SHEAR DIAMONDS LTD.

GENERAL MONITORING PLAN
CARE AND MAINTENANCE
JERICHO DIAMOND MINE, NUNAVUT

REPORT

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ACRONYMS & ABBREVIATIONS

AA	Atomic Absorption Spectrophotometry
AEMP	Aquatic Effects Monitoring Plan
AIA	Aquatic Impact Assessment
ANCOVA	Analysis of Covariance
ANOVA	Analysis of Variance
AQMP	Air Quality Management Plan
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
BACI	Before-after-control-impact
CAEAL	Canadian Association for Environmental Analytical Laboratories
CAMP	Care and Maintenance Plan
CMP	Contingency Management Plan
CPK	Coarse Processed Kimberlite
DO	Dissolved Oxygen
EC	Electric Conductivity
EIS	Environmental Impact Statement
FPK	Fine Processed Kimberlite
GC/FID	Gas Chromatograph - Flame Ionization Detector
GMP	General Monitoring Plan
ICP-MS	Inductively Coupled Plasma – Mass Spectrometry
ICRP	Interim Closure and Reclamation Plan
INAC	Indian and Northern Affairs Canada
LFMP	Landfarm Management Plan
LFP	Landfill Management Plan
KIA	Kitikmeot Inuit Association
MANOVA	Multivariate Analysis of Variance
NIRB	Nunavut Impact Review Board
NWB	Nunavut Water Board
PHC	Petroleum Hydrocarbons
PKCA	Processed Kimberlite Containment Area
PKMP	PKCA Management Plan
RPD	Relative Percent Difference
Shear	Shear Diamonds (Nunavut) Corp.
SWMP	Site Water Management Plan
TDC	Tahera Diamonds Corporation
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
WEMP	Wildlife Effects Management Plan
WMP	Waste Management Plan
WRMP	Waste Rock Management Plan
WTMP	Wastewater Treatment Management Plan
WWTP	Wastewater Treatment Plant

1.0 INTRODUCTION

1.1 General

The Jericho Mine General Monitoring Plan (GMP) has been developed to provide a methodology for managing the environmental influences on the receiving environment associated with activities at the Jericho Site. The GMP is a comprehensive monitoring plan that is designed to:

- Assess the integrity and function of the site infrastructure;
- Record the variations in water flow at the site and in the receiving waterbodies;
- Observe and sample the seepage through the water retention structures and the rock piles; and
- Sample and analyze site water qualities.

The plan fulfills the requirements specified in Part L and Schedule L of the Jericho Mine Water Licence NWB1JER0410 (issued December 21, 2004) for General Monitoring. The aquatic effect monitoring requirements detailed within Part L and Schedule L are covered in the Jericho Aquatic Effects Monitoring Plan, presented as a separate document.

This plan is being submitted to the Nunavut Water Board (NWB) in the absence of complete historical information as Shear Diamonds (Nunavut) Corp. (Shear) only assumed control of the project in August 2010. Since that time Shear has discovered that detailed information on the present site water conditions is limited. Comprehensive historical general monitoring records were not well maintained under previous ownership and management, so the available information is incomplete or lacking detail.

During the course of preparing this plan, it came to Shear's attention that the current site structure layout may deviate from the mine design submitted by the previous owners. Upon a full review of current site conditions in 2011, the monitoring locations and frequencies in this section may need to be modified accordingly.

The GMP is based on these existing records including previous general monitoring plans, regulator comments, and external anecdotal information where available. This plan has been developed for the current regulatory requirements and to reflect Shear's commitment to the best practices in environmental stewardship.

The plan describes existing and planned monitoring stations in addition to revised procedures for the site during care and maintenance. Once Shear has had an opportunity to thoroughly investigate the site and gather information in 2011, the GMP will be revised. Annual reviews required under Part L, Item 4 will identify the need for any necessary revisions to the plan. Subsequent revisions of the GMP will be submitted to the NWB for approval.

1.2 Objective of General Monitoring Plan

The primary objective of the GMP is to identify potential impacts to the environment and assess the integrity of the site infrastructure. The information and data collected under the monitoring plans

evaluates the effectiveness of the mitigation measures implemented at site and triggers the need for additional measures. At the time of the water licence renewal application, mining operations have been suspended and the site is under care and maintenance. This document will therefore address the monitoring requirements at the present time. In addition to being a management tool, the GMP was specifically developed to assist Shear and the regulatory agencies with mine closure planning and the development of Jericho's Interim Closure and Reclamation Plan (EBA 2011e).

1.3 Background Information

The Jericho Diamond Mine is located approximately 260 km southeast of Kugluktuk, NU, and 30 km north of Lupin Mine. The Jericho Mine was constructed and operated by Tahera Diamond Corporation (TDC) between 2004 and 2008. In January 2008, mining operations were suspended by TDC and the site was subsequently placed under care and maintenance. Shortly thereafter, Indian and Northern Affairs Canada (INAC) assumed control of the care and maintenance activities for the site. In August 2010, Shear purchased the Jericho Mine and its assets and assumed the responsibility for the site.

Presently, the mine remains under care and maintenance as Shear evaluates the mineral resource. Once this evaluation is complete, a mine plan and operations schedule for the project will be established.

1.4 Linkage to Other Management Plans

The GMP is a part of the site wide management system. Other management plans that are related to or refer to the GMP include:

- Aquatic Effects Monitoring Plan (AEMP);
- Site Water Monitoring Plan (SWMP);
- Processed Kimberlite Management Plan (PKMP);
- Waste Rock Management Plan (WRMP);
- Wastewater Treatment Management Plan (WTMP);
- Landfarm Management Plan (LFMP);
- Interim Closure and Reclamation Plan (ICRP); and
- Care and Maintenance Plan (CMP) during periods where mining and processing operations are suspended.

2.0 GENERAL MONITORING OVERVIEW

This GMP provides details of:

- Geotechnical performance monitoring of site infrastructure;
- Flow and water level variance monitoring on site and in the receiving environment;

- Seepage survey for water retention structures, waste rock piles, ore and coarse processed kimberlite (CPK) stockpiles; and
- A Site Water Quality Monitoring Program to monitor the water quality at various locations around the site.

3.0 QUALITY MANAGEMENT

While undertaking the requirements set forth the GMP, quality management of monitoring results will be achieved through two separate but interlinked programs: quality control (QC) and quality assurance (QA). For the purposes of the GMP, Shear defines QC and QA as the following:

- Quality Control is a system of maintaining standards for measurement through field and laboratory testing when following a defined or industry standard. Measures of QC success include including precision, accuracy and reproducibility of test results.
- Quality Assurance is a systematic method of monitoring, assessing and recording the care under which the QC testing was performed such that the measurement program is quantifiable and produces data of known quality.

If the developed QC and QA protocols are followed diligently, the GMP will provide monitoring results of acceptable and defensible quality. The QA protocols detailed below will be followed during the execution of the GMP.

Field Staff Qualification and Training

Field staff involved in the AEMP field program will be adequately trained such that they are competent in following the monitoring procedures including data recording and test equipment operation.

Before a field work program begins, a "kick-off" training session will be held with all field and senior staff in attendance. The purpose of the meeting will be to review the monitoring protocols and site-specific requirements. In addition, a close-out meeting will be held once the program is complete to review the results and identify any areas for future improvement.

Equipment Maintenance and Calibration

The devices used to collect field chemistry parameters will be calibrated daily or at a frequency determined by senior staff or designate contractor and will follow the equipment manufacturer recommendations. Testing equipment will be inspected thoroughly before each field season and, if required, will be sent for service and maintenance. Testing equipment will be calibrated based on the manufacturer's recommended schedule. Maintenance records and calibration certificates will be kept in the GMP QA records.

An inspection of equipment used by field staff will be performed each day prior to use.

Laboratory Qualification

The Canadian Association for Environmental Analytical Laboratories (CAEAL) provides accreditation programs to review laboratories' procedures, methods, and quality control. Samples collected from the field will be sent to the CAEAL accredited laboratories.

Data Management

A data management program will be implemented to ensure proper recording and organization of the field and laboratory data.

Senior Staff Involvement

To ensure all procedures are adhered to, senior project staff will be closely involved throughout each stage of the project. Duties of the senior staff will include initiating the field kick-off training session, supervising the field program and staff, conducting a review of the laboratory data and data analysis, facilitating close out meetings, and reviewing the annual reporting.

4.0 GEOTECHNICAL MONITORING

4.1 General

Regular monitoring of site infrastructure is a critical component of care and maintenance activities at Jericho. Inspections are completed regularly to identify potential problems with these earth structures before they risk damaging human health and the environment.

Inspections are completed on most site earth structures which include, but are not limited to, the PKCA dams and dykes; the C1 Diversion; waste rock storage areas; landfill berms; and all containment berms used for fuel storage, hazardous waste, and other materials. Inspections are completed on both the structures and surrounding landforms to ensure the structures are not negatively impacting the surrounding terrain.

Inspections are broken into two categories: Operational Inspections and Formal Inspections.

4.2 Operational Geotechnical Inspections

Operational geotechnical inspections are performed by site personnel and are undertaken at least once a week. The purpose of the operational geotechnical inspection is to identify and document any hazards and damage to or deterioration of the structure. If a condition is deemed to be serious, a qualified geotechnical engineer will be brought to site to inspect the structure. More frequent geotechnical inspections may be required under certain conditions, as identified by the geotechnical engineer.

All site personnel tasked with the operational inspections will be trained in the identification of hazards and will be provided with documentation prepared by a qualified geotechnical engineer to assist with the identification of maintenance issues and hazardous conditions. An Operations, Maintenance, and Surveillance Manual is being prepared for the PKCA dams and dykes and will include detailed information and specific requirements for the inspection of these structures.

An example of an operational geotechnical inspection form is included in Appendix A. A copy of each operational geotechnical inspection will be preserved in Shear's document management system. Additionally, a hard copy will be maintained in a binder on site for review by the geotechnical engineer during the formal geotechnical inspection. Shear expects that the inspection process and form will evolve as more information about the structures and their condition become available during care and maintenance activities.

4.3 Formal Geotechnical Inspections

A site-wide formal geotechnical inspection will be completed annually, as required by the Jericho water licence. The inspection is performed by a qualified geotechnical engineer and includes a visual assessment of the structures and a review of ground temperature and deformation monitoring data where applicable. Where possible, formal geotechnical inspections will take place during freshet.

The following specific tasks should be completed during the formal inspections:

- Each structure and surrounding area is visually examined for signs of settlement, seepage, cracking, or any other signs of distress.
- Observations made during the inspection are photographed and recorded. Photographs of the general condition of each structure area taken to track year by year changes in each structure.
- Settlement surveys are completed where necessary for the dams to assess any movement in the structures.
- Ground temperature data is collected for several structures at various intervals throughout the year. This data is reviewed in conjunction with site observations from each structure to verify acceptable structure performance.

Following the inspection, a report will be prepared summarizing the assessment and monitoring data, a copy of which will be submitted to the NWB for review and approval.

4.4 Thermal Monitoring

Ground temperature cables (GTCs) have been installed in the West, East and Southeast dams to monitor the condition of the frozen zones within the structures. In addition to the dams, Shear plans to install a series of GTCs in the waste dumps to monitor the aggradation of permafrost into the piles.

Temperature readings will be collected monthly while personnel are on site. Monthly inspections will continue until a clear pattern has been established, at which point the geotechnical engineer may recommend reducing the reading frequency to quarterly. In addition, a full set of readings will be taken during the annual formal geotechnical inspection.

4.5 Survey

Settlement monitoring points have been installed in the dams or will be installed at the end of construction. The elevation and location of the monitoring points should be measured monthly while personnel are on

site. The monitoring schedule will be reviewed by the geotechnical engineer if there are no signs of significant movement.

Settlement and topographic surveys of the dam crest will be carried out annually as part of the formal geotechnical inspection. The topographic survey will be carried out to identify any settlement areas or deterioration on the surface of the dams.

5.0 WATER FLOW MONITORING

5.1 General

Water flows are monitored at key locations within the water management system to detect significant deviations from the conditions predicted in the site water balance. Such deviations could indicate the need for changes to site water management procedures to ensure that discharge from the PKCA continues to meet the quality criteria specified in the water licence. The water flow monitoring program also records flow rates in the receiving environment, particularly within waterbodies downstream of the PKCA.

5.2 Monitoring Locations

Site water flow rates will be estimated by collecting volume measurements from site water management activities and by recording PKCA pond elevations and discharge volumes. Where possible, the water levels in ditches or channels will be estimated using weir calculations, whereas pumped water will be measured using flow meters with totalizers.

Table 5.1 in Section 5.3 presents the water flow and quantity monitoring locations, based on structures in the approved mine design. The monitoring locations for the receiving water flow monitoring network are presented in Figure 1 and 4. The key locations in the site water flow monitoring network are presented in Figures 3 and 5.

5.3 Methods and Frequency

The frequencies for estimating flow vary at different monitoring locations depending on the recording methods. Based on the available information, existing water pipelines were equipped with totalizer flow meters to record the total water throughput occurring between sampling events. Ditch and channel flows were monitored using v-notch weirs, which provide an estimate of flow rate but not total flow volume. Gravity-fed piped flows are measured using bucket-and-stopwatch methods. This method calculates the flow rate by measuring the time it takes for the pipe to discharge a known volume of water. As with the weir method, the bucket and stopwatch only provides a flow rate not a total volume. Frequent monitoring of the flow rate from gravity structures can be used to determine a weighted average flow rate, which allows a reasonable estimate of the total discharge volume to be calculated.

Previous versions of the Jericho GMP described a continuous pressure transducer in place at Transition Pool 2 of the C1 Diversion channel. However, the C1 Diversion design and construction report makes no mention of the transducer. During 2011. Shear will confirm the installation of the transducer and, if installed, the operating condition. In addition, a site-wide reconnaissance by a qualified geotechnical

engineer will be conducted to ensure the aforementioned water flow and level monitoring devices are available and in working condition prior to any site water pumping.

The previous GMP also described an automated water level recorder, equipped with a radio link, which was installed prior to mine operations near the outlet of Lake C3. The signal from the radio link was received at the environment office where data was recorded continuously and in real time. The water level recorder was operated whenever discharge from the PKCA occurred.

While the site is under care and maintenance in 2011, the location and effectiveness of the water level recorder and the condition of Stream C3 will be assessed during PKCA discharge.

The following table summarizes the monitoring method and frequency for the water flows to be measured during care and maintenance. Upon the completion of the resource evaluation and prior to commencing mining operations, the sampling methods and frequency for water flow and level monitoring will be reviewed and if necessary updated.

Table 1: Water Flow and Level Monitoring

Category	Station	Location	Method	Frequency	Comment
Site Water Monitoring Stations	JER-SWF-01	Freshwater intake pump	Totalizer	Daily during pumping	Total water withdraw from Carat Lake
	JER-SWF-02	PKCA discharge pump	Totalizer	Daily during pumping	Total site water discharge
	JER-SWF-03	Pump for discharging pit water to PKCA	Totalizer	Daily during pumping	Amount of Water collected in Pit Sump
	JER-SWF-04	Pump for discharging Wastewater Treatment Plant effluent	Totalizer	Daily during pumping	Amount of waste water discharge
	JER-SWF-05	Pump for Processing Plant freshwater Intake	Totalizer	Daily during pumping	Freshwater intake for the Processing Plant
	JER-SWF-06	Pump for discharging Processing Plant Water to PKCA	Totalizer	TBD	Water discharge from the Processing Plant
	JER-SWF-07	Pump for reclaim PKCA water to Processing Plant	Totalizer	TBD	Amount of reclaimed water for the Processing Plant
	JER-SWF-08	C1 Diversion	Weir	Daily during freshet, and monthly thereafter	Amount of the water collected from C1 catchment area
	JER-SWF-09	Area A collection discharge	Totalizer or TBD	Daily during pumping	Surface runoff and seepage collected in ditch or potential Pond A to be drained to Pit Sump
	JER-SWF-10	Area B collection discharge	Totalizer or TBD	Daily during pumping	Surface runoff and seepage collected in ditch or potential Pond B to be drained to Pit Sump
	JER-SWF-11	Plant Site Area collection discharge	Totalizer or TBD	Daily during pumping	Surface runoff and seepage collected in East Sump or

Table 1: Water Flow and Level Monitoring

Category	Station	Location	Method	Frequency	Comment
					potential Pond C to be drained to Pit Sump or pumped to PKCA
Receiving Waterbody Monitoring Stations	JER-RWF-01	Stream C3 Near Mouth	Levelogger	Continuous	Stream C3 flow into Lake C3 due to PKCA discharge
	JER-RWF-02	Lake C3 (Exact monitoring location to be confirmed in 2011)	TBD	TBD	Variance of Lake C3 level due to PKCA discharge
	JER-RWF-03	Stream C8 at Lake C3 Outlet	TBD	TBD	Lake C3 discharge into Carat Lake
	JER-RWF-04	Freshwater Intake Station at Carat Lake	Levelogger	Continuous	Variance of Carat Lake level due to water intake

Note:
1. Monitoring frequency is for the Care and Maintenance Phase
2. Area A, Area B and Plant Site Area collections are collection ditches or future Pond A, B, or C
3. TBD – To be determined during the Care and Maintenance Phase in 2011

5.4 Data Analysis and Reporting

The records from the water flow monitoring program will be used to provide information on the mine water usage and discharge from various catchment areas and will also be interrelated with the Site Water Quality Monitoring Program (SWQM) and AEMP to estimate the constituent dilution and the chemical loadings in the PKCA and the receiving environment.

Monitoring data, including the volume of water used, volume of water pumped to and from collection facilities, the volume of reclaimed water and the volume of PKCA discharge, will be recorded and used to update the annual site water balance calculations as required by the water licence.

Discharge to Stream C3 from the PKCA will be measured and compared to the natural hydrograph developed as part of baseline studies (where available). PKCA discharge volumes will be compared to Lake C3 level and discharge to determine theoretical dilution factors for discharge water.

Seasonal variation in discharge through the C1 diversion will be compared to the background data collected during baseline studies (where available) and during early mine operations to determine whether a significant drop in water discharge has occurred.

The level of Carat Lake will be recorded and compared to the predicted drawdown of the lake. Since there is no background data regarding the seasonal variations of the Carat Lake water level, the lake level records will be compared to the lake bathymetry to determine the percentage of total lake water volume drawn off for mine use.

6.0 SEEPAGE SURVEY PROGRAM

6.1 General

As per Schedule A of the Jericho water licence, seepage is defined as the water that drains through or escapes from any structure designed to contain, withhold, divert, or retain water or waste. The definition also includes any flows that have emerged from the toe of a structure, or as a result of runoff from overburden storage areas, waste rock storage facilities, coarse kimberlite reject areas, and ore stockpile areas.

Any water collected from engineered ditches or sumps will be directed to and stored in the PKCA. Accumulated water in the PKCA can only be discharged once it meets the applicable criteria specified in the water licence.

Seepage from the water retentions structures, including the dams along the perimeter of the PKCA, will be collected and returned to the structure or transferred to another water management structure. Seepage observed from engineered structures will be evaluated by a qualified geotechnical engineer, and remedial actions will be taken if recommended.

Seepage originating from the waste rock dump, ore, and CPK stockpile may contain elevated concentrations of controlled constituents, which may reduce the quality of the PKCA pond water when pumped to the facility. A reduction in the PKCA water quality may affect the planned water discharge schedule. An annual seepage survey will be conducted to evaluate the integrity and effectiveness of the water retention structures, and to develop a better understanding of variations in source concentrations from different areas of site.

6.2 Monitoring Locations

To fulfill the requirements of Schedule L of the Jericho water licence, the Seepage Survey Program (SSP) is divided into two parts:

1. All engineered water retention structures and waste rock pads including all collector ditches; the potential Contingency Pond A, B, and C basins; all PKCA dams; the plant site foundation pad; explosive storage area; and emulsion plant areas.
2. Toes of all rock and ore piles including Waste Rock Pile 1, Waste Rock Pile 2, Ore Stockpile, the Low-grade Ore Stockpile, CPK Stockpiles 1, 2, 3, and 4. Table 6.1 in Section 6.3 summarizes the rock and ore pile seepage monitoring locations along with the monitoring method. The approximate locations in the seepage monitoring program are shown in Figure 3 and 5.

6.3 Methods and Frequency

6.3.1 Weekly Seepage Inspection

As discussed in Section 6.1, all site water collected will be transferred to the PKCA and will only be released to the receiving environment upon verification of compliance with the specified water licence criteria.

The purpose of Part 1 of the Seepage Survey program, which includes water retention structures and the graded site pads, is to prevent uncontrolled release of site water.

A weekly visual inspection of the toe of all water retention structures and waste rock pads as specified in Section 6.2 will be performed by site personnel with details of any observations recorded in a weekly inspection memorandum (Section 6.5). If visible water flow is observed through the structures, the maintenance personnel will immediately inform the mine manager. The released water will be collected and pumped back into the water retention structures or transferred to another structure if deemed necessary. Depending on the flow rate and location of the seepage, a qualified geotechnical engineer may be retained to investigate the integrity of the structure, and to design and monitor corrective measures. To avoid misidentifying the surface runoff as seepage, the weekly inspection will avoid the peak period of spring freshet and periods following precipitation events. The condition and performance of all engineered earthwork structures will be inspected annually by a qualified geotechnical engineer.

6.3.2 Annual Seepage Survey

The purpose of Part 2 the Seepage Survey program, which includes the toe of all waste rock dumps and ore stockpiles, is to ensure that the overall site water quality is not compromised by declining geochemical conditions of the stockpiles.

The seepage collected at the toe of rock piles will be used to predict the potential for metal leaching due to acid rock drainage or neutral drainage. The survey will take place in July or August to coincide with maximum seepage concentrations while avoiding dilution from surface runoff which would occur during the freshet period in June.

As part of the SWQM (discussed in Section 7.0), the monitoring stations at each collection ditch or potential collection ponds ensure that seepage and runoff from the waste rock is monitored on a seasonal basis. One annual seepage survey is, therefore, considered sufficient to characterize variability within the source concentrations from different areas of the dumps and stockpiles.

Seepage from the rock piles is expected to exfiltrate from a number of locations at the toe. Composite samples will therefore be collected based on the judgement of field staff and the senior representative overseeing the survey. In general, no more than three visible turbid streams, originating along a 30 m length of the rock pile, will be combined into a single composite sample.

All incidents of seepage, including each of the streams in a composite sample, will be documented including a written description and photographs of the stream, as well as UTM coordinates for the stream source.

The seepage samples will be submitted to a CAEAL accredited laboratory for the analysis of routine water chemistry, total metal, dissolved metal, and nutrients. Before shipping the samples, dissolved metal samples will be filtered through a 0.45 µm Millipore filter and preserved with AA grade nitric acid. Similarly, samples for total metals analysis will also be preserved with AA grade nitric acid. Nutrients samples will be preserved with AA grade sulphuric acid. The routine water sample will not be preserved. Water bottles containing samples from the same station will be placed in a clean plastic bag to avoid cross-contamination between samples, and stored in coolers to keep the samples below 4°C prior to shipment. Chain of custody forms will be used to track samples. The detailed parameters for each analytical package

is presented in Appendix B. Field measurements including temperature, pH, dissolved oxygen, electric conductivity, and turbidity for each sample will be recorded.

Table 6.1 summarizes the location, method, and frequency for seepage monitoring:

Table 6.1: Annual Rock Pile Seepage Survey

Station	Location	Analysis (1)	Frequency	Comment
JER-SPG-01	Waste Rock Dump 1	R, ICP-T, ICP-D, N	July or August	Under development (2)
JER-SPG-02	Waste Rock Dump 2	R, ICP-T, ICP-D, N	July or August	Under development (2)
JER-SPG-03	CPK Stockpile 1	TBD	No monitoring	Not developed
JER-SPG-04	CPK Stockpile 2	TBD	No monitoring	Not developed
JER-SPG-05	CPK Stockpile 3	TBD	No monitoring	Not developed
JER-SPG-06	CPK Stockpile 4	R, ICP-T, ICP-D, N,	July or August	Under development (2)
JER-SPG-07	Ore Stockpile	R, ICP-T, ICP-D, N,	July or August	Under development (2)
JER-SPG-08	Low Grade Ore Stockpile	TBD	No monitoring	Not developed (2)

Note:

1. Detailed analytical parameters are presented in Appendix B.
2. Waste Rock Dump 1 and 2, CPK Stockpile 4, and Ore Stockpile have not reached to the designed footprints.

6.4 Quality Control

Quality control protocols for sampling seepage water sampling are detailed below.

Field Blank

Field blank samples reflect the ambient conditions during the sampling program and are used to measure potential sampling contamination. Field blank bottles are laboratory-supplied, pre-filled bottles of deionized water and are shipped to site with the other bottles. One field blank will be processed for each sampling location.

Trip Blank

Trip blank samples reflect the potential contamination that may occur during the transportation of the samples/bottles. The trip blank bottles are pre-filled with deionized water in the lab and shipped to site with the other bottles. The trip blank samples accompany other sample bottles to and from the sampling sites. One trip blank will be processed for each monitoring event.

Equipment Blank

Equipment blank samples reflect the adequacy of the equipment decontamination processes. Deionized water is poured over or through the decontaminated sampling equipment at the beginning of each day of the field program. One equipment blank will be processed for each day of sampling.

Duplicate Samples

To verify the precision of the samplers, duplicate water samples will be submitted for testing. A sequential duplicate sample requires that field personnel fill two sampling sets (a group of bottles from two different samples at the same depth). Sequential duplicate samples will be collected for 10% of the total number of samples, with a minimum of one duplicate taken per sampling event. The sampling program will submit blind duplicates for analysis (i.e., duplicate samples not labelled with the location).

Split Samples

To check on the laboratory's precision and accuracy, a split sample will be prepared in the field. A split sample is a discrete water sample separated into two identical tests and used to determine the reproducibility of the analysis. In theory, the individual test results from the split sample should be identical when analyzed by the laboratory. One split will be processed for each monitoring event.

6.5 Data Analysis and Reporting

A seepage inspection form will be prepared by the site personnel performing the inspection and will be maintained in Shear's document management system. The inspection form shall include a description of the condition of the structure being inspected and will note any visible flow at the toe of the structures. Photographs depicting the source and flow path of the seepage will also be included.

Annual seepage survey data will be incorporated into the waste rock geochemistry monitoring program to evaluate for potential metal leaching from the waste rock pile, the CPK stockpiles or ore stock piles. An Annual Seepage Survey report will be produced and submitted to the NWB for review no later than 60 days following completion of the survey.

7.0 SITE WATER QUALITY MONITORING PROGRAM

7.1 General

As described in the Jericho SWMP, any water collected from engineered water retention structures and processing facilities, such as the pit sump, collector ditches and berms, wastewater treatment plant (WWTP), and processing plant, will be directed to and stored in the PKCA. Impounded water in the PKCA will only be discharged to the receiving environment upon verification that its quality meets the criteria specified in the Jericho water licence and upon providing the required notification to the NWB and the Inspector. The Jericho SWQM has been designed to regularly monitor the variation in site water quality at the mine. The objective of the program is to ensure that the water quality in each area of the mine is maintained at an acceptable level, and that the quality of the water in the PKCA is not unduly impacted from inflows of poorer quality water from other mine areas. The SWQM comprises monitoring stations in the PKCA and all main water collection structures.

The SWQM location JER-SWQ-04 is used to determine if the water in the PKCA meets the specified quality criteria prior to discharge from the PKCA.

In contrast to the SWQM, the AEMP monitors the short- and long-term effects that site activities and operations have on the receiving environment. Figure 4 and Figure 5 present flowsheets for the AEMP and

SWQM, respectively. The SWQM flowsheet depicts the monitoring of water quality internal to the site such that water quality in the PKCA will satisfy the discharge criteria. The AEMP focuses on the water quality within the broader receiving environment and is designed to detect any negative impacts from PKCA discharge.

AEMP location JER-AEM-04 is used to determine if the water in the PKCA meets the specified quality criteria during discharge from the PKCA.

7.2 Monitoring Locations

To fulfill the requirements of Schedule K of the Jericho water licence, the SWQM will include routine monitoring of water quality at all main water retention facilities, effluent discharge points — including the discharge pump area in the PKCA, the WWTP, processing plant, pit sump, and collection structures responsible for Catchment Areas A and B and the Plant Site. As discussed in Section 2.7 of the SWMP, prior to construction of the contingency ponds, the collector ditches and the East Sump will be used for temporarily retaining runoff from the aforementioned catchment areas, and will be used as SWQM monitoring stations.

Table 3 in Section 7.3 summarizes the SWQM monitoring locations along with the monitoring method and frequency. Approximate locations for the SWQM stations are also shown on Figure 3.

7.3 Methods and Frequency

Water quality sampling from retention structures, with the exception of the pit sump and the PKCA, is on a monthly basis or until the ponds are ice covered. During the 2011 pit dewatering program, pit sump water quality testing will be performed weekly.

Process plant commissioning and trial operations will be conducted during care and maintenance activities in 2011. While the plant is being operated, even in reduced capacity to evaluate for commissions, supernatant samples will be collected and submitted for testing on a weekly basis.

The SWQM requires weekly monitoring of the effluent from the WWTP; however, to establish the effectiveness of the facility, water quality parameters of the influent, effluent, and some intermediate stages of the WWTP process will be analyzed. Effluent values will be reported in the SWQM while the results of the influent and other testing will be reported as part of the Wastewater Treatment Management Plan (WTMP, EBA 2011l).

The water impounded within the PKCA will be monitored weekly during the discharge period from June through September.

Samples will be submitted to an accredited laboratory for analysis of routine water chemistry, total metal, dissolved metal, and nutrients. Sample preparation procedures are detailed in Section 6.3.2. As required by the water licence, additional biological parameters including BOD_5 and fecal coliform will be included in the analysis of water samples from the PKCA (JER-SWQ-02). The detailed parameter in each of the analytical package is included in Appendix B of this document. Field measurements including temperature, pH, dissolved oxygen, electric conductivity, and turbidity for each sample will be recorded.

Table 3 summarizes the monitoring locations, analysis, and frequency for stations under the SWQM.

Table 3: Site Water Quality Monitoring Program

Station	Location	Analysis [1]	Frequency	Comment
JER-SWQ-01	Wastewater Treatment Effluent	R, ICP-T, ICP-D, N, B	Weekly	N/A
JER-SWQ-02	Pit Sump	R, ICP-T, ICP-D, N,	Weekly during initial pit dewatering, then Monthly until freeze-up	Currently contained approx. 500,000 m^3 water
JER-SWQ-03	Process Plant Supernatant	R, ICP-T, ICP-D, N,	Weekly	No production during Care and Maintenance Phase
JER-SWQ-04	PKCA Pond Water	R, ICP-T, ICP-D, N, B	Weekly during PKCA discharge, then monthly thereafter	Used to determine if water meets initial discharge criteria
JER-SWQ-05	Collector Ditch for Area A or Potential Pond A	R, ICP-T, ICP-D, N,	Monthly until freeze-up	Currently collected from ditch
JER-SWQ-06	Collector Ditch for Area B or Potential Pond B	R, ICP-T, ICP-D, N,	Monthly until freeze-up	Currently collected from ditch
JER-SWQ-07	East Sump or Potential Pond C	R, ICP-T, ICP-D, N,	Monthly until freeze-up	Currently collected from East Sump

Note:
1. Detailed analytical parameters are presented in Appendix A.

7.4 Quality Management

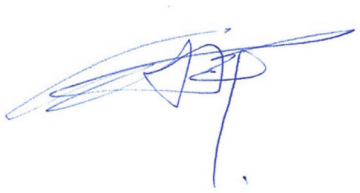
Quality control for the SWQM will follow the same protocols as the SSP described in Section 6.3. If the SWQM and SSP are performed concurrently and by the same field crew, the same field blank, trip blank, and equipment blank samples will be used.

7.5 Data Analysis and Reporting

The interpretation of the SWQM results will include sample variation at each monitoring location using measures of central tendency (range, mean or median, standard deviation). Qualitative and quantitative temporal trenches analysis will also be carried out to evaluate if there is increase of deleterious substance in the inflow water of the PKCA. An annual site water monitoring report will be prepared summarizing the observations, interpretation of the analytical results, and associated conclusions and recommendations. In the case of identifying declining quality of the inflow water to the PKCA, adaptive actions, including constructing additional settling ponds or providing pre-treatment of the inflow water, will be included in the recommendations.

8.0 CLOSURE

EBA, A Tetra Tech Company



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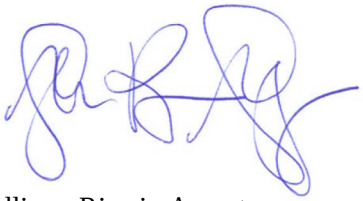

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Allison Rippin Armstrong
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2011 WATER LICENCE RENEWAL DOCUMENTS

Management Plans

EBA, A Tetra Tech Company (EBA), 2011a. Aquatic Effects Monitoring Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

EBA, A Tetra Tech Company (EBA), 2011b. Care and Maintenance Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

EBA, A Tetra Tech Company (EBA), 2011c. Contingency Management Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

EBA, A Tetra Tech Company (EBA), 2011d. General Monitoring Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

EBA, A Tetra Tech Company (EBA), 2011e. Interim Closure and Reclamation Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

EBA, A Tetra Tech Company (EBA), 2011f. Landfarm Management Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

EBA, A Tetra Tech Company (EBA), 2011g. Landfill Management Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

EBA, A Tetra Tech Company (EBA), 2011h. Processed Kimberlite Management Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

EBA, A Tetra Tech Company (EBA), 2011i. Site Water Management Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

EBA, A Tetra Tech Company (EBA), 2011j. Waste Management Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

EBA, A Tetra Tech Company (EBA), 2011k. Waste Rock Management Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

EBA, A Tetra Tech Company (EBA), 2011l. Wastewater Treatment Management Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

Design Reports

EBA, A Tetra Tech Company (EBA), 2011m. C1 Diversion Construction Summary, Jericho Diamond Mine, Nunavut. Prepared for Tahera Diamond Corporation, February 2011.

EBA, A Tetra Tech Company (EBA), 2011n. Geotechnical Design Report – Set 3 Tank Farm of Fuel Storage Facilities, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

EBA, A Tetra Tech Company (EBA), 2011o. Preliminary Landfarm Design Plan, Jericho Diamond Mine, Nunavut. Prepared for Shear Diamonds Ltd., February 2011.

FIGURES

APPENDIX A

APPENDIX A WEEKLY GEOTECHNICAL MONITORING FORM

APPENDIX B

APPENDIX B LABORATORY ANALYTICAL PARAMETERS