

# Lang Bay project

— Kelly creek, BC

Electra Gold Ltd.

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## A mix of kaolin market opportunities

N 49° 48' W 124°25'

June 2003



Bryan Slim, MBA PEng

*MineStart*<sup>™</sup>  
*Management Inc.*

*MineStart™  
Management Inc.*

29 June, 2003

Electra Gold Ltd.,  
100, 853 Richards St  
Vancouver  
BC V6B 3B4

Attn: Mr J Shearer, PGeo President

Dear Mr Shearer,

Lang Bay project, Powell River, BC

It is with much pleasure we forward this report on your Lang Bay project near Powell River.

Exploration and development work of the 1980-90s has demonstrated the existence of extensive secondary kaolins on the 800 ha property and this alumina-rich mineral could prove suitable as cement feedstock. In addition the underlying primary kaolin in the eastern side of the basin offers many opportunities for commercial exploitation in fillers and ceramics. A development plan for the sequential production of the upper and lower kaolins offers an attractive commercial approach.

It was a beneficiated sample of the primary kaolin from the site that was used successfully by Fletcher Challenge for a kaolin-filled newsprint-run and newspaper-run by the Vancouver Sun in 1992.

As such it is our professional opinion that your project at Lang Bay justifies further work to confirm commercial opportunities. Recommendations are made for an initial two-stage \$C 100 000 program for identification of a cement feedstock resource area in the secondary kaolins and, separately, a \$C 50 000 initial program on primary kaolin characterisation and development and market investigations.

We thank you for this opportunity to be of assistance to Electra Gold Ltd and offer our services for the ongoing development.

Yours sincerely  
**MineStart™ Management Inc**

Bryan Slim, BSc, MBA, PEng  
Consulting Mining Engineer

E33/03070.291  
Att

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## SUMMARY

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Electra Gold Ltd. has entered into an agreement under which it has acquired a block of mineral claims known to contain primary and secondary kaolin lying south-east of the town of Powell River in British Columbia. The total area covered is about 800 ha.

Electra's focus is on the kaolin discoveries and development work of Lang Bay Resources Ltd in the 1980-90s. Following the 1988 discovery and confirmation of quality primary kaolin on the property an extensive exploration program of 62 core holes of 4 000 m in total led to the identification of large areas of kaolinisation. In one area near-surface secondary-kaolins were found to overlie a large volume of primary kaolin. Laboratory and industrial testing and trial market investigations identified the kaolins as filler and ceramic potential. Following paper making tests, Fletcher Challenge Canada Limited agreed to a 40 t Lang Bay kaolin filled newsprint run at their Elk Falls division on Vancouver island. The run and subsequent use of the newsprint in copies of the Vancouver Sun newspaper were described as a success. The kaolin feed for this trial was obtained from the primary kaolin within what are now Electra's claims, at a depth of 20-36 m below surface. A second and much larger trial was agreed to with Fletcher Challenge but despite permits being issued for an underground bulk sample, project delays arose and a resulting loss in momentum led to the project being stalled and the claims were eventually allowed to lapse.

With Electra's success in developing cement feedstock at their Apple Bay property on Vancouver Island, the secondary kaolins at Lang Bay could also provide another source of such mineral and at the same time open the access to the underlying primary kaolin. This suggests an order of sequence for strategic development. A third element could be the germanium which was the subject of exploration and development on the property in the 1960-70s

The claims are conveniently sited with regard to access to a town and its infrastructure as well as site access from logging roads and close access to water borne freight.

Recommendations are made for an initial two-stage \$C 100 000 program for identification of a cement feedstock resource area in the secondary kaolins and, separately, a \$C 50 000 initial program on primary kaolin characterisation and development and market investigations.

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# 1 INTRODUCTION

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## 1.1 PREAMBLE

Electra Gold Ltd is acquiring the Duck Lake mineral claims near the town of Powell River in British Columbia and has retained MineStart Management Inc to assist by reviewing the project and draw conclusions and making recommendations.

## 1.2 BACKGROUND

The Duck lake site is known from historical background and exploration of the last fifty years to contain coal, high assay values of germanium and primary and secondary kaolin.

## 1.3 THIS STUDY

### 131 TERMS OF REFERENCE

Electra Gold Ltd has retained MineStart to review the project, draw conclusions and make recommendations to be submitted in a written report to meet regularity requirements.

### 132 PURPOSE OF THE REPORT

MineStart was advised this report is intended to establish the project as a property of merit and thus justify the acquisition and consideration, for approval of the TSX ventures exchange and serve as a base for a possible financing.

### 133 SOURCES OF INFORMATION

The sources of information have included various historical engineering, geological and management reports compiled about the project or site as well as the author's files, personal knowledge and experience on the site in design, planning and permitting for bulk sample extractions as well as strategic planning and market development of the kaolin carried out for and on behalf of Lang Bay Resources Ltd between 1991-95.

Specific references to persons, reports and other information or data are noted as footnotes to superscript text notations. We acknowledge the permission of Marshall Farris, former corporate secretary

of Lang Bay Resources Ltd for MineStart to refer to documents and other information sources produced by or for the company and Russell Hillman, PEng to quote from his report.<sup>1</sup>

134 FIELD ACTIVITY OF THE QUALIFIED PERSON

Although the engineer author's active involvement in the kaolin project from 1991-95 included field work, field involvement for the current issuer has been limited to a general site visit and he has neither taken samples nor carried out nor commissioned analysis of samples or third party studies for the issuer.

1.4 DISCLAIMER

For parts of this report the author has relied on third party information, reports and maps generated from either various exploration programs, or testing and evaluation carried out by companies or individuals. The data reported by these entities is generally presented without comment as judged appropriate unless the author is aware of the situation. Unless otherwise stated the author has not independently confirmed the accuracy of the data. In addition the author has consulted the MineStart files which were accumulated during the years he was consultant to Lang Bay Resources Ltd.

The descriptions of the properties provided herein, including claim numbers or names, areas, locations, etc., are for general orientation purposes only and are not to be construed as legal descriptions. No opinion on ownership is given or implied. It is for Electra Gold Inc, the issuer, to investigate and confirm the tenure.

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<sup>1</sup> Lang Bay Resources Ltd was dissolved in the mid 1990s

## 2 PROPERTY

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### 2.1 PREAMBLE

Part 2 Property, describes the Duck Lake mineral property and tenure as well as the site and infrastructure

### 2.2 MINERAL PROPERTY

The Duck lake project site, which is in the Vancouver mining division in British Columbia and lies 15 km southeast of the town of Powell River encompasses 32 units covering a nominal 800 ha. The mineral titles map shows the claims to form one contiguous parcel.<sup>2</sup> The claim details listed in Table 2-1 and Plate 2-1 shows the general claim boundaries and are provided for Electra Gold Ltd for their due diligence and validation.<sup>3</sup>

While we are not aware of any cadastral surveys carried out we note the drill holes completed in the 1980-90s were surveyed in by a professional surveyor and the co-ordinates reduced to NTS.

### 2.3 TENURE

#### 231 TITLE

##### .1 Ownership

Of the 32 mineral claims six are registered in the name of Doug Stelling holder of FMC 132201 which expires 3 September 2003.<sup>4</sup> The remaining 26 claims are recorded as held 100% by Johan Thom Shearer holding FMC 124452 which expires 4 March 2004.<sup>5</sup>

Claim assessment is recorded as being valid according to the dates shown in Table 2-1.

##### .2 Issuer

Electra Gold Ltd ('the issuer') has entered into an agreement to acquire the mineral claims as listed in Table 2-1.

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<sup>2</sup> 092F16, search on 9 May 2003

<sup>3</sup> information and base map per tenure search Midas website 9 May 2003

<sup>4</sup> adjunct search to claims tenure search

<sup>5</sup> adjunct search to claims tenure search

Table 2-1 List of mineral claims<sup>6</sup>

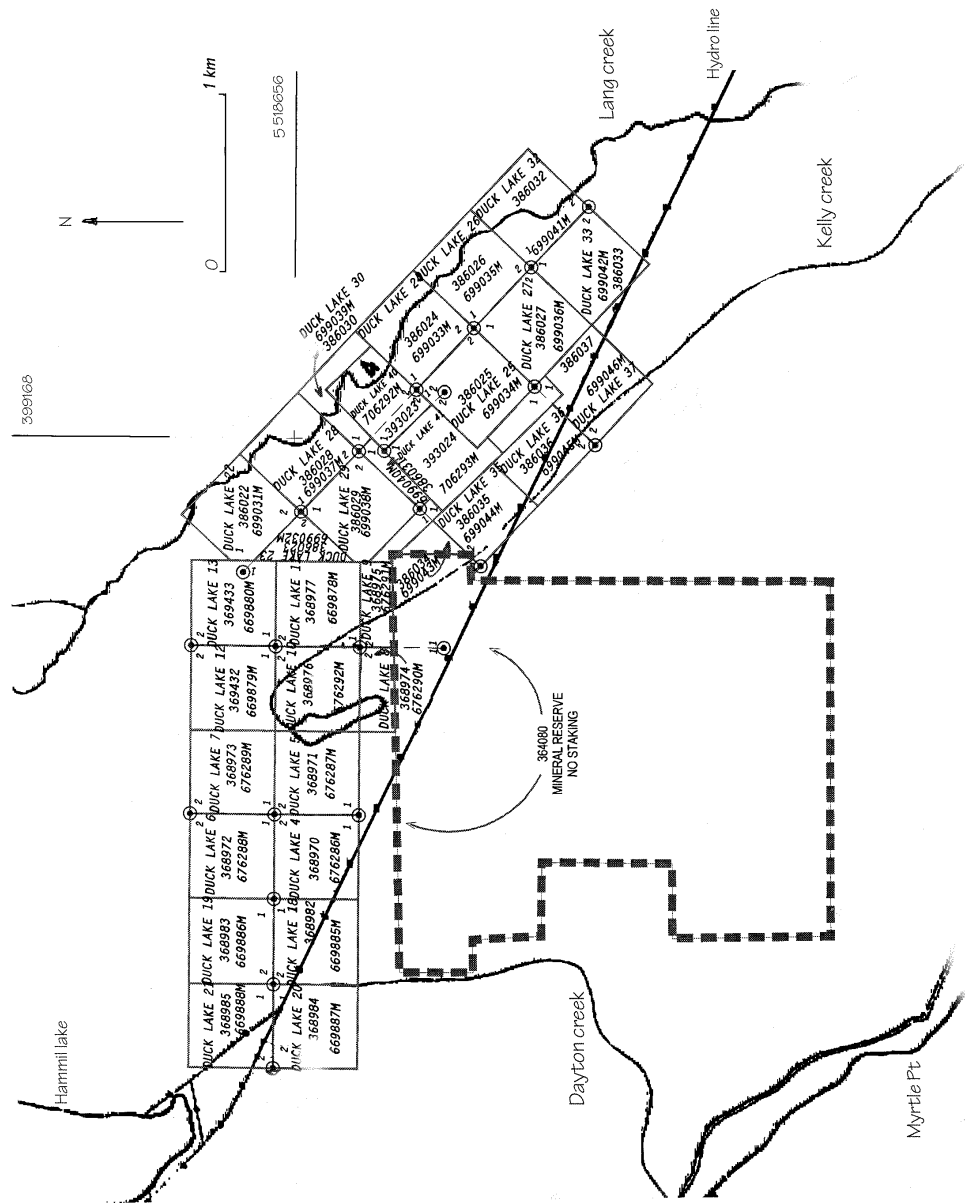
Claim	Tenure	Expiration date	Size units	Holder
Duck lake 4	368970	14 Sep 2003	1	J.T.Shearer
Duck lake 5	368971	14 Sep 2003	1	J.T.Shearer
Duck lake 6	368972	14 Sep 2003	1	J.T.Shearer
Duck lake 7	368973	14 Sep 2003	1	J.T.Shearer
Duck lake 8	368974	14 Sep 2003	1	J.T.Shearer
Duck lake 9	368975	14 Sep 2003	1	J.T.Shearer
Duck lake 10	368976	14 Sep 2003	1	J.T.Shearer
Duck lake 11	368977	14 Sep 2003	1	J.T.Shearer
Duck lake 12	369432	14 Sep 2003	1	J.T.Shearer
Duck lake 13	369433	14 Sep 2003	1	J.T.Shearer
Duck lake 18	368982	14 Sep 2003	1	J.T.Shearer
Duck lake 19	368983	14 Sep 2003	1	J.T.Shearer
Duck lake 20	368984	14 Sep 2003	1	J.T.Shearer
Duck lake 21	368985	14 Sep 2003	1	J.T.Shearer
Duck lake 22	386022	14 Sep 2003	1	J.T.Shearer
Duck lake 23	386023	14 Sep 2003	1	J.T.Shearer
Duck lake 24	386024	14 Sep 2003	1	Doug Stelling
Duck lake 25	386025	14 Sep 2003	1	Doug Stelling
Duck lake 26	386026	14 Sep 2003	1	Doug Stelling
Duck lake 27	386027	14 Sep 2003	1	Doug Stelling
Duck lake 28	386028	14 Sep 2003	1	J.T.Shearer
Duck lake 29	386029	14 Sep 2003	1	J.T.Shearer
Duck lake 30	386030	14 Sep 2003	1	J.T.Shearer
Duck lake 31	386031	14 Sep 2003	1	J.T.Shearer
Duck lake 32	386032	14 Sep 2003	1	J.T.Shearer
Duck lake 33	386033	14 Sep 2003	1	J.T.Shearer
Duck lake 34	386034	14 Sep 2003	1	J.T.Shearer
Duck lake 35	386035	14 Sep 2003	1	J.T.Shearer
Duck lake 36	386036	14 Sep 2003	1	Doug Stelling
Duck lake 37	386037	14 Sep 2003	1	Doug Stelling
Duck lake 40	393023	14 Sep 2003	1	J.T.Shearer
Duck lake 41	393024	14 Sep 2003	1	J.T.Shearer
			32 =	800 ha

## .2 Mineral Rights<sup>7</sup>

Electra Gold will have the mineral rights applicable to any mineral claim holder

<sup>6</sup> all these claims have been renewed and now expire 13 September 2004 and notice has been filed to group

<sup>7</sup> full detail are given in the relevant agreements



Lang Bay project, Kelly creek BC  
Electra Gold Ltd

Claim Map

Base	Mineral titles 92F16W	Scale:	sale bar
Region:	Vancouver MD	Rpt Date:	Jul 2003
		Plate	2-1

### .3 Consideration<sup>8</sup>

Electra is to issue, subject to approval, an aggregate of 500 000 treasury common-shares of which 150 000 are to Doug Stelling and 350 000 to Joe Shearer. There are neither any work requirements nor any royalties

## 2.4 ENVIRONMENTAL LIABILITIES

We understand the reclamation bond of Lang Bay Resources (prior holder of claims in the area now covered by the Duck lake claims) was returned about late 1995.<sup>9</sup> Similarly, Homegold resources had their bond refunded from their 1999 drilling programme.<sup>10</sup> Such refunds mean the companies met their reclamation obligations related to field work.

The claims lie between the two drainages of Kelly and Lang creeks in the lower reaches of which and near the highway there is residential property which rely on wells for water supply. These residents can be quite vociferous in 'protecting' their territory and Powell River area was – and maybe still is – known to have a strong group of environmentalists.<sup>11</sup> Drilling on the claims has intersected ground-water which it has been suggested is a perched water table.<sup>12</sup>

In the early 1990s a fish hatchery was operated 2 km from the headwaters of Lang creek by the Powell River Salmon Society (under contract to the Department of Fisheries and Oceans) which released salmon at various life stages into Lang creek.<sup>13</sup> Coho are reported to have been released into Kelly creek.<sup>14</sup> In addition, the salmon society maintained – again for DFO – a spawning channel in the Lang creek estuary, which is close to Highway 101 crossing.<sup>15</sup> A field restriction boundary of 100 m from Lang creek was placed on Fargo Resources Ltd and this was extended to Lang Bay Resources Ltd as successor company. Some background on water quality and plant and animals was noted in a 1988 review and apart from water colour exceeding drinking water standards there was marginal excess in cadmium, aluminum, iron and zinc concentrations.<sup>16</sup> The figures are believed to be a measure of the water in a natural state and assumed to represent the water released from Haslam lake – see also § 2.7. Water for drilling was obtained from a local resident.

The area of interest close to Lang creek was logged in about the early 1990s prior to which date drilling was carried out on roads cut by Fargo Resources Ltd, the then operators.<sup>17</sup>

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<sup>8</sup> full details are given in the relevant agreements

<sup>9</sup> pers knowledge

<sup>10</sup> pers comm J. Shearer

<sup>11</sup> who in the past proved fair and realistic people to deal with

<sup>12</sup> pers comm, Harvey

<sup>13</sup> the current status of the spawning channels is unknown

<sup>14</sup> the current status is unknown. Given that Kelly creek is reported to have little or no flow in the summer the Coho release appears surprising

<sup>15</sup> the current status is unknown

<sup>16</sup> 'Environmental overview report Lang Bay kaolin prospect' for Fargo Resources Ltd by Norecol; Environmental Consultants Ltd File 166-1A (Oct 1988)

<sup>17</sup> Fargo Resources was the predecessor company to Lang Bay Resources Ltd

## 2.5 MINE PERMITS

The company and property will be subject to the mine permit regulations of British Columbia. We are not aware of any permits presently in force on the property.<sup>18</sup>

## 2.6 SITUATION AND ACCESS

The property, which is about 110 air-km north of Vancouver and 15 km south-east of the town of Powell River is on the mainland coast at about latitude 49° 48' N and longitude 124° 25' W.<sup>19</sup> The map reference, at 1:50 000 scale, is NTS 092F 16. The claims are in the Vancouver mining division.

The area can be reached from Vancouver by ferry from Horseshoe Bay to Langdale then Highway 101 to Earl's Cove and then ferry to Saltery Bay and Highway 101 to Powell River a driving distance of about 145 km.. Alternatively, from Vancouver Island there is a ferry from Comox to Powell River. There is an airport at Powell River but status of scheduled carriers is unknown.

Access to the claims is via Highway 101 to the north bound Zilinski road at about 15 km south-east of the town of Powell River then past the school and crossing the hydro line right-of-way to the dirt road access originally developed by Fargo Resources. To Duck lake road is suitable for the western side of the claims.

## 2.7 PHYSIOGRAPHY

The area is generally covered with a mixed second growth forest consisting mainly of fir, hemlock, cedar and alder; the area is believed to have been first logged around 1920. Selective logging was carried out alongside Lang creek in the late 1980s and was re-forested about 1990. This area is coincident with the primary kaolin site identified by Fargo Resources from drilling in 1988 – Plate 3-1.

Water flow in Lang creek is controlled by the needs of the fish hatchery – § 2.4 – by the water release from Haslam lake.<sup>20</sup> A minimum flow of 0.42 m<sup>3</sup>/s had to be maintained and increased in October and November to 0.57 m<sup>3</sup>/s.<sup>21</sup> The weather is relatively mild with average rainfall and min/max temperatures as shown in Figures 2-1 and 2-2.<sup>22</sup> Of the mean annual precipitation of 1.094 m, 1.047 occurs as rain.

The moderately undulating terrain slopes gently to the south and east to Kelly and Lang creeks. Elevations range from 110 to 130 m asl in the immediate area of interest. Transecting the property in a northwest to southeast line is a high-voltage power-line to the town of Powell River and Norske Canada's pulp and paper mill.

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<sup>18</sup> see § 2.4

<sup>19</sup> latitude/longitude per BC Minfile

<sup>20</sup> 'Environmental overview report Lang Bay kaolin prospect' op cit

<sup>21</sup> Jantz, P.; Project manager Lang creek hatchery as cited 'Environmental overview report Lang Bay kaolin prospect'

<sup>22</sup> average for 1951-80 at Powell River A station 49° 50' N, 124° 30' W at 130 m elevation

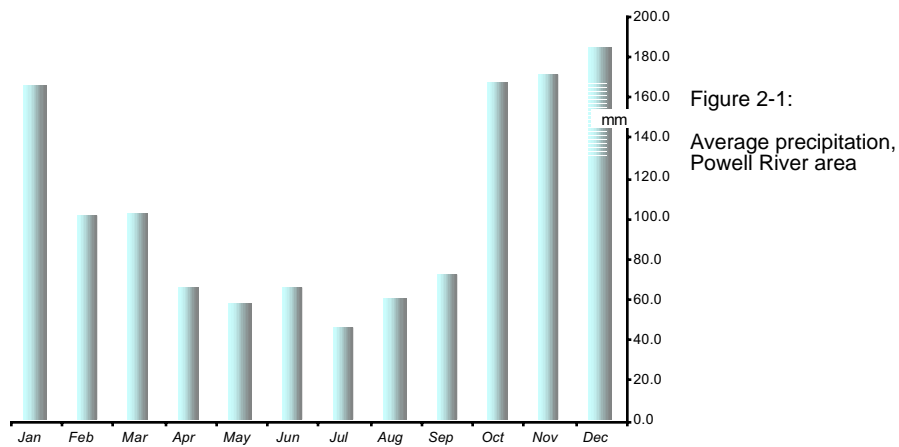
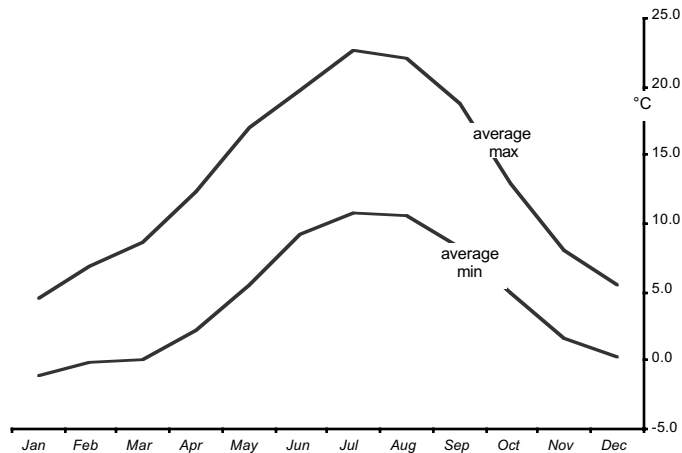


Figure 2-2:  
Average min/max  
temperatures, Powell  
River area



## 2.8 INFRASTRUCTURE AND LOCAL RESOURCES

The property lies only 5 km from tide water which indicates the opportunity for barge traffic immediately south of the claims.

Powell River is a small town of about 18 000 people serving one of Canada's largest pulp/paper mill complexes. Facilities include a hospital and schools. There are several commercial workshops in the area and the usual town services can be expected.

## 3 PROPERTY HISTORY

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### 3.1 PREAMBLE

Section 3 Property History provides a description of the exploration and development history of the area covered by the Duck lake claims, which overlie part of the area of the Lang Bay project which was under investigation from 1981 to about 1995.<sup>23</sup> The early years of exploration were field focused but after 1988 the thrust of the work was development.

### 3.2 DISCOVERY

In 1948 a spectrographic research study on the coals of British Columbia discovered high values of germanium in the carbonaceous shales and sandstones found in the Lang creek area. While the coal had been exploited in years gone by for local fuel needs, the germanium was new.<sup>24</sup>

Forty years later in a detailed germanium exploration programme by Fargo Resources Ltd the drilling water 'suddenly started producing white clay-like material'.<sup>25</sup> This was subsequently identified as a high-grade kaolin.<sup>26</sup> While this was the discovery of significant quantities of high-grade kaolin the mineral had been noted previously on the property.<sup>27</sup>

### 3.3 PRE ISSUER EXPLORATION HISTORY

331 TO 1995

#### .1 Germanium

In 1957 the mineral rights to the area were acquired by the now defunct Taiga Mines Ltd. who are reported to have carried out bulldozer trenching and a churn and diamond drilling in 1958 and 1959.

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<sup>23</sup> initially by Fargo Resources Ltd and subsequently Lang Bay Resources Ltd, the successor company to Fargo

<sup>24</sup> pers comm L Farris

<sup>25</sup> pers comm Farris L and Pilon, C.

<sup>26</sup> pers comm L Farris

<sup>27</sup> pers comm re reported reference in Skerl A.C; 'Report on the germanium property of Taiga Mines Ltd., Lang Creek Powell River area BC.' Private report to Taiga Mines Ltd (1959)

In 1981 the property was staked by Fargo Resources Ltd, whose subsequent exploration included 11 trenching and sampling programmes between August 1981 and April 1984.<sup>28</sup> In 1985 research was carried out on methods of recovering germanium from the arkosic sandstone formation. American Cyanamid produced a germanium-rich concentrate using propriety reagents developed for coal flotation. In 1986-87, a nine-holes, reverse circulation drilling programme was completed to gather more detailed information of the germanium-bearing brown-beds.<sup>29</sup>

Tests on clay/shale horizons contained within the brown beds showed they contained significant kaolin and the white kaolin intersected in one hole in the north-east area of the claims intersected was subsequently identified by Professor Chaklader of the University of British Columbia as high grade material.<sup>30 31</sup> Subsequent testing by Clayburn Refractories Ltd of Abbotsford, BC confirmed the kaolin as 'super-duty', the highest classification for refractory grade material, with a PCE of 33.<sup>32</sup> This result was sufficient for Fargo Resources to re-focus its strategy to the kaolin.<sup>33</sup>

## .2 Kaolin

### .21 Drilling

In May 1987, a 31-hole reverse-circulation programme was completed with financing from a FAME grant, and Brenda Mines Limited who had entered into an option agreement with Fargo. The site was about 1 km to the south-east of the previous exploration area and close to where outcrop has been discovered in the vicinity of Lang creek – Plate 3-1. Later work showed this to be a primary kaolin, whereas the brown beds contained secondary material. Some reports refer to the primary material as residual kaolin – unfortunately, an ambiguous, non-industry term.<sup>34</sup>

The 1987 drilling program confirmed the presence of a significant thickness of kaolin clay although the reverse circulation drilling destroyed the in-situ texture thus precluding any distinction between primary kaolins derived from in-situ alteration from weathering of basement granitoid rocks, and secondary kaolins within the basin sediments.<sup>35</sup>

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<sup>28</sup> pers comm L Farris

<sup>29</sup> Queneau, P.B., Avotins, Peter V. & Farris, Lauch F.; 'Germanium recovery from Fargo Resources' Lang Bay property' (1985)

<sup>30</sup> Hilchey, G.R.; Assessment Work on the Kelly 1-5 and Trish 1-2 Claims file 15836 (1 May 1987)

<sup>31</sup> Chaklader, A.C.D.; 'Two clay samples identified as '86-5 72-74 and 86-7 92-94.' ,letter report (21 Nov 1986)

<sup>32</sup> Albon, D.; Samples of Kaolinitic Clay from Fargo Resources – letter report (15 Apr 1987)

<sup>33</sup> pers comm L Farris

<sup>34</sup> industrial minerals have a specific nomenclature which is user-market orientated as opposed to geological

<sup>35</sup> such drilling was also likely to 'add fine silica –from drilling – to the samples

In the spring of 1988 an HQ core drilling programme was implemented to differentiate between the two occurrences of kaolin and provide material for analysis and testing – §3.5. It is reported that positive results from third party analytical testing and trial paper making led to an airborne geophysical survey and further core-drilling being implemented in the autumn of 1998 ‘...to fully determine the extent of the resource’ – see also §3.4 analytical work.<sup>36</sup> Based on drill logs it appears that 50 holes were completed in 1988 and a further 12 in January 1989 for a total of about 13 000 ft.<sup>37 38</sup>

In total 96 holes – RC plus core – covering about 5 000 m had been drilled on the claims.<sup>39</sup> The completion of the January 1989 drilling appears to have been the last field activity until autumn 1991.

## .22 Geophysical Surveys

The thickness of overburden cover and opportunities for anomalies and differentiation of the primary and secondary kaolins led to recommendations for geophysical surveys as an aid in field investigations. Between September 1987 and February 1988 seismic profiling, ground magnetic, dipole-dipole resistivity and Schlumberger vertical electric soundings were carried out.

The seismic refraction survey, which covered 6.7 line kilometres over seven parallel, east-west lines between Lang and Kelly creeks, was carried out by Foundex Geophysics Inc, in September 1987, in the hope of determining the profile of the basement rocks across the basin. The results are reported to have identified between till and bedrock of secondary kaolin but did not differentiate between primary and secondary kaolins.<sup>40</sup>

The data derived from a magnetic survey carried out in December 1987 over 10.5 line kilometres allowed for successful modelling of the shallowing of the basement rocks towards the edge of the basin, although significant ‘geological noise’ was encountered from large, altered granitic boulders in the glacial till.<sup>41</sup> The 11 km, dipole-dipole electrical resistivity survey was successful in delineating conductive clay horizons although it was not possible to distinguish between the primary and secondary kaolins.<sup>42</sup>

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<sup>36</sup> Farris L. & Harvey C.C.; ‘The Lang Bay Kaolin Resource, British Columbia.’ 27<sup>th</sup> Forum Geology of Industrial Minerals, Banff (Aug 1991)

<sup>37</sup> Harvey, C.C.; ‘Resource Evaluation of the Lang Bay Kaolin project’. Appendix E. for Fargo Resources and Brenda Mines (Apr 1989)

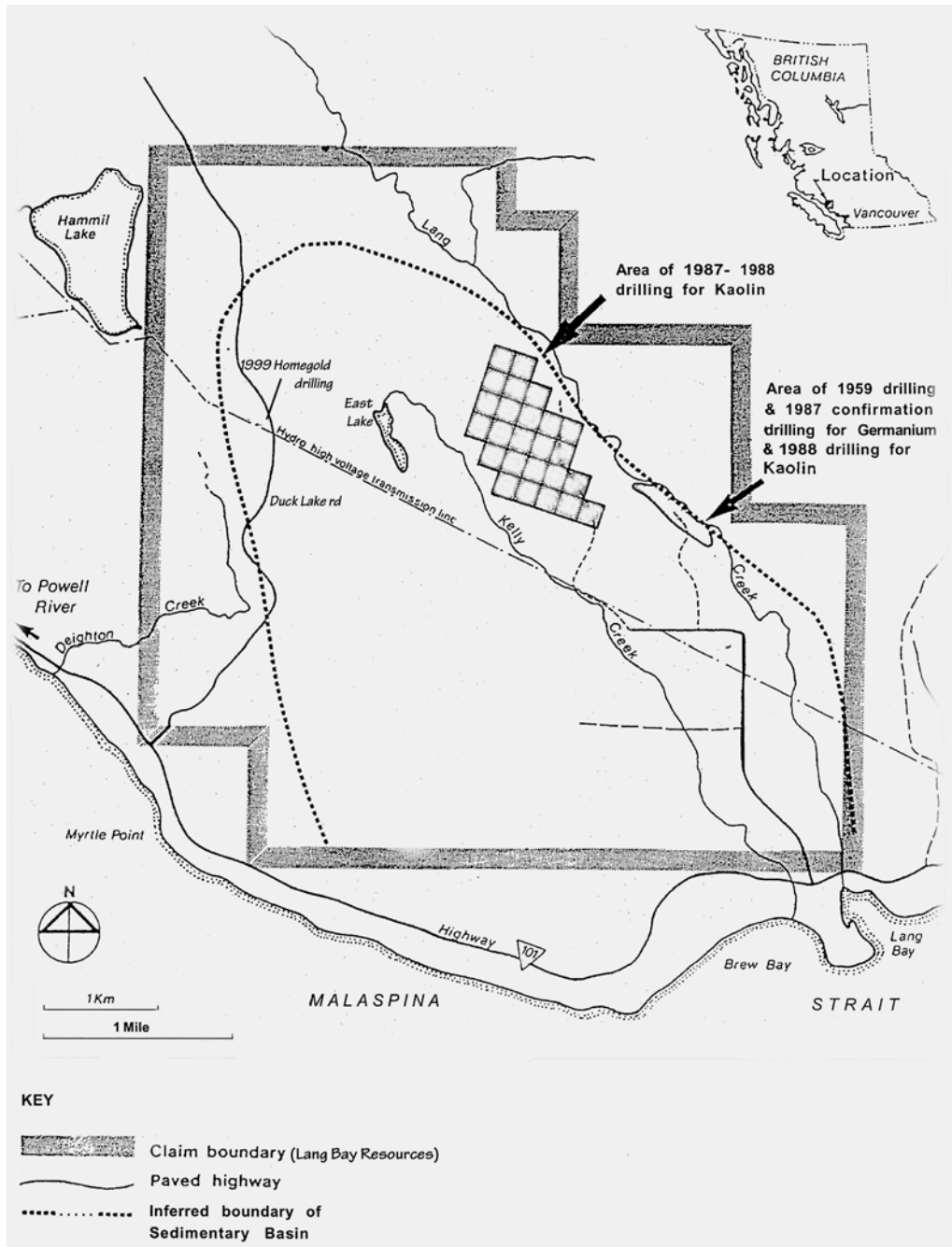
<sup>38</sup> in the absence of a drill summary the total footage was tallied by the author from the drill logs (incomplete) per Appendix E, Harvey C.C. 1989 op cit

<sup>39</sup> pers knowledge. The whereabouts of all the drill logs, corresponding analyses and collar co-ordinate is unknown as are the large scale cross-sections

<sup>40</sup> Currie, James A.; ‘Assessment work on the Kelly and Trish mineral claims’ – Appendix B.’ 17616 (28 Apr 1988)

<sup>41</sup> Shearer J.T.; ‘Diamond Drilling and Geophysical report on the Duck Lake kaolinite prospect’ for Homegold Resources Ltd. Assessment report 26302 (15 Jun 2000)

<sup>42</sup> Currie, James A.; 1988 op cit



Lang Bay project, Kelly creek  
Electra Gold Ltd

Area of exploration

Base	Lang Bay records	Scale:	scale bar
Region:	Vancouver MD	Rpt Date:	July 2003
		Plate	3-1

.3 Sampling for trial market test

In its development of the kaolin project, Lang Bay Resources, had reached the marketing stage in 1991 that a BC paper making company had agreed to a preliminary kaolin-filled newsprint making and print run trial and had requested about a 2 t sample of processed Lang Bay kaolin.<sup>43</sup>

To obtain the sample, based on lowest costs and fastest execution times, a two-hole, 914 mm diameter, three-stage drilling programme was carried out. The overburden was churn drilled and concurrently cased and the kaolinised sample was obtained by tapered head with conical bit drilling of the underlying weathered granite.<sup>44</sup> A 300 mm pilot hole was tri-coned prior to the auger drilling. About 46.7 t (dry basis) of raw kaolinised material was recovered. Samples were loaded into one tonne super-bags.

The last nine foot of the sample (111-120) was lost in hole 91-01 owing to groundwater flow from gravelly till in the overburden. The holes, 91-01/02, based on characteristics from 1987-88 exploration, were positioned close to 87-19.<sup>45</sup>

This was the last field work by Lang Bay Resources apart from the welding of covers on the casing after the drilling and back-filling of the holes in about 1995 when the reclamation bond was returned.<sup>46</sup>

332 POST 1995

.1 Preliminary Work

Following the acquisition of the Duck Lake claims in 1999, four drill sites were selected towards the postulated western sedimentary boundary to examine for overburden thickness kaolin. Plate 3-1 shows the drill site and hole positions.<sup>47</sup>

.2 Drilling

In May 1999 a 200 m, four-hole diamond drill program was carried out by Homegold Resources – see Table 3-1 and Plate 3-n. The contractor was Boisvene who used a unitised Boyles 37-A; the core NQ

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<sup>43</sup> pers knowledge

<sup>44</sup> the custom drill head was mounted beneath a 1.8 m flight scroll

<sup>45</sup> pers knowledge; the author designed and permitted the sampling programme

<sup>46</sup> pers knowledge

<sup>47</sup> assessment work from Lang Bay Resources field work did not expire until 1999

Table 3-1 1999 Drill data<sup>48</sup>

hole	northing m	easting m	elevation m	dip °	Length m	O/B thickness m
99-1	2600 N	2400 E	154	-90	56.24	28.0
99-2	0600 N	2200 W	135	-90	50.29	4.6
99-3	3800 N	6000 W	142	-90	47.85	35.0
99-4	9200 N	1600 W	156	-90	45.72	>45.7
					200.10	

Grid centre was reported as being at the intersection of the Duck lake road and the power-line ROW.<sup>49</sup> A cross projection is presented in Figure 3-1.

Hole 99-01, situated 260 m north of the power-line encountered 28.04 m of coarse gravel and till. The Cretaceous section consists of dark green shale which grades to shaly sandstone. Well altered green pebble conglomerate occurs from 46.3 to 47.5 m and green to brown sandstone was found below the pebble conglomerate horizon which contain minor slickensides at 30° to core axis. A well altered, friable pebble conglomerate characterized by a whitish matrix supported granite clasts occurs at the bottom of the hole.

In hole 99-02, lying west of Duck lake road on the north side of the power-line, the overburden was only 4.72 m and consists of boulders, glacio-marine stony clay over 0.3 m of granitic boulders. The Cretaceous sequence, similar to hole 1, was alternating green-brown shale and coarse green-speckled sandstone. Minor wispy coal partings were noted in the sandstone between 50.3 and 51.4 m. The layering bedding is at 82° to core axis. The sequence appears to be a pro-grading deltaic depositional environment in which minor coal is forming elsewhere in lagoonal portions in the immediate vicinity and being eroded and re-deposited in the outer delta turbiditic sequence. Near the bottom of hole 2, an intense brown shale was encountered. Some sections are a dark red brown. Slickensides at 55° to core axis were noted from 42.1 to 42.5 m.

Hole 99-03, which was drilled to the west of hole 99-02 along the power-line right of way, had an overburden of coarse gravel and sand in excess of 35 m. Driving of the casing was difficult because of strong water inflows at 15.8 and 24.4 m. The Cretaceous sequence is characterized by dark brown shale. The bottom of the hole was in grey-green conglomerate composed of matrix supported rounded to angular fragments of mostly lighter grey shale. Numerous narrow lamphrophic dykes were noted. About 15 per cent of the sections are heavily oxidized and leached, especially at the bottom of the hole.

Hole 99-04 was drilled on the Duck lake road about 900 m north of the ROW, however, over 45 m feet of sand and gravel was encountered without intersecting bedrock.

<sup>48</sup> Shearer, J.S.; 'op cit 15 Jun 2000

<sup>49</sup> surveying was by compass and traverse – pers comm Shearer J.

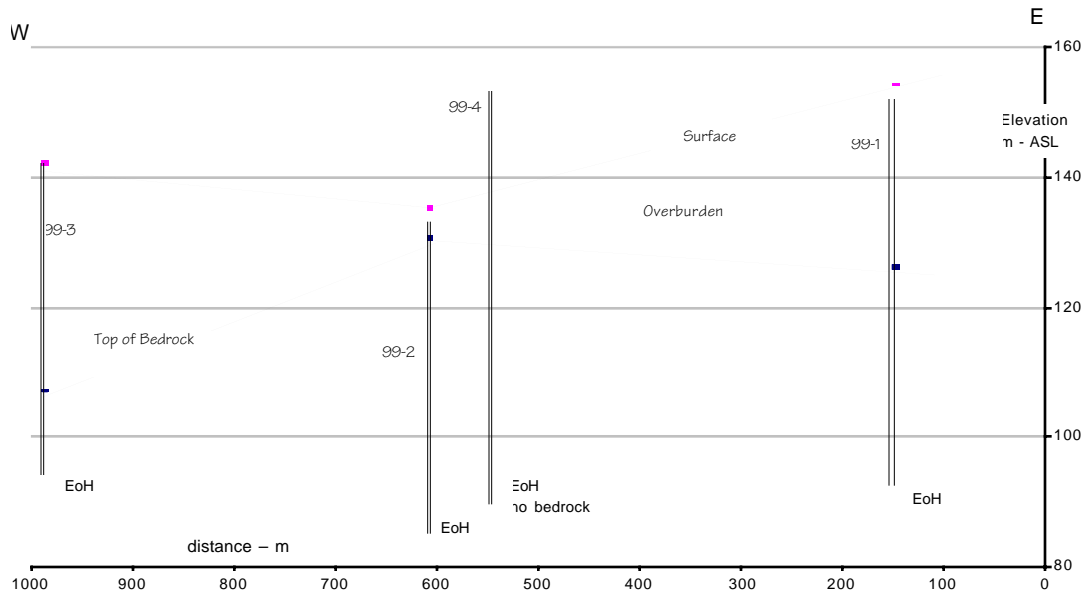


Figure 3-1 Projection of the 1999 drilling results<sup>50</sup>

### .3 Geophysics

The depths of overburden led to a request for a seismic refraction geophysical survey. This was carried out in August/September 1999 by Frontier Geosciences Inc who were familiar with the property from surveys made for Fargo Resources during 1986-89. Lines were set by Homegold and the study sponsored by Tilbury Cement Limited.

The object of the survey was to map overburden and sedimentary bedrock thicknesses and the overall depth to granitic bedrock in the expectation of finding shallow, altered areas in either the sedimentary or granitic rocks. A total of 4.3 km of seismic refraction were completed in four separate seismic traverses.

The interpretation indicated four distinct velocity layers which although allowing for some recognition of overburden components was limited by similarity of velocities in the compacted clay-rich till and glacial-fluvial stony clays and their similarity to those encountered in the Cretaceous shales which form the bedrock.<sup>51, 52</sup>

<sup>50</sup> per Table 3-1 the drill co-ordinates have been reduced by a factor of 10

<sup>51</sup> Shearer, J.S.; 'op cit 15 Jun 2000

<sup>52</sup> Hillman, R.A.; Report on Seismic Refraction Investigations, Lang Bay (Sep 1999)

### 3.4 PRE ISSUER DEVELOPMENT

341 TO 1995

#### .1 Preamble

Much of the work by Lang Bay Resources was off-site in sample analysis and characterisation, beneficiation testing, trial paper handsheets and other market development.

#### .2 Analytical Work

##### .21 Analysis

Initial characterisation work on the kaolins was carried out in Cornwall, England on reverse circulation samples under the direction of Frank Sutton, a geologist with 30 years kaolin experience.<sup>53</sup> His initial descriptions of primary and secondary kaolins provided valuable direction in identifying their low alkalinity/high iron in contrast to the Cornish china clays arising from alteration of acidic granite rocks, and the varying market opportunities of fillers and ceramics.<sup>54</sup>

Following the change over to core drilling, Fargo Resources set up a laboratory at Powell River for evaluation which was carried out under the supervision of the consulting project geologist. It is reported that cores were split, sampled and processed using standard kaolin processing technology, to determine the quality of the kaolin and its character.<sup>55</sup> Such testing was on the basis of 20  $\mu\text{m}$  cut.<sup>56</sup> However, this fraction can be considered coarse relative to the normal industry standard of 2  $\mu\text{m}$ . Brightness, yields and the occasional abrasions are recorded for sample cuts initially from 3 m and later 6 ft sample increments.

Brightness is reported as GE but possibly estimated by numerical adjustment to ISO calibration, specifics are not described. The regrind made on the <20  $\mu\text{m}$  fraction would have reduced the particle size range and thus given a brightness specific to a smaller psd. Abrasion, where reported, is quoted as Mg which is assumed to mean mg but the measurement system and the testing method is not stated.<sup>57</sup> PSD does not appear to have been measured and the 20  $\mu\text{m}$  cut does not appear to have been

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<sup>53</sup> kaolin has been produced in Cornwall since about 1750 which had led to a very knowledgeable industry producing upwards of 80 – 90 market type products

<sup>54</sup> Mr Sutton's notes and reports are not to hand

<sup>55</sup> Harvey, C.C.; Apr 1989 op cit

<sup>56</sup> a nominal 635 mesh equivalent

<sup>57</sup> there are several methods of measuring abrasion just as there are several methods of measuring brightness which differ by manufacturer ; measurement scales between systems are not related

checked.<sup>58</sup> Yields appear to have been reported as 'recovery', which is misleading, and for the  $<20 \mu\text{m}$  fraction.

.22 Quality Control/Quality Assurance

There is no description of either quality control or assurance by duplicate samples or control samples either in-house or sample splits sent to commercial testing laboratories. In this respect there does appear to have been some inconsistencies on reports on trial sample which were sent to potential buyers – those of the buyers generally appeared to report better figures than those in-house.

.3 Pre-feasibility Study

In 1989 it was felt that sufficient investigation and exploration had been carried-out to integrate all the findings into a resource and pre-feasibility study. Such study was contracted by Brenda Mines Limited to Kilborn Engineering Ltd of Vancouver. The study conclusions were the project was not feasible owing to a high strip ratio and a low yield.<sup>59</sup>

It is the author's belief that the findings of infeasibility should be considered restricted to the limited concepts, data and parameters of the study and not necessarily indicative of the site or project.<sup>60</sup>

.4 Beneficiation

Partial independent laboratory beneficiation testing was carried out in 1989.<sup>61</sup> While the object of the testing was research into brightness, it was soon apparent that wet grinding per Harvey procedure was giving low yields with attendant abrasion too high to be acceptable. A change to wet attrition scrubbing 'doubled' the yield and gave a 'product' with acceptable abrasion characteristics.<sup>62</sup> However, against this was still the practice of  $20 \mu\text{m}$  cut..

Industry testing of calcining gave a 88.1% brightness with a corresponding 18 abrasion – the unit not stated for either measurement. Crude sample gave 40.8%  $< 2 \mu\text{m}$  for a 30% recovery and crude brightness of 60.9% unbleached.<sup>63</sup> Subsequent sizing to 80%  $< 2 \mu\text{m}$  gave 77.7 unbleached and bleaching to 79.8% brightness<sup>64</sup> The sample was not identified as to the Lang Bay source.

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<sup>58</sup> as opposed to an estimated size fraction from sub-sieve sizing settling time

<sup>59</sup> see also Section 6 Discussion for comments on the study

<sup>60</sup> a copy of the Kilborn study could not be found despite enquiries

<sup>61</sup> Hazen Research; 'Beneficiation of Lang Bay kaolin' (15 Sep 1989)

<sup>62</sup> the interchange in use of the terms recovery and yield in the report is ambiguous and at times confuse the results

<sup>63</sup> note the standard size cut at  $2 \mu\text{m}$

<sup>64</sup> Nord Kaolin Company letter report to Fargo Resources Ltd. (30 Jul 1991)

Another industry testing gave a 46% 'recovery' with a crude brightness of 58.6 at 47% < 2  $\mu\text{m}$ . for primary kaolin vs Lang Bays expectation of 51% brightness and a possible 15% yield at a 20  $\mu\text{m}$  cut.<sup>65</sup>

.5 Filled Newsprint Trial

The raw kaolin from the 1991 filed program were first sent to the Bacon Donaldson lab in Vancouver where the samples were tested them for brightness and only those bags showing grater than 60% ISO brightness were shipped to the kaolin test facility in Georgia – this amounted to an estimated 35.19 t (dry basis).

The returned product at 5.94 t, dry basis represented 16,9% w/w yield and reported to have a brightness between 64 and 64% GE with an abrasion of 17 mg.<sup>66</sup>

About 2.5 t of this product was then forwarded to the Elk Falls Pulp and Paper Division of Fletcher Challenge Canada Limited to be used to produce a 40 t kaolin filled newsprint run subsequently used in a print run of the Vancouver Sun newspaper. Kaolin loading in the paper was between 2.5 to 3% with good retention and no dusting or linting was reported.<sup>67</sup> Based on the results Fletcher Challenge confirmed they wished to proceed to the next stage for a two to three day trail run using 60 t of Lang Bay kaolin, as a slurry.

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We are not aware of any development work since 1995.

### 3.5 ISSUER EXPLORATION

The issuer has not carried out any exploration on the property

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<sup>65</sup> testing by Engelhard Corporation, file note of telephone conversation (15 Nov 1993)

<sup>66</sup> no product recovery reports were seen from the US test company or Lang Bay's project geologist on either the field sample extraction or product recovery and quality

<sup>67</sup> two reports were issued on the paper machine and pressroom trials but these remain confidential

## 4 GEOLOGY

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### 4.1 INTRODUCTION

Section 4 Geology provides a general geological introduction and is followed by a review of the mineralogy and some of the kaolin characteristics.

### 4.2 REGIONAL GEOLOGY<sup>68</sup>

The Duck lake claims are underlain by sedimentary rocks which occur as a small outlier - Plate 4-1 - of the extensive Georgia Basin which is well known in the Nanaimo-Comox area from the large area coal mining.<sup>69</sup> Plate 4-2 shows the regional geology of the Georgia Basin overlying three different basement entities:

- Wrangellia terrane on Vancouver Island;
- Coast Belt on the mainland of British Columbia; and
- Cascade terranes in northwest Washington State.

The main structural control on the sub-Georgia Basin rocks and the Georgia Basin itself is under-thrusting of the Farallon/Kula oceanic plates beneath the North American Plate.<sup>70</sup> A mid to late Cretaceous west-vergent thrust system is preserved at the southern margin of the Georgia Basin and in the eastern Coast Belt, mainly east of Harrison Lake. Dextral strike-slip faults influenced both basin formation and depositional patterns during the Tertiary. The basin has also been affected by early Tertiary compression, which resulted in southwest directed thrusting in the Nanaimo Group and possibly caused northwest plunging folds in the Chuckanut Formation. Younger (Miocene?) northeast trending faults and folds are evident on gravity and seismic profiles of the Fraser River lowlands. These are probably the subsurface expression of Tertiary structures preserved in the Coast and Cascade Mountains to the east and north.<sup>71</sup>

The Nanaimo Group constitutes up to 4 km of Santonian (locally Turonian) to Maastrichtian age sedimentary rocks. The strata are commonly subdivided into nine formations comprising conglomerate, sandstone and mudstone with coal in lower units. The basal, coal-bearing formations appear to have formed in coastal plain, deltaic and shallow marine environments. Most recent interpretations of the other formations emphasize

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<sup>68</sup> Shearer J.T.; op cit

<sup>69</sup> Plate 4-1 ex Mustard, P. S., and Rouse G. E.; 'Sedimentary Outliers of the Eastern Georgia Basin Margin' Current Research, Part A, Geological Survey of Canada, Paper 91-1A p. 229-240. (1991) as cited Shearer J.T.; Diamond Drilling and Geophysical Report on Duck lake kaolinite prospect (Jun 2000)

<sup>70</sup> Mustard, P. S., and Rouse G. E.; 1991 op cit

<sup>71</sup> Mustard, P. S., and Rouse G. E.; 1991 op cit

submarine fan models. Interpretations of the tectonic controls on basin sedimentation include forearc, strike-slip and foreland models.<sup>72</sup>

Except for an isolated occurrence of Paleocene rocks on Lasqueti Island, the Tertiary rocks of the Georgia Basin are only exposed in the lower Fraser Valley and northwestern Washington. The main stratigraphic components are non-marine clastics of the Paleocene-Eocene Chuckanut Formation of Washington State, the partly equivalent upper Burrard and Kitsilano Formations of the Vancouver area, the late Eocene to Oligocene age Huntingdon Formation and younger (mostly Miocene) sedimentary rocks known from a few surface exposures and sub-surface drilling. Upper Cretaceous rocks occur disconformably beneath the Tertiary strata at Burrard Inlet in Vancouver and in the western Fraser River delta subsurface.<sup>73</sup>

### 4.3 LOCAL GEOLOGY

A sedimentary outlier of about 35 km is preserved at Lang Bay, about 15 km south-east of the town of Powell River. Outcrop is limited to discontinuous exposures in Lang Creek.<sup>74</sup> Conglomerate, sandstone and mudstone dip 10-15° to the south-west. The sequence unconformably overlies granodiorite and, in the northwest, part of the outlier's mafic volcanics. Various authors have reported late Cretaceous palynomorphs from this outlier and suggested correlation with the lower Nanaimo Group (Comox or Extension Formations).<sup>75-76</sup> White (1986) reviewed the exploration history of the area, which most recently was evaluated for industrial kaolin.<sup>77</sup> More than 50 drill-holes were completed during 1987-89 by Fargo Resources Ltd. and Brenda Mines Ltd. as part of an evaluation the kaolin deposits. The thickest drill intersection of Upper Cretaceous strata is about 70 m, with Quaternary alluvium directly overlying the Cretaceous strata.

Two of the core logs from the 1987 Fargo drilling are shown in Plate 4-1. Fining and thinning upward trends are apparent, both on the scale of the preserved sequence (tens of metres) and as smaller cycles (a few metres or less). Conglomerates are clast-supported and moderately sorted with subround pebbles and rare cobbles in an arkosic matrix. Conglomerate clasts are predominantly granitic or mafic volcanic in composition, compatible with local derivation. Sandstones are arkosic or lithic arenites. Mudstones are brown or grey-green and massive, rarely laminated. Normal grading is common in both conglomerate and sandstone beds. Many sandstones display planar or (less common) trough crossbedding. The few well-exposed crossbeds in Lang Creek indicate paleoflow towards the southwest. The small scale fining upward cycles display gradational upward change from coarse, graded sandstone with abundant mudstone ripups to trough crossbedded medium grained sandstone, to rippled or wavy bedded fine grained sandstone and siltstone, to massive mudstone. Many mudstones are carbonaceous and contain

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<sup>72</sup> Mustard, P. S., and Rouse G. E.; 1991 op cit

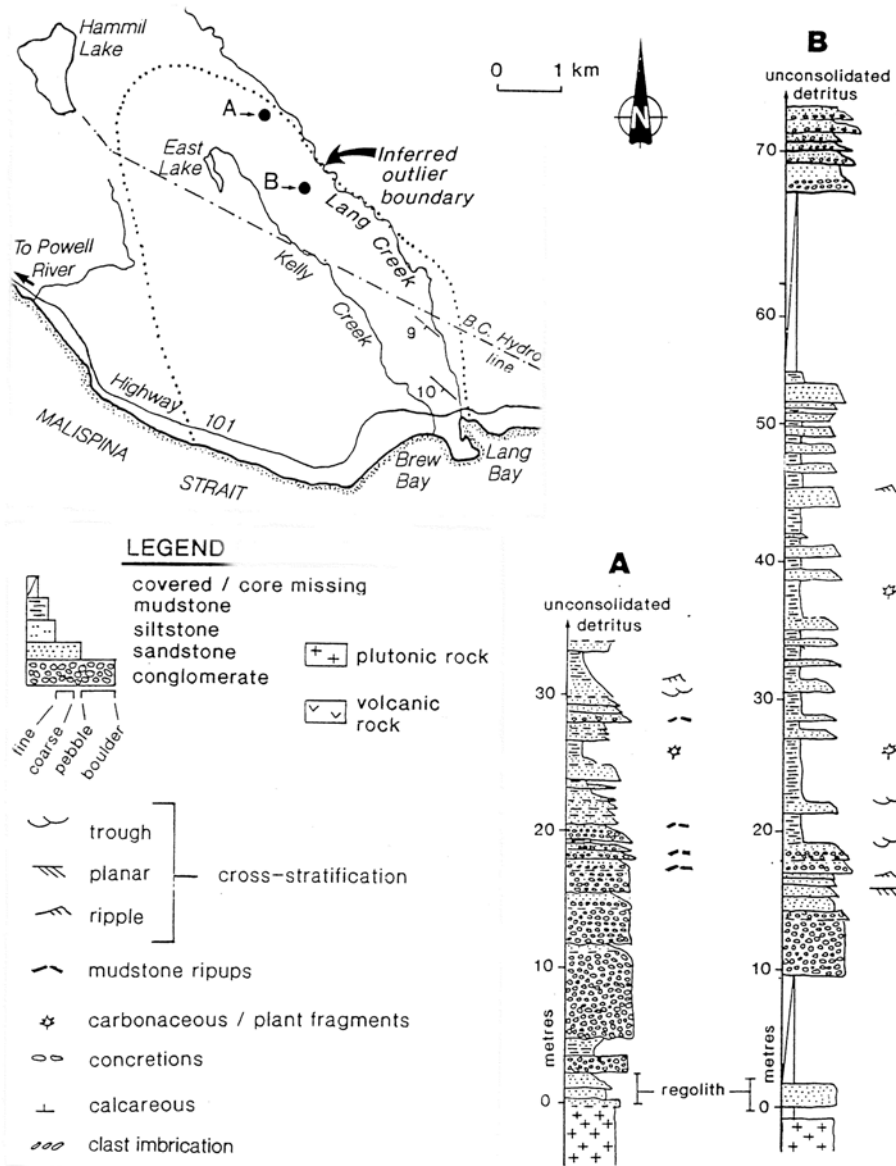
<sup>73</sup> Rouse, G. E., Mathews, W. H., and Blunden, R. H.; 'The Lions Gate Member: a New Late Cretaceous Sedimentary Division in the Vancouver Area of British Columbia'. *Canadian Journal of Earth Sciences*, v. 12, pp.464-471. (1975)

<sup>74</sup> Mustard, P. S., and Rouse G. E.; 1991 op cit

<sup>75</sup> Crickmay, C. E. and Pocock, S. A. J.; 'Cretaceous at Vancouver, British Columbia, Canada'. *American Association of Petroleum Geologists Bulletin*, v. 47, p. 1928-1942. (1963)

<sup>76</sup> Bradley, R. K.; 'Upper Cretaceous Plant Fossils from Mainland Coastal Deposits North of Vancouver, British Columbia, Canada'. *Canadian Journal of Earth Sciences*, v. 10, p. 1841-1843. (1972)

<sup>77</sup> White, G. V.; 'Preliminary Report. Lang Bay Germanium Prospect (92F/1610)'. Paper 1986-1, Geological Field Work (1985), Ministry EMPR of British Columbia. (1986)

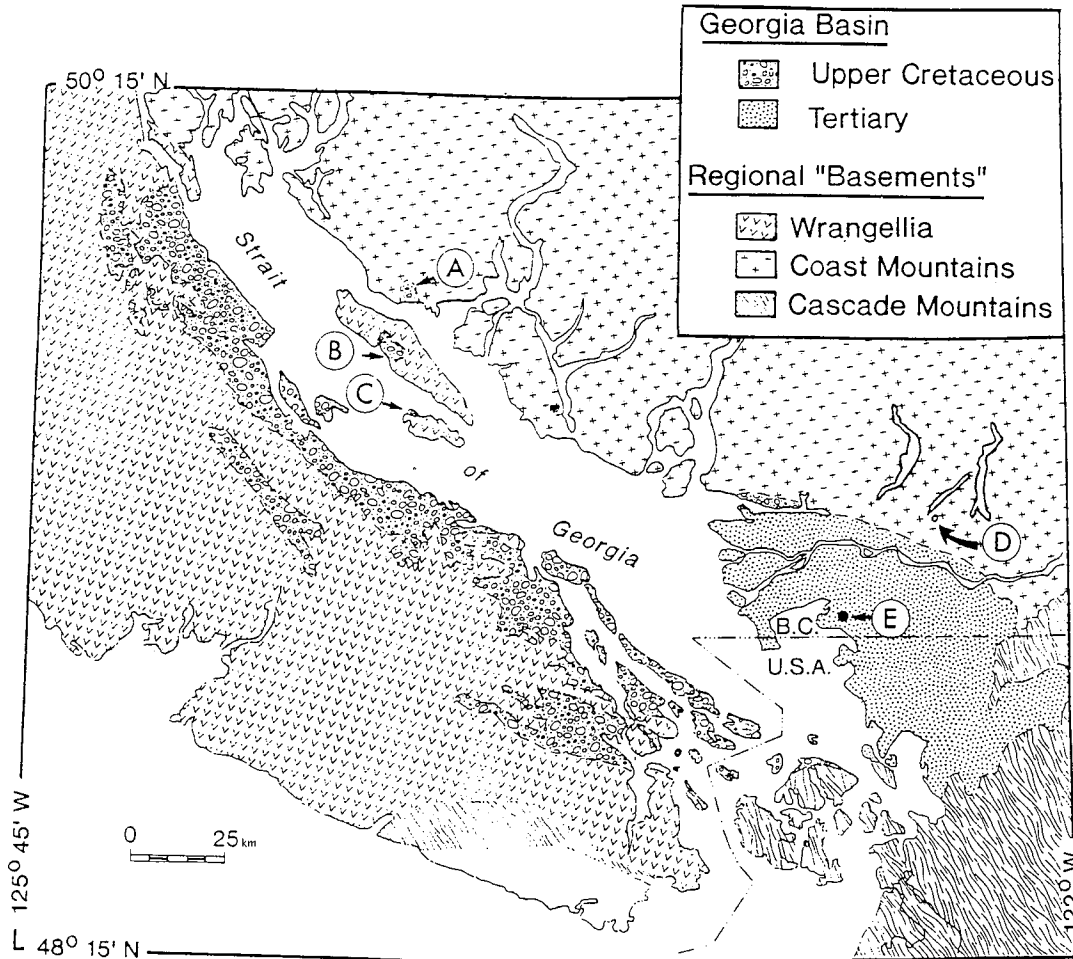


Lang Bay outlier with logs from two drillholes. Outlier boundary is modified from White (1986)

Lang Bay project, Kelly creek  
Electra Gold Ltd

Lang Bay outlier with drill holes

Base	Shearer JS	Scale:	sale bar
Region:	Vancouver MD	Rpt Date:	July 2003
		Plate:	4-1



Regional setting of the Georgia Basin (modified from Monger, 1990). Letters indicate localities discussed in this study. A. Lang Bay outlier; B. Mouet Creek outlier; C. Lasqueti Island outlier; D. Blue Mountain outlier; E. Richfield-Pure Sunnyside exploration well.

Lang Bay project, Kelly creek  
Electra Gold Ltd

Regional setting, Georgia Basin

Base	Shearer J.S	Scale:	scale bar
Region:	Vancouver MD	Rpt Date:	July 2003
		Plate:	4-2

abundant plant debris. Rare coal lenses are present in Lang Creek and in one place root systems are preserved in situ.<sup>78</sup>

The metre-scale cycles display features of fluvial channel and point-bar deposits. The isolated graded sandstone beds in mudstones are interpreted as crevasse-splay deposits. These features, plus the presence of coal lenses, and in situ rootlets support a fluvial-floodplain depositional model.

Palynomorph assemblages have been obtained from about six surface samples along Lang Creek and six mudstone layers in drill-core. Most palynomorphs range from the Santonian to Campanian, but a few range to Albian-Cenomanian, and others into the Maastrichtian. The Santonian-Campanian range agrees with the invertebrate-based range given for the Comox through Extension Formations.

At Lang Bay, several palynomorph species appear restricted to the upper beds, viz. *Proteacidites thalmanni*, *P. marginus*, *Tricolpopollenites divergens*, and *Tricolporopollinites punctatus* (Mustard and Rouse, 1991).<sup>79</sup> These are also found in the Extension-Protection Formations of Vancouver Island, and the Lions Gate Formation at Vancouver but appear absent from Comox and older equivalents.<sup>80</sup> Hence, preliminary results suggest that there is a contact between younger and older segments of the Santonian-Campanian series near the top of the Lang Bay sequence.

#### 4.4 KAOLIN

##### 441 OCCURRENCE

Evaluation by Fargo Resources Ltd showed the existence of both primary and secondary kaolins in their claim area covered by glacial till which varies from 4 m near the eastern boundary at Lang creek to 45 m in the basin centre. Plate 4-3 presents a model of the kaolinisation.<sup>81</sup>

Key to the kaolin formation was the low temperature hydrothermal alteration which occurred along fractures with weathering.

##### 442 MINERALOGY

The basement rocks have been classified as granodiorites which in the kaolinised zone is typically brecciated with extensive microfractures which could be related to the interpreted Lang creek fault.

Alteration was described as moderate to intense in the kaolinisation with hornblende and plagioclase completely altered to kaolin. Towards the top of the profile where kaolinisation was the most intense the K-feldspar was altered to kaolin and the biotite degraded to illite. As the depth below surface increases the K-feldspar and biotite are less altered.

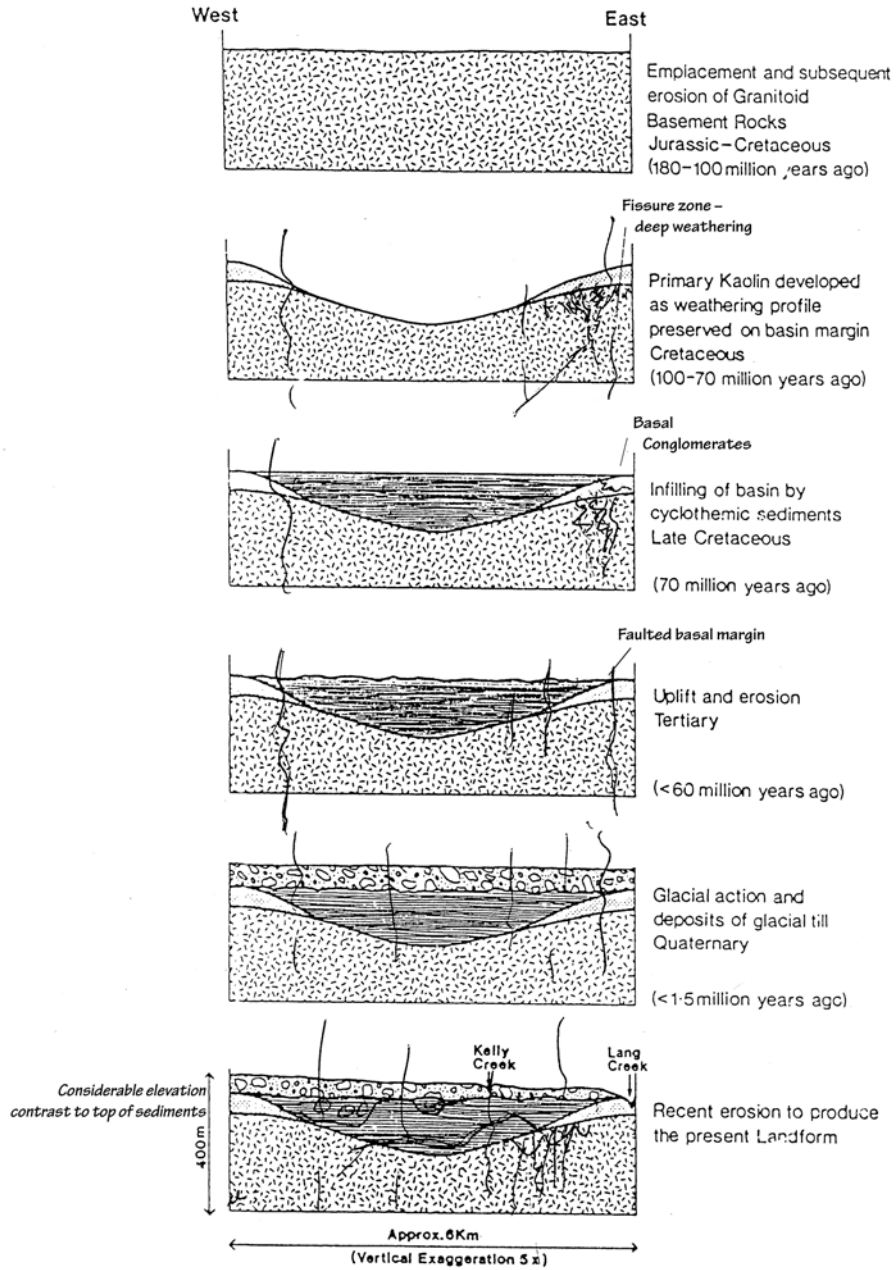
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<sup>78</sup> Mustard, P. S., and Rouse G. E.; 1991 op cit Shearer J.J.T

<sup>79</sup> idem

<sup>80</sup> Rouse, G. E., Mathews, W. H., and Blunden, R. H.; (1975) op cit, p. 469, Table 1

<sup>81</sup> Harvey C. with enhancements by Shearer J.T.



Lang Bay project, Kelly creek BC  
Electra Gold Ltd

Kaolinisation model

Base	Shearer after Harvey	Scale:	na
Region:	Vancouver MD	Rpt Date:	Jul 2003
		Plate	4-3

443 DEPOSIT CHARACTERISATION

.1 Primary Kaolin

In the primary zone, kaolin content and natural brightness have been described as decreasing with depth and in-house measurements ranged from a nominal 50-60% kaolin yield at a 72 ISO brightness at the top to 13-30% yield at 30 brightness lower down where smectite and biotite are major minerals for the  $< 20 \mu\text{m}$  fraction. These figures should not be viewed as for market type product potential but rather as deposit measurements taken in mineralogical investigations. Abrasion was typically reported as less than 20.<sup>82</sup>

A discussion follows in Section 6.

.2 Secondary Kaolin

Fargo Resources strategic priorities were on the primary kaolin and thus little or no work was carried out on the secondary beds apart from preliminary investigations for ceramic opportunities. Limited assaying gave  $\text{Al}_2\text{O}_3$  from 15 – 45%

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<sup>82</sup> assumed as Einleiner for now

## 5 DISCUSSION AND CONCLUSIONS

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### 5.1 PREAMBLE

Section 5 Discussion reviews the project from the viewpoint of project development. Details already presented in previous sections will not be repeated here.

### 5.2 BACKGROUND REVIEW

#### 521 MARKETS

With Electra's experience in alumina-rich cement-feedstock gained at their Apple Bay property on northern Vancouver island it is entirely logical the first target should be the nearer surface secondary kaolins of the brown beds. That the preliminary drilling of 1999 showed a fairly deep cover of overburden in an area expected to be at a shallow boundary should not be disappointing. An analysis of the drill records of the 96 holes from the Lang Bay Resources data base should provide valuable information in this regard.

The issuers' approach of focusing on the cement feedstock market is sound. Electra already knows these markets and the technology required is simple: straight forward excavation –albeit selective– no beneficiation, market preparation from crushing and possible some blending to meet average alumina content. Other market opportunities, with higher selling price needs to be investigated.

Lying beneath the secondary kaolin on part of the eastern side of the basin is the primary kaolin which was the subject of several years market investigations culminating in successful kaolin filled newsprint trial with the Vancouver Sun. The success of the first newsprint filler trials needs a follow-up as does the potential for ceramics and others pioneered by Lang Bay Resources.

An industrial mineral mining project must start from the market perspective with the key question being: 'To whom are you going to sell what?'

#### 522 CHARACTERISATION

From the findings and descriptions in the Section 3 – Work History we have reservations as to the accuracy and applicability of what and basis of measurements made in the Powell River laboratory. We are of the opinion the method of testing cited was not suitable for the primary kaolin in the method's liability to understate certain attributes. Other factors such as delamination (despite the flagging of the lumpy character, in Cornwall) and rheology are not reported. Had there been formal quality control and assurance it could have pointed to higher value measurements as hinted at in third party tests.

Furthermore, the absence of systematic technical reporting on either the extraction, testing, beneficiation and characterisation of the 45 t sample meant that Lang Bay Resources did not gain the valuable knowledge which should have been recorded.

#### 523 FEASIBILITY STUDY 1989

A resource/reserve estimate of the primary kaolin made by two methods has been reported: a sill summation at 3 m increments (akin to cavalier slices of an isopach) of the areal extent and a series of vertical sections at 140 m horizontal spacing.<sup>83</sup> For a non—defined ‘geologic reserve’ the estimates were 6.1 Mt for the horizontal sections and 6.0 Mt for the vertical sections.<sup>84</sup> <sup>85</sup> Such tonnage is stated to include kaolin with a greater than 50% (GE) unbleached brightness. Our independent review on the vertical section method gave general agreement in the sectional areas we checked.

While the similarity of estimate is encouraging, there are at least two ambiguities. The report refers to a ‘dry bulk density’ of 2.3, apparently supplied by the project geologist, but has not been qualified.<sup>86</sup> This is referred to in the vertical section computer runs as ‘specific gravity clay “ore”’.<sup>87</sup> The second ambiguity is what the tonnage represents; the computer runs are quite specific in calling them ‘ore’ tonnes. But tonnes of what? A separate reference to this tonnage also refers to a geologic reserve of 6 million metric tonnes.<sup>88</sup>

In the absence of at least a yield and other qualifying figures the tonnage estimate has no merit and thus we do not accept the figures.<sup>89</sup>

#### 524 HYDROLOGY

Despite the early notification of the presence of a potential high water table there appears to have been no follow-up on the two piezometers installed in December 1988. In general the drill logs of the 1980s do not record ground water interception yet the problems in the loss of the bottom samples in the large hole drilling in 1991 and in hole 99-3 in 1999 stand out.

### 5.3 DEMISE OF THE LANG BAY PROJECT

The stage-two large-sampling program intended to produce a bulk sample for a weeks newsprint production run with Fletcher Challenge and MacMillan Bloedel did not occur because of some delays in the financing.<sup>90</sup> This of

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<sup>83</sup> Harvey, C.C.; Apr 1989 op cit

<sup>84</sup> idem Section 8

<sup>85</sup> the horizontal system estimate by Lang Bay field staff and the vertical by Kilborn Engineering (BC) Ltd

<sup>86</sup> despite a cross reference to another part of the report.

<sup>87</sup> Harvey, C.C.; Apr 1989 op cit, Table 8.2 Kilborn Eng. (BC) Ltd dated 1 Mar 1989 08:221 am

<sup>88</sup> Farris L. & Harvey C.C.; (Aug 1991) op cit

<sup>89</sup> the statement of lack of merit refers to the references as and where cited. A copy of the actual Kilborn feasibility report is not to hand and despite enquiries a copy could not be found

<sup>90</sup> notwithstanding the issuance of permits for an underground bulk sample and posting of a reclamation bond

course hindered the development. We dismiss a later report of a US kaolin producer condemning the project with its apparent overtone of a classical barrier to entry for the newcomer – Lang Bay Resources. The damage was done, however, and further development worked eventually ceased and the claims allowed to lapse.

#### 5.4 CONCLUSIONS

Based on the evidence in reports, discussions with those noted and contributions, secondary data sources, experience and our professional engineering and marketing judgement, all as contained in this report, it is our opinion that:

- the 1999 drilling on the Duck Lake claims in showing kaolinitic material

confirms the previously postulated western extension of the sedimentary basin and adds to the data base arising from the Lang Bay Resources work of the late 1980s on the eastern margin.

Further exploration is needed to determine areas of low overburden and the quality of the kaolinised material with respect to cement feedstock. The potential quality and proximity to tidal water and thus water-borne transport

- justifies further exploration for which the planning and execution should be carried out in success contingent stages.

There are indications of higher quality, higher yields of Lang Bay primary kaolin than either measured in the Powell River laboratory or as indicated from the 1992 beneficiation of the 45 t sample.

- and this justifies a full characterisation study of samples from the primary kaolin from cores from the 1998/9 drilling in a Canadian laboratory selected for its expertise in laboratory techniques and without input from any kaolin producing company or its employees.<sup>91</sup>

US and Cornish kaolins are different from those at Lang Bay and require technology and beneficiation procedures specific to their kaolin types and markets.

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<sup>91</sup> the cores are stored under the control of Homegold Resources Ltd.

## 6 DEVELOPMENT RECOMMENDATIONS AND BUDGET

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### 6.1 PREAMBLE

Section 6 presents recommendations for technical work and provides a preliminary budget.

### 6.2 RECOMMENDATIONS

Clearly the conclusions of this study, in showing potential for low-alkaline cement-feedstock with good access to water borne transport justify a follow-up. Such follow-up needs to focus on describing area of low overburden by which we mean material lying above the material being sought.

Much valuable information could be gained from a review of the Lang Bay data and isopach and interface contour plots would be useful. The Lang Bay Resources drill collar co-ordinates were reduced to NTS and this can facilitate overlays including TRIM data. Plots of the various geophysical surveys to the same scale should facilitate analysis as a GIS approach. At that stage, potential areas of lower overburden could be apparent and the need for and value of say a resistivity survey over the seismic lines to differentiate between overburden and altered bedrock could be considered. In addition, analysis of brown bed material from the Lang Bay cores will provide indications of quality.

In addition a full and independent characterisation study of select samples of the primary kaolin must be carried out. Samples of the secondary kaolin should also be tested for fillers and ceramics.

### 6.3 BUDGET

The budget is preliminary and confirmation is needed from specific proposals. Costs are assumed to include travel, accommodation and food, gst is extra. No allowances are included for possible reclamation bonding.

Cement feedstock			
Stage One		\$C	\$C
– GIS approach compilation and review of old data		10 000	10 000
Stage Two			
– geophysical survey (contingent on findings of Stage One)*		40 000	
– core drilling, logging, splitting etc		50 000	
– geological supervision, report, expenses, etc		10 000	100 000
			<u>110 000</u>

\* assumed to include line-cutting

Kaolin Study			
Stage One		\$C	\$C
	– analytical procedure, lab and sample selection	5 000	5 000
Stage Two			
	– laboratory testing	35 000	
	– direction, report, expenses, etc	10 000	45 000
			<u>50 000</u>

29 July, 2003

CERTIFICATE of AUTHOR

I Bryan A. Slim PEng do hereby certify that:

- 1 I am an independent consulting mining engineer and principal of MineStart Management Inc
- 2 My academic qualifications are:
  - Bachelor of Science in Mining Engineering from the University of London, England in 1963
  - Associate of the Royal School of Mines (ARSM) from the Imperial College of Science and Technology in London, England in 1963
  - Master in Business Administration (MBA) from Simon Fraser University, Vancouver in 1990
- 3 My professional associations are:
  - member of the Association of Professional Engineers and Geoscientists in the Province of British Columbia, Canada
  - Chartered Engineer in England
  - member of the Institution of Mining and Metallurgy, England
  - Mine Manager's Certificate of Competency, Republic of South Africa
  - member of the Canadian Institute of Mining and Metallurgy
- 4 I have been professionally active in the mining industry for 40 years since initial graduation from university.
- 5 I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by reason of my education, affiliation with a professional association and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 6 I am responsible for the preparation of all sections of the technical report entitled 'A mix of kaolin market opportunities' and dated 29 July 2003 relating to the Duck Lake claims. I have visited and worked on the property on various dates going back to 1991 and last visited the property on 13 June, 2003.
- 7 I had involvement, in 1991-94, with the property which is the subject of the technical report.
- 8 I am not aware of any material fact or material change with respect to the subject matter of the technical report which is not reflected in the technical report, the omission of which makes the technical report misleading.
- 9 I am independent of the issuer, applying all of the tests in section 1.5 of National Instrument 43-101.
- 10 I have read National Instrument 43-101 and Form 43-101FI, and the technical report has been prepared in compliance with that instrument and form.
- 11 Subject to agreement by Electra Gold Ltd., I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report, for reading only.

- 12 As author of this report I consent to its exclusive use by Electra Gold Ltd for their legitimate needs. Neither the report nor any information contain herein or otherwise supplied by MineStart™ in connection with the study shall be used by others in any connection without the express written consent of MineStart™ Management Inc and any use which a third party makes of this report, or any reliance on or decisions to be made based on it are the responsibility of such third parties. MineStart™ accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. All rights reserved.
- 13 This report entitled 'A mix of kaolin market opportunities ' and dated 29 July 2003 supercedes all previous reports of the same title.

Signed and sealed as of 29<sup>th</sup> day of July, 2003 in North Vancouver

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