JERICHO PROJECT

ENVIRONMENTAL MONITORING PLAN

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EXECUTIVE SUMMARY

Aquatic Monitoring

The Nunavut Water Board requires, as a condition of Project approval, a program to verify compliance with regulatory standards and to evaluate effectiveness of the mitigation measures as a condition of Project approval. The aquatic effects monitoring program (AEM) for the proposed project is designed to monitor effects on water quality and aquatic biota.

A water quality monitoring network will be established at Jericho during mine operations. Monthly monitoring is proposed: for streams - July through September; and for deeper lakes, sample as for streams, plus April and December. Parameters to be monitored will be a 24-element Inductively Coupled Plasma / Mass Spectrometer (ICP/MS) scan plus pH, alkalinity, suspended solids, and nutrients. Hardness will also be measured as it relates to metals availability.

In addition to the receiving water body sites, water in sediment control ponds will be monitored during summer months (when free water is present) for the above parameters. Turbidity will be measured in the field for sediment ponds. A correlation between turbidity and total suspended solids will be developed to provide an immediate method of determining acceptability of discharge of sediment pond water. Ammonia will also be determined in the field, as this parameter is expected to exceed Water Licence criteria periodically.

Sediment samples will be collected annually from Carat Lake and Lake C3 (receiving water bodies). If metals are elevated above those found from baseline studies, appropriate toxicity testing will be conducted in addition to chemical analyses.

Effluent from the processed kimberlite containment area will be monitored for acute toxicity prior to spring discharge and monthly when discharges occur (likely July through September); acute toxicity will also be measured at the end of the discharge period. Parameters will be as noted above.

Components of the aquatic biological community that are potential receptors suitable for monitoring purposes include periphyton, benthic invertebrates, and fish. The first two organisms were chosen as receptors because they are stationary and are likely to reflect changes in the environment more rapidly than other organisms, such as fish. Lake trout and round whitefish were chosen as receptors because they have the potential to bioaccumulate some metals and they have a higher social value than invertebrates. Other organisms, such as phytoplankton and zooplankton, were deemed unsuitable as receptors for monitoring for two reasons. Firstly, both groups exhibit high levels of natural variability, making it difficult to identify change. Secondly, neither receptor is stationary within the context of this project (eastern portion of Carat Lake), making it difficult to ascertain site-specific effects.

One abiotic component will be included in the AEM program. The rate of sedimentation was chosen for monitoring, because it provides a link between elevated suspended sediments and changes in the aquatic biological community.

Terrestrial Monitoring

The migratory nature of most wildlife populations represented in the Project area, the seasonal nature of the major Project components, and the relatively short Project history combined, present a set of variables that make definitive monitoring of Project/wildlife interactions very difficult. Two wildlife monitoring components, however, stand out as worthy of a monitoring effort to both test the predictive relevance of the assessment, and to add to the overall knowledge of tundra ecosystems interacting with mining activities.

Monitoring annual raptor nesting patterns and numbers in relation to the proximity of mining activities, microtine cycles, and seasonal weather patterns will provide important information for long term land use management in areas of exceptional raptor breeding habitat. This monitoring will likely not show definitive relationships in time to benefit the Jericho Project environmental management program.

The Bathurst caribou herd is of high value to the lifestyle of Nunavut and NWT residents. As such, the Jericho Project will participate in a caribou monitoring program with the Government of Nunavut and other governments and industry interests to ensure that the health of the herd is under ongoing surveillance in relation to all human activities on the herd's overall range.

Tahera Corporation will participate in any joint industry-government body set up to monitor the Bathurst caribou herd and barrenland grizzly.

Any raptor nests found closer than 2 km from mining activities will be monitored by a qualified wildlife biologist. Either fixed wing or helicopter surveys will be conducted in the Willingham Hills area, where nests are know to be located. If indicated from spring surveys, a follow up survey for productivity will be conducted in early to mid July. The raptor program will be developed in discussions with Department of Sustainable Development raptor biologists to ensure harassment of the birds does not occur from monitoring activities. The program will be closely monitored to ensure that any negative effects from surveying nesting raptors cease immediately upon detection.

Where practical, revegetation of inactive disturbed sites will be undertaken. Success of these prescriptions on test plots and/or areas that are no longer used early in the mine operation will be monitored and modified, as appropriate, based on Project experience and the published and unpublished results of others attempting revegetation in the Arctic tundra. Specifically any reclamation trials results available from EKATI™, Diavik, and Lupin will be reviewed and results discussed with environmental personnel from these mines.

Two 100 m long transects were established in 2000 and plant cover measured in 1-m square quadrats every 10 m. Transects were located adjacent to the airstrip and near the existing portal. Transects will be resurveyed in Year 1 and every two years after that to determine whether dust effects are occurring.

Lichen was collected from a site northwest of the airstrip and away from the influence of dust from the strip in 2000. Metals levels were determined. Lichen will be resurveyed in Year 1 and every two years after that to determine whether Project activities are affecting metals levels in lichen.

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1.0 OVERVIEW

Requirements for monitoring the biophysical and socioeconomic / cultural resources throughout the mine life will be part of the terms and conditions appended to the Project's Water Licence and Land Leases. Occupational health and safety monitoring requirements are set out in the North West Territories Mine Health and Safety Act and Regulations and will be implemented at the Jericho Mine; requirements are discussed in the Jericho Project Occupational Health and Safety Plan (Appendix C.2). Presented here are monitoring plans for the biophysical environment to cover those aspects normally required of operating mines. Put in perspective, the Jericho Diamond Project will be a small mining operation. Production will be 800 tonnes per day, compared to EKATI™ with (initial) 9,000 tonnes per day, moving to 18,000 tonnes per day, and Diavik with 3500 to 4800 tonnes per day.

Monitoring at the Jericho Diamond Mine will be accomplished through a combination of on-site personnel and periodic use of consultants as required to accomplish specialized tasks. The final responsibility for the data will rest with the permit holder (Benachee Resources Inc., a wholly owned subsidiary of Tahera Corporation). Monitoring specific aspects of the environment began with the commencement of baseline studies in 1995. Much of the information obtained will be used as background to measure changes that may occur with construction and operation of the mine.

Aquatic monitoring specifically designed to provide an assessment of predicted impacts began in 1999 (RL&L 2001). The study provides detailed background information of fisheries populations and aquatic habitats at Jericho. Raptor nesting success and small mammal surveys were conducted in 1999, 2000, and 2001 by Hubert and Associates and discussed (excluding 2001) in the Wildlife Report for the Jericho Project (Appendix B.1.3). Phenology, or plant growth stage data were collected in 1999 (discussed in the Vegetation Report, Appendix B.1.2) and 2001. An abundant species of lichen (*Flavocetraria cucullata*) was collected in 2000 and analyzed for metals; this survey will be repeated periodically. Two vegetation transects were surveyed at right angles to the airstrip and portal road to provide a background against which dust-related changes in vegetation can be assessed with periodic re-surveys of the transects.

Plans for socio-economic monitoring are outlined in the Socio-Economic Effects Assessment (Appendix C.1.2) and will be worked out in detail as part of Inuit Impact and Benefits Agreement (IIBA) .

2.0 AQUATIC MONITORING

The Nunavut Water Board (NWB) requires a program to verify compliance with regulatory standards and to evaluate effectiveness of the mitigation measures as a condition of Project approval. The aquatic effects monitoring program (AEM) for the proposed project, as described below, is designed to monitor effects on water quality and aquatic biota. Potential effects on the aquatic environment will derive from site disturbance, runoff from site facilities, and discharge of effluent from the PKCA. The aquatic monitoring network will be established to monitor upstream, and near-field and far-field areas potentially affected by Project activities.

2.1 WATER QUALITY

A water quality monitoring network will be established at Jericho prior to construction and will continue through until abandonment, modified as appropriate. Proposed monitoring sites are shown on Figure 2.1. Sites Q3 and Q5 will only be monitored during summer months, as these water bodies are completely frozen in a normal winter. For streams, sampling will be from July through September. For the lake samples, where water bodies do not freeze completely, sampling will be December, April, and July through September. Parameters monitored will be a 24-element Inductively Coupled Plasma / Mass Spectrometer (ICP/MS) scan, pH, alkalinity, suspended solids, and nutrients. Hardness will also be measured, as it relates to metals availability. Toxicity tests (using rainbow trout 96-h LC50 bioassays) will be conducted on the polishing pond (Q3) water prior to, and at the termination of, discharge each year.

The sewage treatment plant will discharge to the PKCA and will be monitored quarterly for parameters regulated by the Project's Water Licence. Typical parameters (NWT Water Board 1992) include biochemical oxygen demand (BOD), total suspended solids, nutrients (phosphorus, nitrogen), and residual chlorine. Since the discharge will be to a controlled site, nutrients, oil and grease, and residual chlorine only are proposed.

As well, water in sediment control ponds will be monitored during summer months (when free water is present) for metals, nitrogen, TSS, pH, and alkalinity, unless water from the ponds is pumped to the PKCA. Water quality monitoring will be conducted by Tahera mine staff; analyses will be performed by a recognized commercial laboratory; preference will be given to a qualified laboratory in Nunavut, should one be established.

The EIS predicts no degradation of water quality in either Carat Lake or water bodies downstream of Carat Lake. The water quality surveillance network proposed will detect any changes in water quality that occur during the monitoring period. As upstream, near-field and far-field sites are included, any changes due to mine operation, i.e. those that do not occur to the same extent upstream, will be most apparent at the near-field sites and will be less apparent at far-field sites.

Table 2.1 provides a summary of locations, parameters, and monitoring frequencies.

2.2 AQUATIC BIOTA

2.2.1 Study Objectives

The main objective of the monitoring program is to monitor the receiving environment to detect un-anticipated effects on aquatic biota so that appropriate mitigative actions can be taken. Secondary objectives of the monitoring program are:

- to allow regulators to evaluate compliance with environmental regulations;
- to verify the predictions of environmental effects; and
- to provide the data needed to revise mitigation measures.

2.2.2 Project Components Potentially Affecting the Aquatic Environment

The ore bearing deposit at the Jericho site is situated 250 m south of Carat Lake. Following collection and treatment, effluent from mining activities (waste rock dumps, ore stockpile, pit, PKCA supernatant water) has the potential to drain down slope into Carat Lake, Lake C1, or Lake C3. The receiving environment is the southeastern portion of Carat Lake for mine runoff (unless diverted as discussed in the Water Management Plan, Appendix D.2.1) and the east side of Lake C3 for PKCA effluent (Map A, Appendix E).

The deleterious substances and their associated effects can be categorized into three broad groups: nutrient loading, elevated suspended sediments, and increased levels of metals. All three have the potential to adversely affect the aquatic biological community.

2.2.3 Aquatic Community Monitoring Components

Components of the aquatic biological community that are potential receptors suitable for monitoring purposes include periphyton, benthic invertebrates, and fish. The first two organisms were chosen as receptors, because they are stationary and are likely to reflect changes in the environment more rapidly than other organisms, such as fish. Lake trout and round whitefish were chosen as receptors because they have the potential to bioaccumulate some metals and they have a higher social value than invertebrates. Other organisms, such as phytoplankton and zooplankton, were deemed unsuitable as receptors for monitoring for two reasons. Firstly, both groups exhibit high levels of natural variability, making it difficult to identify change. Secondly, neither receptor is stationary within the context of this project (eastern portion of Carat Lake), making it difficult to ascertain site-specific effects.

One abiotic component will be included in the AEM program. The rate of sedimentation was chosen for monitoring, because it provides a link between elevated suspended sediments and changes in the aquatic biological community. Table 2.2 lists the water bodies to be sampled. Table 2.3 lists the parameters that will be monitored to ascertain the effects of mining activities on the chosen biological receptor. Table 2.4 lists the number of samples that will be collected annually. Since annual sampling of enough fish to provide statistical validity to tissue metals

data would seriously deplete fish stocks in subject lakes, a program acceptable to DFO and protective of the fisheries resources of the subject lakes will be negotiated at the permitting stage.

Two approaches will be employed by the proposed AEM program. The first is a conventional approach used to detect environmental change (DFO 1993; DIAND 1997). For periphyton, benthic invertebrates, and sedimentation the program will be designed to monitor near-field effects, far-field effects, and to compare these data to two suitable reference sites. To ascertain near-field effects, monitoring will be undertaken in Carat Lake immediately downstream of the effluent source (i.e., outlet zone of Stream C1). Far-field effects will be monitored in Carat Lake adjacent to the outlet on the north shore of the lake. The two reference sites will be located on a control lake, situated in the Carat Lake drainage and upstream of mining activity effects. The second approach to monitoring change will be specific to fish. Because both receptor species are highly mobile, near-field and far-field effects cannot be properly ascertained. Consequently, background metal concentrations in fish residing in the potentially affected water body (Carat Lake) will be compared to data collected from fish in an unaffected water body (a control lake). Because of the potentially negative effect on resident fish populations in Carat and the control lake chosen, metals sampling will be discontinued after three years (on agreement with regulators), if no significant differences are found between control and exposed fish. Further rationale for discontinuance is that if no effects are apparent after three years, they are unlikely to be apparent for the life of mine.

The AEM program is designed to distinguish between natural variability in the environment and Project-induced changes. To this end, power analyses will be used to identify the appropriate level of sampling (other than for fish metals levels, where power analysis would dictate levels of sampling that would endanger fish populations). Site-specific predevelopment baseline data and information from other studies (e.g. RL&L 1996, 1995) will be used to establish appropriate sizes.

The AEM program will last throughout the life of mine (except as noted) and be conducted and evaluated by qualified fisheries biologists. The proposed study plan includes two field periods: spring and late summer. The spring field period will concentrate on deploying the periphyton artificial substrates and sedimentation traps, and collection of benthic macroinvertebrates samples. During the late summer field period, the periphyton artificial substrates and sedimentation traps will be removed and processed. A two-person crew will undertake both sessions.

3.0 WILDLIFE

3.1 CARIBOU AND MUSKOX

The migratory nature of most wildlife populations represented in the Project area, the seasonal nature of the major Project components, and the relatively short Project history combined present a set of variables that make definitive monitoring of Project/wildlife interactions very difficult. Two wildlife monitoring components, however, stand out as worthy of a monitoring effort to both test the predictive relevance of the assessment, and to add to the overall knowledge of tundra ecosystems interacting with mining activities.

Monitoring annual raptor nesting patterns and numbers in relation to the proximity of mining activities, microtine cycles, and seasonal weather patterns will provide important information for long term land use management in areas of exceptional raptor breeding habitat. This monitoring will likely not show definitive relationships in time to benefit the Jericho Project environmental management program.

The Bathurst caribou herd is of high value to the lifestyle of Nunavut and NWT residents. As such, the Jericho Project will participate in a caribou monitoring program with the Government of Nunavut and other governments and industry interests, to ensure that the health of the herd is under ongoing surveillance in relation to all human activities on the herd's overall range.

Wildlife components of the Project EMS will require a record be kept of Project/wildlife interactions, as these are instructive to improving the EMS and the progressive performance of the Project in preventing interactions with negative results to wildlife. Throughout the year, the mine environmental coordinator will keep a log of wildlife sitings, which will be submitted as part of the mine's annual environmental report. Mine crews who are interested will be encouraged to report wildlife sitings; a standard format similar to that used for baseline studies will be employed.

Tahera Corporation will participate in any joint industry-government body set up to monitor the Bathurst caribou herd and/or barrenland grizzly.

The Project EIS predicts negligible effects (on a regional scale) on caribou and muskox from mine construction and operation. The primary purpose of monitoring will be to determine whether any significant local effects occur (e.g. road kills or other mortalities that might be caused by Project activities) and to adjust activities to reduce or eliminate these effects.

3.2 CARNIVORES

Barrenland grizzly bears are of primary concern, but also wolves, foxes, and wolverines. The last named are not common at the Jericho Project and likely will be of less concern. Grizzly bears and other carnivores will not be the subject of special on going studies by the mine, unless dens are found within one km of mine operations. These will

be reported to Department of Sustainable Development in Kugluktuk and an appropriate monitoring program that will not result in wildlife harassment will be developed in consultation with the Department. Any encounters with grizzlies will be recorded and a report prepared by the Project environmental coordinator. Two primary objectives of observations will be: to increase employee safety at the site and modify activities, if indicated; and to reduce or eliminate disturbance and stress to grizzlies that may travel through the Project area.

There are no carnivore dens within 1km of the mine. A fox den complex, occupied at least since 1996 is within 500 m of the airstrip. Activities to date have not affected activities and young have been raised every year at the den site since it was first observed. Any cessation in use of the den complex will be noted and reported in the annual environmental report for the Project. An assessment will be made by a competent wildlife biologist as to the probable cause. If mine activities are implicated, changes in activities will be made (if practical) to mitigate the situation. The most probable change in behaviour by carnivores is attraction to the camp as a food source. As previously discussed, this behaviour will be strongly discouraged. For instance, feeding of wild animals will be prohibited at all times; Tahera policy will be communicated to employees at their initial orientation briefings.

3.3 RAPTORS

There are a number of raptor nests within 1km of the proposed mine operations at Jericho, as discussed in the Baseline Report (Appendix B.1.1). All raptor nests in the vicinity of the Project will be monitored by a qualified wildlife biologist during the Project operating life. Either fixed wing or helicopter surveys will be conducted in the Willingham Hills area where nests are know to be located. Baseline surveys were conducted in 1999 through 2001 in early to mid July and this timing will continue during the life of mine. The raptor program will be developed in discussions with Department of Sustainable Development raptor biologists to ensure harassment of the birds does not result from monitoring activities. The program will be closely monitored to ensure that any negative effects from surveying nesting raptors cease immediately upon detection.

4.0 VEGETATION AND WILDLIFE HABITAT

Where practical, revegetation of inactive disturbed sites will be undertaken. Tentative plant prescriptions were listed in the Reclamation Plan (Appendix B.3.2). Success of prescriptions on test plots and/or areas that are no longer used early in the mine operation will be monitored and modified as appropriate, based on Project experience and the published and unpublished results of others attempting revegetation in the Arctic tundra. Specifically, any reclamation trials results available from EKATI™ Diavik, and Snap Lake will be reviewed and results discussed with environmental personnel from these mines.

Test plots will be established on soil types representative of mine units to be reclaimed. Where feasible and sites for test plots are available, at least three test plots will be established for each mine unit targeted for reclamation. The Project Description (Appendix A.1) discusses mine land units where revegetation will be attempted.

The mine environmental manager will report results annually, or at an appropriate interval. Growth is expected to be slow, given the length of time for natural regeneration and the limited success of others in revegetating Arctic tundra.

5.0 AIR QUALITY MONITORING

5.1 DIRECT MONITORING

A high-volume sampler will be set up on the roof of the accommodation building for monitoring PM-10 (inhalable suspended particulates) or PM-2.5 (respirable suspended particulates). Samplers work for a 24-hour period on a six-day rotation. Once operation commences, PM-10 (or PM-2.5) will be monitored during snow-free periods (summer). Sampling will be conducted over the summer for the first year. If PM-10 (or PM-2.5) guidelines are not exceeded, sampling will be reduced to one month during the summer for the rest of the mine operating period. The chosen month to monitor will be the worst month from the first year's data.

Dust fall monitors will be located northwest, northeast, southeast, and southwest of the open pit, as recommended by Levelton (Air Quality Report, Appendix D.1.1) to determine whether the air quality modelling predictions are correct. Dust fall monitors will be operated year round for the first year of mining and results evaluated at the end of that time to ascertain whether the program should be continued.

5.2 INDIRECT MONITORING

5.2.1 Metals Levels in Lichen

Lichens are know to be sensitive indicators of air borne metal contaminants. Lichens were collected in 2000 and analysed for metals (Attachment 5.1). A sample was taken from west of the airstrip, well away from any exploration project influence. Lichens will be sampled again after two years' operation, from sites proximate and distant from operations (based on prevailing wind patterns), to determine whether the Project is affecting metals levels in lichens. If no effects are noted (i.e. proximate sample significantly higher in metals than the distant sample), sampling will be repeated after five year's operation and at end of mine operations. If significant differences are detected, sampling will be conducted annually. This trigger will apply to any sampling period, except end of mine life.

5.2.2 Project Dust Effects on Plant Communities

Two transects were sampled in 2000 for plant community composition (Figure 5.1). Transects were located west of the airstrip and southeast of the portal. One-meter quadrats were inventoried at 10 m intervals up to 100 m. Transect zero points were adjacent to the airstrip and portal access road. Transects were marked with stakes so that locations could be recovered. Quadrats were divided into 10 cm square subdivisions and the percent cover of plant species were noted for each subdivision. Total cover for the 1m square quadrats were then calculated from subtotals. These transects will be resampled each two years of operation of the mine to determine whether dust is affecting plant communities. A period of two years was chosen because of the nature in which plants grow in the Arctic; many plants only flower and produce seed every two years.

6.0 REPORTING

Landlords (DIAND and KIA), as well as Department of Sustainable Development, DFO, Environment Canada, and communities participating in the community liaison committee will be interested in results of biophysical monitoring. Therefore a comprehensive annual report containing all the year's data plus analyses is proposed. The main report will be non–technical, with any technical treatment of results appended. Thus the general public will be able to gain an appreciation of monitoring results at the Jericho Project, specifically whether impact predictions were borne out and how effective proposed mitigation measures were in reducing or eliminating environmental impacts from the Project. At the same time, technical appendices will satisfy agency (and company) needs for scientific analyses of results. Where applicable and available, traditional knowledge gathered by others will be used as an aid in results interpretation and modification of management approaches, should this prove desirable and practical. The report will be made available to interested agencies and the community liaison committee within six months of the end of each calendar year, or on a schedule agreed to by the government and general public stakeholders listed above.

REFERENCES

Department of Fisheries and Oceans. 1993. Technical guidance document for aquatic environmental effects monitoring related to Federal Fisheries Act requirements. Version 1. 128 p.

DIAND. 1997. Guidance for northern aquatic effects monitoring. Special report prepared by GeoNorth Limited and North/South Consultants for Water Resources Division, Department of Indian Affairs and Northern Development.

NWT Water Board. 1992. Guidelines for the Discharge of Treated Municipal Wastewater in the Northwest Territories.

R.L. & L. Environmental Services Ltd. 1995. 1993 Fish Tissue Metal Analysis, Contwoyto Lake, NWT. Report prepared for Echo Bay Mines Ltd. R.L. & L. Report No. 385F: 33 p. + 4 app.

R.L. & L. Environmental Services Ltd. 1996. Jericho Diamond Project Aquatic Studies 1995. Report prepared for Canamera Geological Ltd. R.L. & L. Report No. 462BF: 122 p. + 10 app.

RL&L. 2001. Jericho Diamond Project Pilot Aquatic Effects Monitoring Program (1999). Report prepared by RL&L Environmental Services Ltd. for Tahera Corporation.

TABLES

TABLE 2.1
Water Quality Monitoring Parameters

Locations	Station Number	Parameters	Frequency
Receiving Environment			
Control Lake Lake C3 Polishing Pond Lake C1 Stream C1 mouth Carat Lake, N basin Jericho Lake	Q1 Q2 Q3 Q4 Q5 Q6 Q7	ICP-MS Total Metals TSS NO_3, NO_2, NH_3 $P_{T\&D}$ pH Alkalinity Hardness	April, July, August, September, December
Polishing Pond	Q3	Toxicity	Prior to discharge; after discharge
Sewage Treatment Plant			
Outlet	n/a	Nitrate-Nitrite Ammonia Total Phosphorus Dissolved Phosphorus Residual Chlorine Oil and Grease	Quarterly
Sedimentation Ponds			
Dump 1 Dump 2 Pit	S1 S2 S3	ICP-MS Total Metals TSS -> Turbidity NO_3, NO_2, NH_3 $P_{T\&D}$ pH	Monthly when exfiltrating

TABLE 2.2
Water Bodies To Be Investigated And Sample Types To Be Collected

Sample Type	Water Body		
	Carat Lake (Near & Far field treatment sites)	**Lake C3 (Near & Far field treatment sites)**	**Control Lake (Reference 1 & 2 sites)**
Benthic Macroinvertebrate Community	♪	♪	♪
Periphyton Community and Standing Crop	♪	♪	♪
Sedimentation	♪	♪	♪
Fish Tissue Metal Concentrations*	♪	♪	♪

* Periodic sampling only, not annual, to be developed in discussions with DFO.

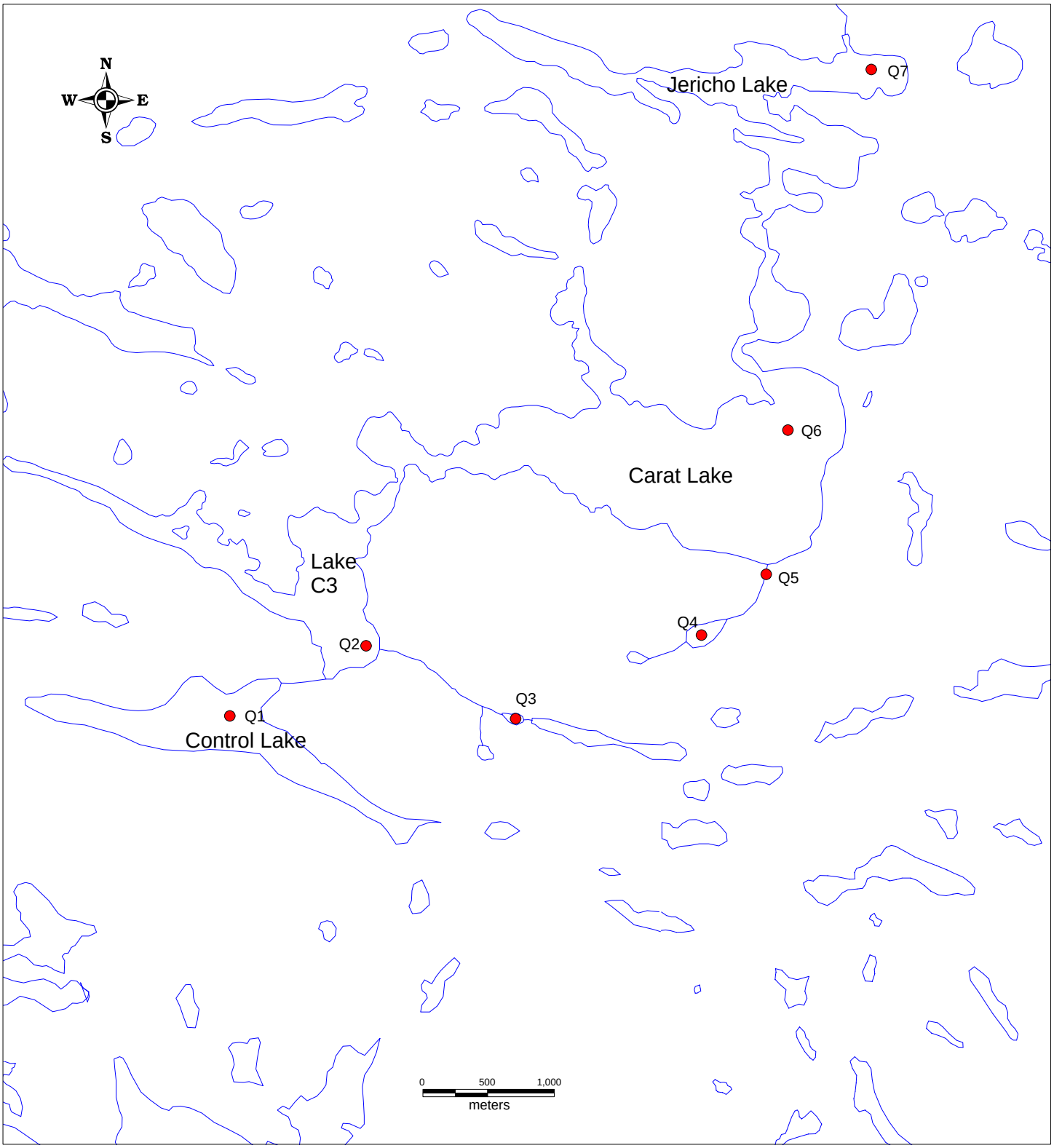
TABLE 2.3
Parameters Used to Monitor Potential Project Induced Changes in the Aquatic Biological Systems at the Jericho Site

Effect	Receptor	Parameter
Nutrient loading	Periphyton	Biomass (chlorophyll *a*); species composition
	Benthic invertebrates	Total density; major taxon density; species diversity
Elevated suspended sediments	Periphyton	Biomass (chlorophyll *a*); species composition
	Benthic invertebrates	Total density; major taxon density; species diversity
	Sedimentation	Rate of sedimentation
Metal Contaminants	Lake trout; Round whitefish	Metal concentrations in muscle and liver tissues

TABLE 2.4
Number of Samples to be Collected Annually

Sample Type	Carat Lake		Lake C3		Control Lake		Total
	Near field	**Far field**	**Near field**	**Far field**	**Ref 1**	**Ref 2**	
Periphyton	7	7	7	7	7	7	**42**
Chlorophyll *a* (Periphyton)	7	7	7	7	7	7	**42**
Benthic Macroinvertebrates	7	7	7	7	7	7	**42**
Sedimentation	7	7	7	7	7	7	**42**

FIGURES

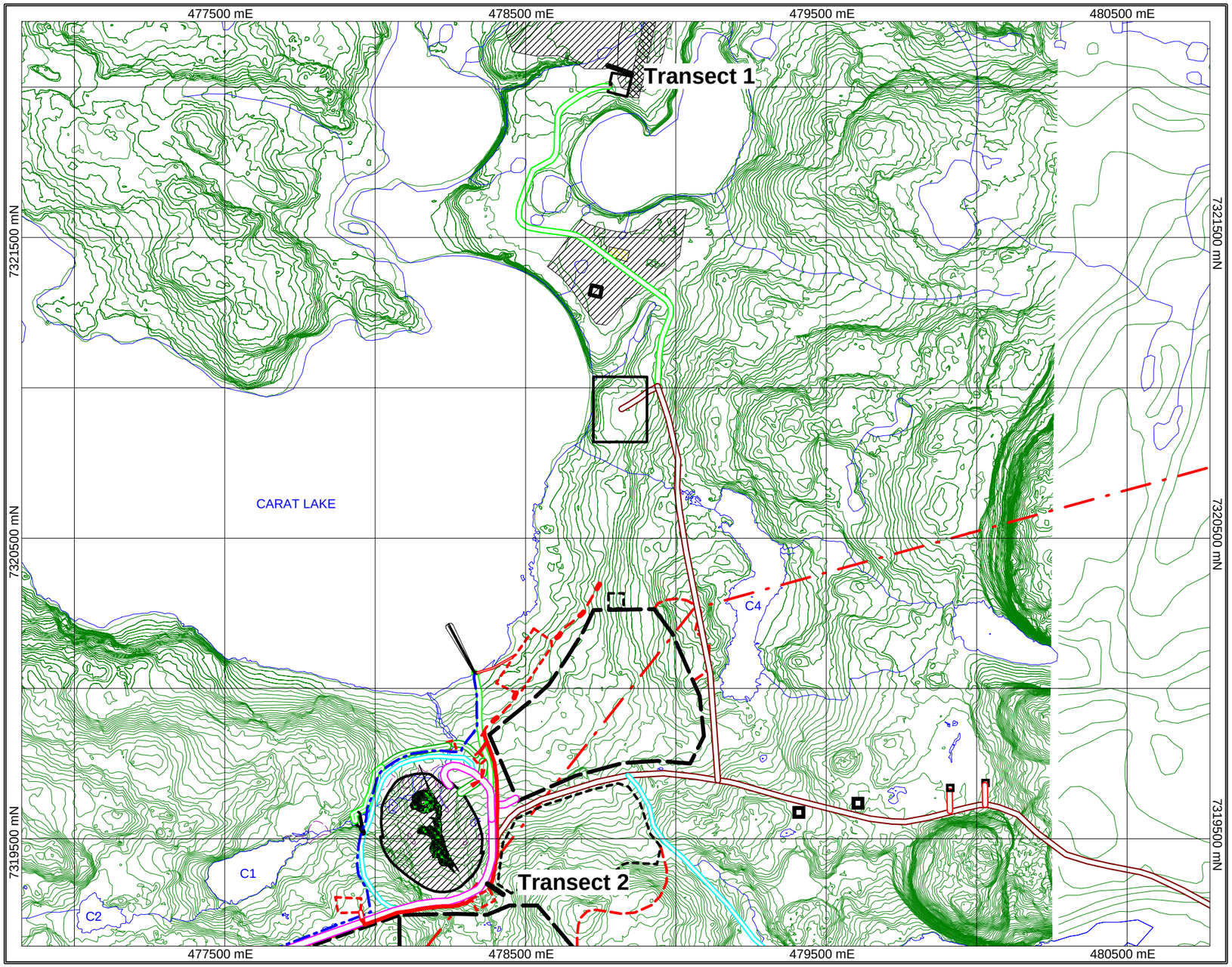


Tahera Corporation

FIGURE 2.1

PROPOSED WATER QUALITY MONITORING SITES

Date:7/11/2000	Source: SRK 1998
Author: 44	
Office: Van	
Drawing:	
Scale: 1:100000	Projection: UTM Zone 12 (NAD 27)



CORE AREA CONTOUR LINES REPRESENT 1m
OUTLYING CONTOUR LINES REPRESENT 10m

Jericho Project Vegetation Transects	
Approved By:	**FIGURE 5.1**
Date:01/11/2000	
Drafted By: M.J.	TAHERA CORPORATION
Scale: 1:15,000	Projection: UTM Zone 12 (NAD 27 for Canada)

200 0 200 400
metres

ATTACHMENT 5.1

2000 LICHEN METALS ANALYSES

LICHEN COLLECTION FOR METALS September 2000		
Location	**Date**	**Notes**
NW of airstrip near Jericho Lk	8 September 2000	*Flavocetraria cucullata*
7323136.56 N		4 g collected from two 1m sq
479003.34 E		quadrats; photographs

Final Report									
ASL WO# M2073a									
	Jericho	Lichen	Lichen	Lichen					
	Granite								
	Host Rock								
	(Average of	00 09 08	00 09 08	00 09 08	Average	Enrich.	BHP (means)		
	29 samples)					Factor	Project Area	Reference Area	
Total Metals									
Aluminum T-Al	6800	**908**	**917**	**1080**	**968.3**	0.1	**270.3**	**157.69**	
Antimony T-Sb	5	<0.03	<0.03	<0.03	<0.03		0.02	0.02	
Arsenic T-As	<5	**1.88**	**1.9**	**2.1**	**2.0**		**0.21**	**0.21**	
Barium T-Ba	36	17.4	17.3	18.6	17.8	0.5	17.86	15.43	
Beryllium T-Be	<0.5	<0.1	<0.1	<0.1	<0.1		0.1	0.1	
Bismuth T-Bi	<5	<0.1	<0.1	<0.1	<0.1		0.01	0.01	
Cadmium T-Cd	<1	0.07	0.06	0.07	0.1		0.07	0.06	
Calcium T-Ca	2900	1340	1330	1480	1383.3	0.5			
Chromium T-Cr	207	**33.2**	**32.1**	**37.8**	**34.4**	0.2	**0.65**	**0.28**	
Cobalt T-Co	5	**1.4**	**1.3**	**1.5**	**1.4**	0.3	**0.4**	**0.25**	
Copper T-Cu	32	**2.9**	**3.01**	**3.14**	**3.0**	0.1	**1.49**	**1.06**	
Iron T-Fe	18,400	**1350**	**1380**	**1560**	**1430.0**	0.1	**342.06**	**200.11**	
Lead T-Pb	9	**1.1**	**1.1**	**1.2**	**1.1**	0.1	**0.57**	**0.63**	
Lithium T-Li	nd	1.7	1.8	2.3	1.9		1.74	0.25	
Magnesium T-Mg	4600	754	761	816	777.0	0.2			
Manganese T-Mn	236	138	133	137	136.0	0.6			
Molybdenum T-Mo	4	**0.55**	**0.52**	**0.59**	**0.6**	0.1	**0.08**	**0.05**	
Nickel T-Ni	10	**16.3**	**15.9**	**17.6**	**16.6**	1.7	**1.02**	**0.76**	
Phosphorus T-P	420	867	890	843	866.7	2.1			
Potassium T-K	2000	2310	2270	2170	2250.0	1.1			
Selenium T-Se	2	<1	<1	<1	<1		0.1	0.1	
Sodium T-Na	600	350	341	349	346.7	0.6			
Strontium T-Sr	10	4	3.92	4.66	4.2	0.4	9.02	7.45	BHP higher
Thallium T-Tl	nd	0.03	0.03	0.03	0.0		0.02	0.02	
Tin T-Sn	<10	<0.2	<0.2	<0.2	<0.2				
Titanium T-Ti	700	**53.6**	**54.2**	**63.4**	**57.1**	0.1	**26.66**	**11.45**	
Uranium T-U	nd	**0.13**	**0.18**	**0.17**	**0.2**		**0.04**	**0.02**	
Vanadium T-V	28	**2.2**	**2.1**	**2.6**	**2.3**	0.1	**0.52**	**0.24**	
Zinc T-Zn	42	**33.6**	**33.6**	**33.9**	**33.7**	0.8	**20.33**	**19.36**	
Fe/Ti Ratio	26				25				
End of Report									