

LOG NO:	SEP 25 1992 RD.
ACTION:	
FILE NO:	

Lang Bay Kaolin

- Powell River, British Columbia

Lang Bay Resources Limited

LOG NO:	FEB 02 1993 RD.
ACTION:	Back from assessment
FILE NO:	

Assessment report:

SUBJECT: Technical assessment of a bulk sample of kaolin obtained from drilling 2 x 914 mm diameter holes

SPECIFIC CLAIM: Kelly 4

MINING DIVISION: Vancouver

NTS LOCATION: Map 92 F16-Haslam Lake, Co-ords - 990184

LAT/LONG: about 49° 48' N /124°25' W

CLAIM OWNER: Lang Bay Resources Ltd

OPERATOR: 50% Western Economic Diversification Fund, 50% claim owner

REPORT AUTHOR: MineStart Management Inc - Bryan A. Slim, PEng

SUBMISSION DATE: 26th August, 1992

GEOLOGICAL BRANCH ASSESSMENT REPORT

22,518

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Management Inc

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1 INTRODUCTION

1 INTRODUCTION

1.1 LOCATION

111 LOCATION

The mineral claims are located about 15 km southeast of the town of Powell River, British Columbia at approximately 49° 48' N and 124°25' W of Greenwich. The specific topographic map is Haslam Lake, 92 F/16, edition 2, scale 1:50 000 — see Plate 1-1.

112 ACCESS

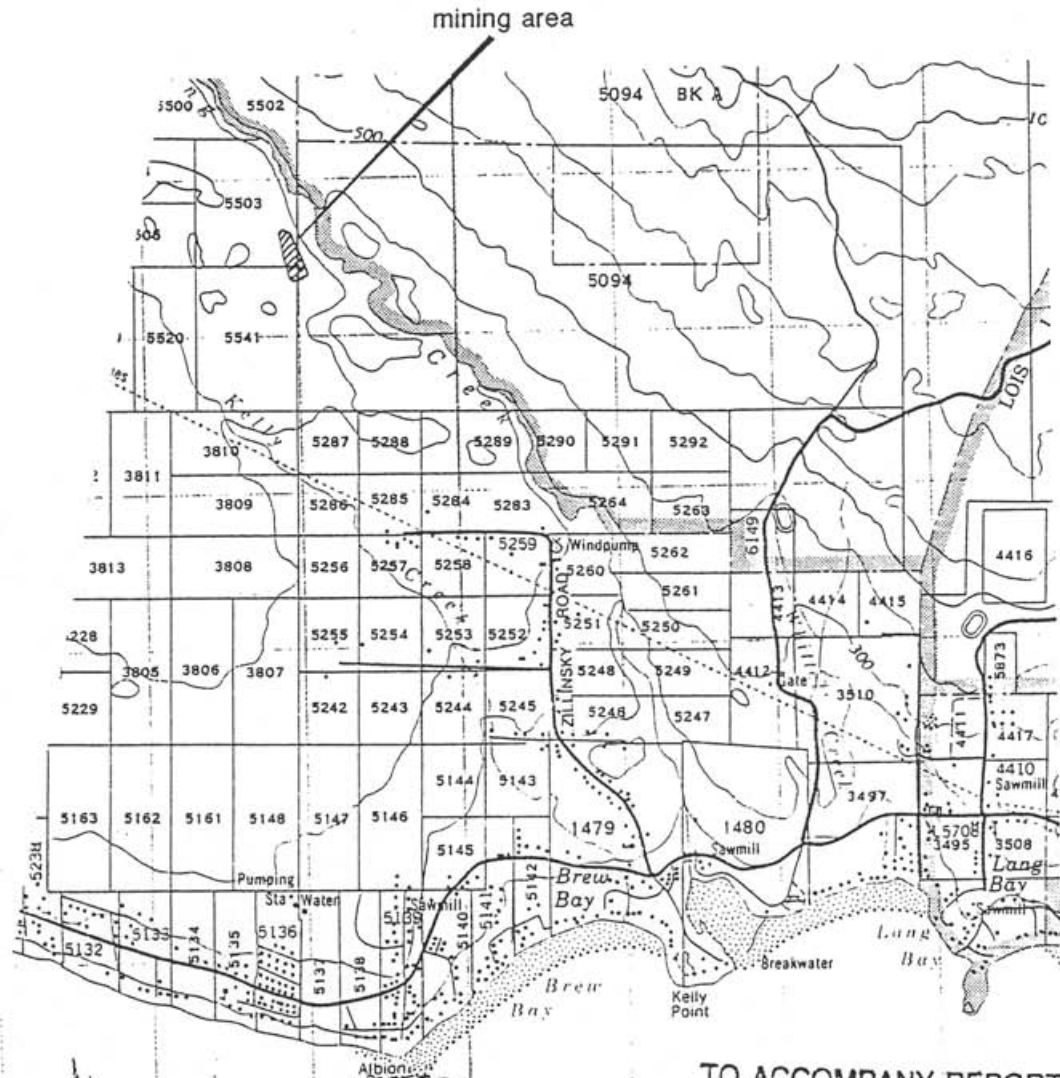
Regional access is via BC highway 101 and BC ferries. From Vancouver the distance is 135 km via Horseshoe Bay, northwest of Vancouver, and includes two ferry crossings. An alternative access is from Comox on Vancouver Island which requires only one ferry. Site access from Highway 101 is to the north onto the Zillinsky Road at Brew Bay about 14 km east of Powell River or 13 km west of the ferry point at Saltery Bay.

The first 3.5 km of the Zillinsky Road is paved as far as the BC Hydro right-of-way. At that point a dirt road (originally constructed by Lang Bay Resources Ltd) is used— see Plate 1-1.

113 TOPOGRAPHIC RELIEF AND CLIMATE

The land slopes gently to the south and elevations range from 110 to 130 m (asl) in the immediate area of interest.

The mean annual precipitation (1951-1980) is reported as 1.094 m with 1.047 m occurring as rain. About 50% of the precipitation falls between the months of October and January. Total days of precipitation average 158 for the year. Temperatures range from a low average of 3.2°C in January to 18.3 °C in July.



TO ACCOMPANY REPORT
BY B.A. SLIM P. ENG.

DATED 26 Aug 1992

LANG BAY KAOLIN
Lang Bay Resources Ltd

Project Location

Base: NTS Scale: 1: 50 000
Province: BC Date Aug 1992
MD: Vanc. Plate 1-1

1.2 PROPERTY DEFINITION

121 MINERAL OF INTEREST

The target of this programme is kaolin which occurs on the mineral claims in both primary and secondary forms. The primary kaolin is derived from in-situ weathering of the granitoid basement rocks. The secondary kaolin is a sedimentary material forming part of the cyclothem sequence within the sedimentary basin and considered to be have originated from the primary deposits

122 OWNERSHIP

The mineral claims are held by Lang Bay Resources Ltd

123 ECONOMICS

Investigations have led to the delineation of an extensive resource of both primary and secondary kaolin on the property. Beneficiation testing and market studies have targeted newsprint as a major market opportunity for the commercial development of this property and preliminary feasibility indicates both technical and commercial merit.

Feasibility of industrial minerals rests, initially, on the existence of a market for the products. The markets are developed by supplying samples to prospective buyers such they can test the material against their needs. This programme was designed to provide that material.

124 HISTORY

Lang Bay has been investigating the feasibility of developing a kaolin mine since the discovery of kaolin on the claims in 1987. Since the discovery 96 holes, totaling about 5 000 m, have been drilled to investigate the kaolin with the focus on the specific quality factors of brightness and abrasiveness. Other exploration work includes geophysical surveys for seismic refraction (6 700 m), magnetometer survey (10 500 m) and dipole-dipole resistivity survey (11 000 m).

1.3 SUMMARY OF CURRENT WORK

Lang Bay Resources Ltd in its development of the kaolin project had reached the marketing stage in 1991 that a prospective paper making company required a 6 tonne sample of processed kaolin for a preliminary newsprint making trial.

To obtain a sample the method selected was a two hole 914 mm diameter, two stage drilling programme which recovered about 46.7 tonne (dry basis) of raw, kaolinised granite. The overburden was churn drilled and cased and the kaolinised sample was obtained by tapered, conical bit drilling of the underlying granite.

The sample was sent for processing to recover the kaolin using, in essence, a sand washing type operation. Recovery was 5.95 tonnes from a 35.2 tonnes raw sample – dry basis – meeting both the target industry brightness and abrasion specifications.

2 PROPERTY

2 PROPERTY

2.1 OBJECTIVE

The overall objective was to obtain a supply of > 60 brightness, < 20 abrasive kaolin for a preliminary newsprint making trial at a BC newsprint mill. In addition the company needed additional material to hand for opportune tests with other prospective buyers.

2.2 DRILLING

221 METHODS

.1 Overburden

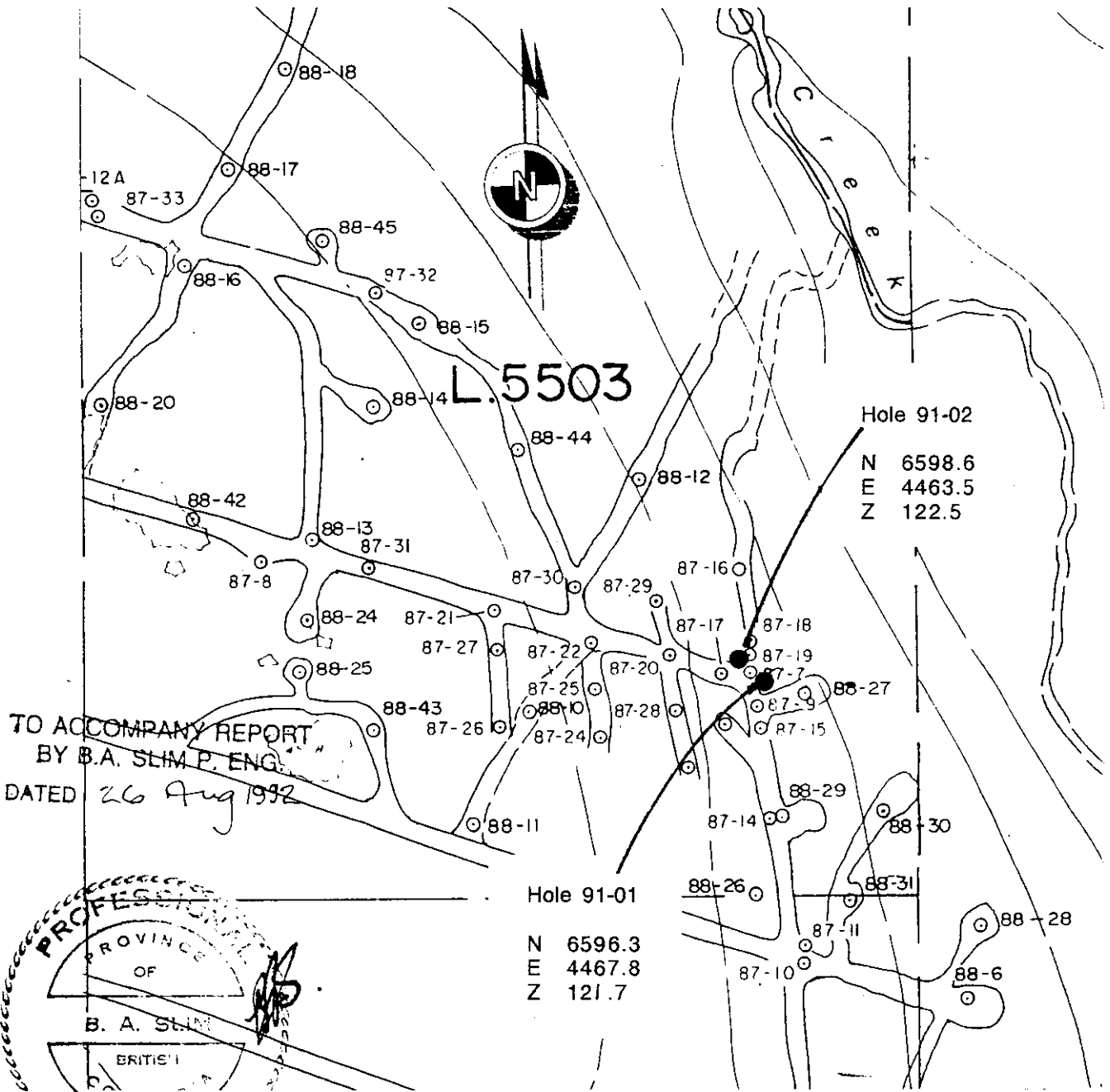
Overburden was excavated by churn drilling 914 mm holes using a 1.36 t hammer. Concurrent with drilling was the placement of casing. This method was selected based on lowest costs and fastest time for excavation.

.2 Kaolinised Granite

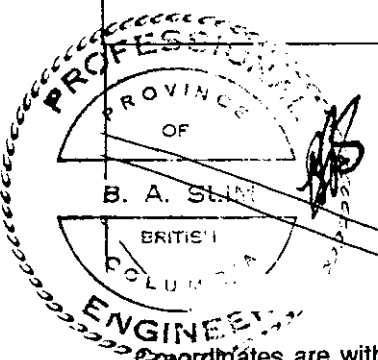
For large diameter holes traditional rotary drilling was estimated to be too expensive and slow and would produce a wet slurry which was not acceptable. The alternative of cable tool drilling was considered to be risky as it could cause comminution of free quartz which could increase abrasiveness of the final product.

Auger drilling was deemed to be appropriate and a custom taper head carrying tungsten carbide bits was ordered from Cubex and this was mounted below a 1.8 m long flight scroll. Auger drilling was carried out following the drilling of a 300 mm pilot holes using a tri-cone bit. The contractor was Tri K Drilling from Victoria British Columbia. Plate 2-1 shows the hole locations and Plate 2-2 the auger and drilling head.

Samples were loaded into one tonne super bags. This allowed for quality control by recording the drilled increment against the bag number.



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DATED 26 Aug 1992



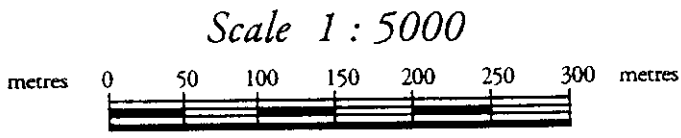
Hole 91-01
N 6596.3
E 4467.8
Z 121.7

Hole 91-02
N 6598.6
E 4463.5
Z 122.5

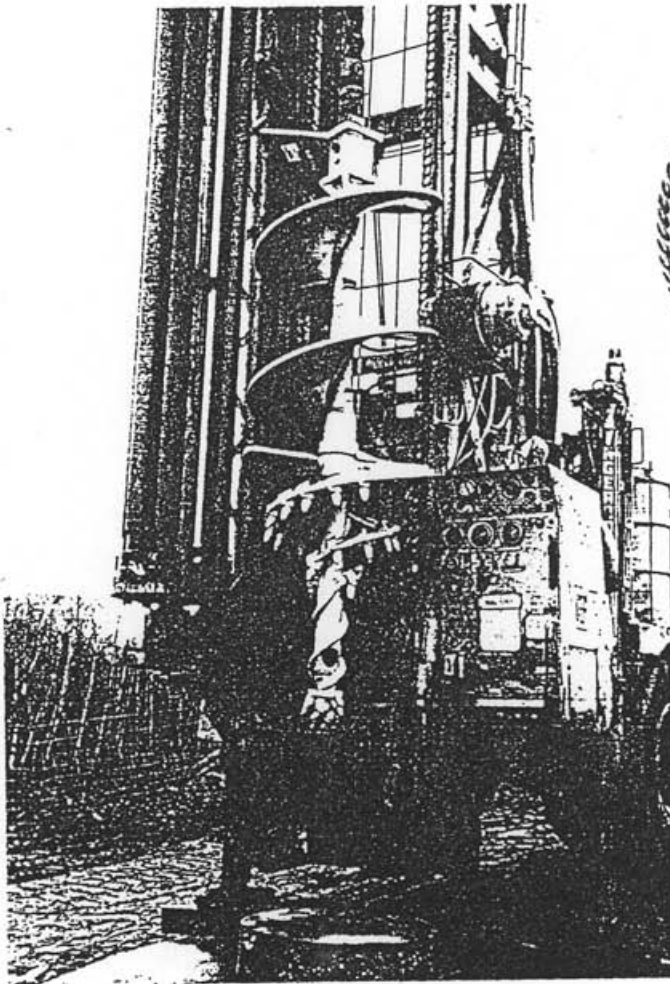
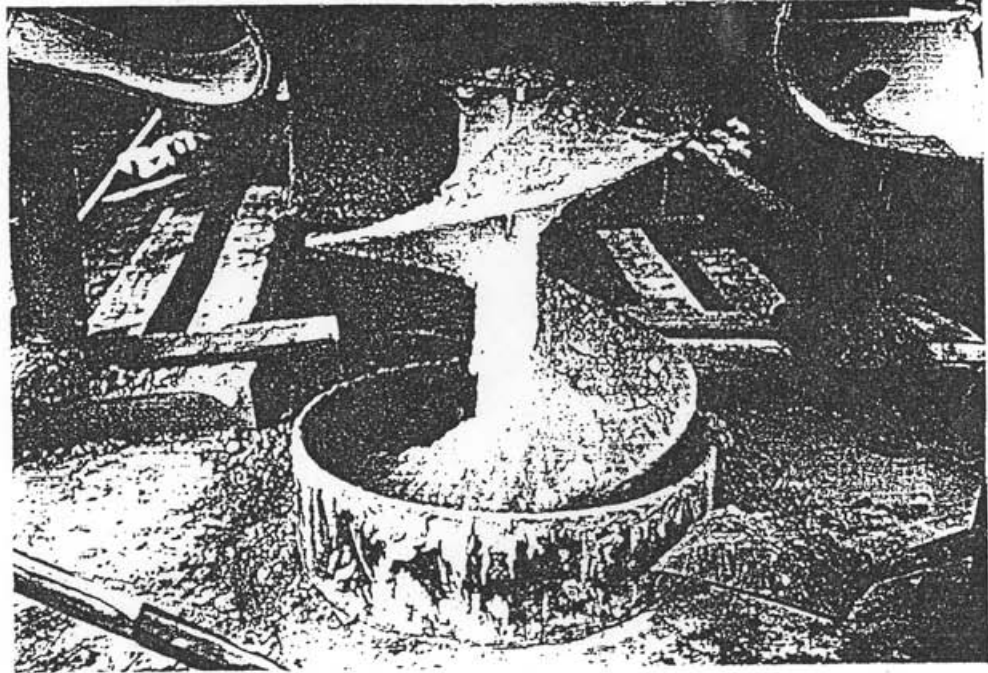
Coordinates are with respect to the LBR grid,
elevations are asl

LANG BAY KAOLIN
Lang Bay Resources Ltd

Drill Hole Locations



Base: NTS Scale: scale bar
Province: BC Date Aug 1992
MD: Vanc. Plate 2-1



TO ACCOMPANY REPORT
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LANG BAY KAOLIN
Lang Bay Resources Ltd

Drill Head and Auger

Base: NTS Scale: scale bar
Province: BC Date: Aug 1992
MD: Vanc. Plate: 2-2

222 RESULTS

The mass of raw kaolin recovered and the dry brightness by bag number are recorded in Table 2-1. Location of the sample increments can be determined by reference to the drill sections presented as Figures 2-1 and 2-2. Actual kaolin content is not given as this was not measured. The brightness value of 60.1 % represents, on a dry basis, an overall weight-average for those samples reporting a brightness. The value of 64.3% represents, on a dry basis, the weight-average for those samples reporting a brightness greater than 60%.

The essential for this programme was to recover kaolin against the specifications with due regard for reasonable costs. The site for the drilling was chosen based on past drilling results and with regard to the specifications and a minimal depth consistent with an expected yield. The choice of hole diameter reflected the tonnage needed and the thickness of the deposit at the drilling location.

2.3 PROCESSING

231 OBJECTIVE

Lang Bay needed, for the paper mill, kaolin product having a minimum 60 brightness and maximum 20 abrasiveness.

232 RESULTS

Samples from each bag were analysed for brightness and, based on the results, 35.19 t (dry basis) were shipped for processing. The weight-average, overall brightness for the raw material shipment was 60.4%. The processing gave a yield of 5.94 t, dry basis, giving 16.9% w/w of the total mass shipped; the brightness of the product was reported between 63 and 64% with abrasion at 17 mg.

2.4 PAPER MAKING TRIALS

Overall the results, as measured by printing, were deemed a success. The resulting newsprint took a loading of 2.6%, w/w.

							Assessment Report	
							Lang Bay Resources Ltd	
Bag	Content Wt lbs	Solids %	Dry Content kg	Dry Brightness %	Dry Brightness >60 %			
Hole 91-01	1	1 860	84.0	708.7	52.6	-		
	2	1 860	85.5	721.4	50.8	-		
	3	1 490	84.8	573.1	51.8	-		
	4	1 615	87.0	637.3	61.6	61.6		
	5	1 415	86.0	552.0	66.2	66.2		
	6	2 050	85.0	790.4	60.0	-		
	7	2 250	90.5	923.6	62.6	62.6		
	8	1 775	88.0	708.5	65.8	65.8		
	9	1 760	90.5	722.5	64.8	64.8		
	10	1 690	88.0	674.6	65.1	65.1		
	11	2 290	85.0	882.9	63.1	63.1		
	12	2 480	86.5	973.1	61.5	61.5		
	13	2 335	84.5	895.0	61.6	61.6		
	14	1 755	86.0	684.6	61.7	61.7		
	15	2 255	89.8	918.5	64.6	64.6		
	16	1 595	91.0	658.4	61.8	61.8		
	17	1 805	91.5	749.1	64.3	64.3		
	18	1 990	85.0	767.3	60.2	60.2		
	19	2 280	85.0	879.1	60.4	60.4		
	20	2 120	85.0	817.4	60.1	60.1		
	21	2 435	84.0	927.8	56.5	-		
	22	2 400	88.0	958.0	56.3	-		
	23	2 475	89.5	1 004.8	57.1	-		
	24	2 170	89.0	876.0	56.8	-		
	25	2 520	83.0	948.7	58.4	-		
	26	2 280	87.0	899.8	53.6	-		
	27	2 495	90.0	1 018.6	51.8	-		
	28	1 265	81.5	467.6	52.5	-		
Hole 91-02	29	1 720	96.5	752.9	65.0	65.0		
	30	2 345	94.7	1 007.3	61.5	61.5		
	31	2 065	94.5	885.2	63.2	63.2		
	32	1 580	87.0	623.5	64.2	64.2		
	33	1 545	89.0	623.7	61.9	61.9		
	34	1 870	88.5	750.7	65.7	65.7		
	35	2 235	82.0	831.3	66.9	66.9		
	36	2 160	81.0	793.6	66.8	66.8		
	37	2 065	85.0	796.2	67.2	67.2		
	38	2 460	87.5	976.4	67.2	67.2		
	39	2 320	90.0	947.1	63.5	63.5		
	40	2 005	87.0	791.2	61.7	61.7		
	41	1 720	89.0	694.4	55.1	-		
	42	1 455	88.0	580.8	55.2	-		
	43	2 090	84.0	796.3	56.4	-		
	44	2 045	87.0	807.0	53.4	-		
	45	2 060	82.0	766.2	53.4	-		
	46	2 390	84.5	916.1	na	na		
	47	2 070	88.5	831.0	na	na		
	48	2 185	78.0	773.1	na	na		
	49	2 290	84.5	877.7	na	na		
	50	2 110	84.0	804.0	na	na		
	51	2 175	83.5	823.8	na	na		
	52	2 295	82.0	853.6	na	na		
	53	2 060	83.5	780.2	na	na		
	54	1 870	84.5	716.8	na	na		
	55A	1 910	86.2	746.8	51.1	-		
	55B	1 570	86.2	613.9	na	na		
	56	1 815	90.5	745.1	na	na		
	57	1 855	90.0	757.3	na	na		
58	1 680	89.5	682.0	na	na			
Totals	118 725	86.7	46 684	60.1	64.3			

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 DATED 26 Aug 1992



- read in conjunction with report

Table 2-1 Drill samples: sample mass and brightness results

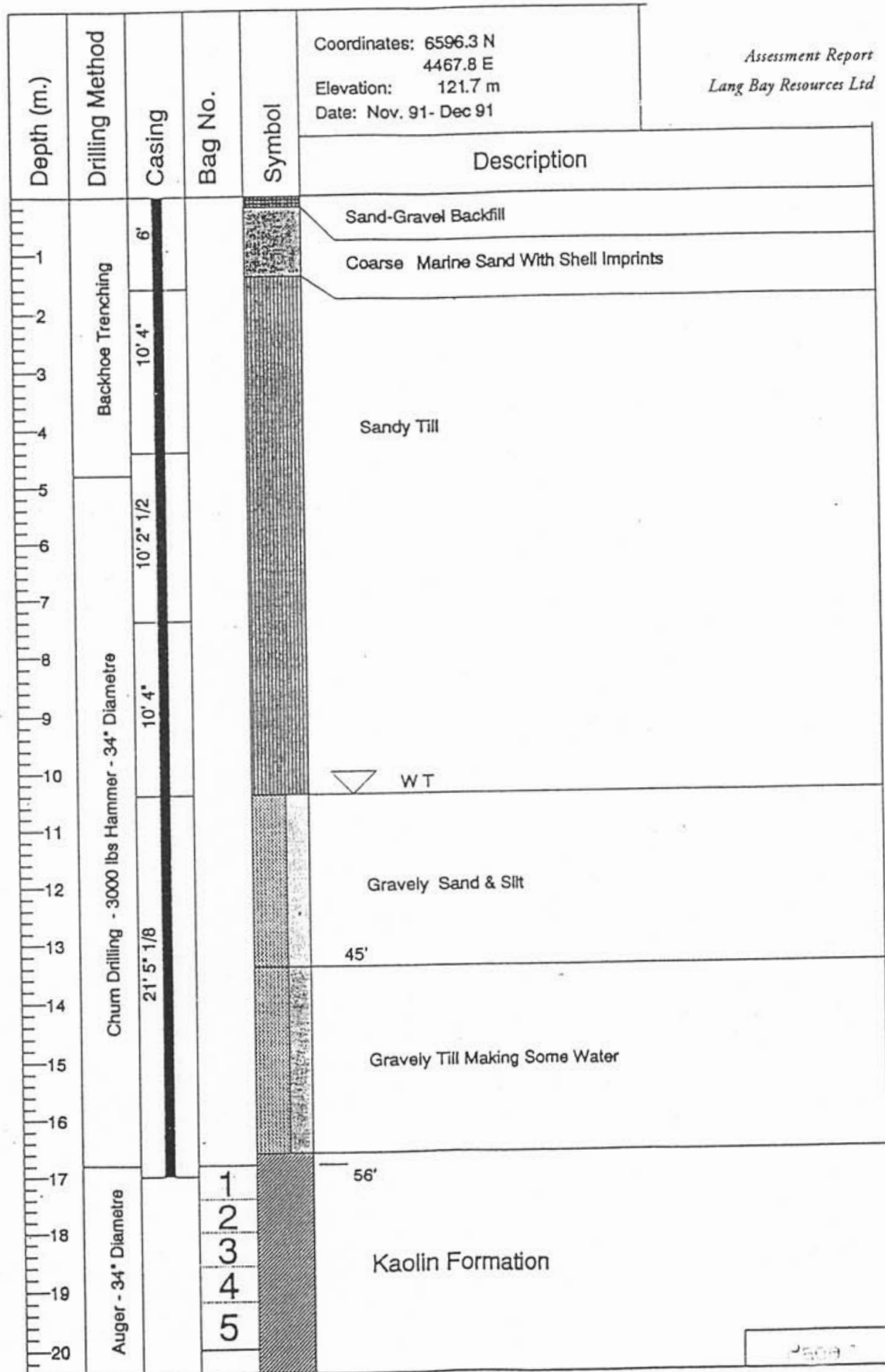


Figure 2-1 Drill section: hole 91-01

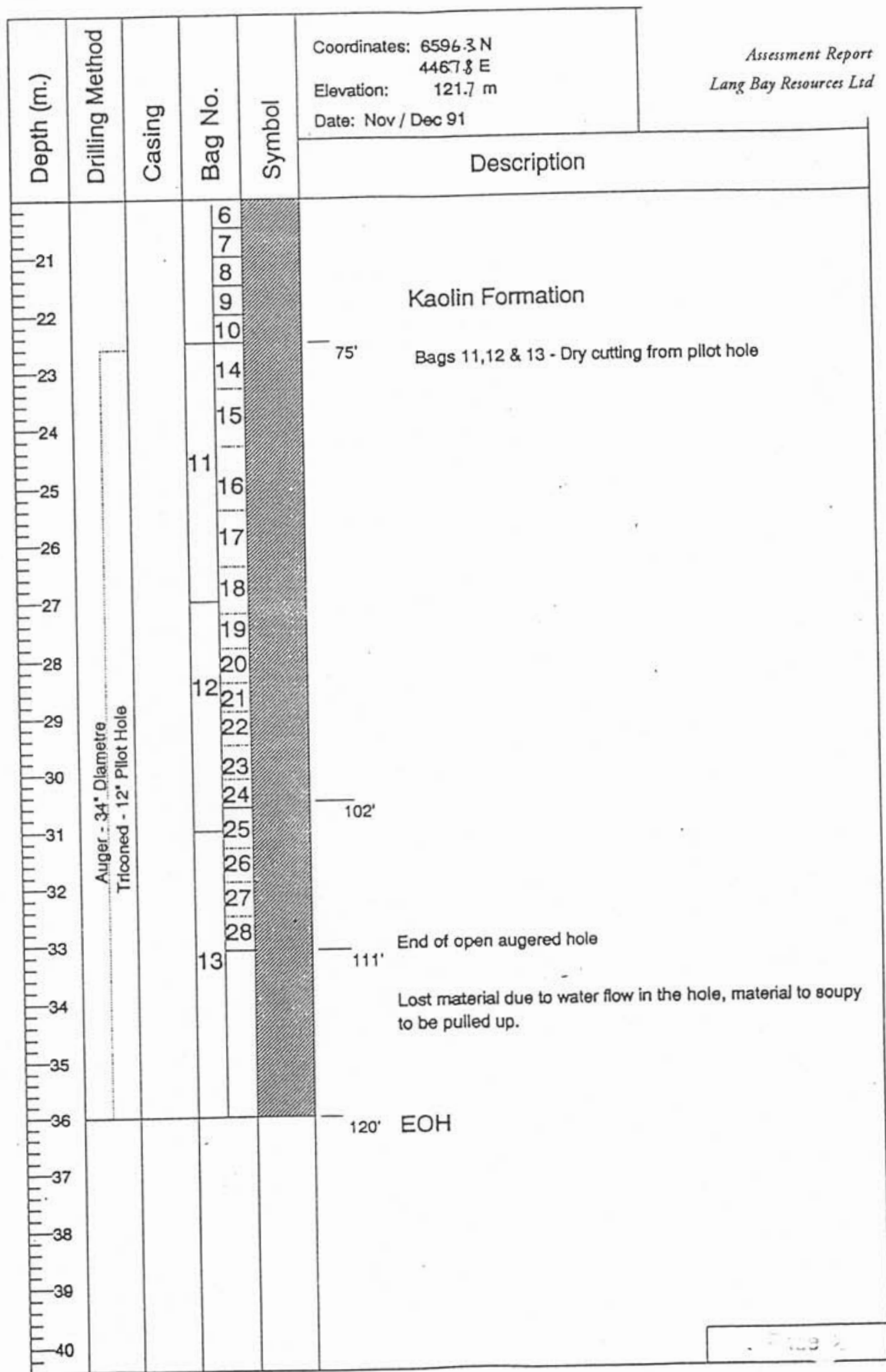


Figure 2-1 cont Drill section: hole 91-01

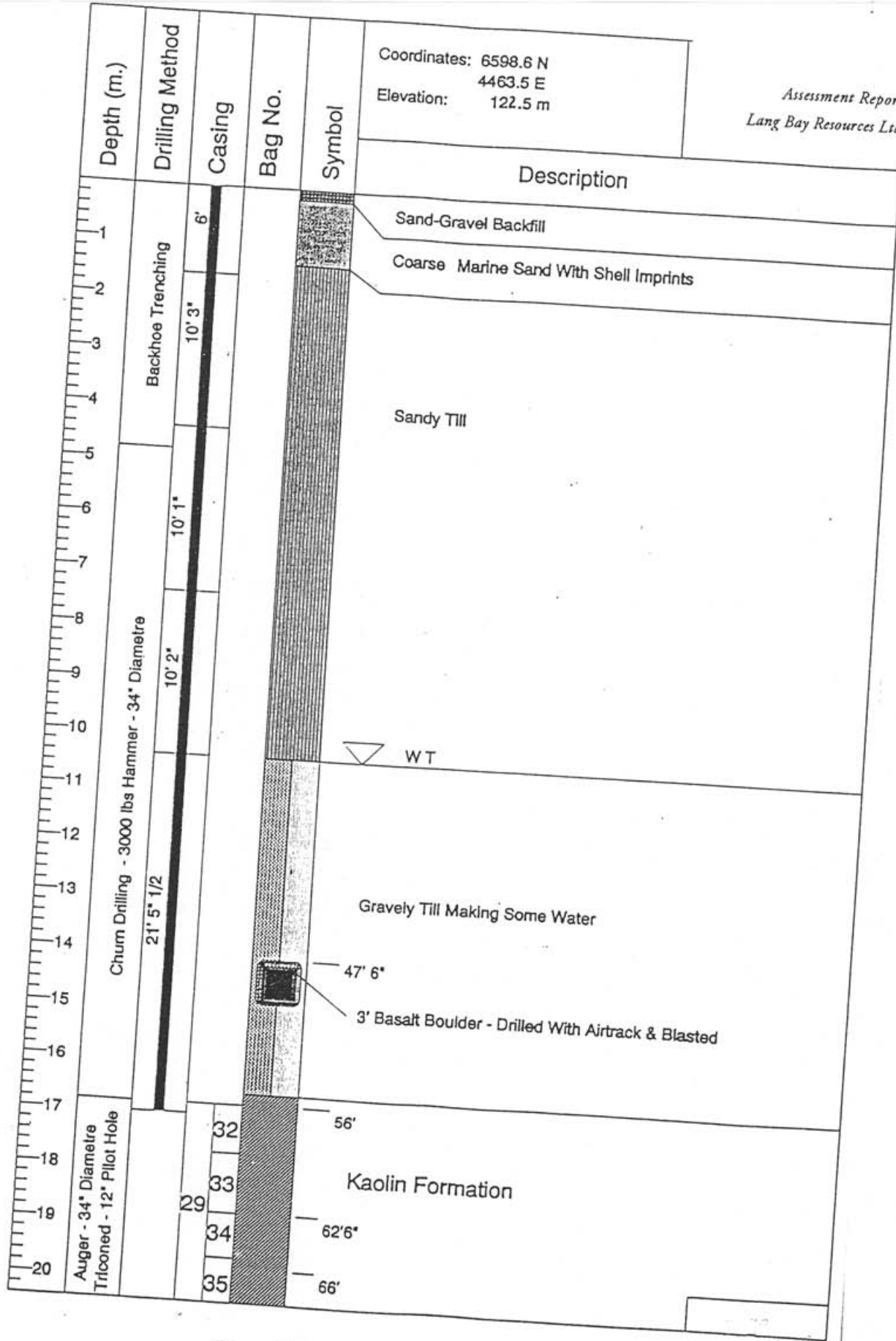


Figure 2-2 Drill section: hole 91-02

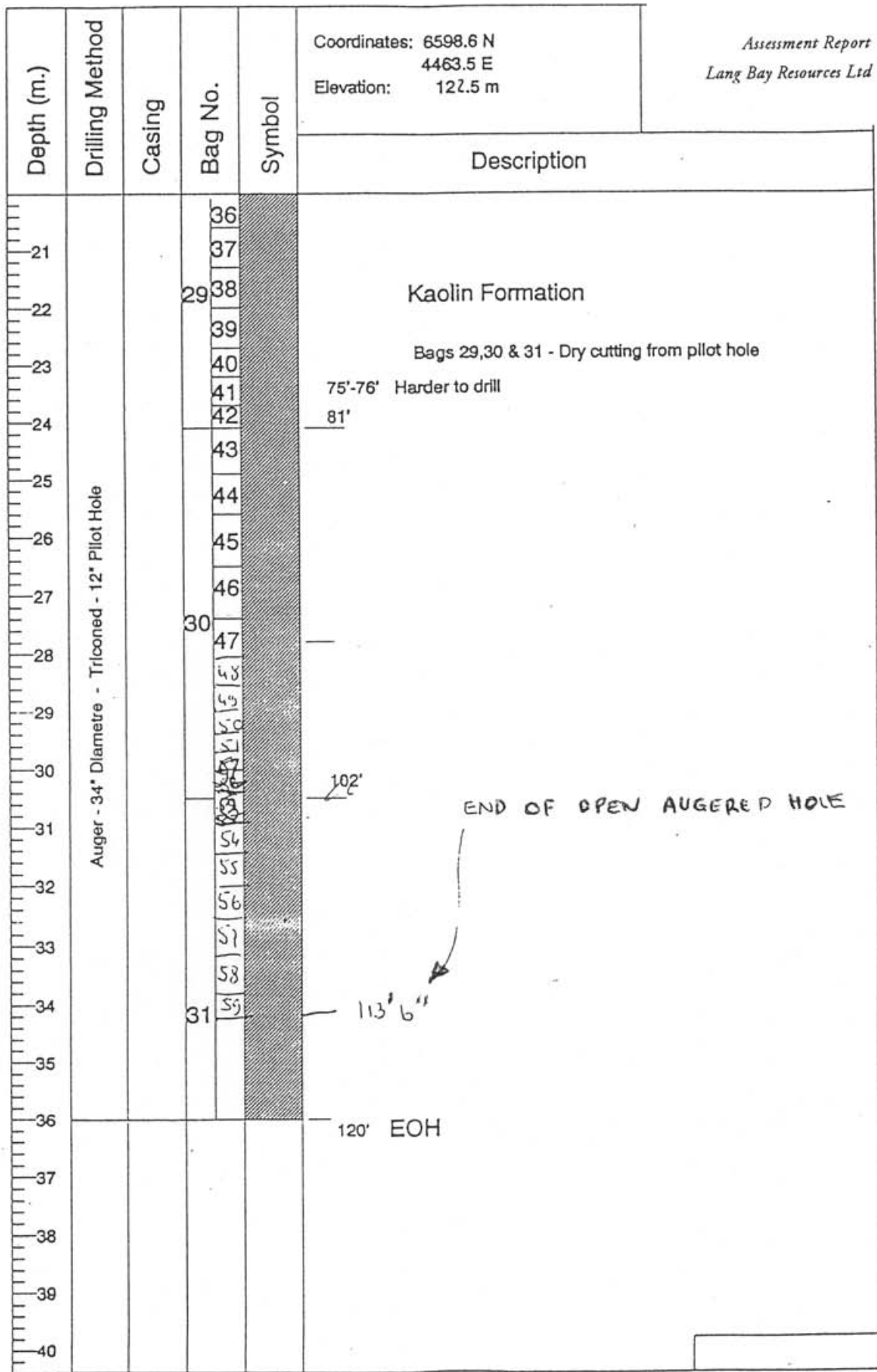


Figure 2-2 cont. Drill section: hole 91-02

3 COST STATEMENT

3 COST STATEMENT

Drilling & Site ¹		\$	\$
Wes. Ind. Drilling		51,164.00	
Tri-K Drilling		30,588.21	
Cubex		14,534.74	
Granet Lake Logging		<u>10,838.37</u>	
			107,125.32
Drilling Supervision/ engineering fees ²			
C. Pilon-Klohn L.		25,782.64	
B.Slim-MineStart		3,855.00	
C.Harvey-HHM		3,200.00	
survey-Emery		479.75	
Brenda mines tech.		<u>1,355.14</u>	
			34,672.53
travel, expenses, etc			
Permitting ³			
B.Slim-MineStart		2,160.94	
C.Harvey-HHM		1,066.48	
Bond		<u>5,000.00</u>	
		8,227.42	
Project Management ⁴			
C.Harvey-HHM		19,899.95	
L.Farris-LBR		<u>3,028.09</u>	
		22,928.04	

¹ site prep, water truck rental and 914 mm casing start by Granet Lake Logging; churn drilling and supply and installation of about 34 m of 914 mm casing by Western Industrial drilling; tri cone pilot and rotary drilling for about 40 m by Tri K; supply and air freight of 914 mm tapered conical bit and scroll auger by Cubex

² C. Pilon at \$50/hr for on-site supervision and owners rep during site prep and drilling; B.Slim, PEng at \$80/hr inspection for compliance to permit restrictions; C.Harvey PhD (kaolin specialist) at \$US 500/day for follow up for sampling quality control; Emery for professional survey to tie in drill holes; Brenda Mine Technician at \$25/hr for sample measurements, included are some of the costs are for allocated expenses. Some of the charges relate to the design of bulk sample programme

³ personnel as before for specifics of preparation and application for permits, bond is reclamation bond

⁴ charges against L Farris (Lang Bay President) relate to out-of-pockets for such items as hotel accommodation, travel etc for meetings (with B Slim) with Powell River Regional Board etc

Other ⁵	bulk bags-Trimeg	1,404.46	
	shipping	21,450.54	
	customs brokers	112.78	
	Brenda equip	3,033.20	
	couriers, faxes, phone	<u>747.54</u>	
			26,748.52
Travel ⁶	expenses	10,168.88	
	truck rental	474.77	
	accommodation & meals	<u>5,260.50</u>	
			15,904.15
Sample process ⁷			
	Bacon Donaldson	17,973.93	
	Aquafine	<u>48,151.48</u>	
			66,125.41
Sample Process Supervision ⁸			
	C.Harvey-HHM		19,515.50
	GST		11,737.11
	TOTAL		312,984.00

⁵ expenses generally relating to shipping of raw kaolin to Bacon Donaldson and then re-shipping to Georgia when BD ceased business, return freight of product kaolin

⁶ these generally represent expenses that could not be easily distributed

⁷ this covers the cost of process the bulk sample to yield the product kaolin. the Bacon Donaldson charges where for use of their facilities and staff for control sampling and preps for brightness and abrasion tests and confirmation of pilot features. The Aquafine was straight contract at a nominal \$ US 1100/ton

⁸ charges for supervision and monitoring of sample preps , sample brightness etc at BD and pilot processing at Aquafine

LANG BAY KAOLIN
-PRODUCT DATA

LANG BAY RESOURCES LTD.

MATERIAL SAFETY DATA

LBK-60

Product/Material	Hydrated Aluminum Silicate
Manufacturer	Lang Bay Resources Ltd.
Address	10th Floor 900 West Hastings Street Vancouver, B.C. Canada / V6C 1E5

Section I - Product Identification

Trade Name	Kaolin
Synonym	Clay
Chemical Family	Hydrated Aluminum Silicate
Formula	$Al_2 O_3 \cdot 2SiO_2 \cdot 2H_2O$
HMIS	Health 0 Flammability 0 Reactivity 0

Section II - Hazardous Ingredients

Inhalable silica is not expected to be present in the dust from this product at levels exceeding 1%. If levels above 1% are detected then additional respiratory protection measures should be taken.

Section III - Physical Data

Boiling Point (°F)	Not applicable
Vapor Pressure (mmHg)	Not applicable
Vapor Density	Not applicable
Solubility in Water	Negligible
Specific Gravity	2.60
Percent Volatile by Weight	0
Evaporation Rate	0
Appearance and Odor	White to off-white odorless powder

Section IV - Fire and Explosion Hazard Data

Flash Point	None
Flammable Limits	LEL - Non-flammable UEL - Non-flammable
Extinguishing Media	Any
Special Fire Fighting Procedures	None
Unusual Fire and Explosion Hazards	None

Section V - Health Hazard Data

Threshold Limit Values	10 mg/m ³ total dust (ACGIH) 5 mg /m ³ respirable dust (ACGIH)
Effects of Over-exposure	No acute health effects. Long-term over-exposure to high concentrates of this dust without the use of a dust mask may produce X-ray evidence of dust in the lungs. Continued long-term over-exposure may affect respiratory function in some individuals.

Carcinogenicity Not listed with NTP, IARC, or OSHA as a known or suspected carcinogen.

Emergency and First-Aid Procedures Eyes and Skin - Flush with water. Inhalation and Ingestion - No special precautions.

Section VI - Reactivity Data

Product is stable.

Incompatibility None

Hazardous Decomposition Products None

Hazardous polymerization will not occur.

Section VII - Spill or Leak Procedures

Steps to take in case material is released or spilled Accidental releases can be cleaned up by sweeping, vacuuming or flushing with water.

Waste Disposal Method Use normal solid waste disposal procedures which are in compliance with federal, state and local regulations.

Section VIII - Special Protection Information

Ventilation Local exhaust recommended

Eye Protection Non-essential but desirable

Gloves Non-essential

Other None

Respiratory Protection For dusty conditions wear a NIOSH approved dust mask.

Section IX - Special Precautions

Kaolin accumulations on walking surfaces will cause very slippery conditions when wet.

LANG BAY RESOURCES LTD.

PRODUCT DATA SHEET

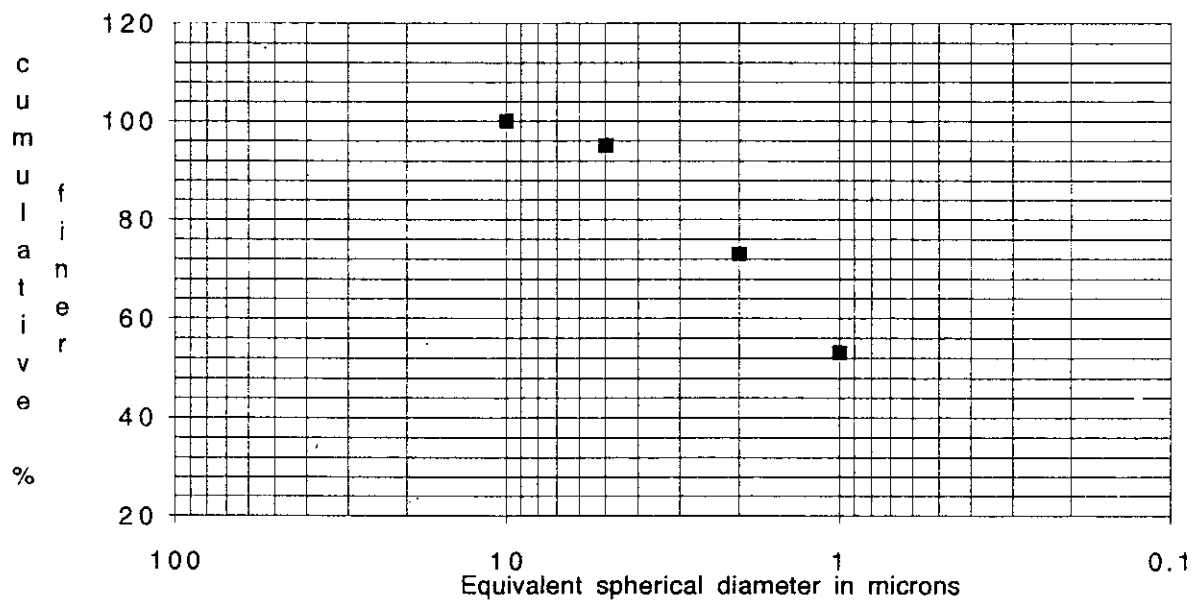
LBK-60

Typical Chemical Analysis

	Percent
SiO ₂	45-46
CaO	0.6
Al ₂ O ₃	35-36
K ₂ O	0.5
P ₂ O ₅	0.1
MgO	0.6
Na ₂ O	0.4
Fe ₂ O ₃	2.5
TiO ₂	1.1
MnO	0.02
Loss on Ignition	13-14
pH (20% suspension)	9.2
Dry Brightness (%)	60-62
Specific Gravity (g per cc.)	2.6
Tapped Density (lbs. per cubic ft.)	53
Loose Density (lbs. per cubic ft.)	40
Abrasion Index (Einlehner Method (mg))	<20
Oil Absorption (mg per 100 mls)	38-42
Thru 200# (%)	99.9
Median Particle Size (µm)	1

Typical Particle Size Distribution:

Microns	% Finer than
10	100
5	95
2	73
1	53



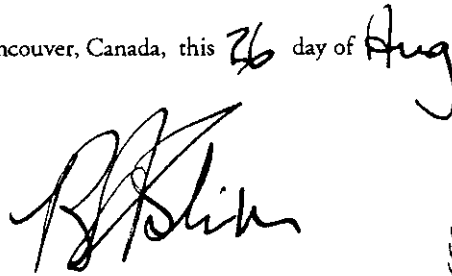
5 ENGINEER'S CERTIFICATE

5 ENGINEER'S CERTIFICATE

I, Bryan A. Slim, do hereby certify that:

- 1 I am a consulting mining engineer and a principal of MineStart Management Inc with a business address at 1763, Scott Road, North Vancouver, British Columbia, Canada, V7J 3J4. telephone (604) 986-7014, fax (604) 986-7017
- 2 My qualifications and professional associations are:
 - M.B.A. Simon Fraser University
 - B.Sc. Mining Engineering, University of London.
 - A.R.S.M. Associate of the Royal School of Mines
 - Mine Managers Certificate of Competency, Republic of South Africa
 - member of the Association of Professional Engineers in the Province of British Columbia, Canada
 - Chartered Engineer in England
 - Member of the Institution of Mining and Metallurgy
 - Member of the Canadian Institute of Mining and Metallurgy
 - Member of the American Institute of Mining, Metallurgical and Petroleum Engineers.
- 3 I have been professionally active in my career in Canada, Africa and the U.S.A since 1963.
- 4 This report on the Lang Bay Kaolin Project is based on various property visits, secondary data sources, experience and my professional engineering and marketing judgement.
- 5 As author of this report I consent to its exclusive use by Lang Bay Resources Ltd for submission as a technical assessment report. Neither the report nor any information contain herein or otherwise supplied by MineStart in connection with the study shall be released by Lang Bay or used by others in any connection without the express written consent of MineStart Management Inc. All rights reserved.

Signed and sealed in North Vancouver, Canada, this 26 day of Aug 1992.



Bryan A. Slim, BSc, ARSM, MBA,
MIMM, CEng, PEng.

