WATER QUALITY MODEL
KUDZ ZE KAYAH PROJECT

BMC-17-02-1105_KZK WQ Model_Rev0_09Oct2018

October 9, 2018

Prepared for:

BMC Minerals (No. 1) Ltd.

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EXECUTIVE SUMMARY

A water quality model has been developed for the Kudz Ze Kayah (KZK) Project (the Project) to estimate the water quality in mine discharge and receiving environment waters and to help guide water management for the Project with respect to water quality. The model incorporates data from groundwater and surface water quality baseline monitoring, meteorological studies, site water balance data, hydrogeological modeling, and laboratory and field-based geochemical testing of trace element leaching from site material. Water quality modelling was performed on a monthly time step through the Construction, Operations, and Closure phases of the Project to estimate seasonal variation. Additionally, three different precipitation scenarios were run to undertake a sensitivity analysis in several important years (at least one year in each phase) throughout the Project:

- Mean Annual precipitation (i.e., an "average" year);
- One in 50 (1/50) wet year; and
- One in ten (1/10) dry year.

The Project is currently undergoing a Screening Assessment by the Yukon Environmental and Socio-economic Assessment Board's (YESAB) Executive Committee, under the *Yukon Environmental and Socio-economic Assessment Act.* As part of this Assessment, YESAB requested in IR3-1 that BMC update the water balance and water quality models, prior to YESAB preparing the draft Screening Report (YESAB, 2018). Subsequently, this Water Quality Model report is an update to the Kudz Ze Kayah Water Quality Model Report (Alexco Environmental Group Inc. (AEG), 2017a) that was submitted as Appendix D-7 of the Project Proposal (BMC, 2017a). This updated water quality model report includes:

- The most recent site and receiving environment water balance (Knight Piesold Ltd. (KP), 2018);
- Updated source terms for Constituents of Potential Interest (COPIs) based on laboratory kinetic testing reported to April 2018 (Alexco Environmental Group Inc. (AEG), 2018a);
- Additional kinetic tests initiated after the original water quality model report was issued (AEG, 2018a);
- The most recent assumptions for long term loadings including acidic drainage from the Class A and Class B materials (AEG, 2018a);
- Water quality predictions for Geona Creek (KZ-37), Upper Finlayson Creek (KZ-15), Lower Finlayson Creek (KZ-26) and South Creek (KZ-13);
- Water quality predictions for all phases of the Project;
- Water quality predictions for Closure with and without Constructed Wetland Treatment Systems (CWTS) for Geona Creek (KZ-37), Upper Finlayson Creek (KZ-15), and Lower Finlayson Creek (KZ-26);

- Most recent baseline surface water quality results (up to March 2018; AEG, 2018b) and groundwater quality baseline results (up to November 2017; AEG, 2018c); and

- Comparison of water quality predictions to most recent pWQOs (AEG, 2018d).

Results from the water quality model were used to assess the requirement for and the selection of mitigations for the Project to meet closure objectives. Project mitigations that are incorporated in the model include:

- Very low permeability covers for Class A and B Storage Facilities and a growth medium cover for the Class C Storage Facility to reduce precipitation and runoff infiltration to waste rock and reduce potential contaminant loading to the receiving environment;

- In situ treatment of the ABM Lake;

- CWTS to passively treat surface flow from the ABM Lake; and

- Active treatment of collected drain-down and runoff water from the Class A and B Storage Facilities during the Active Closure and Transition Phases of the Project.

During the Construction phase, COPI concentrations in the Geona and Finlayson Creek receiving environment were estimated to be generally comparable to, or slightly lower than baseline due to the diversion of upstream waters (i.e. Fault Creek) and dilution from discharge of the ABM Open Pit dewatering water for all scenarios. The Fault Creek diversion resulted in increased estimated selenium, cadmium and zinc concentrations in South Creek (KZ-13), but without pWQO exceedances.

During Operations, COPI concentrations in the water management pond (WMP) [modelled as the combined upper WMP (UWMP) and lower WMP (LWMP)] discharge increased throughout the project life, reflecting increases in load contribution from pit wall runoff as the ABM Open Pit is excavated. No water quality parameter concentrations were estimated to exceed their respective pWQO's under any precipitation scenario.

During the Active and Transition Closure phases, COPI concentrations in South Creek (KZ-13) were estimated to return to baseline levels as the Fault Creek diversion is removed, allowing South Creek to revert to its pre-Project flow regime. Elsewhere, COPI concentrations in the Geona and Finlayson Creek receiving environments increased during the Active Closure phases due to drain-down of the Class A and B Storage Facilities; however, water from the drain-down of the facilities will be treated and loading from those facilities were not estimated to cause exceedances in the receiving environment. Nitrite-N marginally exceeded its pWQO for one month in the Active Closure period mean scenario and eight months in the Active Closure period under the dry year scenarios. There was no exceedance in the wet year scenario. Infrequent (one or two months of the year), exceedances of a maximum 1.5 times the copper pWQO were estimated by the model during the Transition Closure phase in Geona Creek in all precipitation scenarios. No COPI exceedances were estimated in Finlayson Creek or South Creek during the Active and Transition Closure phases.

During the Active and Transition Closure phases, flooding of the ABM Open Pit will occur due to the cessation of local groundwater dewatering and the removal of the Fault Creek diversions. It is anticipated that the ABM Open Pit will take 15 years to fill (Year 25) before the ABM Lake overflows into Geona Creek, via the CWTS. Modelling suggests that the ABM Lake will contain elevated concentrations of antimony, arsenic, cadmium, copper, lead, selenium, uranium, and zinc due to solubilisation of the load accumulated on the pit floor and walls; however, in situ treatment of the ABM Lake is anticipated to significantly lower the concentrations of these elements.

Outflow from ABM Lake marks the start of the Post-closure phase, resulting in increases in some COPI concentrations in Geona Creek. No exceedances of any pWQO were estimated in Geona Creek, Finlayson Creek or South Creek during Post-closure in the precipitation scenarios evaluated. The results from the water quality modelling indicate no significant adverse effects are anticipated as all the estimated concentrations were below the environmental assessment high magnitude threshold of two times the pWQO (BMC, 2017b).

LIST OF ACRONYMS

AEG	Alexco Environmental Group Inc.
AK RHY	Ankeritic Rhyolite Geodomain
ARD/ML	Acid Rock Drainage and Metal Leaching
ANFO	Ammonium Nitrate/Fuel Oil
AP	Acid Generation Potential
BCP	Background Concentration Procedure
BCMOE	British Columbia Ministry of Environment
BMC	BMC Minerals (No. 1) Ltd.
BQE	BQE Water
CA CL MAF	Calcite Chloritic Mafic Geodomain
CARB MDS/RHY	Carbonaceous Mudstone/Rhyolite Geodomain
CCME	Canadian Council of Ministers of the Environment
Contango	Contango Strategies Ltd.
COPI	Constituents of Potential Interest
CWTS	Constructed Wetland Treatment System
DOC	Dissolved Organic Carbon
EA	Environmental Assessment
EBA	Tetra Tech EBA Inc.
KP	Knight Piesold Ltd.
KZK	Kudz Ze Kayah
LGO	Low Grade Ore
LWMP	Lower Water Management Pond
masl	Metres above sea level
MAP	Mean Annual Precipitation
MDS	Mudstone Geodomain
Mm^3	Million cubic meters
MU PY RHY	Muscovite Pyrite Rhyolite Geodomain
NH_3	Ammonia
NO_2	Nitrite
NO_3	Nitrate
NP	Neutralization Potential
PAG	Potentially Acid Generating
pWQO	Preliminary Water Quality Objective
PY AK RHY	Pyrite Ankeritic Rhyolite Geodomain
PY CL RHY	Pyrite Chloritic Rhyolite Geodomain
RHY	Rhyolite Geodomain
ROM	Run of Mine
SFE	Shake Flask Extraction
SSWQO	Site Specific Water Quality Objective
UWMP	Upper Water Management Pond

WERP	Water Effects Ratio Procedure
WMP	Water Management Pond
WTP	Water Treatment Plant

GLOSSARY

Acid Rock Drainage: drainage with acidic pH from material having an insufficient capacity to neutralize acidic products of sulphide and elemental sulphur oxidation and dissolution products of acidic minerals.

Ammonium Nitrate/Fuel Oil: a widely used bulk industrial explosive mixture.

Background Concentration Procedure: a method that applies a statistical metric (e.g., 95th percentile) to existing baseline water quality data to develop site-specific water quality objectives.

Circumneutral: nearly neutral, having a pH between 6.5 and 7.5.

Hardness: a term referring to the amount of dissolved calcium and magnesium in water (i.e., hard water has high dissolved calcium and magnesium).

Humidity Cell: a kinetic test used to determine the rates of acid generation and neutralization of geological material. Humidity cell tests involve aerobic weathering conditions and excess drainage in order to fully dissolve soluble weathering products. Standard methodology uses a 1 kg crushed rock sample exposed to 3 days of humid air followed by 3 days of dry air. On the 7th day, the material is flushed and the leachate chemistry is determined. Results from humidity cell tests are often used to calculate reaction rates and used in the development of source terms.

Kinetic Test: a procedure used to analyze dynamic physical and chemical processes of materials over time, including reaction rates, mineral alteration and drainage chemistry and loading resulting from the interaction between water and mine material. Kinetic tests are most often performed in controlled laboratory settings where environmental conditions are simplified (e.g., trickle leach columns and humidity cells) but can also be conducted at study sites under conditions that would be encountered in the field (e.g., field bin leaching tests).

Metal Leaching: extraction of soluble metals by solvents. Leaching can be natural or induced in a laboratory procedure.

Meteoric: relating to or denoting water derived from the atmosphere by precipitation or condensation.

Neutralization Potential: the total acid a material is capable of neutralizing. Measurements of NP are used in acid base accounting calculations to estimate future drainage pH and the potential for acidic drainage pH.

Shake Flask Extraction: a static test procedure designed to measure the mass of soluble constituents of a material. The standard procedure involves a 3:1 solution to solids ratio, agitated for 24 hours; however, variations of this test can be employed.

Source Terms: the release rates or leachate concentrations of constituents predicted to be present in water following the contact with particular geological materials under site specific conditions.

Trickle Leach Column: a kinetic test often conducted in a laboratory that is designed to measure the drainage chemistry of water percolated through a column of geological material. Leach column tests attempt to simulate the weathering, leaching and mineral precipitation and dissolution that occur in field conditions and the results of these tests are often used in the development of predictive source terms.

Water Effects Ratio Procedure: a tool to modify generic water quality guidelines based on site-specific water quality characteristics. Toxicity tests are performed with an indicator or resident species using both laboratory water and site water. The results determine the water effects ratio, which is the ratio of constituent toxicity in site water compared to that in laboratory water. The calculated water effects ratio is then used to directly convert the generic water quality guideline to a site-specific water quality objective.

Water Management Pond: the combined water management area between the Upper Water Management Pond and Lower Water Management Pond used for purposes of the water quality model.

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1. INTRODUCTION

The Kudz Ze Kayah (KZK) Project (the Project) is a proposed base metal mine located approximately 110 km southeast of Ross River, Yukon territory. The Project comprises the development of the ABM Deposit, composed of ABM Zone and Krakatoa Zone, which will be mined predominantly via open pit along with some underground workings to access a portion of the Deposit not mined by open pit methods. The Project is currently undergoing a Screening Assessment by the Yukon Environmental and Socio-economic Assessment Board's (YESAB) Executive Committee, under the *Yukon Environmental and Socio-economic Assessment Act.* As part of this Assessment, YESAB requested in IR3-1 that BMC update the water balance and water quality models, prior to YESAB preparing the draft Screening Report (YESAB, 2018). Subsequently, this Water Quality Model report is an update to the Kudz Ze Kayah Water Quality Model Report (Alexco Environmental Group Inc. (AEG), 2017a) that was submitted as Appendix D-7 of the Project Proposal (BMC, 2017a). This updated water quality model report includes:

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- Comparison of water quality predictions to most recent pWQOs (AEG, 2018d).

It is projected that approximately 139 Mt of waste rock and overburden will be generated throughout the mine life. Approximately 15.5 Mt of tailings are expected to be generated from ore processing. The waste rock, overburden and tailings will be placed in separate storage facilities depending on acid rock drainage and metal leaching (ARD/ML) potential. The filtered tailings will be placed in the Class A Storage Facility

along with strongly potentially acid generating (PAG) waste rock with an associated high potential for metal leaching. Such material will be managed accordingly during Operations and a low permeability engineered cover will be placed over this material at closure. Results from geochemical characterization of material from the KZK property showed that the time until the onset of acid drainage from the strongly PAG waste rock and tailings in the Class A Storage Facility was likely on the order of several years; however, leaching of certain trace element at circumneutral pH is predicted, particularly for selenium, antimony, uranium and arsenic (AEG, 2018a), and will require monitoring and controls to meet water quality objectives. The Class B Storage Facility will host rock that is mildly PAG with a potential for metal leaching that is lower than Class A material. The Class C Storage facility will contain rock that is non-PAG and has a low potential for trace element leaching. Further details regarding the classification of the Class A, B, and C waste materials is provided in Section 2.1.1 and AEG (2018a).

Diversion ditches will be constructed to divert clean water away from the Project footprint, including the diversion of Fault Creek into South Creek. During Construction, water from pit dewatering will be pumped to the Pit Rim Pond to promote settlement of suspended solids. The water will then be discharged to Geona Creek if it meets Water Quality Objectives or will be further treated prior to discharge.

The water quality model incorporates pertinent geochemical and hydrological data and predictions to estimate water chemistry throughout the Project life for key mine components and locations. Such information will inform mine management and help minimize the impact of mining activities on the receiving environment.

It must be emphasized that this predictive modelling can only estimate a range of concentrations and, in some cases, relative changes in concentrations or loadings. The water quality modelling is attempting to simulate a range of complex natural process that have inherent variability. This modelling is used to understand the potential range of controls that are needed to safely meet the water quality and closure objectives. The modelling will then help characterize the monitoring program for Operations and Post-closure that will inform future modelling and required environmental controls. Additionally, the results of the model do not represent an impact assessment for the receiving environment. An aquatic impact assessment has been completed by AEG and is presented in Chapter 10 of the Project Proposal (BMC, 2017a). The results of this water quality model report show that the significance determination remains the same and no significant adverse impacts are expected from the Project.

This report is structured as follows:

- Project components that supply geochemical load to the receiving environment are presented in Section 2.
- The development of source terms that describe the mass loading for these components is discussed in Section 3.

- An overview of the water quality model is presented in Section 4, with more detailed discussion of the modelling associated with the Water Management Ponds (WMP) and ABM Lake presented in Sections 5 and 6, respectively.

- Finally, the sources of loading to the receiving environment and the modelling of the receiving environment waters are presented in Sections 7 and 8, respectively.

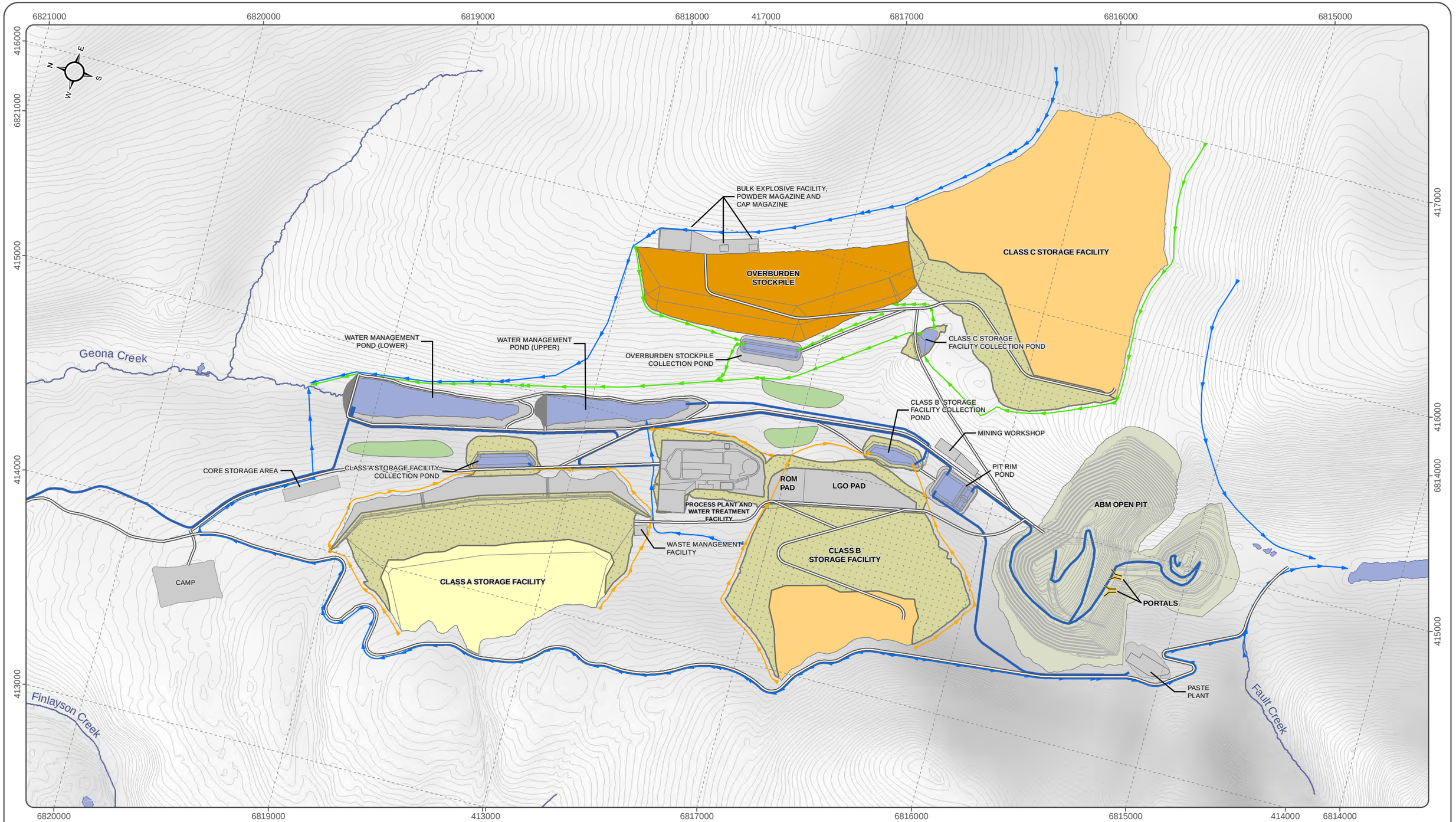
2. MINE SITE COMPONENTS

The following sections briefly describe the main proposed mine components for the Project and their relevance to water management and water quality modelling. Additional information related to the Project mine site components and the Project design and operations is available in Chapter 4 of the Project Proposal (BMC, 2017a). Figure 2-1 shows the site layout and the main components of the Project.

2.1 PROJECT COMPONENTS

The proposed Project components pertaining to the discussion of water management and water quality in this document include:

- Class A Storage Facility, Collection Pond and Seepage;
- Class B Storage Facility, Collection Pond and Seepage;
- Class C Storage Facility and Sediment Pond;
- Process Plant Facility including run of mine (ROM) and low-grade ore (LGO) stockpiles, sumps and seepage;
- Overburden Stockpile and Sediment Pond;
- ABM Open Pit and Pit Rim Pond;
- Water Treatment Plant (WTP);
- Upper and Lower Water Management Ponds (UWMP and LWMP, respectively; often considered collectively as WMP);
- North and South Constructed Wetland Treatment Systems (CWTS); and
- Various water diversions and ditches including Fault Creek and south diversion channels and the Upper Diversion and East Diversion Channels.



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Datum: NAD 83; Map Projection: UTM Zone 8N

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AEG

1:17,000 (when printed on 11 x17 inch paper)

Metres
0 250 500 750

- Class A Storage Facility
- Class B and C Storage Facility
- Overburden Stockpile
- Topsoil Stockpile
- Progressive Reclamation
- Pond/Water
- Non Contact Diversion Ditch
- Contact Class A & B Diversion Ditch
- Contact Class C Diversion Ditch
- Pipeline
- Proposed Mine Road

BMC MINERALS

KUDZ ZE KAYAH PROJECT

FIGURE 2-1
PROJECT MINE SITE LAYOUT (YEAR 10)

SEPTEMBER 2018

D:\Project\AllProjects\Kudz_Ze_Kayah\Maps\01_Overview\03-SpecificTopics\Project_Development\Year_10_20180926.mxd (*Last edited by: amatlashevska;26/09/2018/13:20 PM*)

2.1.1 CLASS A, B AND C STORAGE FACILITIES

Waste rock will be sorted into three categories during mining operations and stored in one of the following facilities:

- Class A Storage Facility, which will host rock that is strongly PAG and has an associated potential for elevated trace element leaching;
- Class B Storage Facility, which will house mildly PAG rock that has a lower susceptibility to trace element leaching; and
- Class C Storage Facility, which will host non-PAG rock with a low potential for trace element leaching.

Geochemical classification criteria were developed based on the results from the static and kinetic testing programs. Waste rock is deemed strongly potentially acid generating (i.e., Class A) if it has high sulphide content (>2.9 wt.% total sulphur) with little neutralization capacity or has a very low neutralization potential (<10 kg $CaCO_3$/t) that may result in the development of acidic drainage during Operations.

Process tailings will also be stored in the Class A Storage Facility and co-disposed with the Class A waste rock. A total of approximately 11.6 Mt of Class A waste rock will be stored in the Class A Storage Facility amounting to a total volume of approximately 5.8 Mm^3, assuming a broken rock density of 2.0 t/m^3. The Class A Storage Facility will also contain approximately 15.5 Mt or an approximate volume of 7.2 Mm^3 of filtered tailings, assuming a bulk tailings density of 2.1 t/m^3. Contact water from the Class A Storage Facility that is collected in the Class A Storage Facility collection pond during operations and in the seepage collection system during Active and Transitional Closure will be directed to the WTP. At Closure, a very low permeability engineered cover will be constructed on the Class A Facility to decrease water contact with Class A material. A small proportion of Class A contact water is assumed to seep through the liner due to assumed defects and eventually flow to Geona Creek (Appendix F of KP, 2018).

Approximately 47.2 Mt of Class B waste rock will be stored in the Class B Facility amounting to a volume of approximately 24 Mm^3, assuming a broken rock density of 2.0 t/m^3. Class B waste rock is identified as rock that has a neutralization potential ratio (NPR) less than 1.9 and does not meet the Class A criteria. Regardless of its NPR, all the calcite-chlorite mafic (CA CL MAF) geodomain material is categorized as Class B owing to its propensity to leach arsenic (AEG, 2018a). Contact water from the Class B Storage Facility that is collected in the Class B collection pond during Operations and in seepage collection system during Active and Transitional Closure will be directed to the WTP. At Closure, a very low permeability engineered cover will be constructed on the Class B Storage Facility to decrease water contact with Class B material. A small proportion of Class B contact water is assumed to seep through the liner due to assumed defects and eventually flow to Geona Creek (Appendix F of KP, 2018).

Approximately 63.8 Mt of Class C waste rock will be stored in the Class C Storage Facility amounting to a volume of approximately 32 Mm^3, assuming a broken rock density of 2.0 t/m^3. Waste rock that has an NPR greater than 1.9 is defined as Class C material. Based on the kinetic testing program, the long-term water quality from the Class C runoff and seepage is predicted to be acceptable for discharge to the environment without treatment (AEG, 2018a). A growth medium cover will be placed on the Class C Storage Facility to allow revegetation.

2.1.2 PROCESS PLANT FACILITY

The Process Plant and associated service facilities will process ROM ore at a nominal rate of 2 Mtpa, to produce separate copper, lead and zinc concentrates and tailings. The design availability of the plant is nominally 93% (after ramp-up) with an allowance for standby equipment in most areas to achieve this availability. The process consists of: Crushing and grinding of the ore; separate sequential pre-float; rougher and cleaner flotation of copper, lead and zinc; and regrind of copper, lead and zinc rougher concentrates. Concentrates will be thickened, filtered and stockpiled on site prior to being loaded onto trucks for transport to third party smelters. The flotation tailings will be dewatered by thickening and pressure filtration before the tailings are transported either for disposal at the Class A Storage Facility or combined with cement to produce backfill paste for the underground mine. The Process Plant includes a ROM and LGO stockpile with runoff collected and conveyed to the Processing Plant Facility for use in the Process Plant or treated in the WTP. A small volume of LGO/ROM contact water is assumed to seep directly to the receiving environment in Geona Creek. There is no direct discharge of the Process Plant water as it will require a constant feed of fresh water to replace the water lost in the concentrate and tailings.

2.1.3 OVERBURDEN STOCKPILE

The total tonnage of overburden material excavated from the ABM Open Pit area is approximately 16.1 Mt and will be stored in a temporary facility sized for a storage volume of 8 Mm^3. Based on geochemical testing of overburden material, water quality of overburden contact water is predicted to be acceptable to flow to the receiving environment without the need treatment (AEG, 2018a). During Operations, the overburden stockpile will be incrementally decommissioned as material is used for progressive reclamation including the construction of covers for the Class A, B and C Storage Facilities. The area will be revegetated at closure.

2.1.4 ABM OPEN PIT

The majority of the ABM Deposit will be mined by open pit mining methods. Open pit mining is planned to be completed over a period of approximately 10 years. Mining of the ABM Open Pit will generate approximately 139 Mt of waste rock and overburden material. The final planar area of the open pit will be approximately 1.14 km^2. Dewatering of the pit will commence in the Construction phase and continue throughout the Operations phase. Dewatering will discharge first to a settlement pond (Pit Rim Pond);

during Operations, water will be conveyed from the Pit Rim Pond to the WTP. Upon cessation of Operations, dewatering will be discontinued, and the pit will be allowed to fill naturally to a water elevation of approximately 1,380 metres above sea level (masl). At the final water elevation, approximately 0.70 km^2 of the pit planar area will be submerged and 0.44 km^2 will be open to air with a total water storage volume of approximately 34.4 Mm^3.

2.1.5 WATER TREATMENT PLANT

The water treatment plant (WTP) will be constructed at the Process Plant Facility to treat:

- Class A contact water from the Class A Storage Facility collection pond;
- Class B contact water from the Class B Storage Facility collection pond;
- Pit dewatering water from the Pit Rim Pond;
- Runoff from the Process Plant Facility site collected in the perimeter sumps, including LGO and ROM contact water;
- Other contact water as required; and
- Process water from time to time as required.

During Active and Transitional Closure, the WTP will treat drain-down water from the Class A and B seepage collection systems and any surplus water from the LGO and ROM sump.

The treatment will consist of pH adjustment, clarification, and any other processes that may be required to bring the water to a suitable standard for discharge to the environment. Additionally, a second stage process will be added to treat selenium and provide polishing for other constituents. The treated water will be discharged to the LWMP for final polishing before discharge to the receiving environment or may be used in the processing circuit. Further information on the WTP specifications and performance is provided in BQE Water (BQE), 2018.

2.1.6 WATER MANAGEMENT POND

An Upper and Lower WMP (UWMP and LWMP) with a combined capacity of 750,000 m^3 will be constructed to store and manage site water during Operations including treated discharge from the WTP (see Section 5.2.1.11 for WTP influent) and diverted and nondiverted runoff. Water will be conveyed from the UWMP to the LWMP, with discharge of water to the receiving environment controlled at the LWMP. For modelling purposes, the UWMP and LWMP were treated as a single WMP receiving the sum of loading and water sources.

2.1.7 CONSTRUCTED WETLAND TREATMENT SYSTEM

A constructed wetland treatment system was chosen for passive treatment at Closure because the goal of final mine site Closure is to ensure long-term physical and geochemical stability and to eliminate reliance on long-term active treatment. To meet the requirements for water treatment with minimal intervention, the selected passive treatment wetland design requires no operational management, and only minimal periodic maintenance, which could be performed without the use of machinery. Based on these guiding objectives, the selected configuration at the Project has been designed by Contango Strategies Limited (Contango) and is a horizontal surface flow treatment wetland (Contango, 2017).

2.1.8 WATER DIVERSIONS AND DITCHES

Diverting clean water around the Project infrastructure is one of the main objectives of the Project's surface water management plan. Reducing the volume of contact water requiring management and treatment is critical to the success of the water management strategy for the Project. The Project includes three major diversions (Figure 2-1). The Fault Creek and associated South Diversion Channel will re-route water that would otherwise flow into the ABM Open Pit and will divert it into South Creek. The northwestern diversion ("Upper Access Road and Diversion Channel") will route water above the Class A Storage Facility and the Class B Storage Facility past the LWMP into Geona Creek. The northeastern diversion ("East Diversion Channel") will redirect water above the Class C Storage Facility and Overburden Stockpile. The runoff from the Class C Storage Facility and Overburden Stockpile will also enter the northeastern diversion, which will be directed into Geona Creek below the Lower Water Management Pond. Further details on the diversion channel design and performance are provided in the Life of Mine Water Balance Model Report (KP, 2018).

2.2 PROJECT WATER MANAGEMENT PHASES

The Project is divided into five main water management phases as presented in Table 2-1. The "Project Year" for each water management phase is relative to the beginning of milling ore. The information pertinent to water modelling in each water management phase is summarized in the following sections.

Table 2-1: KZK Project Water Management Phases

Water Management Phase	Document Nomenclature	Project Year
Construction Water Management	Construction	-2 to -1
Operations Water Management	Operations	1 to 10
Active Closure Phase	Active Closure	10 to 13
Transitional Closure Phase	Transition Closure	13 to 25
Post-closure Phase	Post-closure	26 and beyond

2.2.1 CONSTRUCTION WATER MANAGEMENT PHASE (YEAR -2 TO YEAR -1)

The Construction phase will include dewatering of the ABM Open Pit and the start of Open Pit excavation. Dewatering pump rates were provided in the Hydrogeological Model Report (Tetra Tech EBA Inc.; EBA, 2018). The overburden dewatering design incorporates a series of trenches and sumps which will be used to collect water for pumping to the Pit Rim Pond for sediment settlement. Clear water (monthly mean of total suspended solids (TSS) <15 mg/L) will then be pumped downstream to Geona Creek for discharge to the environment or treated if required.

The following water management components will be established in the Construction phase:

- Diversion ditches to restrict runoff to the Project site (directing runoff to the north and south of the site) and divert Fault Creek into South Creek;
- Construction of the water treatment plant (WTP); and
- Construction of the Pit Rim Pond and Upper and Lower Water Management Ponds.

Stockpiling of Class A, B and C waste and overburden will also commence in the Construction phase. During this phase, Class A and B Facility contact water will go into their respective collection ponds (allowing for settlement of sediments), then into the environment as the quantities of Class A and B waste present are not expected to result in water of a quality that requires treatment.

2.2.2 OPERATIONS WATER MANAGEMENT PHASE (YEAR 1 TO YEAR 10)

The Operations phase will consist of the development of the ABM Open Pit, underground workings, and milling of ore. Waste rock and tailings will be placed according to the waste rock management plan in the Class A, B and C Facilities. Water collected in the Class A and Class B Storage Facility collection ponds will be directed to the WTP. Surplus water from the Process Plant and LGO and ROM sumps will also be conveyed to the WTP. ABM Open Pit dewatering will be pumped to the WTP via the Pit Rim Pond. The LWMP will store and control discharge of site water to the receiving environment.

Water from the Class C Storage Facility and Overburden Stockpile sediment ponds will be conveyed via ditches, bypassing the WMPs, to the receiving environment (Geona Creek at KZ-9).

Diversions will be in place to reduce the flow of runoff water to the Project site. These diversions will include a diversion to direct Fault Creek into South Creek. Ditches will collect and direct runoff to the south of the site into South Creek and north of the site to Geona Creek.

2.2.3 ACTIVE CLOSURE WATER MANAGEMENT PHASE

The Active Closure phase is the three-year period immediately following cessation of Operations, during which most consequential decommissioning and reclamation work will be completed. Mining equipment will be removed, most infrastructure decommissioned, and the Fault Creek diversion removed to allow Fault Creek to return to its pre-mining channel and begin filling the ABM Open Pit. ABM Open Pit lime

water treatment will begin in year 11, if required, and continue through the Transition Closure phase as needed.

Most major reclamation earthworks will be completed during this phase. The portions of the Class A and B Storage Facilities not reclaimed progressively during Operations will have their reclamation completed, with the low permeability cover placement being finalized. The camp will be partially decommissioned. All operational water treatment and management systems (i.e., seepage collection and conveyance) are retained and functional, and monitoring and inspection regimens will remain in place, unchanged from the Operations phase. Drain-down water and runoff from the Class A and B Storage Facilities captured in seepage collection systems and LGO/ROM sump water will constitute the feed to the WTP during this phase.

2.2.4 TRANSITION CLOSURE PHASE

This phase is a 12-year period during which the ABM Open Pit continues to fill, ending when the ABM Lake begins to overflow to Geona Creek. ABM Lake water treatment will continue with addition of lime, and carbon sources will also begin to be added. The wetland treatment systems will be constructed and commissioned at the start of this phase. The operational water management systems will continue to treat drain-down water from the Class A and B Storage Facilities until water is no longer collected in seepage collection systems and/or treatment is no longer required to meet water quality objectives (WQO) in the receiving environment. If treatment is not required in this phase, the WTP will remain operational as a contingency.

2.2.5 POST-CLOSURE PHASE

The Post-closure phase commences with the over-spilling of ABM Lake water into Geona Creek, and it is currently planned to be a 10-year period of primarily monitoring and maintenance. It is expected that a year or two may be required to ensure that the passive water treatment systems are achieving performance expectations with the new water contribution from ABM Lake. Once these objectives and performance criteria are achieved, the active water treatment plant and remaining infrastructure will be demobilized/decommissioned, and site water management will be passive in nature.

3. SOURCE TERM DEVELOPMENT

3.1 BACKGROUND AND OVERVIEW

Prediction of the geochemistry of water which has contacted mine components was completed by developing "source terms"; the release rates or leachate concentrations of constituents predicted to be present in water following contact with particular geological materials under site specific conditions. Source terms for the Project were developed using:

1) the results from kinetic testing conducted on material from the Project;

2) factors that scale lab testing results to field-scale applications based on anticipated conditions; and

3) geochemical modelling of secondary mineral controls that limit concentrations of certain elements in drainage waters.

The chemistry of mine contact water is dependent on multiple physical, lithological and environmental factors that need to be considered and incorporated in the transformation of laboratory data to the field. These factors include:

1) particle size of the geological material;

2) the degree of hydraulic contact to geological materials and flushing of contact water; and

3) temperature effects on rates of weathering reactions.

The approach and methodology used in developing scaling factors is discussed in detail in the subsequent sections.

3.2 MODEL APPROACH

The results of the kinetic testing program carried out by AEG (2018a) were the basis for source terms. The kinetic testing program consisted of trickle leach columns, humidity cells, and field barrel leach experiments and are discussed in detail in the acid rock drainage and metal leaching (ARD/ML) characterization report (AEG, 2018a). Dissolved leachate concentrations from these tests were converted into geochemical loads ($mg/kg_{rock}/wk$) by multiplying each analyzed constituent concentration (in mg/L) with the output leachate volume collected at the end of a weekly cycle (in L/wk) and dividing by the total mass of material used in the experiment (i.e., 1 kg in a standard humidity cell, approximately 27 kg in a trickle leach column and approximately 260 kg in a field bin).

3.2.1 WASTE ROCK, TAILINGS AND PIT WALL MATERIAL

Trickle leach column and humidity cell kinetic test results were used to predict drainage from the storage facilities managing waste rock, tailings and pit wall materials. Waste rock and tailings generated from the Project will be categorized into three classes based on the potential for acid generation and trace element leaching:

- The Class A Storage Facility will contain material that is strongly potentially acid generating (PAG) with an associated high potential for metal leaching;
- The Class B Storage Facility will contain material that is mildly PAG with a more moderate potential for metal leaching; and
- The Class C Storage Facility is non-PAG and has a low potential for metal leaching.

Trickle leach and humidity cells were grouped to represent the various waste rock and tailings materials expected to be stored and exposed to weathering in the three storage facilities. A summary of the tests, the waste classification assignment and the predominant geodomain in each test is presented in Table 3-1. A detailed description of the kinetic testing program including sample selection, solid-phase characteristics, waste rock classification rationale, and descriptions of geodomains is provided in the acid rock drainage and metal leaching (ARD/ML) characterization report (AEG, 2018a).

Table 3-1: Summary of Kinetic Tests Used for Waste Rock Drainage Predictions

Column ID	Waste Rock Classification	Predominant Geodomain
C-1	B/C	Ankerite Rhyolite (Volcaniclastic) (AK RHYv)
C-2	C	Pyrite Ankerite Rhyolite (Volcaniclastic) (PY AK RHYv) Pyrite Ankerite Rhyolite (Coherent) (PY AK RHYc)
C-3	B/C	Muscovite Pyrite Rhyolite (MU PY RHY)
C-4	B/C	Carbonaceous Mudstone/Rhyolite (CARB MDS/RHY)
C-5	B	PY AK RHYv
C-6	C	Mixture
C-7	A	CARB MDS/RHY, Pyrite Chloritic Rhyolite (PY CL RHY)
C-8	B/C	Rhyolite (intrusive) (RHYi)
C-9	B/C	Mudstone (MDS)
C-10	A	Mixture of Class A Waste Rock and Tailings
C-11	B	CA CL MAF
HC-1	B	PY AK RHYv
HC-2	B	CARB MDS/RHY
HC-3	A	Tailings
HC-4	A	NP-depleted Mixture of Class A Waste Rock and Tailings
HC-5	B	NP-depleted Mixture of Class B Waste Rock

Kinetic testing is still ongoing at the time of writing. Kinetic testing of waste rock and tailings material for the Project suggested that the time to acid generations is several (Class A) to tens (Class B) of years. As such, NP-depleted tests HC-4 (composed of Class A waste rock and tailings) and HC-5 (mixture of Class B material) were commissioned to observe the release of COPIs after the onset of acidic drainage conditions.

Loading rates were developed for the drainage from each of the storage facilities based on the results of the kinetic tests and the proportions of each geodomain that comprise each facility. A summary of the approximate geodomain composition of waste rock storage facilities is presented in Table 3-2.

Multiple sets of source terms were developed to predict neutral and acidic waste rock drainage chemistry throughout the course of the Project. The median of the complete data set for each kinetic test was used as the basis for developing source terms during Operations and Active Closure (Years 1 through 13). The median of the last 20 weeks of kinetic test loading rates was used as the basis for the development of source terms for the Transition Closure and Post-closure phases (Years 14 through 36), as steady state conditions have generally been reached. At the time of writing, only 34 weeks of data had been collected from HC-4 and HC-5 humidity cells; thus, the median of the last 10 weeks were used for development of source terms for the Transition Closure and Post-closure phases. The loading rates of select parameters from the kinetic tests used in developing the operational and closure source terms are shown in Table 3-3 and Table 3-4, respectively.

From the interpretation of kinetic test data in the ML/ARD characterization report, it was conservatively estimated that the time to acid onset for Class A waste rock and tailings would be 6 years after placement and that the drainage from the Class B storage facility would become acidic after 30 years (AEG, 2018a).

A similar approach was utilized to estimate constituent mass loading rates from the ABM Open Pit wall material. Source terms based on kinetic tests data (in mg/kg/wk) from the ARD/ML characterization report (AEG, 2018a) were selected to represent each geodomain exposed on the pit wall and adapted to provide per-planar area loading rates (in $mg/m^2/month$). The limited massive sulphide and sulphide stockwork exposure on the pit wall was modelled using humidity cell data (II-22) from Cominco (1996). A conservative approach was adopted in developing pit wall runoff source terms where the 75^{th} percentile of each kinetic test was used based on the assumption that a relatively high loading rate will be produced from pit wall rock freshly exposed to atmospheric oxygen during the Operations, Active Closure, and Transition Closure phases. Following the establishment of ABM Lake, the more moderate “steady state” (average of the last two months of kinetic data) was used for the Post-closure phase. Further details regarding the ABM Open Pit wall contributions can be found in Sections 5.2.1.3 and 6.2.1.4.

Table 3-2: Approximate Geodomain Composition of Waste Rock for the Class A, B, and C Storage Facilities

Geodomain	Kinetic Test [a]	Mass (tonnes)			Percent Distribution (by weight)		
		Class A	Class B	Class C	Class A	Class B	Class C
Ankerite Rhyolite (Coherent) (AK RHYc)	-	-	-	1,282,000	0%	0%	2%
AK RHYv	C-1	-	8,048,000	21,793,000	0%	17%	34%
Calcite Chloritic Mafic (CA CL MAF)	C-11	-	8,522,000	-	0%	18%	0%
CARB MDS/RHY	C-4	2,442,000	4,261,000	3,205,000	21%	9%	5%
MU PY RHY	C-3	3,140,000	4,734,000	4,487,000	27%	10%	7%
PY AK RHYc	C-5, C-2	814,000	4,261,000	4,487,000	7%	9%	7%
PY AK RHYv	C-5, C-2	1,744,000	14,675,000	17,305,000	15%	31%	27%
PY CL RHY	-	2,093,000	947,000	1,282,000	18%	2%	2%
RHYi	C-8	1,047,000	947,000	641,000	9%	2%	1%
MDS	C-9	349,000	947,000	10,256,000	3%	2%	16%
Total		11,629,000	47,342,000	64,738,000	100%	100%	100%

[a] Class A neutral drainage chemistry is based on column C-10 containing mixture of Class A rock and tailings; For Class B drainage, column C-5 release rate data were used for PY AK RHYv and PY AK RHYc; For Class C drainage, column C-2 release rate data were used for PY AK RHYv and PY AK RHYc.

Table 3-3: Loading Rates from the Kinetic Tests used in the Development of Source Terms for the Operations and Active Closure Phases (Years 1 through 13) – Median Data from Entire Data Sets

Column ID	pH	Alkalinity	Sulphate	Hardness ($CaCO_3$)	Al	Sb	As	Cd	Ca	Co	Cu	Fe	Pb	Mg	Mn	Ni	Se	Th	U	Zn
		mg $CaCO_3$/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
C-1	7.7	2.0	1.5	3.5	0.0015	0.000018	0.000012	0.00000040	0.85	0.0000077	0.000025	0.000073	0.0000018	0.33	0.00095	0.0000033	0.000026	0.00000040	0.00052	0.000036
C-2	7.6	1.8	1.9	3.5	0.0016	0.00010	0.0000029	0.00000052	0.90	0.0000031	0.000021	0.000072	0.0000018	0.31	0.00170	0.0000033	0.000029	0.00000054	0.00042	0.000036
C-3	7.5	1.5	1.4	2.8	0.00076	0.00049	0.000012	0.0000072	0.78	0.0000053	0.000026	0.000072	0.000035	0.20	0.0020	0.0000059	0.00017	0.000011	0.0015	0.00043
C-4	7.4	1.1	3.5	4.3	0.00033	0.00039	0.0000093	0.000012	1.1	0.000015	0.000025	0.000073	0.000011	0.40	0.0043	0.000097	0.00055	0.0000086	0.00017	0.0011
C-5	7.6	1.5	4.6	5.6	0.00080	0.000087	0.0000040	0.0000025	1.5	0.000012	0.000033	0.000072	0.0000049	0.48	0.0035	0.000010	0.00015	0.00000088	0.00024	0.00022
C-6	7.6	1.7	1.8	3.3	0.0012	0.00040	0.000014	0.0000038	0.89	0.0000073	0.000026	0.000073	0.000011	0.27	0.0019	0.0000066	0.00020	0.0000044	0.0013	0.00029
C-7	6.0	0.1	4.3	4.0	0.00037	0.00019	0.00038	0.00066	0.97	0.00033	0.0012	0.0026	0.0041	0.34	0.039	0.0013	0.00070	0.000020	0.00020	0.057
C-8	7.5	1.1	1.1	2.1	0.0011	0.00022	0.0022	0.0000063	0.61	0.0000030	0.000025	0.000072	0.000025	0.14	0.0018	0.0000076	0.000033	0.0000030	0.00072	0.00048
C-9	7.6	1.8	3.7	5.3	0.00036	0.000034	0.000092	0.00000076	1.3	0.000027	0.000015	0.000071	0.0000020	0.51	0.000037	0.000099	0.000057	0.00000046	0.00029	0.000076
C-10	7.7	8.1	29	38	0.000036	0.00026	0.00019	0.00033	13.3	0.00083	0.00012	0.00022	0.00017	1.0	0.11	0.0050	0.0012	0.00056	0.00022	0.098
C-11	7.4	1.0	0.2	1.0	0.0013	0.00054	0.0035	0.00000036	0.29	0.0000070	0.000022	0.00014	0.0000018	0.059	0.00021	0.000022	0.000023	0.0000019	0.00012	0.000043
HC-1	7.3	10.9	20	30	0.017	0.00066	0.000046	0.0000091	8.1	0.000041	0.00024	0.00095	0.000042	2.5	0.018	0.000037	0.0010	0.0000064	0.00089	0.00093
HC-2	6.8	4.3	12	16	0.0025	0.00095	0.000055	0.000050	3.5	0.000033	0.00035	0.0010	0.00012	1.8	0.017	0.000065	0.00065	0.000027	0.00026	0.013
HC-3	7.4	16.9	327	354	0.00050	0.0011	0.00028	0.0056	98	0.0043	0.00066	0.0010	0.00083	25	0.49	0.0072	0.078	0.0065	0.00017	0.23
HC-4	3.5	0.3	680	530	0.97	0.0032	0.087	0.12	182	0.086	7.4	40	0.0040	21	2.3	0.081	0.14	0.0022	0.0013	17
HC-5	7.3	10.3	493	500	0.00075	0.023	0.017	0.00011	200	0.015	0.00076	0.0048	0.00013	0.22	0.11	0.031	0.00071	0.00025	0.00011	0.0091

Table 3-4: Loading Rates from Kinetic Tests Used in the Development of Source Terms for the Transition Closure and Post-closure Phases (years 14 through 36) – Average of the Last Two Months of Kinetic Data

Column ID	pH	Alkalinity	Sulphate	Hardness ($CaCO_3$)	Al	Sb	As	Cd	Ca	Co	Cu	Fe	Pb	Mg	Mn	Ni	Se	Th	U	Zn
		mg $CaCO_3$/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
C-1	7.5	2.1	1.2	3.4	0.00039	0.0000057	0.0000056	0.00000018	0.67	0.00000071	0.0000064	0.000072	0.0000018	0.41	0.000026	0.0000014	0.000020	0.00000084	0.00022	0.000036
C-2	7.6	2.0	1.7	3.6	0.00053	0.000034	0.0000018	0.00000036	0.81	0.0000014	0.0000065	0.000072	0.0000018	0.37	0.00085	0.0000025	0.000022	0.00000064	0.00020	0.000036
C-3	7.4	1.5	1.3	2.7	0.00020	0.00016	0.0000028	0.0000044	0.66	0.00000050	0.000010	0.000072	0.0000069	0.24	0.00025	0.0000033	0.00010	0.0000067	0.00053	0.00027
C-4	7.3	1.1	3.1	4.1	0.000074	0.000080	0.0000038	0.0000075	0.95	0.0000049	0.000020	0.000072	0.0000028	0.41	0.0027	0.000039	0.00028	0.0000066	0.000050	0.00060
C-5	7.4	1.2	3.7	4.9	0.00025	0.000024	0.0000018	0.0000017	1.2	0.0000054	0.000011	0.000071	0.0000018	0.46	0.0016	0.0000070	0.00010	0.00000064	0.00010	0.00016
C-6	7.6	1.7	1.5	3.1	0.00054	0.00016	0.0000054	0.0000048	0.81	0.0000063	0.000013	0.000072	0.0000079	0.27	0.0018	0.0000058	0.00015	0.0000034	0.00065	0.00029
C-7	3.6	0.018	4.6	3.3	0.021	0.0000066	0.0032	0.0012	0.70	0.00087	0.0076	0.078	0.0098	0.37	0.10	0.0031	0.00032	0.000016	0.0029	0.18
C-8	7.3	0.96	0.73	1.5	0.00052	0.00013	0.0038	0.0000095	0.46	0.00000022	0.000020	0.000073	0.000010	0.086	0.00012	0.0000023	0.000017	0.0000016	0.00028	0.00097
C-9	7.5	1.8	0.84	2.8	0.000071	0.00035	0.00060	0.00000096	0.66	0.0000090	0.000042	0.00011	0.0000039	0.27	0.00073	0.000048	0.000038	0.00000285	0.00014	0.00021
C-10	7.9	8.3	13	22	0.000036	0.00011	0.000058	0.000078	7.2	0.00025	0.000085	0.000073	0.000026	0.86	0.080	0.0021	0.00061	0.00038	0.00013	0.021
C-11	7.3	0.84	0.13	0.89	0.00045	0.00037	0.0045	0.00000026	0.27	0.0000070	0.000016	0.000071	0.0000018	0.054	0.00010	0.000015	0.000017	0.0000013	0.000086	0.000039
HC-1	7.3	13	21	34	0.0068	0.00026	0.000046	0.0000084	9.0	0.000030	0.00019	0.00096	0.000024	2.9	0.012	0.000042	0.00082	0.0000115	0.00047	0.00082
HC-2	6.9	5.3	9.1	15	0.0015	0.00055	0.000035	0.000034	3.2	0.000021	0.00025	0.0010	0.000070	1.6	0.0079	0.000050	0.00062	0.000021	0.00025	0.010
HC-3	7.3	13	129	149	0.00050	0.00043	0.000087	0.00089	40	0.00030	0.00034	0.0010	0.00010	12	0.049	0.00045	0.018	0.0026	0.000048	0.037
HC-4	3.4	0.25	571	423	0.88	0.00060	0.021	0.095	128	0.054	6.8	48	0.0022	22	3.5	0.056	0.09	0.0010	0.0019	15
HC-5	7.4	13.5	241	257	0.0010	0.016	0.016	0.00010	103	0.0067	0.00067	0.011	0.000078	0.17	0.051	0.0070	0.00088	0.00026	0.00013	0.013

3.2.2 OVERBURDEN STOCKPILE

The median concentration of constituents measured in shake flask extraction (SFE) tests performed on eight overburden samples collected across the ABM Open Pit footprint was used to develop the loading contribution for the overburden stockpile (Table 3-5). SFE tests are designed to measure the readily soluble component of a sample. The median SFE concentration was multiplied by runoff volumes calculated to interact with the overburden stockpile from the KP water balance (2018) to produce a load associated with the overburden stockpile.

Table 3-5: Median SFE Concentration from Project Site Overburden Samples

Parameter	Concentration (mg/L)	Parameter	Concentration (mg/L)
Hardness (from total)	6.5	Iron	0.11
Sulphate	0.55	Lead	0.00035
Fluoride	0.049	Manganese	0.0053
Aluminum	0.095	Nickel	0.00031
Antimony	0.00012	Silver	0.000040
Fluoride	0.049	Selenium	0.00010
Arsenic	0.00048	Uranium	0.000075
Cadmium	0.000065	Zinc	0.0030
Copper	0.0036		

3.3 SCALING FACTORS

3.3.1 PARTICLE SIZE

The weathering rate of waste rock is expected to be influenced by its particle size, with finer grained material weathering at a faster rate than coarser particles. The grain size distribution of granitic waste rock from a site in northern Ontario showed that approximately 30% of material was <30 mm, 12% was <20 mm, and 3% was <5 mm in size (Fines, 2006). Other grain size distribution studies yielded similar results (Neuner, 2009, Frostad et al., 2005). It has been found that the majority of flushed particles are in the 5 mm to 30 mm size range and that this fraction also represents the majority of flushed oxidation products (Tran, 2003).

The waste rock trickle leach columns (100% passing 44 mm, with the majority in the approximately 30 mm size fraction) and the humidity cells (85% passing 6.3 mm) contain crushed material that have a higher proportion of fine grained particles than is expected to be in the waste rock storage facilities. To compensate for the difference in weathering rates due to the discrepancy in particle size, scaling factors of 0.3 and 0.1 were applied to the trickle leach column and humidity cell data, respectively, representing the proportion of fines in each kinetic test that could be anticipated to be in a field scale waste rock storage facility.

The particle size of the tailings used in the humidity cell HC-3 is expected to be equivalent to those generated by the Process Plant and stored in the Class A Storage Facility. Therefore, a particle size scaling factor of one (i.e., no change) was applied to the tailings humidity cell data.

3.3.2 WATER CONTACT

3.3.2.1 Uncovered Waste Rock (Operations)

It is expected that preferential flow paths will form within a storage facility resulting in infiltration water only contacting a fraction of waste rock and/or tailings surfaces and flushing only a fraction of weathering products. Laboratory kinetic tests receive a much higher flushing water to rock material ratio than is expected for a storage facility on an annual basis. Humidity cells and trickle leach columns receive approximately 26 and 2 L/kg/year, respectively, whereas the estimated annual precipitation on the Class A, B and C Storage Facilities as a function of final mass stored in each is 0.04 L/kg/year, 0.01 L/kg/year, and 0.006 L/kg/year, respectively. Applying a scaling factor on these magnitudes (i.e., 1/200 to 1/approximately 4000) may underestimate loading rates. Furthermore, water contact is subject to significant variability based on the magnitude and frequency of precipitation events. Therefore, more conservative scaling factors of 0.1 and 0.25 were initially applied to the humidity cell and trickle leach column data, respectively (ElBoushi, 1975; Morin and Hutt, 1994; Frostad et al., 2005; Kempton, 2012).

As the storage facilities grow in size, it is expected that the overall water contact to the waste rock volume as a whole will decrease as portions of material in the storage facility becomes more isolated from infiltrating water. A summary of the water contact scaling factors over the 10 years of mining Operations is shown in Table 3-6. As an additional conservative measure and due to uncertainty of the effect of progressive reclamation on water contact through the phases of the Project, these water contact factors do not account for progressive reclamation of the Storage Facilities.

Table 3-6: Water Contact Scaling Factors over Time for the Class A, B and C Storage Facilities

	Trickle Leach Column	Humidity Cell
Year 1	0.25	0.1
Year 2	0.23	0.09
Year 3	0.21	0.08
Year 4	0.19	0.07
Year 5	0.17	0.065
Year 6	0.15	0.06
Year 7	0.14	0.055
Year 8	0.12	0.05
Year 9	0.11	0.045
Year 10	0.1	0.04

3.3.2.2 Seepage from Waste Rock Storage Facilities

The storage facilities will be covered at closure to reduce water infiltration and contact with the geological materials. Cover selection for each facility was based on the ARD/ML potential of the material stored therein; such that a cover that would more effectively reduce infiltration would be constructed on material with relatively high ARD/ML potential and a cover that would less effectively reduce infiltration would be placed on material with relatively low ARD/ML potential. The covers constructed on the Class A and B facilities will be very low permeability and significantly limit the amount of water entering the facilities and contacting the material. However, it is assumed that a small quantity of water will infiltrate the covers, contact waste material and leak through defects in the liners as seepage (Appendix F of KP, 2018). Load picked up by this seepage will then report to Geona Creek via groundwater flow. The seepage flows from the Class A and B storage facilities were estimated by KP and are discussed in KP (2018). As the seepage flow volumes are very small relative to the volume of material stored in the facilities and contact with waste material will be limited, the water contact factor for seepage-associated loads is much smaller than for loads associated with contact water in the collection ponds during Operations when covers are not yet established. For seepage loads, the water contact factor was calculated by dividing the monthly seepage flow volume by the estimated void space in the storage facilities such that:

Seepage Water Contact Factor = Seepage Flow Volume/Facility Void Volume

Where:

Facility Void Volume = Porosity * Stored tonnage/Bulk Density

A porosity of 0.3 was assumed for the facilities while the bulk densities for the Class A and B facilities were estimated to be 2.1 and 2.0 t/m^3, respectively, based on the dry bulk density of the material provided by BMC.

Seepage from the Class C Storage Facility and Overburden Stockpiles was not calculated separately as the entirety of load generated from those facilities was assumed to go to the receiving environment in Geona Creek.

3.3.2.3 Class C Cover

A growth medium cover will be placed on the Class C Storage Facility to allow revegetation. This cover will also decrease water infiltration and contact with the waste material. As such, an additional water contact factor of 0.9 (10% reduction of load) was assumed for the cover on the Class C storage facility in Closure.

3.3.3 TEMPERATURE

The laboratory kinetic trickle leach and humidity cell tests were conducted at room temperature (approximately 22^{o}C), which is higher than the temperature of precipitation and contact water that would be encountered at the Project site. The Arrhenius equation is commonly used to adjust for differences in temperature-dependant reactions (SRK and Mehling, 2006). Metal sulphide oxidation reactions occur at slower rates at lower temperatures. The oxidation rate of metal sulphide minerals pyrite and pyrrhotite, dominant minerals in the KZK waste rock and tailings material, have been found to be approximately 70% lower at 5^{o}C (i.e., average field temperature) than at laboratory room temperature (SRK and Mehling, 2006). Therefore, a temperature scaling factor of 0.3 was applied to constituents whose release was expected to be tied to the oxidation of metal sulphide assemblages (i.e., sulphate, Sb, As, Cd, Cu, Fe, Pb, Ni, Se, Ag, U, Zn) or from the dissolution of carbonate phases in response to sulphide oxidation (e.g., alkalinity, Ca, Mg).

3.3.4 STORED LOADS

The quantity of load from the waste rock storage facilities in each month is assumed to be proportional to the flow volumes to the seepage collection or sediment ponds. As such, during months of relatively low infiltration of water into the waste rock piles (i.e. winter months), less weathered load is flushed from the facilities. Rather, load is accumulated in these months and is flushed out during months with flows when infiltration pathways are reactivated. The flushing factors were calculated using flows from the monthly water balance (KP, 2018); for the Class A and B facilities, the flushing factors were calculated from the flows for the seepage collection system while the flushing factors for the Class C facility were calculated using the overflow from Class C sediment pond flow volumes. The flushing factors for the Class A, B and C storage facilities are provided in in Table 3-7.

Table 3-7: Proportion of Load that is Flushed per Month

	Flushing Factors		
	Class A	Class B	Class C
January	0.87	0.69	0.39
February	0.58	0.42	0.23
March	0.55	0.34	0.20
April	0.42	0.23	0.14
May	0.64	0.54	1.43
June	0.89	1.01	2.20
July	1.18	1.44	2.24
August	1.44	1.70	1.72
September	1.54	1.77	1.41
October	1.59	1.72	0.85
November	1.23	1.20	0.65
December	1.07	0.94	0.52

3.3.5 SOLUBILITY CONTROLS

The calculated concentrations in the drainage from material for which source terms were developed were then input into the thermodynamic equilibrium software program PHREEQC (Parkhurst and Appelo, 1999) to determine if any secondary minerals were oversaturated. The Minteq.v4 database was used and the pH of all of the PHREEQC simulations was fixed at the average pH of the field barrel leachate (pH 7.7). Modelled CO_2 partial pressures ranged between $10^{-2.2}$ and $10^{-2.8}$ atmosphere (atm), suggesting oversaturation of CO_2 relative to atmosphere. As such, the P_{CO2} was set to $10^{-3.2}$ atm for all solutions to approximate equilibrium with the atmosphere. If a mineral was oversaturated and was expected to precipitate under the circumneutral, oxic conditions, expected of the storage facilities drainage, its solubility limit was used to cap the concentration of the precipitating constituent. Although only those minerals that do not have significant kinetic limitations were selected to precipitate (where oversaturated), it should be noted that full equilibrium may not be realized in the field and this is an inherent uncertainty in the development of water quality models.

3.3.6 SCALED SOURCE TERMS

The scaling factors discussed in the previous sections were applied to the kinetic testing loading rates in Table 3-3 and Table 3-4 for Operations/Active Closure and the Transition/Post-closure phases, respectively. Loading terms specifically for each of the three storage facilities were developed based on the sample composition of the kinetic tests and the categorization of those samples in one of the three waste classes. Weighted averages of various tests were calculated to best represent the varied

composition of material that will be stored in the storage facilities. The weights of the scaled source term used to calculate the waste rock storage facility loading rates are provided in Table 3-8 and the scaled loading rates for the Operations and Closure phases are shown in Table 3-10 and Table 3-11, respectively.

At the time of writing, acidic conditions had not yet developed in the drainage from the kinetic test HC-5, comprised of NP-depleted Class B waste material (AEG, 2018a). Therefore, using the HC-5 results to develop an acidic drainage source term for Class B waste was not appropriate. Alternatively, the change in loading rates from the C-7 test, of which the pH of drainage has decreased from pH 7.0 to pH 3.6 from cycle 2 to 97, was used to adjust the neutral drainage Class B loading rate to estimate acidic drainage. The factors, calculated by dividing the median loading rates from C-7 in the most recent 20 cycles of testing (weeks 77 to 97) by the median of the first 10 cycles, are presented in Table 3-9. The majority of constituents returned an adjustment factor greater than one, signifying an increase in loading rate once acidic drainage conditions set in; in particular, iron, copper, aluminum, lead and zinc are estimated to be released at much higher rates under acidic conditions. Conversely, some constituents are estimated to be released at lower rates under acidic conditions (e.g. antimony and selenium).

Table 3-8: Weights of Kinetic Tests Results Used in Storage Facility Loading Rates

	C-1	C-2	C-3	C-4	C-5	C-6	C-7	C-8	C-9	C-10	C-11	HC-4
Class A (Neutral Drainage)										1.0		
Class A (Acidic Drainage)												1.0
Class B [1]	0.17		0.1	0.09	0.42			0.02	0.02		0.18	
Class C	0.36	0.35	0.07	0.05				0.01	0.16			

[1] Class B acidic drainage is calculated using the same weighting as neutral drainage

Table 3-9: Median of Loading Rates from First 10 Cycles and Last 20 Cycles from C-7 and Adjustment Factors for Acidic Drainage from Class B Waste Rock

Parameter	Sulphate	Hardness ($CaCO_3$)	Al	Sb	As	Cd	Ca	Co	Cu
Median Weeks 2 to 10	4.0	4.0	0.00022	0.0040	0.00021	0.00029	1.2	0.00033	0.000071
Median Weeks 77 to 97	4.6	3.3	0.021	0.0000066	0.0032	0.0012	0.70	0.00087	0.0076
Adjustment Factor	1.1	0.82	98	0.0017	15	4.2	0.60	2.7	106
Parameter	**Fe**	**Pb**	**Mg**	**Mn**	**Ni**	**Se**	**Th**	**U**	**Zn**
Median Weeks 2 to 10	0.000073	0.00019	0.25	0.026	0.0012	0.0011	0.000025	0.00014	0.0077
Median Weeks 77 to 97	0.078	0.0098	0.37	0.10	0.0031	0.00032	0.000016	0.0029	0.18
Adjustment Factor	1067	50	1.5	3.8	2.6	0.30	0.65	20	23

The loading from the overburden stockpile was based on the median of the SFE data as described in Section 3.2.2. Since only a fraction of the overburden will be flushed by the runoff, a scaling factor of 0.5 was applied to this load.

Table 3-10: Scaled Loading Rates for Storage Facilities for the Operations Phase (Median Data)

Column ID	Total Alkalinity	SO_4	Hardness ($CaCO_3$)	F	Al	Sb	As	Cd	Ca	Co	Cu	Fe	Pb	Mn	Ni	Se	Ag	Tl	U	Zn
	mg $CaCO_3$/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
C-1	0.046	0.035	0.078	0.00016	0.00011	0.00000041	0.00000027	0.0000000090	0.019	0.00000017	0.00000055	0.0000016	0.000000041	0.0000713	0.000000074	0.00000058	0.0000000082	0.0000000089	0.000012	0.00000082
C-2	0.040	0.044	0.078	0.00014	0.00012	0.0000024	0.000000066	0.000000012	0.020	0.000000071	0.00000048	0.0000016	0.000000041	0.000128	0.000000073	0.00000066	0.0000000081	0.000000012	0.0000095	0.00000082
C-3	0.034	0.031	0.063	0.00011	0.000057	0.000011	0.00000027	0.00000016	0.017	0.00000012	0.00000058	0.0000016	0.00000078	0.000150	0.00000013	0.0000039	0.0000000081	0.00000025	0.000033	0.0000096
C-4	0.024	0.080	0.097	0.000087	0.000025	0.0000088	0.00000021	0.00000027	0.024	0.00000033	0.00000057	0.0000016	0.00000026	0.00032	0.0000022	0.000012	0.0000000082	0.00000019	0.0000037	0.000024
C-5	0.035	0.10	0.13	0.00011	0.000060	0.0000019	0.000000089	0.000000057	0.034	0.00000026	0.00000074	0.0000016	0.00000011	0.00026	0.00000023	0.0000034	0.0000000081	0.000000020	0.0000055	0.0000049
C-6	0.037	0.041	0.074	0.00012	0.000093	0.0000090	0.00000030	0.000000086	0.020	0.00000016	0.00000058	0.0000016	0.00000024	0.00014	0.00000015	0.0000046	0.0000000082	0.000000099	0.000028	0.0000065
C-7	0.0025	0.10	0.089	0.00016	0.000028	0.0000042	0.0000086	0.000015	0.022	0.0000074	0.000028	0.00006	0.000093	0.0029	0.000030	0.000016	0.0000000081	0.00000045	0.000005	0.0013
C-8	0.024	0.025	0.046	0.000098	0.000079	0.0000050	0.000050	0.00000014	0.014	0.000000068	0.00000056	0.0000016	0.00000057	0.0001337	0.00000017	0.00000074	0.0000000081	0.000000067	0.000016	0.000011
C-9	0.041	0.083	0.12	0.00020	0.000027	0.00000076	0.0000021	0.000000017	0.029	0.00000061	0.00000034	0.0000016	0.000000045	0.0000028	0.0000022	0.0000013	0.0000000079	0.000000010	0.0000065	0.0000017
C-10	0.61	2.2	2.8	0.0020	0.0000027	0.000020	0.000015	0.000025	1.0	0.000062	0.0000089	0.000017	0.000013	0.0083	0.00037	0.000094	0.00000019	0.000042	0.000017	0.0074
C-11	0.022	0.0044	0.022	0.000088	0.00010	0.000012	0.000079	0.0000000081	0.0066	0.00000016	0.00000050	0.0000032	0.000000041	0.000016	0.00000049	0.00000052	0.0000000080	0.000000043	0.0000027	0.00000097
HC-1	0.033	0.059	0.090	0.000098	0.00017	0.0000020	0.00000014	0.000000027	0.024	0.00000012	0.00000071	0.0000028	0.00000013	0.00018	0.00000011	0.0000030	0.000000014	0.000000019	0.0000027	0.0000028
HC-2	0.013	0.035	0.048	0.000090	0.000025	0.0000028	0.00000017	0.00000015	0.011	0.000000098	0.0000011	0.0000030	0.00000035	0.00017	0.00000020	0.0000020	0.000000015	0.000000081	0.00000078	0.000038
HC-3	0.51	9.8	11	0.0015	0.000015	0.000033	0.0000085	0.00017	2.9	0.00013	0.000020	0.000030	0.000025	0.015	0.000215	0.0023	0.00000026	0.00019	0.0000050	0.0070
HC-4	0.0075	20	16	0.00030	0.029	0.000095	0.0026	0.0035	5.5	0.0026	0.22	1.2	0.00012	0.070	0.0024	0.0043	0.0000011	0.000067	0.000039	0.51
HC-5	0.031	1.5	1.5	0.000075	0.0000023	0.000068	0.000051	0.00000032	0.60	0.000046	0.0000023	0.000014	0.00000038	0.00033	0.000094	0.0000021	0.000000015	0.00000075	0.00000032	0.000027

Table 3-11: Scaled Loading Rates for Storage Facilities for the Closure Phases (Steady-State Data)

Column ID	Total Alkalinity	SO_4	Hardness ($CaCO_3$)	F	Al	Sb	As	Cd	Ca	Co	Cu	Fe	Pb	Mn	Ni	Se	Ag	Tl	U	Zn
	mg $CaCO_3$/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
C-1	0.048	0.027	0.076	0.00012	0.000030	0.00000013	0.00000013	0.0000000040	0.015	0.000000016	0.00000014	0.0000016	0.000000040	0.0000020	0.000000032	0.00000045	0.0000000080	0.000000019	0.0000049	0.00000081
C-2	0.044	0.037	0.081	0.00010	0.000040	0.00000077	0.000000041	0.0000000081	0.018	0.000000031	0.00000015	0.0000016	0.000000041	0.000064	0.000000057	0.00000049	0.0000000081	0.000000014	0.0000044	0.00000081
C-3	0.034	0.029	0.060	0.000078	0.000015	0.0000035	0.000000063	0.00000010	0.015	0.000000011	0.00000021	0.0000016	0.00000015	0.000019	0.000000073	0.0000022	0.0000000081	0.00000015	0.0000119	0.0000060
C-4	0.024	0.070	0.092	0.000060	0.0000055	0.0000018	0.000000086	0.00000017	0.021	0.00000011	0.00000045	0.0000016	0.000000063	0.00020	0.00000088	0.0000062	0.0000000082	0.00000015	0.0000011	0.000013
C-5	0.027	0.083	0.11	0.000076	0.000019	0.00000054	0.000000040	0.000000039	0.027	0.00000012	0.00000025	0.0000016	0.000000040	0.00012	0.00000016	0.0000023	0.0000000080	0.000000014	0.0000021	0.0000036
C-6	0.037	0.035	0.071	0.000076	0.000040	0.0000037	0.00000012	0.00000011	0.018	0.00000014	0.00000029	0.0000016	0.00000018	0.00013	0.00000013	0.0000033	0.0000000081	0.000000075	0.000015	0.0000065
C-7	0.00040	0.10	0.074	0.00033	0.0016	0.00000015	0.000073	0.000027	0.016	0.000020	0.00017	0.0018	0.00022	0.0076	0.000070	0.0000072	0.0000000079	0.00000036	0.000065	0.0040
C-8	0.022	0.016	0.034	0.000066	0.000039	0.0000029	0.000085	0.00000021	0.010	0.0000000050	0.00000045	0.0000016	0.00000023	0.0000092	0.000000053	0.00000039	0.0000000081	0.000000035	0.0000063	0.000022
C-9	0.041	0.019	0.062	0.00014	0.0000053	0.0000078	0.000014	0.000000022	0.015	0.00000020	0.00000095	0.0000025	0.000000089	0.000055	0.0000011	0.00000086	0.0000000081	0.000000064	0.0000030	0.0000048
C-10	0.62	0.96	1.6	0.0015	0.0000027	0.0000084	0.0000043	0.0000059	0.54	0.000019	0.0000064	0.0000054	0.0000019	0.0060	0.00016	0.000046	0.000000027	0.000029	0.0000098	0.0016
C-11	0.019	0.0030	0.020	0.000064	0.000034	0.0000083	0.00010	0.0000000059	0.0061	0.00000016	0.00000036	0.0000016	0.000000040	0.0000073	0.00000034	0.00000039	0.0000000080	0.000000029	0.0000019	0.00000088
HC-1	0.040	0.062	0.10	0.000091	0.000068	0.00000077	0.00000014	0.000000025	0.027	0.000000091	0.00000057	0.0000029	0.000000072	0.00012	0.00000013	0.0000024	0.000000014	0.000000035	0.0000014	0.0000025
HC-2	0.016	0.027	0.045	0.000080	0.000015	0.0000017	0.00000011	0.00000010	0.010	0.000000062	0.00000075	0.0000030	0.00000021	0.000079	0.00000015	0.0000019	0.000000015	0.000000063	0.00000075	0.000029
HC-3	0.39	3.9	4.5	0.00047	0.000015	0.000013	0.0000026	0.000027	1.2	0.0000090	0.000010	0.000030	0.0000029	0.0015	0.000013	0.00054	0.00000015	0.000079	0.0000015	0.0011
HC-4	0.0075	17	13	0.00030	0.026	0.000018	0.00062	0.0028	3.8	0.0016	0.20	1.4	0.000066	0.11	0.0017	0.0028	0.0000013	0.000030	0.000056	0.44
HC-5	0.041	0.72	0.77	0.000055	0.0000031	0.000048	0.000048	0.00000029	0.31	0.000020	0.0000020	0.000033	0.00000023	0.00015	0.000021	0.0000026	0.000000015	0.00000078	0.00000038	0.000039

3.4 NITROGEN SOURCE TERM DEVELOPMENT

The use of nitrogen-based explosives is a source of nitrogen compound(s) release to the environment. Nitrate (NO_3), ammonia (NH_3) and nitrite (NO_2, an oxidation product of NH_3) can accumulate in the ABM Open Pit and/or on blasted waste rock as a result of blasting and are readily soluble when contacted with infiltration and runoff water. The concentration of residual nitrogen leftover from blasting activities depends on the quantity and type of explosive used and the efficiency with which nitrogen is consumed with use.

Release of nitrogen from the storage facilities is directly correlated to the volume of waste rock stored in those facilities and the amount of infiltration water contacting the waste rock that can rinse nitrogen species from the rock and into the receiving environment. As the transport of nitrogen from storage facilities is dependent on infiltration and the development of flow paths, a lag time is expected between waste rock placement and nitrogen flushing to the receiving environment (Bailey et al., 2013). Furthermore, flushing of nitrogen concentrations are expected to persist after waste rock placement as new flow paths develop and waste rock surfaces become wetted.

The following sections outline the assumptions and modelling approach utilized in predicting the release of nitrogen species from the Project to the receiving environment.

3.4.1 ASSUMPTIONS

The quantity (in tonnage) of explosives anticipated for use in the Project per month was provided by BMC and the proportion of explosives used was calculated using the relative proportions of Class A, B and C material from the annual waste rock production schedule provided by BMC (Table 3-12). Other assumptions for the nitrogen load model are as follows:

- 70/30 emulsion explosives will be used; 70% emulsion and 30% ammonium nitrate/fuel oil (ANFO) with an average nitrogen content of 28%;
- It has been estimated that an average of 28% of blasting will be conducted in challenging blasting conditions (i.e. wet holes with flowing water) with the remainder conducted in favourable blasting conditions (i.e. dry conditions);
- Challenging blasting conditions will result in a nitrogen loading rate of 5.1% (of total nitrogen used) while favourable blasting conditions will yield a nitrogen loading rate of 0.94%, as per the Ferguson and Leask model for mines using greater than 20% emulsion (Ferguson and Leask, 1988);
- The total nitrogen released to the receiving environment occurs in the average proportions observed by Ferguson and Leask (1988): 87% nitrate, 11% ammonia and 2% nitrite;

- All residual nitrogen from explosives use reports to the storage facilities; and

Release of nitrogen compounds is similar to other cold climate mines in the Northwest Territories, Yukon Territory and Northeastern British Columbia (e.g., Bailey et al., 2013).

Table 3-12: Anticipated Explosives Use and Waste Production by Year

	Explosives Used (tonnes)	Waste Rock Production (tonnes)		
		Class A	Class B	Class C
Year -1	2,942	584,300	2,381,900	3,413,400
Year 1	5,591	687,300	3,796,700	5,246,400
Year 2	6,142	1,142,200	6,482,000	7,218,100
Year 3	6,351	1,583,700	7,583,900	10,294,100
Year 4	5,395	1,563,600	5,656,200	6,444,300
Year 5	4,936	1,310,600	3,675,500	8,854,400
Year 6	3,695	1,025,300	2,889,000	7,248,500
Year 7	1,704	859,600	3,445,700	6,314,300
Year 8	838	1,037,300	4,208,500	4,482,800
Year 9	235	1,341,500	5,418,200	3,722,000
Year 10	31	481,100	1,945,000	730,400
Total	37,859	11,616,600	47,482,800	63,968,700

3.4.2 WASTE ROCK DRAINAGE

Ferguson and Leask (1988) developed a model for estimating explosive losses based on the amount of explosive used and the proportions of ANFO and emulsion in the explosives. Explosive losses represent the nitrogen loads that are not consumed in the blasting and are left in the waste rock. Ferguson and Leask (1988) presented the following equation for mines that use more than 20% emulsion explosives:

$$N_{Load} = (0.94\% \times E_{favourable} + 5.1\% \times E_{challenging}) \times N_{avg}$$

Where N_{Load} is the mass of nitrogen residue load, $E_{favourable}$ and $E_{challenging}$ are the masses of explosives (as N) used in favourable and challenging conditions, respectively, and N_{avg} is the average nitrogen content of the explosive.

Bailey et al. (2013) conducted a study of blasting agent residue in waste rock effluent at the Diavik diamond mine in Northwest Territories, Canada. It was found that an average of 0.44% of residual nitrogen was released in leachate collected from large scale waste rock test piles over a three-year period following placement. Laboratory leach tests of the same waste rock released 5.4% of residual nitrogen (Bailey et al., 2013). If leach tests removed all leachable nitrogen residual from explosives use, 8.1% of residual nitrogen was observed to flush from the waste rock in the field.

The Diavik site receives a mean annual precipitation (MAP) of 280 mm, compared a MAP of 520 mm at the KZK site (KP, 2018). Higher MAP will result in higher volumes of infiltration to the storage facilities, more contact with waste rock surfaces and, ultimately, greater flushing of nitrogen species to the receiving environment. Thus, it would be expected that the flushing of nitrogen would be greater from the KZK Project storage facilities than was observed at Diavik by a factor of approximately 1.9 based on the MAP comparison alone. For this model, it was conservatively predicted that 16% of leachable nitrogen would flush out of the waste rock over a three-year period. It was also assumed that there would be a delay for precipitation to infiltrate into the waste rock and begin flushing nitrogen. Therefore, nitrogen species are only released one year after first deposition (i.e., from Year 2 of Operations). The mass of nitrogen flushed in a year was distributed among the months is shown in Table 3-13. This was based on the relative monthly runoff volumes (Table 3-7). A summary of the annual nitrogen loading from each storage facility and nitrogen release to the receiving environment is shown in Table 3-14.

Table 3-13: Monthly Distribution of Nitrogen Loading

	Class A	Class B	Class C
January	7%	6%	3%
February	5%	3%	2%
March	5%	3%	1%
April	3%	2%	1%
May	5%	4%	11%
June	7%	8%	19%
July	10%	12%	20%
August	12%	14%	15%
September	13%	15%	12%
October	13%	14%	6%
November	10%	10%	5%
December	9%	8%	4%
Total	100%	100%	100%

Table 3-14: Annual Nitrogen Loading to Waste Rock Storage Facilities, Nitrogen Load Stored in Waste Rock Storage Facility at Year's end and Nitrogen Load Released from Storage Facilities

	Class A			Class B			Class C		
	Load to Facility (kg N)	Load Stored (kg N)	Load Released (kg N)	Load to Facility (kg N)	Load Stored (kg N)	Load Released (kg N)	Load to Facility (kg N)	Load Stored (kg N)	Load Released (kg N)
Year -2	794	794	-	3,832	3,832	-	4,753	4,753	
Year -1	2,243	2,927	117	9,813	13,167	503	15,770	19,896	646
Year 1	2,271	5,378	226	14,163	26,283	1,071	13,436	31,972	1,372
Year 2	2,544	7,575	353	13,579	38,106	1,547	19,285	49,132	2,141
Year 3	2,788	9,889	479	12,180	47,936	2,369	14,218	60,392	2,969
Year 4	2,786	12,079	602	8,497	53,673	2,770	13,445	70,404	3,443
Year 5	1,877	13,264	695	4,485	55,212	2,950	13,264	79,582	4,096
Year 6	742	13,292	714	2,544	54,801	2,953	5,528	80,810	4,302
Year 7	355	12,945	701	1,508	53,411	2,897	2,204	78,738	4,274
Year 8	113	12,380	677	471	51,081	2,796	472	75,086	4,120
Year 9	25	11,759	644	93	48,511	2,658	51	71,222	3,911
Year 10	-	11,147	611	-	49,985	2,522	-	67,510	3,708
Year 11	-	10,566	579	-	43,590	2,391	-	63,991	3,515
Year 12	-	10,016	549	-	41,320	2,266	-	60,656	3,332
Year 13	-	9,495	520	-	39,168	2,148	-	57,494	3,158
Year 14	-	9,000	493	-	37,128	2,036	-	54,497	2,994
Year 15	-	8,532	467	-	35,194	1,930	-	51,657	2,838
Year 20	-	6,530	358	-	26,935	1,477	-	39,527	2,171
Year 25	-	4,998	274	-	20,615	1,131	-	30,245	1,661
Year 30	-	3,826	210	-	15,777	865	-	23,143	1,271
Year 35	-	2,928	160	-	12,075	662	-	17,708	973
Year 40	-	2,155	118	-	8,871	485	-	12,924	709

4. WATER QUALITY MODEL OVERVIEW

A model was developed to predict the water quality of drainage from the Project components for each Project phase in order to assess the effect of the Project on the water quality of the receiving aquatic environment. The predictions of water quality at various Project locations should be considered as best estimates and considered conservative given the source terms used. It is anticipated the water quality for the Project will be better than presented in this report due to the conservative inputs used to compensate for uncertainty in the various data sets used.

Geochemical mass loading rates were estimated for each Project component throughout each Project phase and combined with modelled flow rates to calculate water quality predictions from individual Project components and, ultimately, for the receiving environment. The following sections provide an overview of the water quality modelling performed.

4.1 WATER BALANCE MODEL

A water balance for the Project components and receiving environment was developed by Knight Piésold Ltd. (KP, 2018). A version of the water balance utilising mean annual precipitation (MAP) was provided along with alternate results that used 1/10 dry or 1/50 wet years throughout the Project life as a measure of sensitivity on water quality predictions. These water balance model iterations varied precipitation during years throughout the mine life, including dry and wet years in:

- Year -1 (Construction);
- Year 2 (Operations);
- Year 9 (Operations);
- Year 12 (Active Closure);
- Year 20 (Transitional Closure); and
- Year 38 (Post-closure).

More details on the development of the Project water balance can be found in KP (2018).

4.2 WATER QUALITY MODEL

A geochemical mass load balance was developed to estimate water quality for the various Project components/facilities. Source terms were developed to determine the constituent mass loading rates from geological materials as discussed in Section 3. Baseline water quality data presented by AEG (AEG,

2018b) for Fault Creek (KZ-2), South Creek (KZ-13), Geona Creek (KZ-6, KZ-7, KZ-9, KZ-18 and KZ-37), and Finlayson Creek (KZ-15 and KZ-26) were used to calculate geochemical loads in existing water courses. The modelled fluxes and flow volumes from the water balance were used with the calculated loads to estimate water quality concentrations in South Creek (KZ-13), Geona Creek (KZ-37) and Finlayson Creek (KZ-15 and KZ-26) (Figure 5-1). Water quality was modelled under the MAP scenario and the additional scenarios where wet and dry years were modelled throughout the Project life (KP, 2018).

A total of 43 parameters were modelled, although the focus of the report is primarily associated with the following constituents of interest:

- Sulphate;
- Nitrogen (Nitrate, Nitrite and Ammonia);
- Fluoride;
- Total and dissolved fraction of:
  - Aluminum;
  - Antimony;
  - Arsenic;
  - Cadmium;
  - Cobalt;
  - Copper;
  - Iron;
  - Lead;
  - Manganese;
  - Selenium;
  - Thallium;
  - Uranium; and
  - Zinc.

4.3 WATER QUALITY MODELLING TIMELINE

The model was run in monthly time-steps starting from the year when pit dewatering and Construction begins (Year -2) and continues for the 41 years following the beginning of Operations into Post-closure. A summary of timeline items that are relevant to water management is shown in Table 4-1.

Table 4-1: Relevant Water Management Timeline Items for Water Quality Model

Project Year	Project Activity
-2	Start of Construction and dewatering
1	Start of Operations
10	Last year of Mining
10	Pit dewatering ceases, ABM Lake begins to form. Begin construction of waste rock storage facility covers and wetland water treatment system
14	Transition from active water treatment to passive wetland treatment system
25	ABM Lake maximum storage reached and discharge to constructed wetland treatment systems

4.4 MASS TRANSPORT SCHEMATIC DIAGRAMS

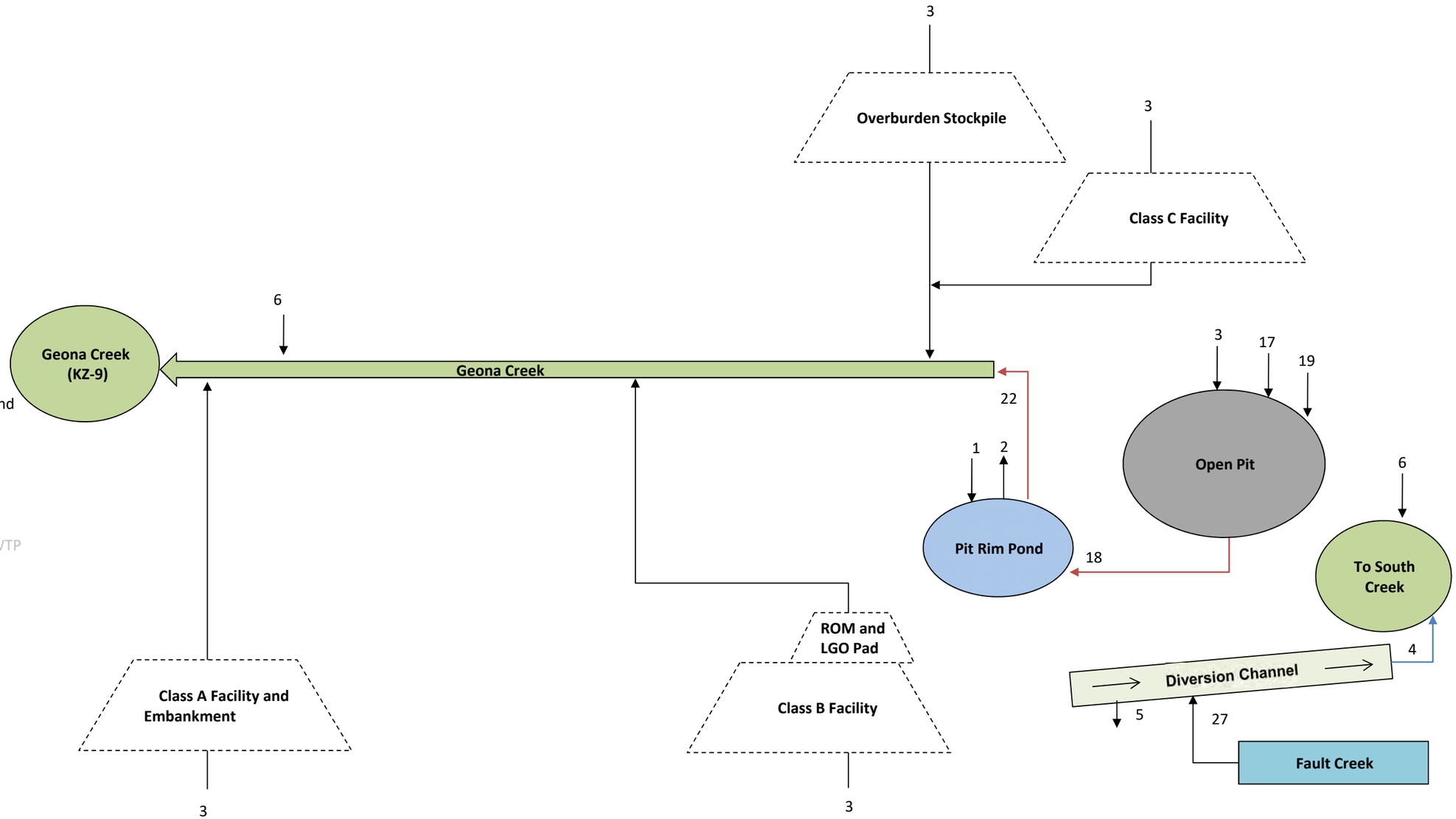
The water management systems which dictate the flow of mass loads throughout the Project site and to the receiving environment are depicted in schematic diagrams in this section. Schematics of Year -2 of Construction, -1 of Construction, Years 1 to 2 of Operations, 3 to 10 of Operations, Active Closure, Transition and Post-closure Phase are shown in Figure 4-1 through Figure 4-7 (KP, 2018). Further details on the nature of these flows can be found in KP (2018).

4.5 MODELLING PLATFORM

The water quality model was developed deterministically with MS Excel spreadsheet software. PHREEQC geochemical speciation software developed by the United States Geological Survey (Parkhurst and Appelo, 1999) was used at key Project locations at various milestones to determine if the estimated water quality gave rise to oversaturation of any secondary minerals. If a mineral was oversaturated and was expected to precipitate under the circumneutral, oxic conditions expected during Operations, its solubility limit was used to cap the concentration of the precipitating constituent. Although only those minerals that do not have significant kinetic limitations were selected to precipitate (where oversaturated), it should be noted that full equilibrium may not be realized in the field and is an inherent uncertainty in the development of water quality models.

FLOW PATHS

1 Net Precipitation
2 Evaporation
3 Runoff from Undiverted Area
4 Diverted Runoff
5 Seepage to Geona Creek (KZ-9) Groundwater System
6 Groundwater discharge from upstream catchment
7 Water in Tailings
8 Void Losses
9 Process Water from Mill to WTP
10 Makeup Water from LWMP
11 Mill Reclaim
12 Water in Ore
13 Water in Concentrate
14 Potable Water
15 Dust Suppression
16 Water to Paste Plant
17 Groundwater Inflow to Open Pit and Underground Workings
18 Open Pit Dewatering
19 Surface Runoff from Mine Facility
20 Toe Discharge
21 Seepage Collection System
22 Overflow from Sediment Pond
23 Surplus from Collection Pond to WTP
24 Treated Discharge from WTP
25 Surplus from UWMP or LWMP
26 Discharge from LWMP
27 Discharge from Fault Creek
28 Pit Lake Discharge
29 Discharge from Wetland
30 Diversion Channel Seepage to Groundwater System



NOTES:

1. ROM = RUN OF MINE, LGO = LOW GRADE ORE.
2. → = DIVERSION OR COLLECTION DITCH, → = PIPELINE, → = OTHER FLOW PATHS.

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KUDZ ZE KAYAH PROJECT

WATER BALANCE FLOW SCHEMATIC CONSTRUCTION - YEAR -2

Knight Piésold CONSULTING

P/A NO. VA101-640/6

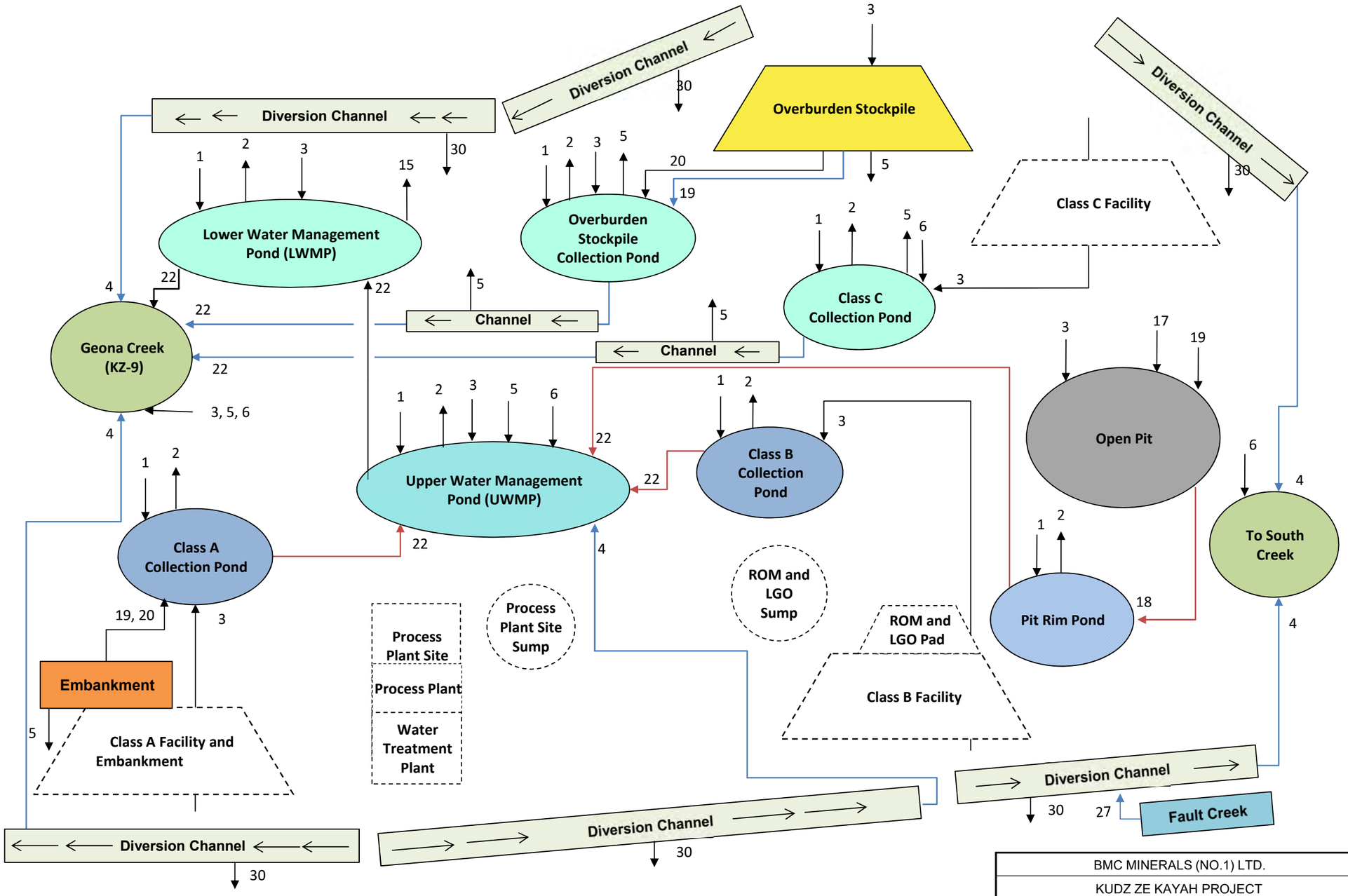
REF. NO. 3

FIGURE 4-1

REV B

FLOW PATHS

1 Net Precipitation
2 Evaporation
3 Runoff from Undiverted Area
4 Diverted Runoff
5 Seepage to Geona Creek (KZ-9) Groundwater System
6 Groundwater discharge from upstream catchment
7 Water in Tailings
8 Void Losses
9 Process Water from Mill to WTP
10 Makeup Water from LWMP
11 Mill Reclaim
12 Water in Ore
13 Water in Concentrate
14 Potable Water
15 Dust Suppression
16 Water to Paste Plant
17 Groundwater Inflow to Open Pit and Underground Workings
18 Open Pit Dewatering
19 Surface Runoff from Mine Facility
20 Toe Discharge
21 Seepage Collection System
22 Overflow from Sediment Pond
23 Surplus from Collection Pond to WTP
24 Treated Discharge from WTP
25 Surplus from UWMP or LWMP
26 Discharge from LWMP
27 Discharge from Fault Creek
28 Pit Lake Discharge
29 Discharge from Wetland
30 Diversion Channel Seepage to Groundwater System



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REV	DATE	DESCRIPTION	PREP'D	RVW'D
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KUDZ ZE KAYAH PROJECT

WATER BALANCE FLOW SCHEMATIC CONSTRUCTION - YEAR -1

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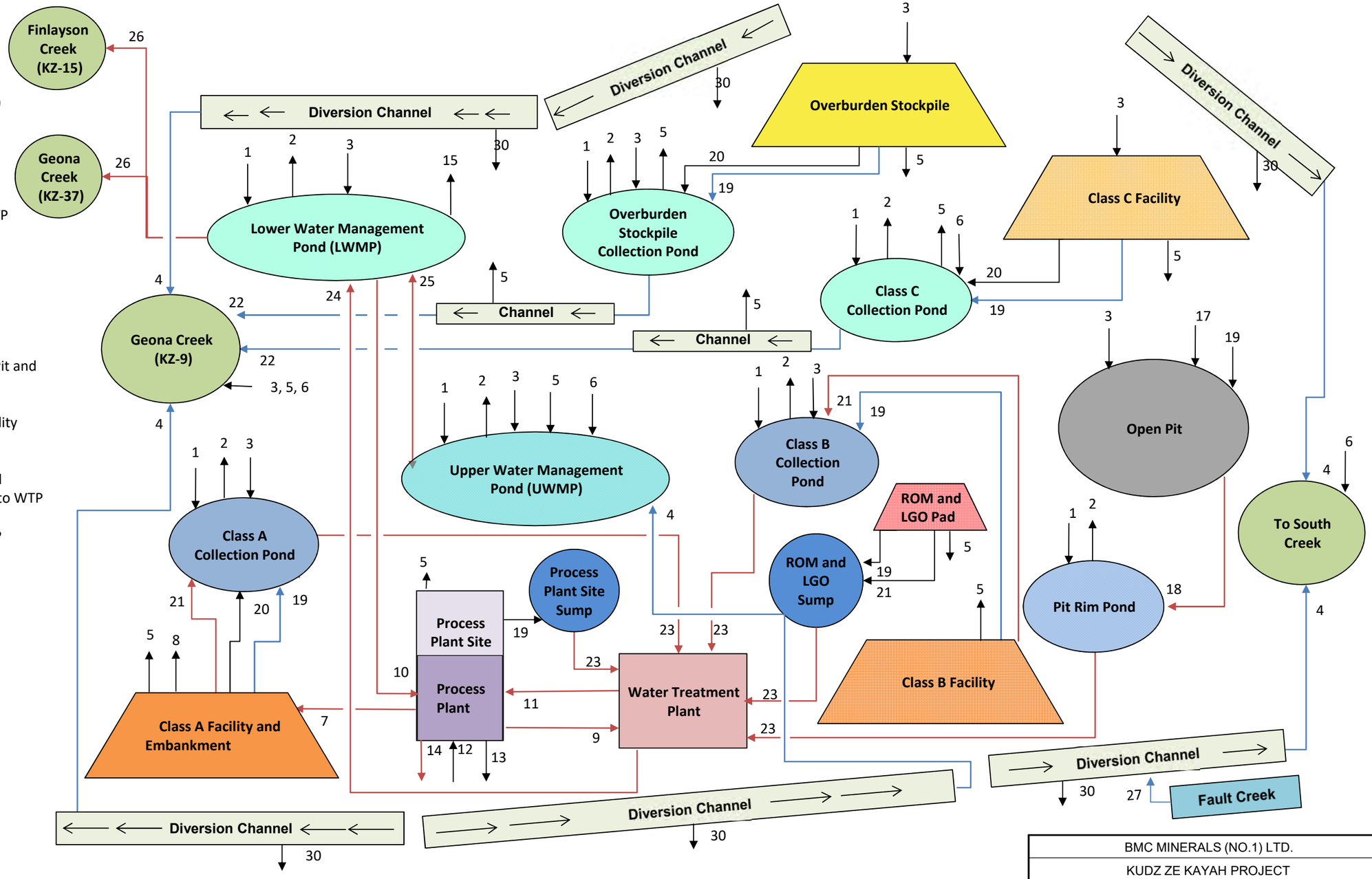
REF. NO. 3

FIGURE 4-2

REV B

FLOW PATHS

1 Net Precipitation
2 Evaporation
3 Runoff from Undiverted Area
4 Diverted Runoff
5 Seepage to Geona Creek (KZ-9) Groundwater System
6 Groundwater discharge from upstream catchment
7 Water in Tailings
8 Void Losses
9 Process Water from Mill to WTP
10 Makeup Water from LWMP
11 Mill Reclaim
12 Water in Ore
13 Water in Concentrate
14 Potable Water
15 Dust Suppression
16 Water to Paste Plant
17 Groundwater Inflow to Open Pit and Underground Workings
18 Open Pit Dewatering
19 Surface Runoff from Mine Facility
20 Toe Discharge
21 Seepage Collection System
22 Overflow from Sediment Pond
23 Surplus from Collection Pond to WTP
24 Treated Discharge from WTP
25 Surplus from UWMP or LWMP
26 Discharge from LWMP
27 Discharge from Fault Creek
28 Pit Lake Discharge
29 Discharge from Wetland
30 Diversion Channel Seepage to Groundwater System



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2. → = DIVERSION OR COLLECTION DITCH, → = PIPELINE, → = OTHER FLOW PATHS.

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KUDZ ZE KAYAH PROJECT

WATER BALANCE FLOW SCHEMATIC OPERATIONS - YEAR 1 TO 2

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REF. NO. 3

FIGURE 4-3

REV B

FLOW PATHS

1 Net Precipitation
2 Evaporation
3 Runoff from Undiverted Area
4 Diverted Runoff
5 Seepage to Geona Creek (KZ-9) Groundwater System
6 Groundwater discharge from upstream catchment
7 Water in Tailings
8 Void Losses
9 Process Water from Mill to WTP
10 Makeup Water from LWMP
11 Mill Reclaim
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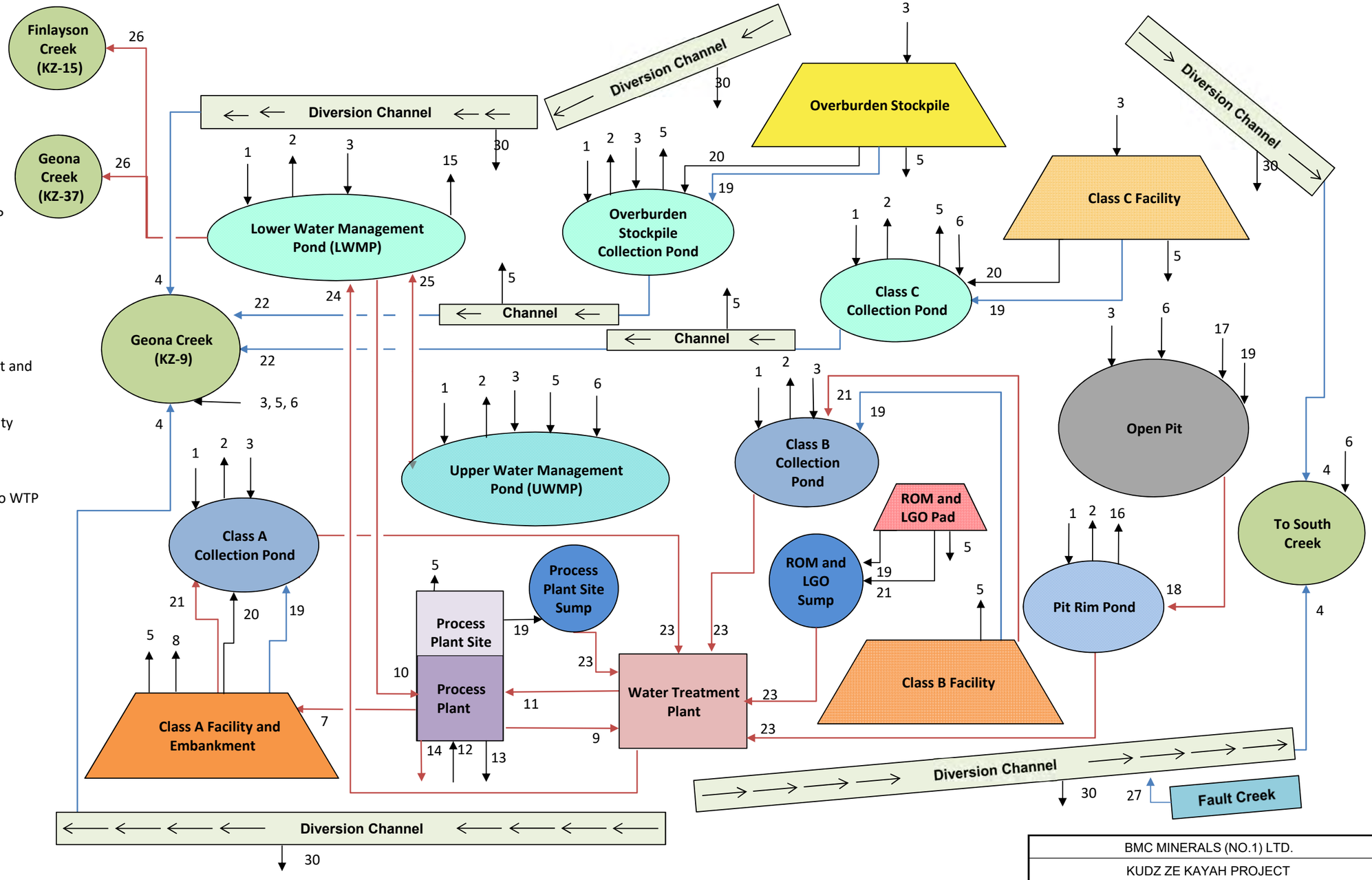
24 Treated Discharge from WTP
25 Surplus from UWMP or LWMP
26 Discharge from LWMP
27 Discharge from Fault Creek
28 Pit Lake Discharge
29 Discharge from Wetland
30 Diversion Channel Seepage to Groundwater System



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1. ROM = RUN OF MINE, LGO = LOW GRADE ORE.
2. → = DIVERSION OR COLLECTION DITCH, → = PIPELINE, → = OTHER FLOW PATHS.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
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KUDZ ZE KAYAH PROJECT

WATER BALANCE FLOW SCHEMATIC OPERATIONS - YEAR 3 TO 10

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REF. NO. 3

FIGURE 4-4

REV B

FLOW PATHS

1 Net Precipitation
2 Evaporation
3 Runoff from Undiverted Area
4 Diverted Runoff
5 Seepage to Geona Creek (KZ-9) Groundwater System
6 Groundwater discharge from upstream catchment
7 Water in Tailings
8 Void Losses
9 Process Water from Mill to WTP
10 Makeup Water from LWMP
11 Mill Reclaim
12 Water in Ore
13 Water in Concentrate
14 Potable Water
15 Dust Suppression
16 Water to Paste Plant
17 Groundwater Inflow to Open Pit and Underground Workings
18 Open Pit Dewatering
19 Surface Runoff from Mine Facility
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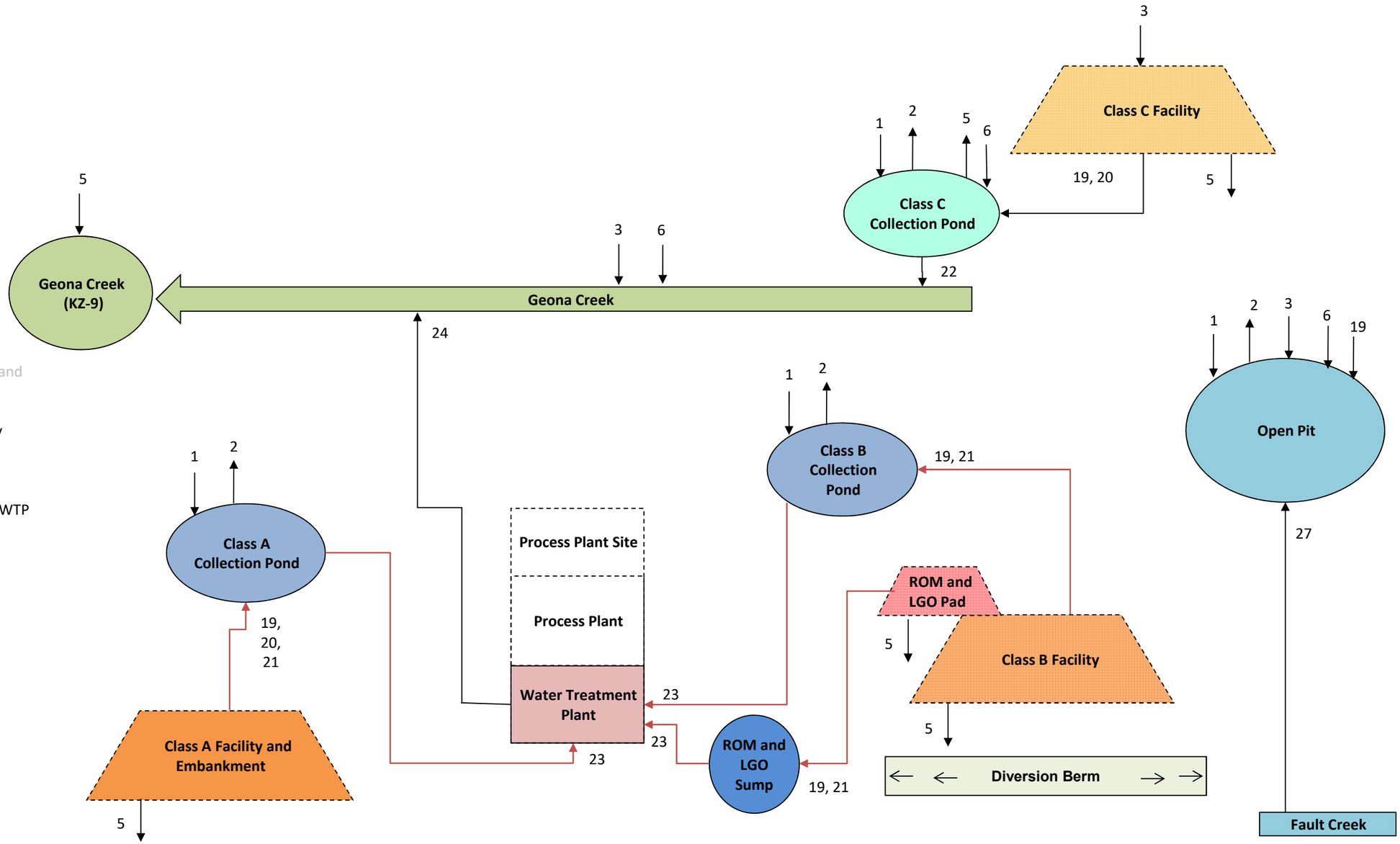
21 Seepage Collection System
22 Overflow from Sediment Pond
23 Surplus from Collection Pond to WTP
24 Treated Discharge from WTP
25 Surplus from UWMP or LWMP
26 Discharge from LWMP
27 Discharge from Fault Creek
28 Pit Lake Discharge
29 Discharge from Wetland
30 Diversion Channel Seepage to Groundwater System



NOTES:

1. ROM = RUN OF MINE, LGO = LOW GRADE ORE.
2. → = DIVERSION OR COLLECTION DITCH, → = PIPELINE, → = OTHER FLOW PATHS.

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KUDZ ZE KAYAH PROJECT

WATER BALANCE FLOW SCHEMATIC ACTIVE CLOSURE

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REF. NO. 3

FIGURE 4-5

REV B

FLOW PATHS

1 Net Precipitation
2 Evaporation
3 Runoff from Undiverted Area
4 Diverted Runoff
5 Seepage to Geona Creek (KZ-9) Groundwater System
6 Groundwater discharge from upstream catchment
7 Water in Tailings
8 Void Losses
9 Process Water from Mill to WTP
10 Makeup Water from LWMP
11 Mill Reclaim
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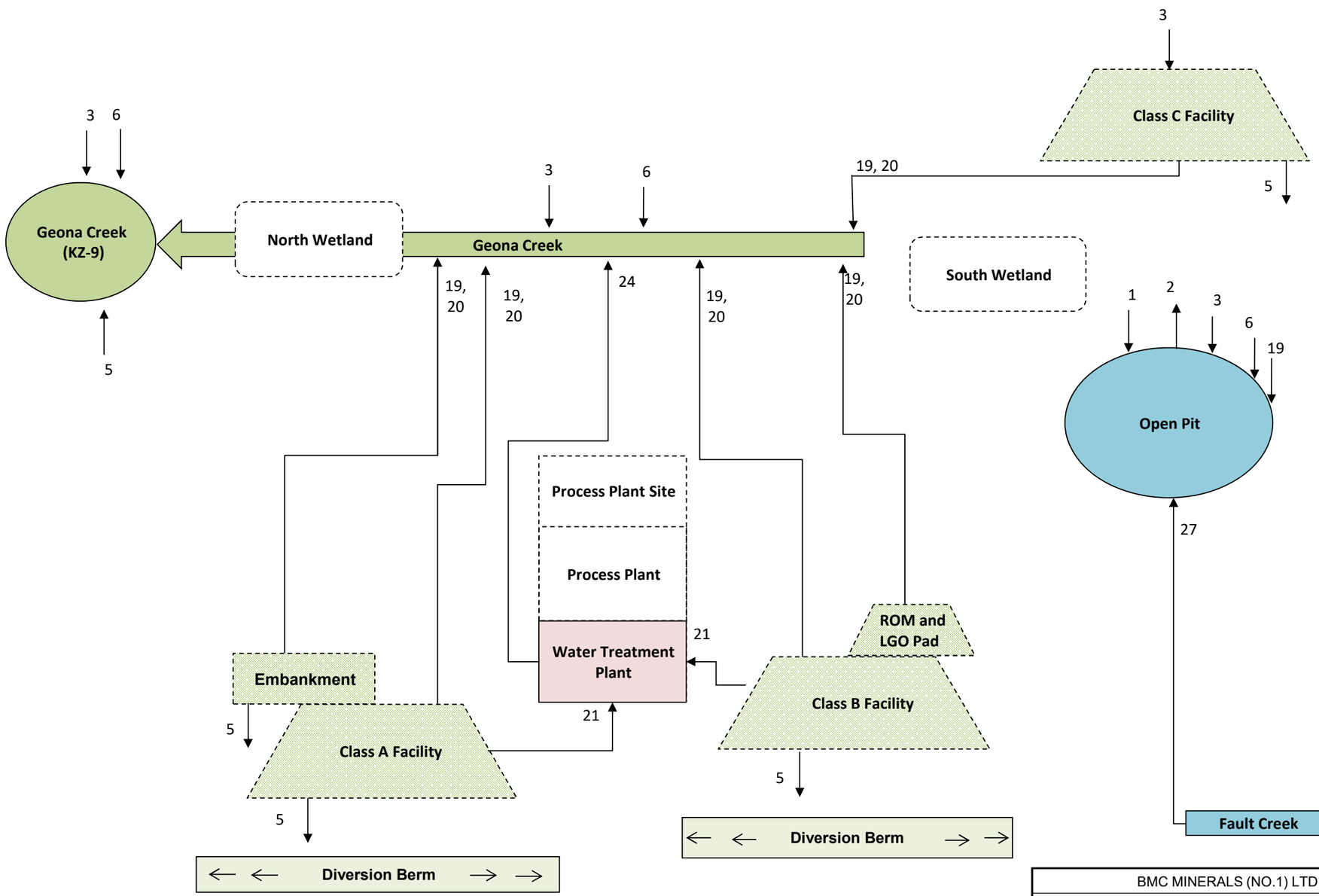
23 Surplus from Collection Pond to WTP
24 Treated Discharge from WTP
25 Surplus from UWMP or LWMP
26 Discharge from LWMP
27 Discharge from Fault Creek
28 Pit Lake Discharge
29 Discharge from Wetland
30 Diversion Channel Seepage to Groundwater System



NOTES:

1. ROM = RUN OF MINE, LGO = LOW GRADE ORE.
2. = DIVERSION OR COLLECTION DITCH, = PIPELINE, = OTHER FLOW PATHS.
3. WATER TREATMENT AS REQUIRED

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KUDZ ZE KAYAH PROJECT

WATER BALANCE FLOW SCHEMATIC TRANSITIONAL CLOSURE

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REF. NO. 3

FIGURE 4-6

REV B

FLOW PATHS

1 Net Precipitation
2 Evaporation
3 Runoff from Undiverted Area
4 Diverted Runoff
5 Seepage to Geona Creek (KZ-9) Groundwater System
6 Groundwater discharge from upstream catchment
7 Water in Tailings
8 Void Losses
9 Process Water from Mill to WTP
10 Makeup Water from LWMP
11 Mill Reclaim
12 Water in Ore
13 Water in Concentrate
14 Potable Water
15 Dust Suppression
16 Water to Paste Plant
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18 Open Pit Dewatering
19 Surface Runoff from Mine Facility
20 Toe Discharge
21 Seepage Collection System
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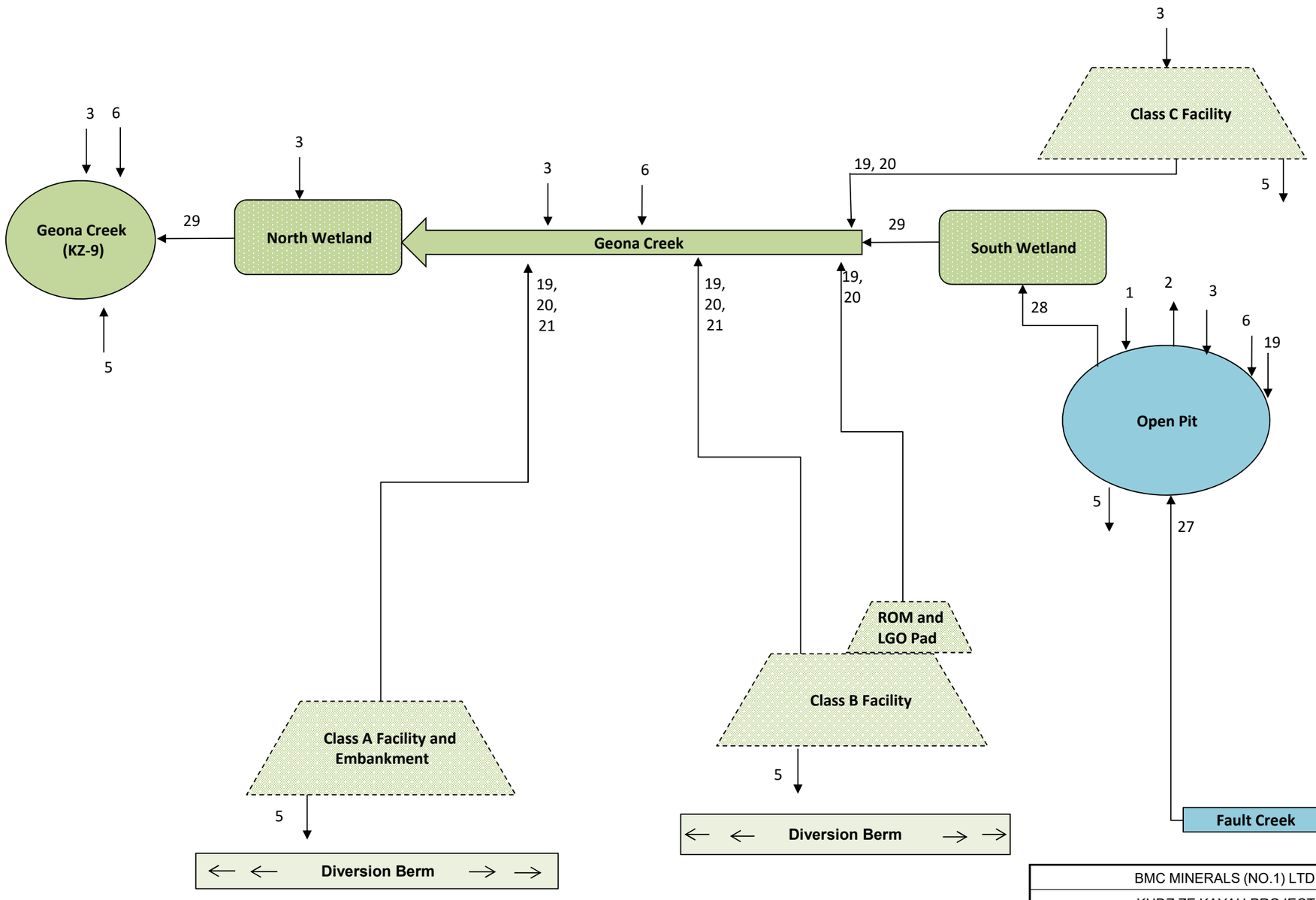
23 Surplus from Collection Pond to WTP
24 Treated Discharge from WTP
25 Surplus from UWMP or LWMP
26 Discharge from LWMP
27 Discharge from Fault Creek
28 Pit Lake Discharge
29 Discharge from Wetland
30 Diversion Channel Seepage to Groundwater System



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KUDZ ZE KAYAH PROJECT

WATER BALANCE FLOW SCHEMATIC POST-CLOSURE

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REF. NO. 3

FIGURE 4-7

REV B

5. WATER MANAGEMENT POND WATER QUALITY MODEL

Storage of surface water within the Project site will be managed in the WMP consisting of the Upper and Lower Water Management Ponds (UWMP and LWMP, respectively). The two ponds will be constructed with a total storage capacity of approximately 750,000 m^3 and will receive surface runoff and treated discharge from the WTP. Water is discharged from the LWMP at varying rates throughout the year to the receiving environment at two discharge points:

1) Geona Creek near the existing KZ-9 monitoring station and immediately upstream of the confluence with unnamed creek (KZ-18); and

2) Finlayson Creek immediately upstream of the existing KZ-15 monitoring station (Figure 5-1).

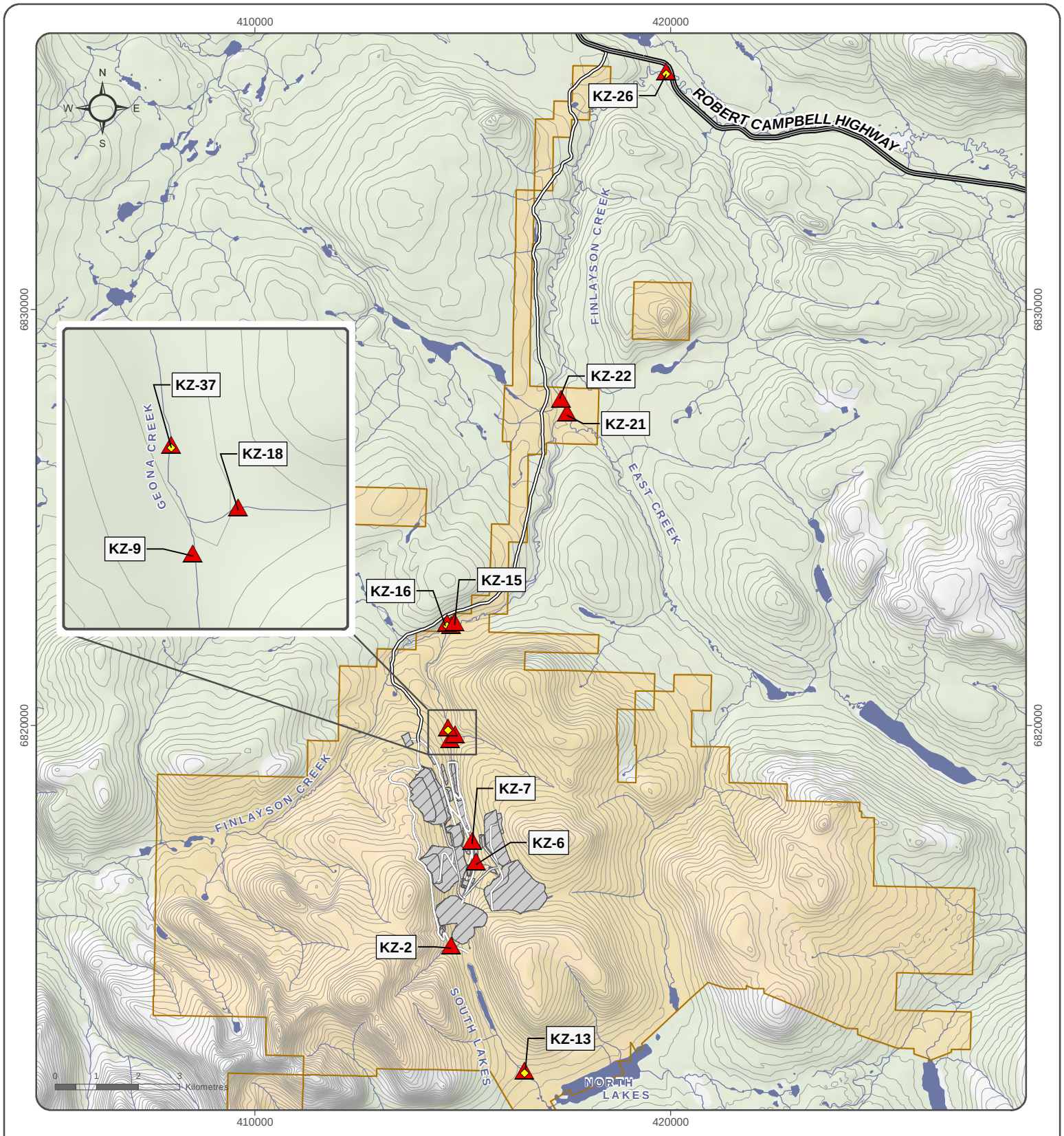
The water balance developed by Knight Piésold Ltd. (KP, 2018) includes water balances for the UWMP and LWMP, as well as for the WTP, which receives contact water from the Class A and Class B storage facilities, runoff collection from the Process Plant area and LGO/ROM pad, and the Pit Rim Pond (receiving ABM pit dewatering). For the purpose of water quality modelling, the UWMP and LWMP were treated as a single storage body that receives all surface water loads and will be henceforth referred to as the Water Management Pond (WMP) since it will be last point of control before Site water is discharged to the receiving environment. The water balance flows were combined with loading source terms developed for the main Project components and background water quality to predict water quality in the WMP.

During the transition closure phase the UWMP dam will be removed and the LWMP dam will be removed and no longer retain water. Therefore, water quality predictions were not made for the WMP after the Operations phase and the predicted impact of Project site drainage water to the receiving environment water quality is addressed in the Receiving Water Quality Model (Section 8).

5.1 WATER BALANCE MODEL RESULTS

The water balance for the WMP was developed by KP and incorporated the monthly flows into the WMP, monthly discharges to KZ-9 and KZ-15, and storage volumes (KP, 2018).

The water balance was developed with a MAP scenario as well as several variations that include dry and wet year inputs to investigate water quality sensitivity to climatic variation, as discussed in Section 4.1. Additional information regarding the water balance and the various scenarios is provided in KP (2018).



Current Surface Water Quality Monitoring Station

Surface Water Quality Monitoring Station with Prediction

Location of Proposed Mine Infrastructure

BMC Minerals (No.1) Ltd. Mineral Claim Areas

Contours (20 m interval)

Tote Road/Proposed Access Road

Proposed Mine Road

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Datum: NAD 83; Projection: UTM Zone 9N

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KUDZ ZE KAYAH PROJECT

FIGURE 5-1

SURFACE WATER QUALITY MONITORING LOCATIONS

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5.2 WATER MANAGEMENT POND WATER QUALITY MODEL

The following section outlines the modelling inputs and outputs used in predicting the movement of mass loads from the various Project components to the WMP.

5.2.1 MASS LOAD INFLOWS

5.2.1.1 Surface Runoff

Runoff from precipitation that falls within the site but not within the catchment of one of the main site components will report to the WMPs via surface flow or captured in ditches diverting water from site facilities. The runoff was assumed to have water quality similar to that which has been observed at the monitoring stations in the vicinity of the KZK site footprint (monitoring locations KZ-6 and KZ-7; Figure 5-1). The load contribution to the WMPs from surface runoff was calculated by multiplying the runoff volume for a specific month by the average of the monthly median water quality of KZ-6 and KZ-7 for that month. The median monthly water quality from 1994 to March 2018 at KZ-6 and KZ-7 is provided in APPENDIX A.

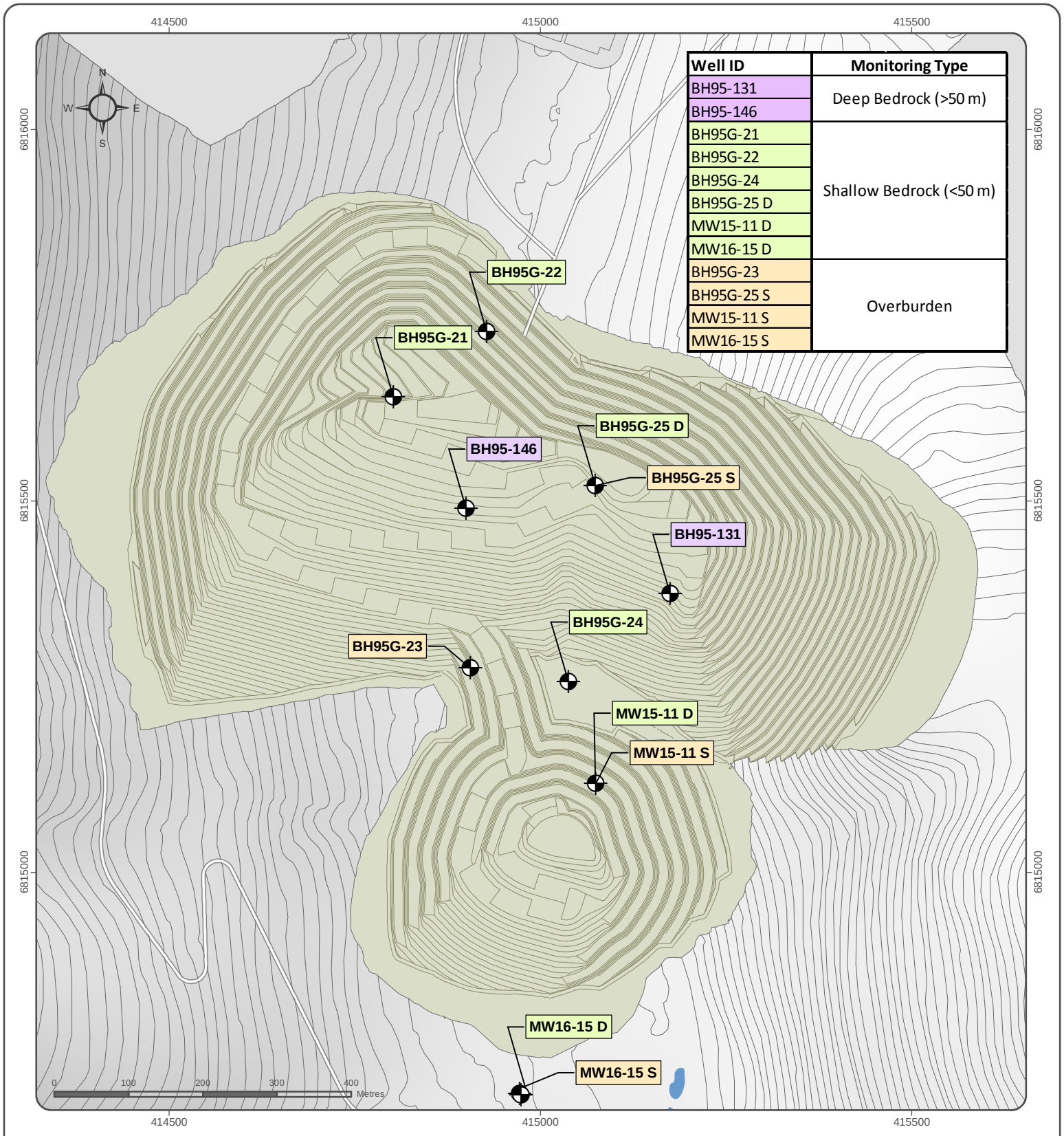
5.2.1.2 ABM Open Pit Dewatering – Groundwater

The ABM Open Pit and surrounding groundwater will require dewatering throughout the Operations phase. The dewatering from the ABM Open Pit will first be pumped to the Pit Rim Pond to allow for settlement and then will be conveyed to the WTP before release to the WMP. Water quality data from groundwater monitoring wells (May 2015 to November 2017) in the vicinity of the ABM Open Pit were used to calculate the load contributed from dewatering. The average of water quality data from deep bedrock (>50 m depth) wells (May 2015 to November 2017) was used to approximate the water quality extracted from the underground workings and the average of shallow bedrock (<50 m depth) and overburden wells was used to approximate the water quality from groundwater and surface pit dewatering (Table 5-1; Figure 5-2). It was assumed that the residence time in the Pit Rim Pond would allow for oxidation and precipitation of reduced iron in the extracted groundwater once exposed to atmospheric conditions. To account for this process, the average iron concentration from the groundwater data was reduced by a factor of ten. Loading from groundwater dewatering to the WTP was calculated by multiplying the volume of groundwater extracted by the average groundwater quality.

Table 5-1: Groundwater Wells and Average Groundwater Quality Data for use in the WMP Model

	Deep Groundwater	Shallow and Overburden
Wells used to calculate average concentrations:	BH95-131, BH95-146	BH95-21, BH95-22, BH95-23, BH95-24, BH95-25S/D, MW16-15S/D, MW15-11S/D
	Average Dissolved Concentration (mg/L)	
Parameter	**Deep Groundwater**	**Shallow and Overburden**
Hardness	565	378
Sulphate	237	111
Nitrate-N	0.011	0.10
Nitrite-N	0.0011	0.0026
Ammonia-N	0.085	0.12
Fluoride	0.17	0.10
Chloride	0.77	1.2
Dissolved Organic Carbon	1.2	1.7
Aluminum	0.0023	0.0046
Antimony	0.0014	0.00019
Arsenic	0.0020	0.0041
Cadmium	0.000028	0.00027
Calcium	149	90
Cobalt	0.000066	0.000357
Copper	0.00029	0.00072
Iron	0.061[a]	0.091[a]
Lead	0.00049	0.00011
Manganese	0.12	0.26
Nickel	0.00026	0.00079
Silver	0.000012	0.0000038
Selenium	0.000047	0.00039
Thallium	0.0000081	0.0000044
Uranium	0.010	0.0051
Zinc	0.0043	0.052

[a] Reduced by a factor of ten to account for oxidation and precipitation of reduced iron



Well ID	Monitoring Type
BH95-131	Deep Bedrock (>50 m)
BH95-146	
BH95G-21	Shallow Bedrock (<50 m)
BH95G-22	
BH95G-24	
BH95G-25 D	
MW15-11 D	
MW16-15 D	
BH95G-23	Overburden
BH95G-25 S	
MW15-11 S	
MW16-15 S	

Groundwater Monitoring Locations

ABM Open Pit

Location of Proposed Mine Infrastructure

ABM Open Pit Contour

Project Site Road

Contour (5 m Interval)

KUDZ ZE KAYAH PROJECT

FIGURE 5-2

GROUNDWATER MONITORING WELLS IN ABM PIT VICINITY

DECEMBER 2016

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(Last edited by: amaltashevska; 23/12/2016/11:51 AM)

5.2.1.3 ABM Open Pit Dewatering - Pit Wall Runoff

Excavation of the ABM Open Pit will expose bedrock units (geodomains) that will undergo weathering. Weathered products will then be flushed from the pit wall surfaces and fractures into the ABM Open Pit, where they will be removed via pit dewatering and conveyed to the Pit Rim Pond and, further, to the WTP. The load contribution from the pit wall was calculated based on the surface area of exposed pit wall and the source terms presented in Section 3. The source term for massive pyrite component of the pit wall was extracted from the kinetic data published by Cominco (1996). The final open pit wall surface area of 1,140,700 m^2 will incrementally be exposed as the ABM Open Pit is developed and the approximate timeline of development is shown in Table 5-2.

Table 5-2: Approximate ABM Open Pit Bench Development

Pit Bench Elevations (masl)	Approximate Time of Development (Year)
1,570 – 1,530	-1
1,530 – 1,510	1
1,500 – 1,490	2
1,480 – 1,460	3
1,450 – 1,440	4
1,430 – 1,420	5
1,410 – 1,400	6
1,390 – 1,370	7
1,360 – 1,340	8
1,330 – 1,290	9
1,280 – 1,210	10

The loading from the ABM Open Pit wall is dependent on the geological material exposed at each bench level as characterized by geodomain. The approximate surface area at each bench level was broken down by geodomain and presented in Table 5-3.

Source terms based on kinetic tests data (in mg/kg/wk) from the ARD/ML characterization report (AEG, 2018a) were selected to represent each geodomain exposed on the pit wall and adapted to provide per-planar area loading rates (in mg/m^2/month). The limited massive sulphide stockwork exposure on the pit wall was modelled using humidity cell data (II-22) from Cominco (1996). A conservative approach was adopted in developing pit wall runoff source terms where the 75th percentile of each kinetic test was used on the assumption that a relatively high loading rate will be produced from pit wall rock freshly exposed to atmospheric oxygen during the Operations phase ("steady state" loading rates are used in the closure phases of the Pit Lake Model, as discussed in Section 6.2.1). The kinetic test results used to develop the pit wall loading rates during Operations are provided in Table 5-4.

Table 5-3: Approximate ABM Open Pit Wall Surface Area by Geodomain

ABM Open Pit Bench Level (masl)	Surface Area (m^2)												
	AK RHYc	AK RHYv	CA CL MAF	CARB MDS/RHY	Massive Sulphide	MDS	MU PY RHY	Overburden	PY AK RHYc	PY AK RHYv	PY CL RHY	RHYi	Total
1,570	-	-	-	-	-	-	-	-	-	-	-	-	-
1,560	-	-	-	-	-	-	-	-	-	-	-	-	-
1,550	-	-	-	-	-	-	-	11,643	-	-	-	-	11,643
1,540	-	-	-	-	-	411	-	7,393	-	-	-	-	7,804
1,530	-	-	-	-	-	3,460	-	5,119	-	-	-	-	8,578
1,520	-	-	-	-	-	5,340	-	3,412	-	-	-	-	8,752
1,510	-	-	-	-	-	6,651	-	3,934	-	63	-	-	10,648
1,500	-	-	-	-	-	7,615	-	5,498	-	2,022	-	-	15,134
1,490	-	-	-	-	-	8,215	-	5,134	-	4,376	-	-	17,725
1,480	-	-	-	-	-	8,341	-	8,152	-	6,256	-	-	22,749
1,470	-	-	-	32	-	7,741	-	5,687	553	9,731	-	-	23,744
1,460	-	490	363	316	-	8,815	869	3,902	3,223	6,066	253	-	24,298
1,450	-	3,318	885	237	-	8,010	679	3,776	1,675	1,533	300	-	20,412
1,440	-	4,471	1,122	679	-	9,779	1,074	3,602	1,754	3,618	427	-	26,526
1,430	-	3,902	1,438	758	-	8,736	1,169	4,329	1,359	2,907	521	-	25,119
1,420	-	6,967	2,085	1,706	-	9,226	1,390	6,351	1,896	3,412	632	-	33,665
1,410	-	7,978	2,512	916	-	7,188	1,074	5,735	-	4,392	585	-	30,380
1,400	-	12,796	3,570	806	16	6,983	1,137	10,901	-	7,709	774	-	44,693
1,390	-	10,443	4,724	363	79	4,455	916	15,213	-	11,627	743	932	49,496
1,380	-	18,310	5,687	774	142	2,370	1,027	15,340	-	15,056	679	4,518	63,903
1,370	-	17,890	7,096	271	159	1,611	1,324	12,613	-	16,981	686	4,417	63,047
1,360	-	22,690	10,269	558	112	1,419	2,169	1,020	16	24,109	606	7,175	70,142
1,350	-	14,542	11,735	255	16	1,148	1,642	-	399	20,346	207	4,927	55,218
1,340	32	16,200	12,469	64	159	861	2,503	-	2,535	26,724	446	5,246	67,240
1,330	144	8,658	15,626	48	96	526	2,647	-	3,731	19,469	1,037	3,620	55,601
1,320	255	8,977	13,202	319	16	191	4,162	-	4,560	22,387	1,052	4,991	60,113
1,310	-	4,481	13,713	463	255	-	8,419	-	2,838	12,373	367	3,476	46,384
1,300	-	1,786	10,683	1,594	829	-	8,180	-	3,396	16,328	367	5,182	48,345
1,290	-	-	11,305	1,834	797	-	7,670	-	2,982	8,594	670	4,656	38,508
1,280	-	-	11,959	941	1,084	-	7,654	-	4,831	10,205	2,615	3,285	42,573
1,270	-	-	11,369	1,531	1,913	-	5,613	-	2,631	4,273	4,927	1,786	34,043
1,260	-	-	8,881	4,114	2,854	-	4,879	-	1,977	2,679	8,148	1,435	34,968
1,250	-	-	8,228	4,066	2,089	-	3,301	-	-	733	8,993	-	27,410
1,240	-	-	6,633	2,169	1,611	-	3,412	-	-	128	10,635	-	24,587
1,230	-	-	6,697	-	909	-	3,412	-	-	-	4,321	-	15,339
1,220	-	-	7,861	-	861	-	1,866	-	-	-	271	-	10,859
1,210	-	-	1,020	-	32	-	-	-	-	-	-	-	1,052
Total	431	163,898	191,132	24,814	14,031	119,091	78,188	138,754	40,356	264,097	50,263	55,646	1,140,699

Table 5-4: 75th Percentile Loading Rates (mg/kg/wk) of Select Kinetic Tests

Kinetic Test ID	Hardness ($CaCO_3$)	Sulphate	P	F	Al	Sb	As	Cd	Ca	Co	Cu	Fe	Pb	Mn	Ni	Ag	Se	Th	U	Zn
C-1	3.8	1.8	0.00036	0.0032	0.0018	0.000041	0.000016	0.00000058	0.92	0.000011	0.000033	0.000073	0.0000018	0.0017	0.0000059	0.00000037	0.000031	0.00000069	0.00097	0.000037
C-2	3.9	2.4	0.00036	0.0027	0.0020	0.00021	0.0000061	0.00000080	1.0	0.0000056	0.000034	0.000073	0.0000018	0.0031	0.0000057	0.00000036	0.000037	0.00000064	0.00064	0.000037
C-3	3.1	1.4	0.00037	0.0014	0.0015	0.0013	0.000034	0.0000086	0.86	0.000014	0.000054	0.000073	0.000087	0.0030	0.000010	0.00000037	0.00024	0.000014	0.0022	0.00051
C-4	4.9	3.5	0.00037	0.0012	0.00066	0.0011	0.000022	0.000014	1.2	0.000023	0.000038	0.000073	0.000018	0.0063	0.00012	0.00000037	0.00083	0.0000098	0.00031	0.0012
C-5	6.6	5.1	0.00036	0.0027	0.0010	0.00017	0.0000074	0.0000029	1.7	0.000017	0.000047	0.000073	0.0000065	0.0049	0.000017	0.00000037	0.00019	0.0000011	0.00040	0.00029
C-6	3.7	2.3	0.00036	0.0028	0.0015	0.00067	0.000024	0.0000045	1.0	0.000012	0.000044	0.000073	0.000013	0.0026	0.000012	0.00000036	0.00023	0.0000051	0.0021	0.00032
C-7	4.2	4.6	0.00037	0.0034	0.0047	0.0012	0.00096	0.00084	1.2	0.00056	0.0041	0.024	0.0082	0.063	0.0021	0.00000037	0.0010	0.000023	0.00085	0.098
C-8	2.5	1.5	0.00036	0.0029	0.0012	0.00034	0.0030	0.0000075	0.67	0.0000067	0.000040	0.000073	0.000044	0.0030	0.000016	0.00000036	0.000047	0.0000036	0.0013	0.00061
C-9	6.3	5.2	0.00036	0.0036	0.00041	0.000054	0.00012	0.0000010	1.7	0.000047	0.000025	0.000072	0.0000053	0.00015	0.00016	0.00000036	0.000071	0.00000066	0.00048	0.000096
C-11	1.1	0.23	0.00036	0.0014	0.0016	0.00076	0.0046	0.00000068	0.32	0.0000082	0.000035	0.00028	0.0000030	0.00063	0.000035	0.00000036	0.000026	0.0000024	0.00014	0.000078
HCII-22 [a]	16.1	44	0.037	N/A	0.049	N/A	N/A	0.01			0.033	8.8	N/A	4.9	0.014	N/A	0.007		N/A	0.15

[a] Cominco (1996) humidity cell test with massive pyrite; relatively poor detection limits for some analytes measured in the Cominco HCII-22 humidity cell leachate prevented the calculation of loading rates for some parameters

A summary of the adjustment factors used to adapt the loading rates from mass-based kinetic tests to planar area loading rates for the pit wall is provided in Table 5-5 and are described below. The adjusted loading rates for each geodomain used in the model are provided in Table 5-6.

Table 5-5: Summary of Adjustment Factors to Convert mg/kg/wk Loading Rates to mg/m^2/month

	Adjustment Factors	
	Trickle Leach Column	Humidity Cell
Grain Size Factor	0.3	0.1
Flushing Factor	0.5	
Pit Slope (45°)	1.41	
Reactive Thickness (m)	1	
Average Density (tonnes/m^3)	2.76	
Weeks/Month	4.34	
Bulk Factor	**2,530**	**840**

5.2.1.4 Grain Size Factor

Broadly, weathering of rock is influenced by its particle size with the smaller particle fraction contributing relatively more load than the larger particle size fraction. The source terms used in this model were developed using results from the trickle leach columns and humidity cells. The trickle leach column and humidity cell tests use material with particle sizes that are not representative of the more competent pit wall rock, which has a lower proportion of particles that contribute more readily to loading. Thus, trickle leach and humidity cell test results would tend to overestimate loading from rock material and their data have been scaled by factors of 0.3 and 0.1, respectively, to address this (further discussed in Section 3.3.1).

5.2.1.5 Flushing Water Factor

Kinetic tests receive much higher volumes of flushing water on a water to solids basis than pit wall rock that receives meteoric flushing water. Thus, weathered loads are more thoroughly flushed from the kinetic test material than would be from pit wall material that was contacted by meteoric water in the form of precipitation and surface runoff. It is assumed that 50% of the total weathered load is flushed by runoff/precipitation. The remaining 50% was assumed to accumulate and be released as a load when the pit wall surface is submerged during Closure (see Section 6.2.1.5). Pit wall surfaces below 1,380 masl contribute a monthly runoff load until submerged. As a conservative measure, it was assumed that the pit wall surface contributes a runoff load for one year after submergence to account for the potential of seasonally fluctuating pit lake elevations and the continuation of weathering by oxygenated water near the ABM Lake surface. One year after an elevation has been submerged, the load contribution from that level to ABM Lake ceases.

It is assumed that runoff loads will only occur during the months of April through October as the pit walls will be frozen throughout the winter months and significant flushing of weathered loads is not anticipated.

5.2.1.6 Mass of ABM Open Pit Wall Rock

The volume of pit wall rock that will undergo weathering and contribute to mass loading to the ABM Lake is broadly defined as the planar surface area of the pit wall and the depth to which fractures extend into the pit wall. Blasting can widen pre-existing fractures, loosen material from the competent pit wall, and create new fractures, thereby increasing the exposure of wall rock to atmospheric oxygen and the flushing of weathered products by meteoric water and groundwater. It was assumed that blast-induced fractures extend 1 m into the pit wall. The volume of rock in a planar unit area of pit wall was increased by a factor of 1.41 to account for an average pit wall slope of 45 degrees. The mass rock in a planar unit area of pit wall is determined by multiplying the volume of rock by the rock density. The bulk density of ABM Open Pit rock of 2.76 tonnes/m^3 was used to calculate the mass of a planar area of intact pit wall rock.

5.2.1.7 Geodomain Representation

Loading rates from the kinetic tests were combined to best represent the loading rates that could be expected from material of a particular geodomain. The material in certain kinetic tests spanned multiple geodomains and so composites of results were assigned to certain geodomains. More details regarding the geodomain composition of the kinetic tests can be found in the ARD/ML report (AEG, 2018a). The kinetic tests used to calculate geodomain-specific loading rates are shown in Table 5-6.

Table 5-6: Adjusted Geodomain-specific Loading Rates for Pit Wall Planar Area (mg/m²/month)

Geodomain	Kinetic Test Used	Hardness ($CaCO_3$)	Sulphate	P	F	Al	Sb	As	Cd	Ca	Co	Cu	Fe	Pb	Mn	Ni	Ag	Se	Th	U	Zn
AK RHYv/AK RHYc	C-1 (75%), C-5 (25%)	10,651	6,338	0.87	7.4	3.8	0.17	0.033	0.0028	2680	0.029	0.087	0.17	0.0072	5.9	0.020	0.00087	0.17	0.0019	2.0	0.24
MU PY RHY	C-3 (75%), C-7 (25%)	8,011	5,176	0.87	4.6	5.5	3.0	0.63	0.52	2239	0.36	2.6	14	5.0	43	1.3	0.00087	1.0	0.038	4.4	59
CARB MDS/RHY	C-4 (75%), C-7 (25%)	11,245	9,088	0.87	4.1	4.0	2.7	0.61	0.53	2893	0.37	2.5	14	4.9	49	1.5	0.00087	2.1	0.031	1.1	61
PY AK RHYv/PY AK RHYc	C-5 (90%), C-7 (10%)	15,174	12,054	0.87	6.6	3.2	0.63	0.24	0.21	3988	0.17	1.1	5.9	2.0	25	0.55	0.00087	0.65	0.0077	1.1	24
PY CL RHY	C-7	10,042	10,981	0.87	8.1	11	2.8	2.3	2.0	2793	1.3	9.9	57	19	150	5.1	0.00087	2.4	0.055	2.0	233
RHYi	C-8	5,871	3,519	0.87	6.9	2.8	0.82	7.2	0.018	1599	0.016	0.095	0.17	0.10	7.1	0.038	0.00087	0.11	0.0085	3.1	1.5
MDS	C-9	15,112	12,480	0.85	8.6	1.0	0.13	0.29	0.0025	4020	0.11	0.059	0.17	0.013	0.35	0.384	0.00085	0.17	0.0016	1.1	0.23
CA CL MAF	C-11	2,561	555	0.86	3.3	3.8	1.8	11	0.0016	764	0.020	0.083	0.67	0.0073	1.5	0.083	0.00086	0.062	0.0057	0.33	0.19
Massive Pyrite	HC II-22 [a]	130,926	354,852	297	N/A	396	N/A	N/A	81	706	N/A	272	71458	N/A	39798	117	N/A	56.7	N/A	N/A	1213

[a] Cominco (1996) humidity cell test with massive pyrite; relatively poor detection limits for some analytes measured in the Cominco HCII-22 humidity cell leachate prevented the calculation of loading rates for some parameters

5.2.1.8 Process Plant Facility Site Contact Water

The Process Plant Facility includes a ROM and LGO stockpile where Class A rock will be stored before being milled. Contact water from this area will be collected in sumps at the mill and the ROM/LGO stockpile and either be used in the milling process or be directed to the WTP for treatment. The ROM/LGO stockpiles are not anticipated to contain more than six months of feed, and thus acidic conditions are not expected to develop; however, based on shake flask extraction (SFE) analysis results of ore samples presented in the ARD/ML report (AEG, 2018a), it is anticipated that water in contact with ROM and LGO stockpile material will have relatively high concentrations of constituents of potential interest (COPIs) (e.g., antimony, cadmium, lead, selenium and zinc) and will require treatment prior to release to the LWMP. The water quality of the Process Plant Facility site runoff was assumed to have the median concentrations of the SFE analyses of ore samples multiplied by a scaling factor of 0.5 as only a fraction of the ROM and LGO material would be flushed by runoff. The water quality of the Process Plant Facility site runoff is presented in Table 5-7. Given the elevated COPI concentrations in the runoff water from the Process Plant Facility site, such drainage will be conveyed to the water treatment plant (WTP) for treatment before being discharged to the WMP. The water quality of the treated WTP discharge is discussed in Section 5.2.1.11. Loading associated with process plant facility contact water was calculated by multiplying the concentrations presented in Table 5-7 by the flows provided in KP (2018).

Table 5-7: Estimated Process Plant Facility Site Runoff Water Quality

Dissolved Constituent	Concentration (mg/L)	Dissolved Constituent	Concentration (mg/L)
Hardness (from total)	16	Lead	0.098
Sulphate	7.3	Manganese	0.069
Aluminum	0.0013	Nickel	0.00048
Antimony	0.0050	Silver	0.000010
Arsenic	0.00021	Selenium	0.010
Cadmium	0.000095	Thallium	0.00092
Cobalt	0.00014	Uranium	0.0000020
Copper	0.00020	Zinc	0.3
Iron	0.0010		

5.2.1.9 Class A Storage Facility Runoff

The Class A Storage Facility will manage, and store filtered tailings and Class A waste rock. At the end of Operations, the Class A Storage Facility will store approximately 11.6 Mt of Class A waste rock and 15.5 Mt of tailings. Based on kinetic testing results presented in the ARD/ML report (AEG, 2018a) it is anticipated that water in contact with Class A waste rock and tailings will have elevated COPIs (e.g., cadmium, copper, lead, selenium, and zinc) and will require treatment prior to release to the LWMP. The estimated median concentrations of COPIs in the Class A Storage Facility drainage in the last 12 months of operations are presented in Table 5-8 for the mean precipitation scenario. Given the elevated COPI concentrations in the

water from the Class A Storage Facility, such drainage will be conveyed to the water treatment plant (WTP) for treatment before being discharged to the WMP. The water quality of the treated WTP discharge is discussed in Section 5.2.1.11.

The monthly load contained in the Class A runoff was calculated by multiplying the total tonnage of waste rock present in the Class A Storage Facility in that month by the loading rate source term for Class A material during the Operations phase as described in Section 3.3.6.

Table 5-8: Estimated Median Class A Storage Facility Drainage Chemistry in Last 12 Months of Operations (mg/L)

Dissolved Constituent	Concentration (mg/L) [a]
pH	4
Sulphate	880
Nitrate-N	2.8
Nitrite-N	0.065
Ammonia-N	0.98
Fluoride	1.2
Aluminum	13
Antimony	0.013
Arsenic	0.31
Cadmium	1.4
Cobalt	0.82
Copper	100
Iron	58
Manganese	60
Nickel	0.92
Lead	0.035
Selenium	1.4
Thallium	0.026
Uranium	0.032
Zinc	220

[a] Concentrations adjusted following equilibrium with gypsum (sulphate) and schwertmannite (iron)

5.2.1.10 Class B Storage Facility Runoff

The Class B Storage Facility will accumulate and store Class B waste rock. At the end of the Operations phase, the Class B Storage Facility will store approximately 47.2 Mt of Class B waste rock. Analysis of kinetic test results of Class B material indicates that drainage from Class B material is anticipated to contain elevated concentrations of COPIs (e.g., arsenic, antimony) compared to the pWQO. Therefore,

the Class B runoff water will be conveyed to the WTP to decrease COPI concentrations before being discharged to the WMP. The model estimated median concentrations of COPIs in the Class B Storage Facility drainage during the last 12 months of operations are presented in Table 5-9 for the MAP scenario.

The monthly load contained in the Class B runoff was calculated by multiplying the total tonnage of waste rock present in the Class B Storage Facility in that month by the loading rate source term for Class B material during the Operations phase as described in Section 3.3.6.

Table 5-9: Estimated Median Class B Storage Facility Drainage Chemistry in Last 12 Months of Operations (mg/L)

Dissolved Constituent	Concentration (mg/L)
pH	7
Sulphate	160
Nitrate-N	10
Nitrite-N	0.24
Ammonia-N	1.3
Fluoride	0.29
Aluminum	0.002
Antimony	0.013
Arsenic	0.040
Cadmium	0.00018
Cobalt	0.00058
Copper	0.0016
Iron	0.0007
Manganese	0.44
Nickel	0.0012
Lead	0.00045
Selenium	0.0082
Thallium	0.00016
Uranium	0.023
Zinc	0.015

[a] Concentrations adjusted following equilibrium with gibbsite (aluminum) and ferrihydrite (iron)

5.2.1.11 Water Treatment Plant Discharge Quality

The WTP will receive water from the Class A Storage Facility collection pond, the Class B Storage Facility collection pond, the Pit Rim Pond (ABM pit dewatering), the Process Plant Facility site runoff (from LGO/ROM sump) water not used in milling. Treated water from the WTP will then be conveyed to the LWMP. The water quality from the Class A and B Storage Facility collection ponds is expected to worsen

throughout Operations as more waste material is placed in those facilities and loading increases, particularly as acidic conditions develop in the Class A drainage in approximately year 6. The median bulk input water quality to the WTP in the last 12 months of operations is shown in Table 5-10.

Design of the WTP has been undertaken by BQE Water, (BQE, 2018) in order to meet pWQOs in the receiving environment. BQE provided WTP effluent concentrations for a select group of parameters that are predicted to be highest relative to water quality guidelines (sulphate, aluminium, arsenic, cadmium, copper, iron, selenium and zinc) based on estimated input water quality and proposed treatment stages. For the remainder of parameters, the treatment efficiency of the WTP was based on conservative constituent removal based on experience with similar water treatment processes in Yukon.

In the water quality model, the treated WTP discharge concentration for each parameter was assumed to be equal to the treated concentration reported by BQE Water (BQE, 2018) or reduced by the factors specified in Table 5-10.

The load from the WTP to the LWMP was calculated by multiplying the WTP discharge concentrations by the "treated discharge from WTP to LWMP" flow volumes provided by KP (2018).

Table 5-10: WTP Input and Treated Discharge Water Quality for Select Parameters

Dissolved Constituent	WTP Input Concentration (mg/L)	WTP Output Concentration (mg/L)	% Reduction/Specified by BQE
Sulphate	1,200	470	Specified
Nitrate-N	1.4	0.72	50%
Nitrite-N	0.033	0.017	50%
Ammonia-N	0.30	0.030	90%
Fluoride	0.26	0.26	0%
Aluminum	1.7	0.10	Specified
Antimony	0.0059	0.00059	90%
Arsenic	0.048	0.0050	Specified
Cadmium	0.18	0.00030	Specified
Cobalt	0.10	0.003	98%
Copper	12	0.0060	Specified
Iron	89	0.35	Specified
Manganese	7.6	2.3	75%
Nickel	0.11	0.023	80%
Lead	0.034	0.0034	90%
Selenium	0.18	0.0030	Specified
Thallium	0.0034	0.0014	60%
Uranium	0.012	0.0012	90%
Zinc	27	0.033	Specified

5.2.2 MASS LOAD OUTFLOWS

The only mass load outflows from the WMP is to the receiving environment and water used for dust suppression, as described in the following section. Any other "losses" from site that result in loading to the environment (e.g. seepage from waste rock storage facilities or ditches) are considered as part of the receiving water quality model (Section 8).

5.2.2.1 WMP Discharge

Water will be discharged from the WMP at two discharge points:

1) Geona Creek at the existing KZ-9 surface water monitoring station; and

2) Finlayson Creek immediately upstream of the existing KZ-15 surface water monitoring station.

The load attributed to the monthly WMP discharge volume was calculated assuming the WMP water is well-mixed and has uniform water quality throughout. It is assumed that the load discharged from the WMP is proportional to the volume that is discharged such that:

$$L_{eff} / L_{WMP} = V_{eff} / V_{WMP}$$

Where:

L_{eff} is the load in the WMP discharge volume;

L_{WMP} is the load in the WMP;

V_{eff} is the volume discharged from the WMP; and

V_{WMP} is the volume in the WMP.

Therefore, the load outflow in the WMP discharge for a given month was calculated according to the following equation:

$$L_{eff} = L_{WMP} * V_{eff} / V_{WMP}$$

Where the L_{WMP} was calculated after adding the load inflows in that given month.

5.2.3 CALCULATION OF WATER MANAGEMENT POND WATER QUALITY

The water quality in the WMP for a given month was calculated by summing the mass load inflows and subtracting the WMP discharge load outflow in that month to determine the net load present in the WMP. The load in the WMP was then divided by the water volume in the pond in that given month which provides a concentration.

5.2.4 RESULTS AND DISCUSSION

The results of the WMP water quality model are presented in APPENDIX B. The 25th percentile, average, 75th percentile and maximum concentrations of select modelled water quality parameters for the mean precipitation scenario are presented in Table 5-11, along with the maximum concentrations from the dry year precipitation scenario. The model estimated COPI concentrations during Years 1 to 10 of Operations under mean and the four different water balance variations during the Operations phase (dry and wet years in year 2 and 9) are presented in Figure 5-3 to Figure 5-6.

In general, concentrations of most modelled parameters increase throughout Operations as more waste material is deposited in storage facilities, acid drainage conditions (and thus, higher loading rates) develop in drainage from the Class A facility, and the surface area of the ABM Open Pit wall rock becomes exposed. Higher peak COPI concentrations (up to 50% higher) were observed for the dry year precipitation scenario compared to the mean precipitation. Conversely, the wet year scenarios returned lower concentrations for these constituents than the mean precipitation simulation.

Table 5-11: 25th Percentile, Average, 75th Percentile and Maximum Concentrations in the Mean Scenario and the Maximum Concentration in the Dry Scenarios of Select Modelled Parameters in the WMP Throughout Operations in each of the Precipitation Scenarios (all concentrations mg/L)

		Hardness	Sulphate	Nitrate-N	Nitrite-N	Ammonia-N	Fluoride
Mean	P25	304	136	0.18	0.0042	0.012	0.17
	Average	533	242	0.55	0.013	0.021	0.22
	P75	772	358	0.95	0.022	0.032	0.28
	Maximum	1188	501	1.3	0.030	0.042	0.36
Dry	Max	1479	534	1.7	0.040	0.058	0.36

		Total														Dissolved
		Aluminum	Antimony	Arsenic	Cadmium	Cobalt	Copper	Iron	Lead	Manganese	Nickel	Silver	Selenium	Thallium	Uranium	Zinc	Cadmium
Mean	P25	0.018	0.00027	0.0031	0.00021	0.000043	0.00073	0.28	0.0020	0.18	0.0014	0.000012	0.0022	0.00045	0.00065	0.026	0.00020
	Average	0.051	0.00037	0.0036	0.00026	0.00085	0.0029	0.32	0.0026	0.66	0.0073	0.000033	0.0026	0.00074	0.00083	0.031	0.00025
	P75	0.081	0.00045	0.0041	0.00031	0.0017	0.0049	0.37	0.0033	1.2	0.014	0.000057	0.0031	0.0010	0.0010	0.036	0.00031
	Maximum	0.11	0.00068	0.0054	0.00038	0.0034	0.0068	0.54	0.0039	2.1	0.025	0.00010	0.0044	0.0014	0.0015	0.051	0.00038
Dry	Max	0.12	0.00083	0.0057	0.00039	0.0042	0.0071	0.55	0.0042	2.6	0.031	0.00013	0.0045	0.0018	0.0018	0.052	0.00039

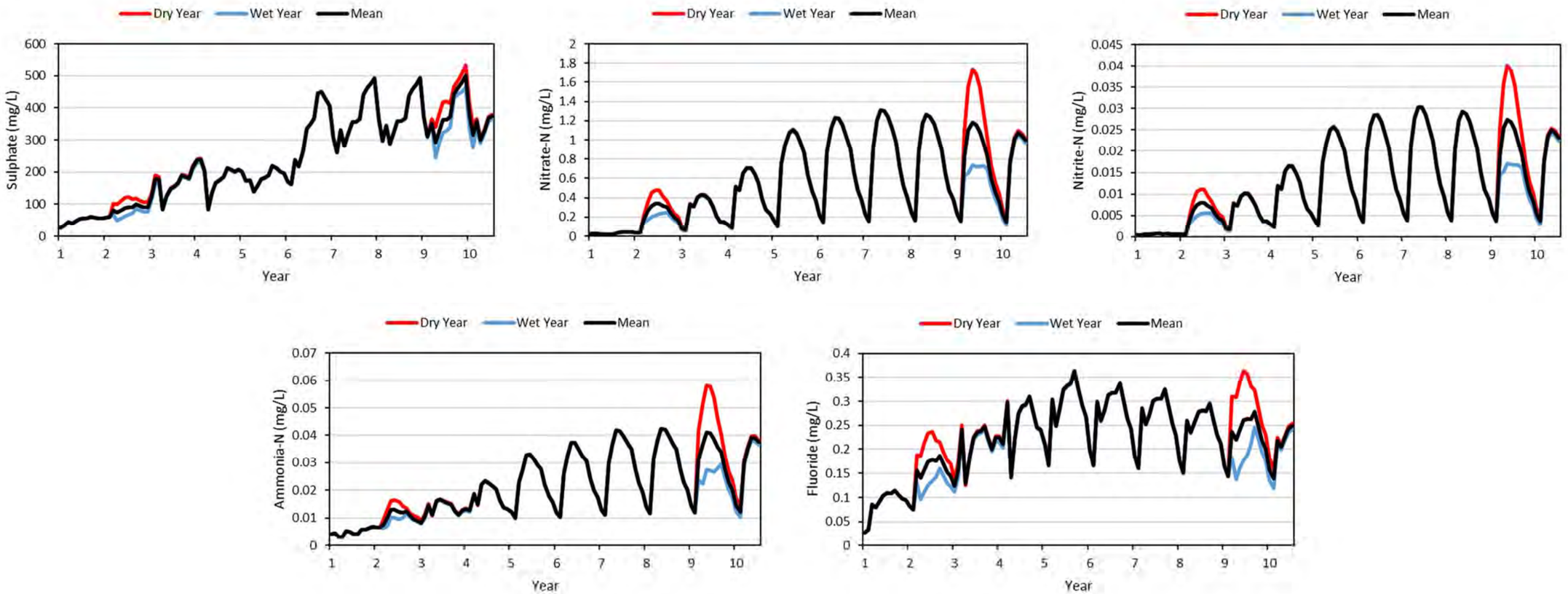


Figure 5-3: Model Estimated Total Concentrations of Sulphate, Nitrate-N, Nitrite-N, Ammonia-N, and Fluoride in the WMP throughout Operations (Year 1 through Year 10)

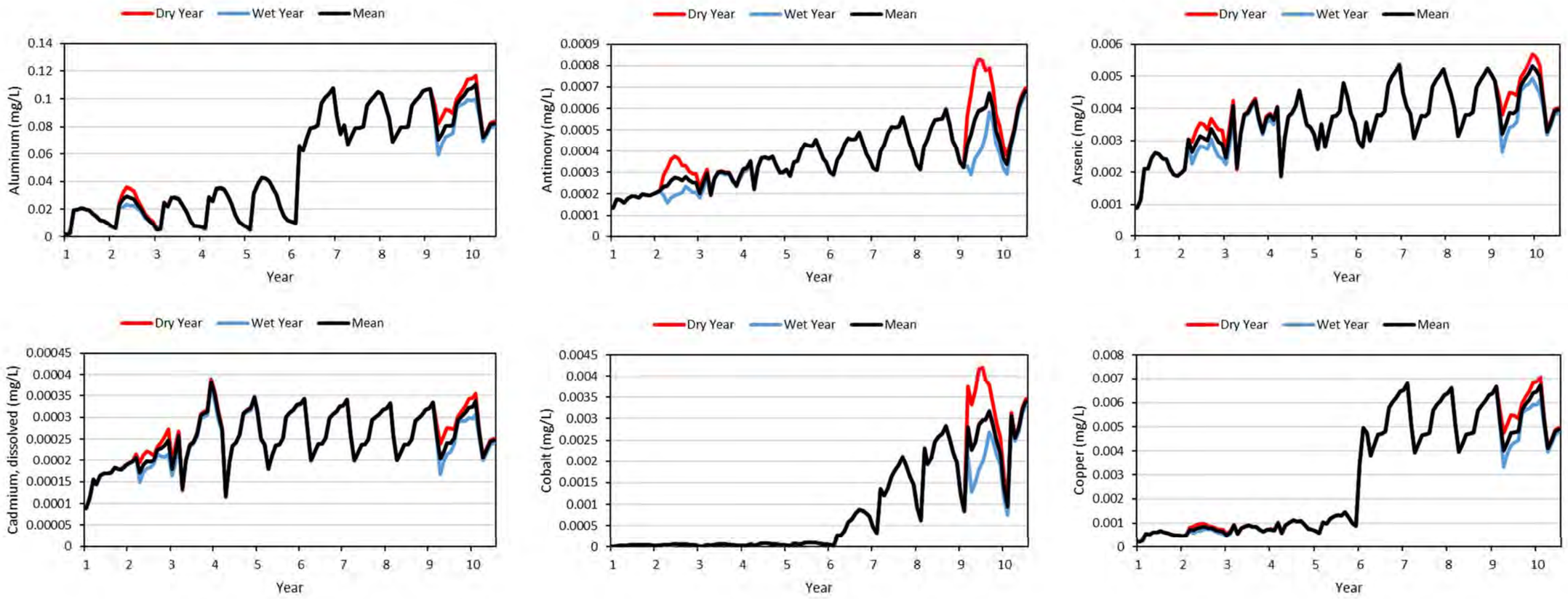
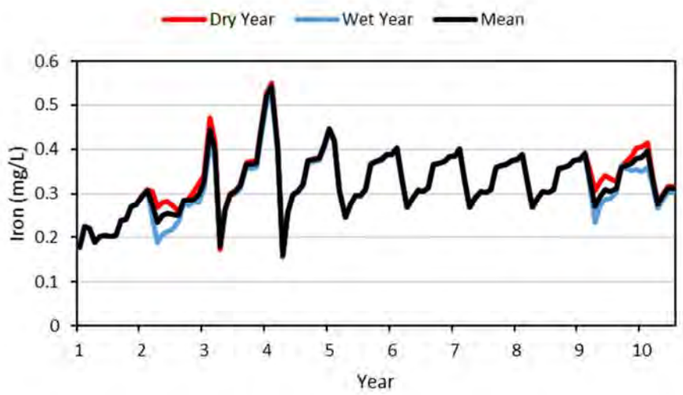
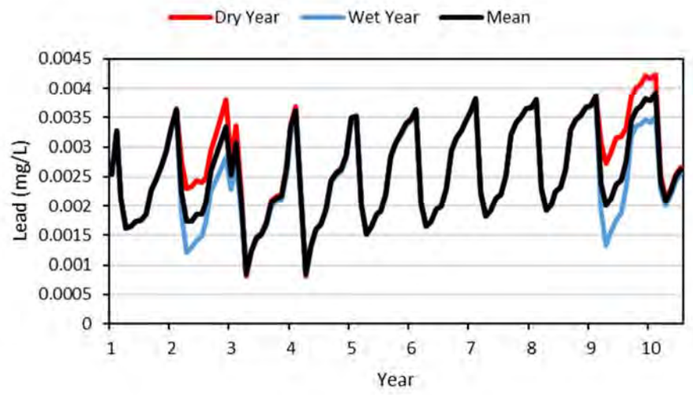
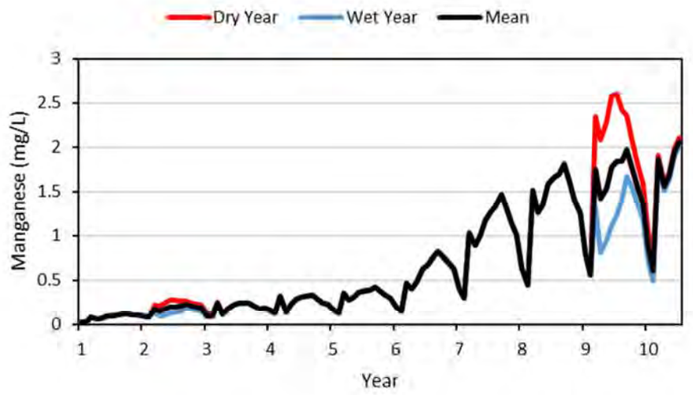
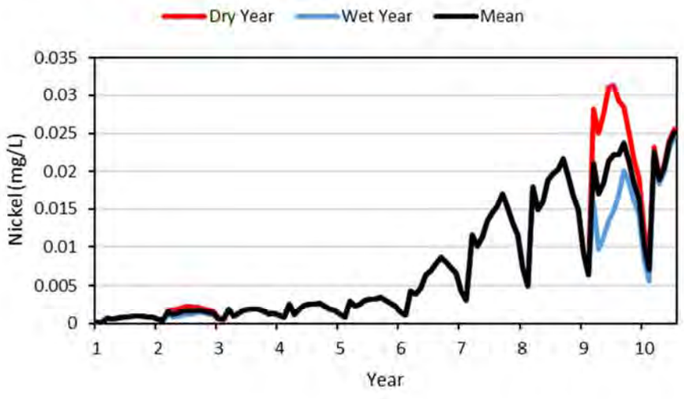


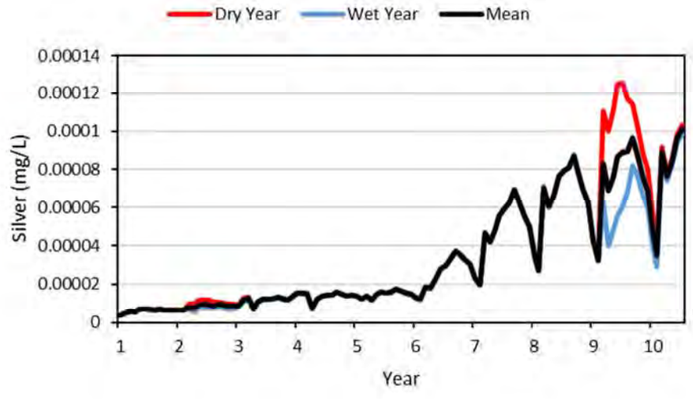
Figure 5-4: Model Estimated Total Concentrations of Aluminum, Antimony, Arsenic, Cobalt and Copper and Dissolved Cadmium in the WMP Throughout Operations (Year 1 Through Year 10)











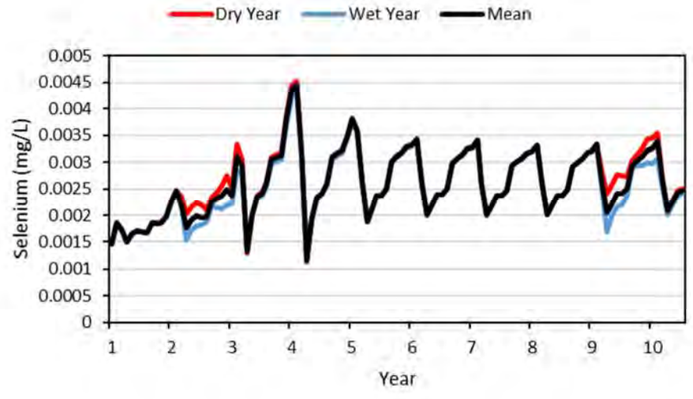


Figure 5-5: Model Estimated Total Concentrations of Iron, Lead, Manganese, Nickel, Silver and Selenium in the WMP Throughout Operations (Year 1 Through Year 10)

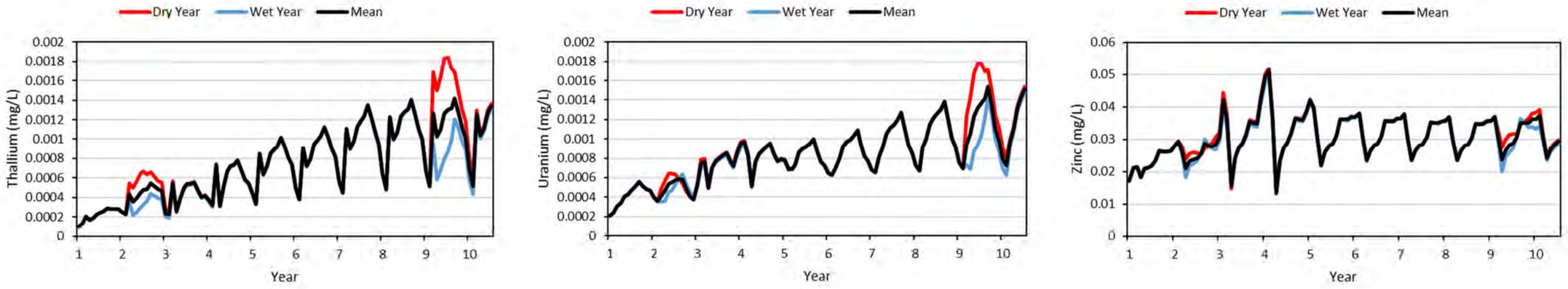


Figure 5-6: Model Estimated Total Concentrations of Thallium, Uranium and Zinc in the WMP Throughout Operations (Year 1 Through Year 10)

6. ABM LAKE WATER QUALITY MODEL

6.1 INTRODUCTION

At the end of mining, dewatering of the groundwater table will cease and the Fault Creek diversion will be removed. As such, the ABM Open Pit will begin to fill due to:

- Inputs from the rebounding groundwater table;
- The flow from Fault Creek which will discharge into the ABM Open Pit; and
- Local runoff.

These three water sources, as well as the pit wall rock, will provide load to the ABM Lake that forms. The water balance developed by KP includes flows into and out of the ABM Lake (KP, 2018). It is expected that ABM Lake will reach a final volume of approximately 33,272,000 m^3 at a surface elevation of 1,380 masl during year 25 of the Project (approximately 15 years after the cessation of Operations), at which point ABM Lake will start to discharge north towards Geona Creek via a constructed wetland treatment system. These processes are summarized in the conceptual mass transfer model presented in Figure 6-1. More information on this aspect of the water balance can be found in KP (2018).

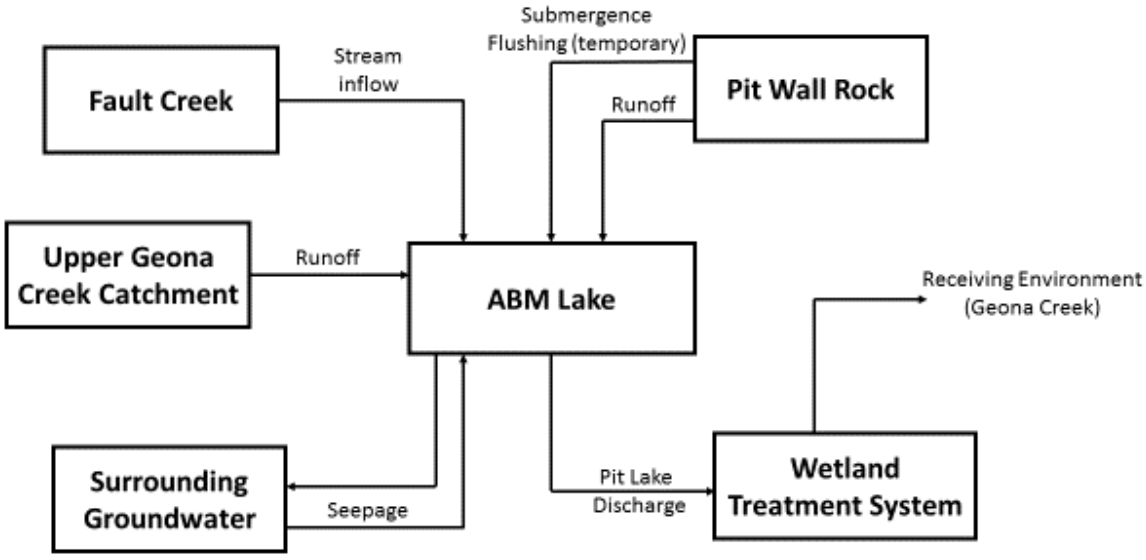


Figure 6-1: ABM Lake Mass Transfer Flow paths during Closure Phases

6.2 ABM LAKE WATER QUALITY MODEL

A model was developed to predict the water chemistry of the ABM Lake as it fills during Closure and eventually discharges to the constructed wetland treatment system and then into Geona Creek. Water balance flows for the mean precipitation scenario developed by KP (2018) were combined with pit wall loading rate source terms and baseline surface and groundwater quality data (AEG, 2018b, c) to predict mass loading to the pit and estimate the concentrations of COPIs in ABM Lake. This section summarizes the methodology and the inputs used.

6.2.1 MASS LOAD INFLOWS

6.2.1.1 Precipitation and Evaporation

The monthly precipitation and evaporation volumes were provided in KP (2018). The net precipitation/evaporation contributes only to the ABM Lake volume and does not have associated loading.

6.2.1.2 Fault Creek and Background Runoff

During Operations, Fault Creek, a watercourse that naturally flows over the ABM Open Pit footprint, will be diverted south to the South Creek catchment to avoid contact with mine impacted materials and to reduce inflow into the ABM Open Pit during Operations. Upon cessation of Operations, the diversions controlling Fault Creek water will be removed and water will flow into the ABM Open Pit. The load contribution from Fault Creek was developed using the modelled monthly flow volumes in Fault Creek where it currently meets Geona Creek (KZ-2, Figure 5-1) and the baseline monthly median water quality data for Fault Creek (at KZ-2) (AEG, 2018b). The monthly load is calculated by multiplying the monthly flow volume by the parameter concentration for each month. The monthly water quality at KZ-2 for modelled parameters are provided in APPENDIX A.

In addition to the Fault Creek stream flow, runoff from the area around the ABM Lake will also contribute loading to the Pit. These flows were also provided in the Water Balance Report (KP, 2018). The average of monthly water quality data for monitoring stations in the vicinity of the ABM Open Pit footprint (KZ-6 and KZ-7, Figure 5-1) was used as the concentration term for the runoff. The water quality for modelled parameters at KZ-6 and KZ-7 are provided in APPENDIX A.

6.2.1.3 Background Groundwater

The groundwater inflow volumes to the ABM Open Pit were provided in KP, 2018. The load attributed to the groundwater inflow to the pit was calculated by multiplying the groundwater inflow volumes by the 75th percentile water quality in bedrock monitoring wells in the vicinity of the ABM Open Pit (Figure 5-2). The Kudz Ze Kayah 2018 Hydrogeology Baseline Report (AEG, 2018c) provides the water quality for 2015 and 2017 for the individual groundwater monitoring wells in more detail. The 75th percentile water quality for select parameters used in the model is shown in Table 6-1.

Table 6-1: 75th Percentile Water Quality in Groundwater Monitoring Wells in the ABM Open Pit Vicinity for Select Parameters

	Deep Groundwater
Wells used to calculate average concentrations:	BH95-131, BH95-146
Constituent	**Dissolved Concentration (mg/L)**
Hardness	665
Sulphate, dissolved	242
Nitrate (N)	0.0028
Nitrite (N)	0.0010
Ammonia (N)	0.046
Fluoride (F)	0.29
Chloride (Cl)	0.97
Aluminum (Al)	0.0027
Antimony (Sb)	0.0012
Arsenic (As)	0.0027
Cadmium (Cd)	0.000024
Calcium (Ca)	169
Cobalt (Co)	0.000091
Copper (Cu)	0.000527
Iron (Fe)	1.1
Lead (Pb)	0.00075
Manganese (Mn)	0.16
Nickel (Ni)	0.00032
Silver (Ag)	0.000020
Selenium (Se)	0.000037
Thallium (Th)	0.0000095
Uranium (U)	0.016
Zinc (Zn)	0.0045
Dissolved Organic Carbon	1.1

6.2.1.4 ABM Open Pit Wall Runoff

The load contribution from the pit wall was calculated based on the unsubmerged surface area of each geodomain exposed on the pit wall and adapted source terms from the ARD/ML characterization report (AEG, 2018a). The source term for massive pyrite component of the pit wall was extracted from the kinetic data published by Cominco (1996). Of the total pit wall surface area (1,140,700 m^2), 445,300 m^2 will not be submerged at the final pit elevation while the remainder (695,400 m^2) will incrementally be submerged as the pit elevation rises to 1,380 masl. The approximate pit wall surface area by geodomain was provided by BMC and is shown for below and above the spill-over elevation of 1,380 masl in Table 6-2 and Table 6-3, respectively.

Source terms based on kinetic tests (in mg/kg/wk) from the ARD/ML characterization report (AEG, 2018a) were selected to represent each geodomain exposed on the pit wall and adapted to provide per-planar area loading rates (in mg/m^2/month). The limited massive sulphide stockwork exposure on the pit wall was modelled using humidity cell data (II-22) from Cominco (1996). A conservative approach was adopted in developing pit wall runoff source terms for the first 16 years of pit lake formation (before the overflow stage) and the 75th percentile of each kinetic test of interest was used to assume a relatively high loading rate that can be expected from rock that is exposed to atmospheric oxygen and is well flushed. In the Post-closure Phase after year 25, a "steady state" loading rate was adopted for the pit wall runoff. The steady state loading rate was calculated as the median of the last two months of data available from kinetic testing results when the majority of analyzed parameters had stabilized. The kinetic test results used for developing the pit wall loading rates for years 11 through 25 (75th percentile) and Post-closure ("steady-state") are provided in Table 6-4 and Table 6-5, respectively.

Table 6-2: Approximate ABM Open Pit Wall Surface Area (m^2) by Geodomain Below the 1,380 masl

Level (masl)	AK RHYc	AK RHYv	CA CL MAF	CARB MDS/RHY	MDS	MU PY RHY	PY AK RHYc	PY AK RHYv	PY CL RHY	RHYi	Massive Sulphide	Overburden	Total
1,210	-	-	1,020	-	-	-	-	-	-	-	30	-	1,050
1,220	-	-	7,860	-	-	1,870	-	-	270	-	860	-	10,860
1,230	-	-	6,700	-	-	3,410	-	-	4,320	-	910	-	15,340
1,240	-	-	6,630	2,170	-	3,410	-	130	10,640	-	1,610	-	24,590
1,250	-	-	8,230	4,070	-	3,300	-	730	8,990	-	2,090	-	27,410
1,260	-	-	8,880	4,110	-	4,880	1,980	2,680	8,150	1,440	2,850	-	34,970
1,270	-	-	11,370	1,530	-	5,610	2,630	4,270	4,930	1,790	1,910	-	34,040
1,280	-	-	11,960	940	-	7,650	4,830	10,210	2,620	3,290	1,080	-	42,570
1,290	-	-	11,310	1,830	-	7,670	2,980	8,590	670	4,660	800	-	38,510
1,300	-	1,790	10,680	1,590	-	8,180	3,400	16,330	370	5,180	830	-	48,350
1,310	-	4,480	13,710	460	-	8,420	2,840	12,370	370	3,480	260	-	46,380
1,320	260	8,980	13,200	320	190	4,160	4,560	22,390	1,050	4,990	20	-	60,110
1,330	140	8,660	15,630	50	530	2,650	3,730	19,470	1,040	3,620	100	-	55,600
1,340	30	16,200	12,470	60	860	2,500	2,540	26,720	450	5,250	160	-	67,240
1,350	-	14,540	11,740	260	1,150	1,640	400	20,350	210	4,930	20	-	55,220
1,360	-	22,690	10,270	560	1,420	2,170	20	24,110	610	7,180	110	1,020	70,140
1,370	-	17,890	7,100	2701	1,610	1,320	-	16,980	690	4,420	160	12,610	63,050
Total	**430**	**95,220**	**168,750**	**18,230**	**5,760**	**68,850**	**29,900**	**185,330**	**45,350**	**50,200**	**13,790**	**13,630**	**695,430**

Table 6-3: Approximate ABM Open Pit Wall Surface Area (m^2) by Geodomain Above the 1,380 masl

Level	AK RHYc	AK RHYv	CA CL MAF	CARB MDS/RHY	MDS	MU PY RHY	PY AK RHYc	PY AK RHYv	PY CL RHY	RHYi	Massive Sulphide	Overburden	Total
1,380	-	18,310	5,690	770	2,370	1,030	-	15,060	680	4,520	140	15,340	63,900
1,390	-	10,440	4,720	360	4,460	920	-	11,630	740	930	80	15,210	49,500
1,400	-	12,800	3,570	810	6,980	1,140	-	7,710	770	-	20	10,900	44,690
1,410	-	7,980	2,510	920	7,120	1,070	-	4,390	590	-	-	5,740	30,380
1,420	-	6,970	2,090	1,710	9,230	1,390	1,900	3,410	630	-	-	6,350	33,670
1,430	-	3,900	1,440	760	8,740	1,170	1,360	2,910	520	-	-	4,330	25,120
1,440	-	4,470	1,120	680	9,780	1,070	1,750	3,620	430	-	-	3,600	26,530
1,450	-	3,320	890	240	8,010	680	1,680	1,530	300	-	-	3,780	20,410
1,460	-	490	360	320	8,820	870	3,220	6,070	250	-	-	3,900	24,300
1,470	-	-	-	30	7,740	-	550	9,730	-	-	-	5,690	23,740
1,480	-	-	-	-	8,340	-	-	6,260	-	-	-	8,150	22,750
1,490	-	-	-	-	8,220	-	-	4,380	-	-	-	5,130	17,730
1,500	-	-	-	-	7,620	-	-	2,020	-	-	-	5,500	15,130
1,510	-	-	-	-	6,650	-	-	60	-	-	-	3,930	10,650
1,520	-	-	-	-	5,340	-	-	-	-	-	-	3,410	8,750
1,530	-	-	-	-	3,460	-	-	-	-	-	-	5,120	8,580
1,540	-	-	-	-	410	-	-	-	-	-	-	7,390	7,800
1,550	-	-	-	-	-	-	-	-	-	-	-	11,640	11,640
1,560	-	-	-	-	-	-	-	-	-	-	-	-	-
1,570	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**-**	**68,670**	**22,390**	**6,590**	**113,340**	**9,340**	**10,460**	**78,770**	**4,910**	**5,450**	**240**	**125,120**	**445,270**

Table 6-4: 75th Percentile Loading Rates (mg/kg/wk) of Select Kinetic Tests

Kinetic Test ID	Hardness ($CaCO_3$)	Sulphate	P	F	Al	Sb	As	Cd	Ca	Co	Cu	Fe	Pb	Mn	Ni	Ag	Se	Th	U	Zn
C-1	3.8	1.8	0.00036	0.0032	0.0018	0.000041	0.000016	0.00000058	0.92	0.000011	0.000033	0.000073	0.0000018	0.0017	0.0000059	0.00000037	0.000031	0.00000069	0.0010	0.000037
C-3	3.1	1.4	0.00037	0.0014	0.0015	0.0013	0.000034	0.0000086	0.86	0.000014	0.000054	0.000073	0.000087	0.0030	0.000010	0.00000037	0.00024	0.000014	0.0022	0.00051
C-4	4.9	3.5	0.00037	0.0012	0.00066	0.0011	0.000022	0.000014	1.2	0.000023	0.000038	0.000073	0.000018	0.0063	0.00012	0.00000037	0.00083	0.000010	0.00031	0.0012
C-5	6.6	5.1	0.00036	0.0027	0.0010	0.00017	0.0000074	0.0000029	1.7	0.000017	0.000047	0.000073	0.0000065	0.0049	0.000017	0.00000037	0.00019	0.0000011	0.00040	0.00029
C-7	4.2	4.6	0.00037	0.0034	0.0047	0.0012	0.0010	0.00084	1.2	0.00056	0.0041	0.024	0.0082	0.063	0.0021	0.00000037	0.0010	0.000023	0.00085	0.098
C-8	2.5	1.5	0.00036	0.0029	0.0012	0.00034	0.0030	0.0000075	0.67	0.0000067	0.000040	0.000073	0.000044	0.0030	0.000016	0.00000036	0.000047	0.0000036	0.0013	0.00061
C-9	6.3	5.2	0.00036	0.0036	0.00041	0.00005	0.00012	0.0000010	1.7	0.000047	0.000025	0.000072	0.0000053	0.00015	0.00016	0.00000036	0.000071	0.00000066	0.00048	0.000096
C-11	1.1	0.23	0.00036	0.0014	0.0016	0.00076	0.0046	0.00000068	0.32	0.0000082	0.000035	0.00028	0.0000030	0.00063	0.000035	0.00000036	0.000026	0.0000024	0.00014	0.000078
HCII-22 [a]	16.1	44	0.037	N/A	0.049	N/A	N/A	0.010	N/A	N/A	0.033	8.8	N/A	4.9	0.014	N/A	0.007	N/A	N/A	0.15

[a] Cominco (1996) humidity cell test with massive pyrite; relatively poor detection limits for some analytes measured in the Cominco HCII-22 humidity cell leachate prevented the calculation of loading rates for some parameters

Table 6-5: "Steady-state" (last two months of available data) Loading Rates (mg/kg/wk) of Select Kinetic Tests

Kinetic Test ID	Hardness ($CaCO_3$)	Sulphate	P	F	Al	Sb	As	Cd	Ca	Co	Cu	Fe	Pb	Mn	Ni	Ag	Se	Th	U	Zn
C-1	3.4	1.2	0.00036	0.0016	0.00039	0.0000057	0.0000056	0.00000018	0.67	0.00000071	0.0000064	0.000072	0.0000018	0.000026	0.0000014	0.00000036	0.000020	0.00000084	0.00022	0.000036
C-3	2.6	1.3	0.00036	0.0011	0.00027	0.00020	0.0000034	0.0000039	0.66	0.00000053	0.0000094	0.000072	0.0000075	0.00024	0.0000031	0.00000036	0.00011	0.0000075	0.00057	0.00022
C-4	4.1	3.4	0.00036	0.00088	0.00008	0.000093	0.0000040	0.0000079	0.94	0.0000045	0.000015	0.000072	0.0000024	0.0024	0.000038	0.00000036	0.00032	0.0000073	0.000052	0.00051
C-5	4.9	3.7	0.00036	0.0010	0.00025	0.000024	0.0000018	0.0000017	1.2	0.0000054	0.000011	0.000071	0.0000018	0.0016	0.0000070	0.00000036	0.00010	0.00000064	0.00010	0.00016
C-7	3.5	4.9	0.00035	0.0044	0.016	0.000011	0.0026	0.0013	0.76	0.00098	0.0062	0.079	0.010	0.12	0.0033	0.00000035	0.00038	0.000018	0.0027	0.16
C-8	1.4	0.77	0.00036	0.00090	0.00060	0.00011	0.0037	0.0000058	0.43	0.00000028	0.000018	0.000072	0.0000090	0.00013	0.0000024	0.00000036	0.000018	0.0000015	0.00027	0.00049
C-9	5.0	3.0	0.00035	0.0023	0.00027	0.000012	0.000038	0.00000039	1.0	0.0000038	0.000014	0.000070	0.0000017	0.0000072	0.000039	0.00000035	0.000055	0.00000030	0.00017	0.000035
C-11	1.0	0.20	0.00035	0.00095	0.00070	0.00039	0.0046	0.00000026	0.30	0.0000059	0.000023	0.000072	0.0000018	0.00010	0.000017	0.00000036	0.000023	0.0000018	0.00011	0.000040
HCII-22 [a]	10	35	0.011	N/A	0.0015	N/A	N/A	0.0047			0.011	7.6	N/A	2.1	0.0078	N/A	N/A		N/A	0.090

[a] Cominco (1996) humidity cell test with massive pyrite; relatively poor detection limits for some analytes measured in the Cominco HCII-22 humidity cell leachate prevented the calculation of loading rates for some parameters

A summary of the adjustment factors used to adapt the loading rates from mass-based kinetic tests to planar area loading rates for the pit wall is provided in Table 6-6. The same approach in developing planar loading rates for the pit wall was used in the WMP Water Quality Model and the scaling factor rationale is described in detail in Section 5.2.1.3. An additional fracture factor for loading rates from submerged wall portions was applied as a conservative measure to account for variability in both natural and blasting-induced fractures within the pit wall that contain more weathering surfaces and a greater fraction of smaller particles that are more readily flushed. The fracture factor was also used to account for loose, fine-grained material that may accumulate on the benches and contribute load to the ABM Lake. A fracture factor of 10 was applied for the submerged load to reflect the flushing of weathering products from within the fracture zone of the pit wall. The fracture factor was not applied to the non-submerged pit wall runoff loading terms; however, a greater reactive thickness was assumed for runoff (3 m) – relative to during operations (1 m) – to account for greater weathering time and more thorough flushing of fractured surfaces once the pit is established and pre-Project flowpaths resume (i.e. more groundwater and runoff flows to the pit after dewatering ceases and diversions are removed).

The adjusted loading rates for each geodomain used in the model for years 11 through 25 (75th percentile) and Post-closure ("steady-state) are provided in Table 6-7 and Table 6-8, respectively.

Table 6-6: Summary of Adjustment Factors to Convert mg/kg/wk Loading Rates to mg/m^2/month

	Runoff Loading Adjustment Factors		Submerged Load Adjustment Factors	
	Trickle Leach Column	Humidity Cell	Trickle Leach Column	Humidity Cell
Grain Size Factor	0.3	0.1	0.3	0.1
Flushing Factor	0.5		0.5	
Fracture Factor	-		10	
Pit Slope (45°)	1.41		1.41	
Reactive Thickness (m)	3		1	
Average Density (kg/m^3)	2,760		2,760	
Weeks/Month	4.34		4.34	
Bulk Factor	7,600	2,530	25,330	8,440

Table 6-7: Adjusted Geodomain-specific Loading Rates for ABM Open Pit Wall Planar Area (mg/m^2/month) for Years 11 Through 25

	Kinetic Test Results	Hardness (CaCO3)	Sulphate (SO4)	Fluoride (F)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Cadmium (Cd)	Calcium (Ca)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Silver (Ag)	Selenium (Se)	Thallium (Th)	Uranium (U)	Zinc (Zn)
AK RHYv/AK RHYc	**C-1 (75%), C-5 (25%)**	32,692	19,452	23	12	0.53	0.10	0.0084	8,226	0.090	0.27	0.53	0.022	18	0.063	0.0027	0.52	0.0057	6.1	0.73
MU PY RHY	**C-3 (75%), C-7 (25%)**	24,587	15,885	14	17	9.0	1.9	1.6	6,872	1.10	7.9	44	15	131	4.0	0.0027	3.2	0.12	14	182
CARB MDS/RHY	**C-4 (75%), C-7 (25%)**	34,515	27,892	13	12	8.1	1.9	1.6	8,879	1.1	7.8	44	15	150	4.6	0.0027	6.4	0.10	3.2	186
PY AK RHYv/PY AK RHYc	**C-5 (90%), C-7 (10%)**	46,574	36,997	20	9.7	1.9	0.75	0.64	12,241	0.52	3.3	18	6.0	78	1.7	0.0027	2.0	0.024	3.3	74
PY CL RHY	**C-7**	30,821	33,705	25	34	8.5	7.0	6.2	8,572	4.1	30	176	60	460	16	0.0027	7.4	0.17	6.2	716
RHYi	**C-8**	18,020	10,799	21	8.7	2.5	22	0.055	4,909	0.049	0.29	0.54	0.32	22	0.12	0.0027	0.35	0.026	9.0	4.5
MDS	**C-9**	46,382	38,304	26	3.0	0.39	0.9	0.0076	12,338	0.35	0.18	0.53	0.039	1.1	1.2	0.0026	0.52	0.0049	3.5	0.70
CA CL MAF	**C-11**	7,860	1,704	10	12	5.6	34	0.0050	2,344	0.060	0.25	2.0	0.022	4.6	0.26	0.0026	0.19	0.017	1.0	0.57
Massive Pyrite	**Cominco HC II-22**	39,278	106,456	-	119	-	-	24	9,718	-	82	21,438	-	11,940	35	-	17	-	-	364

[a] Cominco (1996) humidity cell test with massive pyrite; relatively poor detection limits for some analytes measured in the Cominco HCII-22 humidity cell leachate prevented the calculation of loading rates for some parameters

Table 6-8: Adjusted Geodomain-specific Loading Rates for ABM Pit Wall Planar Area (mg/m^2/month) for Post-closure

Geodomain	Kinetic Test Used	Hardness ($CaCO_3$)	Sulphate	P	F	Al	Sb	As	Cd	Ca	Co	Cu	Fe	Pb	Mn	Ni	Ag	Se	Th	U	Zn
AK RHYv/AK RHYc	**C-1 (75%), C-5 (25%)**	27,498	13,412	2.6	10	2.6	0.075	0.034	0.0042	5,881	0.014	0.056	0.52	0.013	3.1	0.021	0.0026	0.30	0.0058	1.4	0.49
MU PY RHY	**C-3 (75%), C-7 (25%)**	20,948	16,142	2.6	14	32	1.1	4.9	2.3	5,050	1.8	11	146	18	212	6.1	0.0026	1.3	0.074	8.0	293
CARB MDS/RHY	**C-4 (75%), C-7 (25%)**	28,999	27,442	2.6	12.9	30.5	0.53	4.9	2.3	6,566	1.8	11	146	18	224	6.3	0.0026	2.5	0.073	5.2	295
PY AK RHYv/PY AK RHYc	**C-5 (90%), C-7 (10%)**	34,607	27,904	2.6	10	13.7	0.16	1.9	0.93	8,430	0.76	4.6	59	7.4	95	2.5	0.0026	0.96	0.017	2.6	118
PY CL RHY	**C-7**	25,972	35,953	2.6	32	120	0.080	19	9.2	5,594	7.2	46	582	74	844	24	0.0026	2.8	0.13	20	1167
RHYi	**C-8**	10,136	5,655	2.6	6.6	4.4	0.80	27	0.043	3,119	0.0020	0.13	0.53	0.066	1.0	0.018	0.0026	0.13	0.011	2.0	3.6
MDS	**C-9**	36,940	22,194	2.6	17	2.0	0.09	0.28	0.0029	7,592	0.028	0.10	0.51	0.013	0.053	0.28	0.0026	0.40	0.0022	1.3	0.26
CA CL MAF	**C-11**	7,468	1,429	2.6	6.9	5.1	2.9	34	0.0019	2,172	0.043	0.17	0.53	0.013	0.71	0.12	0.0026	0.17	0.013	0.79	0.29
Massive Pyrite	**HC II-22** [a]	24,416	85,702	27	N/A	4	N/A	N/A	11	2,393	N/A	27	18,508	N/A	5,225	19	N/A	N/A	N/A	N/A	220

[a] Cominco (1996) humidity cell test with massive pyrite; relatively poor detection limits for some analytes measured in the Cominco HCII-22 humidity cell leachate prevented the calculation of loading rates for some parameters
[b] Nitrogen not anticipated to runoff from pit wall materials in significant concentrations in the long term

6.2.1.5 ABM Pit Wall Rock Submergence

It is anticipated that surface runoff will travel along preferential flow paths resulting in incomplete flushing of weathering products from the pit wall rocks into ABM Lake. Upon submergence of the pit wall, the unflushed weathering products will be flushed from poorly drained portions of pit wall that were not contacted by runoff water. The same source terms used in the preceding Pit Wall Runoff section were adapted to calculate the total load that could be expected to accumulate throughout the time since the pit wall was exposed during mining to when the Pit Lake elevation submerged the pit wall. The load that is released upon submergence of pit wall area was calculated using the following equation:

$$L_S = R_L * A * t$$

Where:

L_S is the load released when a planar area of pit wall is submerged in ABM Lake (mg);

R_L is the planar area loading rate (mg/m^2/month);

A is the planar area of a pit wall rock surface (m^2); and

t is the time a pit wall planar surface has been exposed.

The load for a planar surface (as calculated by the above equation) is released when the ABM Lake water level reaches the elevation of that surface. The model conservatively assumes that the entire load is released to the pit lake at that time step. The exposure time of each pit elevation level was estimated according to the waste production schedule provided by BMC. The higher elevations have longer exposure times than the lower elevations which were mined last. The wall rock exposure time by elevation level is shown in Table 6-9. The total time period exposed that was used in determining the submerged load is the sum of the time exposed during Operations plus the time after Operations until the pit bench level is submerged.

Table 6-9: Exposure Time of ABM Open Pit Wall Rock at the End of Operations (year 10)

Pit Bench Elevations (masl)	Average Wall Rock Exposure Time (years)
1,210-1,280	1
1,280-1,330	2
1,330-1,370	3
1,370-1,380	3.5
1,380-1,390	4
1,390-1,410	5
1,410-1,440	6
1,440-1,460	7
1,460-1,480	8
1,480-1,510	9
1,510-1,520	10
1,520-1,530	11

6.2.2 MASS LOAD OUTFLOWS

6.2.2.1 Groundwater

It is assumed in the KP Water Balance (2018) that there will not be any groundwater flow out of the pit until the maximum pit volume is reached. After year 25, an amount of water will discharge from the ABM Lake down-gradient in the vicinity of the spillway as groundwater. Monthly flow volumes were provided in EBA (2018). It was assumed that the water quality of the groundwater discharge will reflect the bulk water quality of ABM Lake at that time. The mass load out of the pit as groundwater discharge was calculated by multiplying the monthly groundwater outflow volume by the water quality parameter concentrations of the previous month.

6.2.2.2 ABM Lake Surface Flow

Once the ABM Lake reaches its maximum storage volume, water will begin to discharge as surface streamflow, flowing to the wetland treatment system before discharging to Geona Creek. The surface flows from the ABM Lake were provided in KP (2018).

Similar to the groundwater outflow, it was assumed that the surface outflow water quality from the pit will reflect the bulk water quality of the ABM Lake at that time. Thus, the mass load out of the Lake as surface flow was calculated by multiplying the monthly surface flow volume by the water quality parameter concentrations of the previous month.

6.2.3 CALCULATION OF ABM LAKE WATER QUALITY

The ABM Lake water quality was calculated by dividing the cumulative mass of a given parameter by the volume of water stored in the pit on a monthly time step. It was assumed that cumulative mass stored in the pit would be mixed evenly throughout the water volume stored in the pit at each timestep.

6.2.3.1 In Situ Treatment of ABM Lake

Given the elevated COPI concentrations that are estimated to be present in the ABM Lake upon filling, treatment is anticipated to be required in order to maintain water quality in the receiving environment. ABM Lake treatment is anticipated to be amenable to in situ treatment where a soluble source of organic carbon (e.g., alcohol and/or molasses) is added to the lake to stimulate the formation of reducing conditions. Briefly, enough soluble organic carbon will be added to the ABM Lake during its filling to stimulate naturally occurring bacteria to form reducing conditions in the water column. This will result in the consumption of dissolved oxygen, nitrate and nitrite, and the partial conversion of some dissolved sulphate to sulphide. Under such reducing conditions, elements such as selenium and uranium are largely transformed to less soluble forms (e.g., elemental selenium and uraninite phases). Chalcophile elements such as cadmium, zinc, copper, antimony, and lead will precipitate as poorly soluble sulphide minerals. The insoluble phases formed will settle to the lake bottom for long term storage. Reactive iron sulphide minerals will also form during treatment, which will help scavenge some COPIs via co-precipitation and also act as a redox buffer to maintain the reduced COPIs in their stable precipitated forms in the lake sediment.

The use of in situ treatment to significantly lower contaminant concentrations in pit lakes, underground mine workings, and shallow groundwater has been described in detail in numerous reports at locations across North America (Harrington et al, 2015; Lindsay, 2009; Murphy et al, 2008; Houston et al, 2005; Addison et al, 2005; Harrington et al, 2004; Saunders et al, 2004; Morie et al, 2004; Harrington, 2002; Harrington et al, 1999) including Yukon (Gault et al., 2018). In particular, in situ treatment has been successfully implemented at numerous pit lakes in the USA to treat the COPIs that are expected in ABM Lake (Harrington, 2002; Harrington et al., 2004, 2009). The pit lake at the Barite Hill gold mine (SC, USA) was subjected to in situ treatment. Prior to treatment, this pit lake was acidic (pH 1.5 to 2) and had high trace element concentrations (Table 6-10). Carbide lime was used to raise the pit lake pH closer to circumneutral conditions while injection of soluble organic carbon created sulphate-reducing conditions that sequestered the metals as metal sulphides and/or less soluble reduced phases. Comparison of constituent concentrations before and after in situ treatment indicated >70% removal of antimony from the pit lake water column and >90% removal was achieved for other metal(loid)s of concern (Table 6-10; Harrington et al., 2009).

Table 6-10: Barite Hill Pit Lake Constituent Concentrations Before and After *In Situ* Treatment (Harrington et al., 2009)

Parameter	Concentration Before In Situ Treatment	Concentration After In Situ Treatment	Percent Reduction
	mg/L	mg/L	%
Antimony	0.02	<0.006	>70%
Arsenic	0.968	<0.01	>99%
Cadmium	1.57	<0.005	>99%
Chromium	0.141	<0.01	>92%
Copper	287	<0.01	>99%
Lead	0.161	<0.01	>93%
Nickel	0.404	<0.02	>95%
Selenium	0.23	0.01	96%
Zinc	40.2	<0.02	>99%

The Anchor Hill pit lake at the Gilt Edge Mine Superfund site (SD, USA) was also subjected to in situ treatment to significantly lower elevated metal and nitrate concentrations. The acidic pit (pH 3) was treated with lime initially to raise the pH before methanol and molasses were added to stimulate the development of sulphate-reducing conditions and associated metals removal. This resulted in near complete nitrate removal (from 55 mg/L to 0.01 mg/L) and reductions in pit lake trace element concentrations of between 86% and >99% (Table 6-11; Harrington et al., 2009).

Table 6-11: Anchor Hill Pit Lake Constituent Concentrations Before and After In Situ Treatment (Harrington et al., 2004)

Parameter	Concentration Before In Situ Treatment	Concentration After In Situ Treatment	Percent Reduction
	mg/L	mg/L	%
Nitrate-N	55	0.013	>99%
Arsenic	0.017	Below detection [a]	-
Cadmium	0.284	0.007	98%
Copper	13.6	0.028	>99%
Lead	0.0281	Below detection [a]	-
Nickel	0.348	0.048	86%
Selenium	0.0222	<0.0009	>96%
Zinc	6.66	0.15	98%

[a] Detection limit not reported

In situ treatment was also employed for the circumneutral pH pit lake at the Sweetwater uranium mine (WY, USA) to address elevated uranium and selenium concentrations. Addition of soluble organic carbon resulted in the decrease of nitrate-N concentrations from 1.1 mg/L to below detection within the first two weeks of treatment (Harrington, 2002). Within four months, uranium and selenium concentrations decreased from 8.4 mg/L to ~4.5 mg/L and 0.45 mg/L to ~0.005 mg/L, respectively, and have remained at those levels two years following in situ treatment (Harrington, 2002), with follow up sampling indicating that such levels have been maintained over a ten-year monitoring period.

It is important to note that both the Anchor Hill and Sweetwater pit lake locations experience cold winters similar to those of Kudz Ze Kayah. The pit lakes both freeze over during winter, but this has not impeded the COPI removal obtained by in situ treatment. Indeed, the ice cover may be viewed as beneficial in that it acts as a barrier to the mixing and diffusion of oxygen from the atmosphere into the lake. As such, carbon additions at both Anchor Hill and Sweetwater pit lakes were typically performed in the late summer or fall to prolong the period that the lake would remain reducing and therefore maximize COPI removal.

Although acidic conditions are not expected to develop in ABM Lake, in cases where the pit lake is strongly acidic (i.e. pH <4), alkali amendment has been used, sometimes with simultaneous organic carbon addition, to raise the pH to produce a more favourable environment for sulphate-reducing microorganisms. Such pre-treatment has been performed with a variety of alkali sources, including water treatment sludge residues, which may be a cost-effective solution and allow for conversion of voluminous lime-based treatment sludges into denser and more compact metal sulphide phases (e.g., Harrington et al., 2015). Although initial alkali pre-treatment of acidic pit lakes will result in a reduction in the concentration of many metals of concern, it is unlikely to significantly lower the concentrations of nitrate, selenium, and uranium, while elevated concentrations of some elements such as cadmium and zinc may persist at circumneutral pH; in situ treatment has been shown to effectively treat these constituents.

The percent removal anticipated for each parameter in ABM Lake that is used in the water quality modelling is presented in Table 6-12. These removal percentages are based on the presented field case studies, alongside experience of in situ treatment in other mine settings, and are considered conservative. It also should be noted that while continued low concentrations have been achieved elsewhere, on-going long-term monitoring and management of ABM Lake will be required to both ensure that treated parameter concentrations are sustained and inform any additional reagent injections to maintain the desired level of removal.

Table 6-12: Percent Reduction of Parameters Resulting from in situ ABM Lake Treatment

Parameter	In Situ Treatment Reduction (% Removal) [a]
Sulphate	5%
Nitrate-N	90%
Nitrite-N	90%
Ammonia-N	50%
Antimony	50%
Cadmium	90%
Copper	90%
Lead	50%
Nickel	50%
Selenium	90%
Uranium	50%
Zinc	90%

[a] All other constituents were set to 0% removal

6.2.4 RESULTS AND DISCUSSION

The results of the ABM Lake water quality model are presented in APPENDIX C. The changes in ABM Lake water quality during filling of the ABM Open Pit for selected COPIs are presented in Figure 6-2 and Figure 6-3. All parameters show a sharp increase in concentration during the first year of filling as load that accumulated on the pit floor and deepest benches is solubilized. The deeper portions of the ABM Open Pit have relatively high proportions of Class A and B material, including approximately 80% of the massive sulphide wall rock flooded in the first year, leading to the spike in concentrations observed. Upon further flooding over the subsequent 15 years, the concentrations of cadmium, copper, lead, zinc, antimony, and selenium gradually decline as the submerged pit wall produces negligible further load and the load released from pit wall rock at higher elevations is lower due to the greater proportion of Class C material. Notable exceptions are arsenic and uranium, which show slowly increasing concentrations as the pit fills (Figure 6-3). The arsenic is sourced from the arsenic-leaching CA CL MAF and RHYi geodomains which are distributed throughout the ABM Open Pit wall. Uranium leaching is observed to varying degrees from all geodomains, leading to the gradual increase in uranium concentration as the ABM Lake fills.

The average untreated and in situ treated ABM Lake water quality for Year 25, when it is anticipated the water will begin to discharge from the pit to the engineered wetland treatment system, are provided in Table 6-13. The untreated ABM Lake water is anticipated to contain elevated concentrations of antimony, arsenic, cadmium, copper, lead, selenium, uranium, and zinc. In situ treatment is expected to significantly reduce the concentrations of antimony, cadmium, copper, lead, nickel, selenium, uranium, and zinc (Table 6-13).

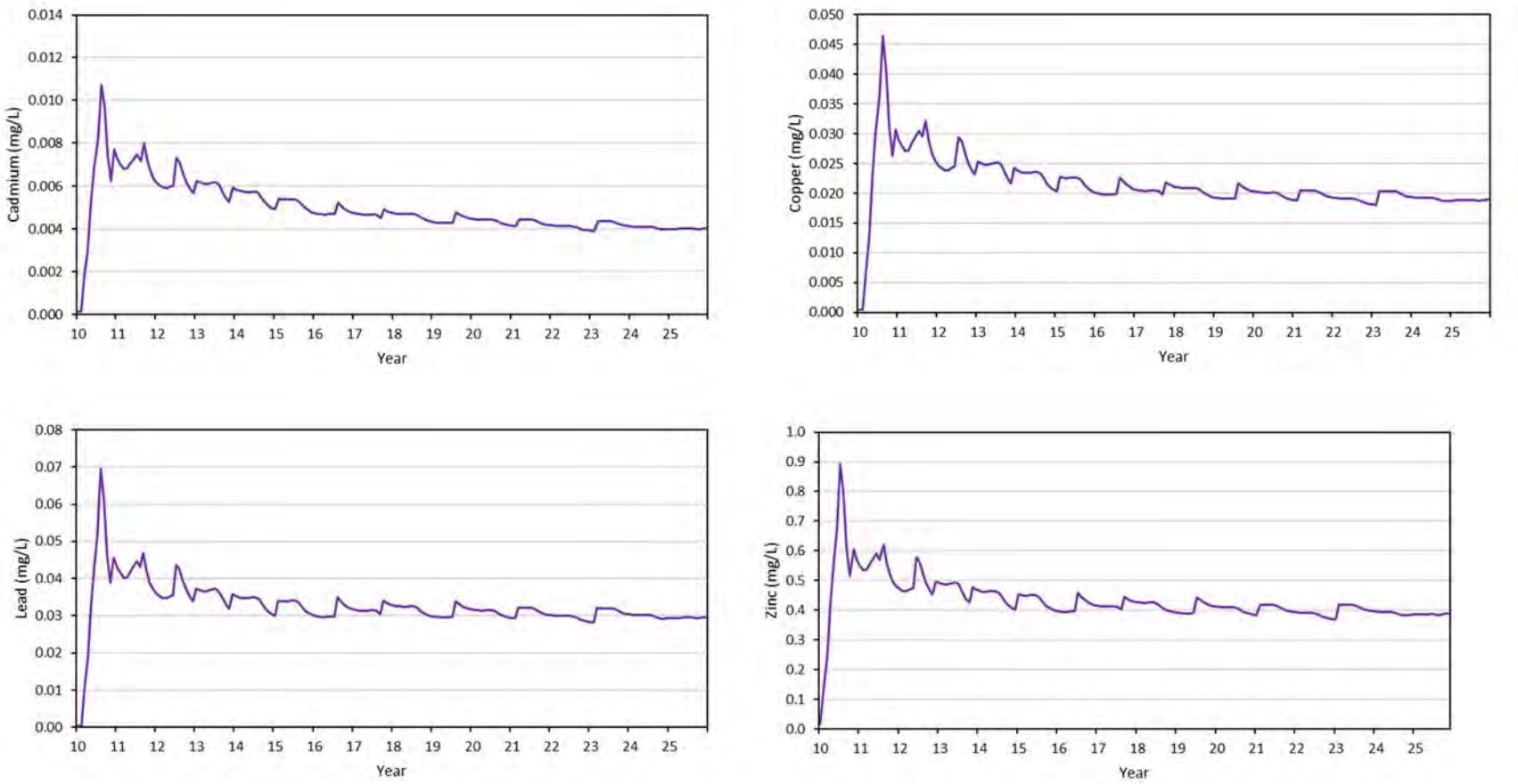


Figure 6-2: Change in Total Cadmium, Copper, Lead, and Zinc Concentrations in ABM Lake as Lake Fills

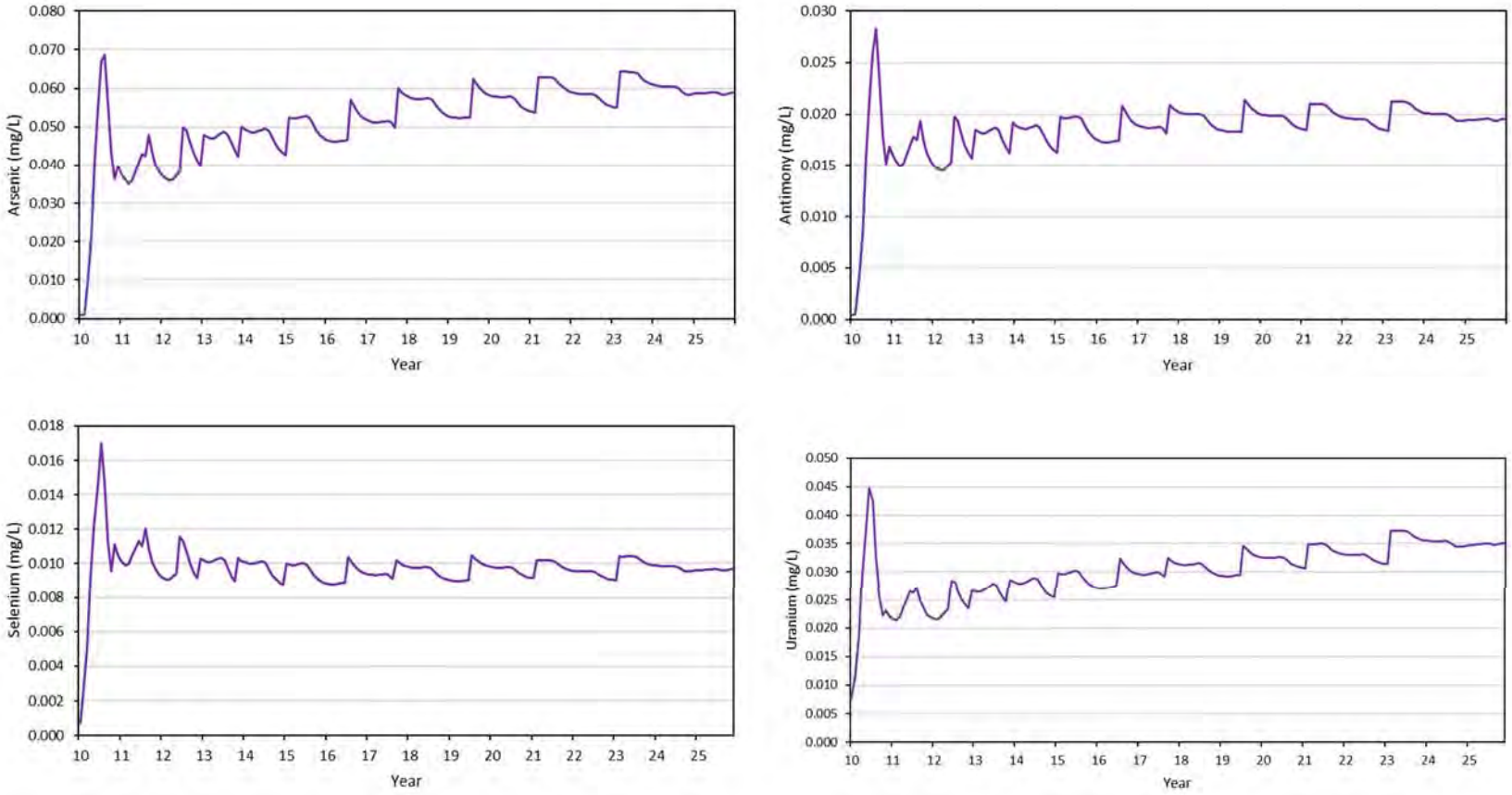


Figure 6-3: Change in Total Arsenic, Antimony, Selenium, and Uranium Concentrations in ABM Lake as Lake Fills

Table 6-13: ABM Lake Water Quality Results

Parameter	Units	Initial ABM Lake Chemistry (Year 26) Total Concentration (*Dissolved Concentration*)	ABM Lake Chemistry After In Situ Treatment (Year 26) (*Dissolved Concentration*)
Sulphate	mg/L	231	219
Hardness (as $CaCO_3$)	mg/L	437	437
Nitrate-N	mg/L	0.049	0.0049
Nitrite-N	mg/L	0.00095	0.000095
Ammonia-N	mg/L	0.018	0.0092
Fluoride	mg/L	0.22	0.22
Aluminum	mg/L	0.087 (*0.078*)	0.087 (*0.078*)
Antimony	mg/L	0.019 (*0.019*)	0.0097 (*0.0097*)
Arsenic	mg/L	0.058 (*0.058*)	0.058 (*0.058*)
Cadmium	mg/L	0.0040 (*0.0040*)	0.00040 (*0.00040*)
Calcium	mg/L	119 (*118*)	119 (*118*)
Cobalt	mg/L	0.0026 (*0.0026*)	0.0026 (*0.0026*)
Copper	mg/L	0.019 (*0.019*)	0.0019 (*0.0019*)
Iron	mg/L	1.2 [a] *(1.1)*	1.2 [a] *(1.1)*
Lead	mg/L	0.029 (*0.029*)	0.015 (*0.015*)
Manganese	mg/L	0.66 (*0.66*)	0.66 (*0.66*)
Nickel	mg/L	0.010 (*0.010*)	0.0052 (*0.0052*)
Selenium	mg/L	0.0096 (*0.0096*)	0.00096 (*0.00096*)
Thallium	mg/L	0.00018 (*0.00018*)	0.00018 (*0.00018*)
Uranium	mg/L	0.034 (*0.034*)	0.017 (*0.017*)
Zinc	mg/L	0.38 (*0.38*)	0.038 (*0.038*)

[a] Although iron is oversaturated with respect to ferrihydrite ($Fe(OH)_3$) under oxidizing conditions expected as ABM Lake forms, in situ treatment will promote reducing conditions under which ferrihydrite and poorly crystalline iron oxyhydroxide minerals will dissolve. Therefore, to remain conservative, the model-estimated iron concentrations were not adjusted.

7. MINE SOURCES OF GEOCHEMICAL LOADING TO THE RECEIVING ENVIRONMENT

Loads from mine sources were calculated and used as inputs to the receiving environment water quality prediction model. Mine source loads to the receiving environment are expected to change throughout the different water management phases of the Project. The main change in water management will occur when the Project transitions from active treatment of mine site water to passive treatment of mine site water. This will occur during the Transition Closure phase when drain-down of water stored in the Class A and Class B Storage Facilities is collected and treated in the WTP and the engineered wetland is developed, evaluated, and deemed effective at polishing site water before discharge to Geona Creek.

Mine sources of loading to the receiving environment are described in the following sections during the active and passive water management phases.

7.1 CONSTRUCTION, OPERATIONS AND ACTIVE CLOSURE

During Construction, estimation of water quality in the receiving environment considers loading from the following sources:

- Groundwater dewatering for development of the ABM Open Pit;
- Use of waste rock and overburden material as construction materials; and
- Diverted runoff.

The quality of water derived from dewatering was determined from baseline groundwater data as described in Section 5.2.

During Operations, all site water will be managed in the WMP. The estimated monthly concentrations from the WMP water quality model were used as the WMP discharge chemistry to the two WMP discharge points (Section 5.2.4).

In addition to the WMP discharge, water from the Class C Storage Facility collection pond and from the Overburden Stockpile collection pond will also provide load to the receiving environment since water from these facilities is diverted past the WMP into Geona Creek at KZ-9. The loads from the Class C Storage Facility and Overburden Stockpile are discussed in Sections 3.2.1 and 3.2.2 respectively. The estimated median concentrations of COPI in the Class C Storage Facility drainage in the last 12 months of operations derived from the model are presented in Table 7-1 for the MAP scenario. Seepage from the Class A, B and C Storage Facilities, Overburden Stockpile, Process Plant area and LGO/ROM pad directly into Geona Creek are considered. Loads associated with the seepage from the various storage facilities are calculated using the loading rates and scaling factors presented in Section 3 and the seepage volumes reported in the Project water balance (KP, 2018). Seepage from the LGO/ROM pad is calculated using the LGO/ROM water quality presented in 5.2.1.8 and the seepage flow volumes provided in the Project water balance (KP, 2018).

Table 7-1: Estimated Median Class C Storage Facility Drainage Chemistry in Last 12 Months of Operations (mg/L)

Dissolved Constituent	Concentration (mg/L) [a]
Sulphate	64
Nitrate-N	4.8
Nitrite-N	0.11
Ammonia-N	0.61
Fluoride	0.22
Aluminum	0.002
Antimony	0.0039
Arsenic	0.0063
Cadmium	0.000051
Cobalt	0.00011
Copper	0.00060
Iron	0.0007
Manganese	0.088
Nickel	0.00051
Lead	0.00012
Selenium	0.0019
Thallium	0.000082
Uranium	0.0096
Zinc	0.0053

[a] Concentrations adjusted following equilibrium with gibbsite (aluminum) and ferrihydrite (iron)

In the Active Closure phase, the WTP will remain operational and treat water from the Class A and B Storage Facility collection ponds. Covers will be constructed on the Class A, B and C Facilities. The completed covers will be designed to limit infiltration of precipitation and surface water runoff, and thus, lower seepage load from the Class A, B and C Facilities. Dewatering of the ABM Open Pit will cease and less water will be discharged from the Project relative to that discharged during Operations. Seepage to Geona Creek from the Class A, B, and C Storage Facilities will continue to be a load source during Active Closure. The Overburden Stockpile will be decommissioned during Active Closure and was therefore not modelled as a load source.

7.2 TRANSITION AND POST-CLOSURE

Throughout the Transition Closure phase, engineered wetlands will be constructed to treat surface runoff from the site and the ABM Lake water once the maximum pit water elevation (1,380 masl) is reached and outflow occurs. During the transition phase, the WTP will receive drain-down water from the Class A and B Storage Facilities and seepage from the LGO/ROM pad captured in seepage collection systems; it is modelled to perform to the specifications described in Section 5.2.1.11. The WTP will be decommissioned once the drain-down of the Class A and B Storage Facilities is complete and is no longer collected in the seepage collection system, or the water collected no longer requires treatment before release to the environment.

Seepage from the Class A, B and C Storage Facilities will continue to contribute load to the receiving environment through Transition and Post-closure phases. Seepage from the Class A and B Storage Facilities is modelled according to the approach described in Section 3.3 while loading from the Class C Storage Facility is assumed to decrease by 10% due to the installation of the cover. Seepage from the ABM Open Pit direct to the receiving environment in Geona Creek that bypasses the constructed wetland treatment system (CWTS) is also considered.

7.3 MODEL CONSERVATISM

In general, water quality models are developed from field and laboratory datasets that attempt to capture the range of conditions that may be expected during the period of time over which predictions are made. Given the limitations of these datasets (i.e., sampling size, temporal range), numerous assumptions are required in order estimate water quality on larger spatial scales and longer temporal extents. In the interest of caution, relatively conservative estimates are preferred, which results in a water quality model that generates COPI concentrations that will likely be higher than the actual levels in the receiving environment.

The conservative assumptions built into the water quality model include:

- Relatively conservative conversion factors for particle size and contact water used to scale the laboratory ARD/ML data to field conditions;
- No natural attenuation of COPIs were assumed between KZ-37 and KZ-15 or KZ-15 and KZ-26;
- The use of median release rates from laboratory kinetic experiments to develop source terms for constituent release from waste rock and tailings during the Operations and Active Closure phases of the Project;
- The use of 75th percentile release rates from laboratory waste rock kinetic experiments to develop source terms for constituent release from the ABM Open Pit wall rock;
- Various precipitation scenarios (in addition to the mean; as described in Section 4.1) were modelled to assess the sensitivity of COPI concentrations to hydrologic variations and the most conservative of these scenarios (i.e., that returned the highest COPI concentrations) were evaluated against the pWQOs; and
- Retaining moderate estimates of COPI removal from in situ treatment of the ABM Lake lends conservatism to the Post-closure water quality forecasts.

8. RECEIVING WATER QUALITY MODEL

8.1 WATER QUALITY PREDICTION LOCATIONS

All loads from mine components are anticipated to report to Finlayson Creek via the WMP discharge pipe or via Geona Creek. Water quality predictions were made at the following locations (presented in Figure 5-1):

- Geona Creek (KZ-37): located downstream of the discharge from the WMP near KZ-9, approximately 50 m downstream from the confluence with the un-named tributary to Geona Creek (KZ-18);
- Upper Finlayson Creek (KZ-15): at an existing water quality/quantity station (KZ-15) that is downstream of the confluence with Geona Creek and the LWMP discharge to Finlayson Creek; and
- Lower Finlayson Creek (KZ-26): at an existing water quality monitoring station near the Robert Campbell Highway.

Water quality predictions were also made at an existing water quality monitoring station on South Creek (KZ-13) to assess the potential effect of Fault Creek and south diversion water on the South Creek catchment during Construction and Operations.

8.2 BASELINE WATER QUALITY

Water quality data presented by AEG (2018b) were used to establish the baseline water quality at the prediction locations. The median total concentrations for each month from the existing monitoring stations KZ-37, KZ-15, KZ-26, and KZ-13 were used for the Geona Creek, Upper Finlayson Creek, Lower Finlayson Creek, and South Creek locations, respectively.

The median monthly water quality for select modelled parameters at these four sites are provided in APPENDIX A.

8.3 MASS LOADING SOURCES

Mass loading from both mine components and natural occurring sources were considered for the prediction of water quality in the receiving environment. These mine-related and natural loading sources are discussed in the following sections.

8.3.1 MINE SOURCES

Load sources from the mine site to the receiving environment are expecting to vary throughout the Project life as water management phases progress. The mine source loads are described in Section 7.

8.3.2 BACKGROUND LOADING

The water quality model for the receiving environment considered the loading that naturally occurs at the prediction locations without mining source loads. This loading is referred to as "background" load. Background loads are calculated from median total metal concentrations from baseline monitoring data. Mean monthly flow volumes from KP (2018) were used in background load calculations.

Estimated background loads were calculated as the change in load from one prediction point to a prediction point downstream such that:

$$L_{(BG)\,b} = [\ C_b * V_b\ ] - [\ C_a * V_a\ ]$$

Where:

$L_{(BG)\,b}$ is the background load of a given parameter at a point *b* downstream of point *a*;

C_b is the median baseline concentration of a given parameter at point *b*;

V_b is the predicted flow volume at point *b*;

C_a is the median baseline concentration of a given parameter at point *an* upstream of point *b*; and

V_a is the predicted flow volume at point *a*.

Background loads were estimated for each month and were added as load sources to KZ-15 (load increase from KZ-37 to KZ-15) and to KZ-26 (load increase from KZ-15 to KZ-26).

In the case where the change in load for a COPI was negative (i.e., the load downstream was smaller than upstream), zero load was added. While it is possible that attenuation of a particular parameter is occurring naturally along the flow path, the model conservatively assumes no attenuation.

8.3.3 WATER MANAGEMENT DIVERSIONS

During Operations, ditches will be constructed to divert surface water runoff to prevent clean water from outside the management area from entering the site and coming into contact with Project components. Diversions will direct flow either south of the site into South Creek or north into Geona Creek. Flows for all modelled scenarios were provided by KP (2018).

It was assumed that the north and south diversions will be in place for the Construction (ABM Open Pit, removal of overburden and dewatering) and Operations phases and that they would be decommissioned at the start of Active Closure.

Water diverted to the receiving environment was assumed to have water quality similar to the baseline water quality data collected within the vicinity of the Project site. Thus, the load attributed to the diversion water was

calculated by multiplying the average of baseline water quality at monitoring stations KZ-6 and KZ-7 for a given month by the flow volume for that month. The baseline water quality data for KZ-6 and KZ-7 are provided in APPENDIX A and the locations of those stations are shown in Figure 5-1.

8.4 MASS BALANCE AND WATER QUALITY MODELLING EQUATIONS

The consideration of load sources was dictated by the flows provided by the Project water balance (KP, 2018). Concentrations were calculated as the sum of all loads to a prediction point in a given month divided by the total flow volume through a prediction point in that given month as provided in the Project water balance (KP, 2018):

$$C = \sum L / V$$

Where:

C is the average concentration for a given parameter in a given month;

L is the total mass load input for a given parameter during the given month; and

V is the total volume through a prediction point during the given month as provided by KP, 2018.

8.4.1 GEONA CREEK (KZ-37)

The loading sources considered through each phase of the Project are summarized in Table 8-1.

Table 8-1: Summary of loads to Geona Creek at KZ-37 in the Water Quality Model

Load Source to KZ-37	Construction (Year -2 to -1)	Operations (Year 1 to 10)	Active Closure (Year 10 to 13)	Transition Closure (Year 13 to 25)	Post-closure (Year 25 Forward)
Undiverted Runoff to KZ-9	■	■	■	■	■
KZ-18 Surface Baseline	■	■	■	■	■
ABM Open Pit Dewatering	■				
Diverted Runoff	■	■			
Class A Waste Surface Contact Water	■				
Class A Storage Facility Seepage		■	■	■	■
Class B Waste Surface Contact Water	■				
Class B Storage Facility Seepage		■	■	■	■
Class C Storage Facility Contact Water		■	■	■	■
Class C Storage Facility Seepage	■				
Seepage from LGO Stockpile, ROM Pad and Mill Site		■	■		
Water Management Pond Discharge to KZ-9 (Including WTP discharge and dewatering)		■	■	■	
ABM Open Pit Surface Flow (via Constructed Wetland Treatment Systems)					■
Seepage from ABM Open Pit					■

8.4.1.1 Constructed Wetland Treatment System

During the Transitional Closure phase, CWTSs will be established down-gradient of the ABM Pit in the area of the decommissioned Pit Rim Pond and further down-gradient in the area of the WMPs. Further details on the design of the CWTSs is available in the *Kudz Ze Kayah Constructed Wetland Treatment System Memo* (Contango, 2017) and Section 8.4.1.6 of the Project Proposal (BMC, 2017a). Design specifications and removal coefficients for the treatment of select COPIs were provided for arsenic, cadmium, copper, lead, selenium and zinc by Contango Strategies Ltd. and in BMC's response to YESAB adequacy information request R108 (BMC, 2017b).

For this updated model report, COPI concentrations were not estimated to be in excess of their pWQOs in the input to CWTSs. As such, COPI removal rates were estimated in the model and the results discussed in Section 8 do not assess reduction from the CWTS.

8.4.2 UPPER FINLAYSON CREEK (KZ-15)

The water quality concentration estimates at KZ-15 were calculated with the following equation:

$$C_{KZ\text{-}15} = (L_{KZ\text{-}37} + L_{(BG)\ KZ\text{-}15} + L_{\ WMP\ KZ\text{-}15}) / V_{KZ\text{-}15}$$

Where:

$C_{KZ\text{-}15}$ is the concentration of a given parameter at KZ-15;

$L_{KZ\text{-}37}$ is the load calculated at KZ-37;

$L_{(BG)\ KZ\text{-}15}$ is the background load at KZ-15;

$L_{\ WMP\ KZ\text{-}37}$ is the load released to KZ-15 from the WMP (only during Operations); and

$V_{KZ\text{-}15}$ is the modelled monthly flow volume at KZ-15.

Note that $L_{\ WMP\ KZ\text{-}37}$ direct to KZ-15 only occurs in the Operations phase.

8.4.3 LOWER FINLAYSON CREEK (KZ-26)

During all phases of the Project, the water quality concentration estimates at KZ-26 were calculated with the following equation:

$$C_{KZ\text{-}26} = (L_{KZ\text{-}15} + L_{(BG)\ KZ\text{-}26}) / V_{KZ\text{-}26}$$

Where:

$C_{KZ\text{-}26}$ is the concentration of a given parameter at KZ-26;

$L_{KZ\text{-}15}$ is the load calculated at KZ-15;

$L_{(BG)\ KZ\text{-}26}$ is the background load at KZ-26; and

$V_{KZ\text{-}26}$ is the modelled monthly flow volume at KZ-26.

8.4.4 SOUTH CREEK (KZ-13)

During the Operations phase, diversions will be constructed to redirect Fault Creek and runoff water from south of the site into the South Creek catchment to limit access of clean surface water flow to the Project site. These

diversions will be removed following the Operations phase. Therefore, water quality in South Creek (at KZ-13) was predicted only for the Operations phase to assess the addition of loads from Fault Creek and runoff from south of the project to South Creek. It was assumed that the load sources for each month would be constant from year to year and thus only one general Operations phase was modelled. The estimated water quality concentrations at KZ-13 was calculated according to the following equation:

$$C_{KZ\text{-}13} = (L_{KZ\text{-}13} + L_{KZ\text{-}2} + L_{S\ Div}) / V_{KZ\text{-}13}$$

Where:

$C_{KZ\text{-}13}$ is the concentration of a given parameter at KZ-13 on South Creek;

$L_{KZ\text{-}13}$ is the baseline load at KZ-13;

$L_{KZ\text{-}2}$ is the load from KZ-2;

$L_{S\ Div}$ is the load from the south diversions; and

$V_{KZ\text{-}13}$ is the modelled monthly flow volume at KZ-13.

8.5 WATER QUALITY MODEL RESULTS

8.5.1 PRELIMINARY WATER QUALITY OBJECTIVES

Preliminary water quality objectives (pWQO) have been developed for a range of COPIs associated with the Project and were submitted to YESAB as Appendix D-8 of the Project Proposal (BMC, 2017) and (AEG, 2016b). The pWQOs were updated and submitted to YESAB in Response Report Number 3 (BMC, 2018 and AEG 2018d). These pWQO have been derived utilising methods outlined by Canadian Council of Ministers of the Environment (CCME) (2003), which is consistent with other permitted mining projects in Yukon. The background concentration procedure (BCP) was used to develop site-specific water quality objectives (SSWQO) for those COPIs for which the 95th percentile concentration at each receiving environment monitoring stations (Geona Creek, Finlayson Creek and South Creek) within the Project study area exceeded the CCME (2007) or British Columbia Ministry of Environment (BCMoE, 2017) water quality guidelines for protection of aquatic life. This resulted in SSWQOs being developed for aluminum, cadmium, copper, and zinc. Where the 95th percentile was lower than the generic CCME or BCMoE water quality guideline, then the more recent of the two guidelines was used.

An exception was the zinc pWQO at KZ-13, where the hardness-dependent BCMOE zinc guideline was often higher than the 95th percentile total zinc concentration (0.014 mg/L), typically during the winter months. Therefore, a hybrid zinc pWQO was developed for KZ-13 where the highest of either the BCMOE zinc guideline or the 95th percentile (0.014 mg/L) concentration was adopted for comparison with each modelled month of water quality at KZ-13.

Different approaches were used to develop the pWQO for selenium, fluoride, and arsenic. Selenium uptake by primary producers (autotrophic organisms that produce biomass from inorganic compounds) is a significant factor in the accumulation of selenium in higher trophic levels of the freshwater food chain. Sulphate is documented to compete with selenium for uptake by primary producers, and laboratory test work using Finlayson Creek water demonstrated that selenium uptake by two primary producers decreased in the presence of increasing sulphate concentration (Minnow Environmental, 2016). On this basis a sulphate-dependent selenium SSWQO was developed for the Project. At baseline sulphate concentrations of 60 mg/L or less, the SSWQO was set equivalent to the BCMoE guideline (0.002 mg/L), but at higher sulphate concentrations, the selenium SSWQO was calculated using an equation based on the sulphate concentration.

The CCME interim fluoride guideline was developed in 2001 using guideline derivation protocols that have since been revised by CCME. A chronic fluoride SSWQO was developed using the current CCME guidance by reviewing published fluoride toxicological studies for resident species in Canada (or suitable surrogate species) that meet the CCME criteria for a Type A guideline (CCME, 2007). This review resulted in a fluoride SSWQO of 1.1 mg/L (APPENDIX D). The inclusion of the most sensitive chronic and sub-chronic endpoints in this SSWQO derivation ensures that it will likely be protective of most aquatic life at site.

A similar approach was also adopted for the development of a chronic arsenic SSWQO. Published toxicological studies were reviewed, and a SSWQO was developed for the major inorganic forms of arsenic that are found in natural surface waters, namely arsenate [As(V)] and arsenite [As(III)]. A SSWQO was also developed for a mixture

of As(V) and As(III). Given the oxidizing nature of the KZK receiving environment surface waters, and the identification of As(V) as the sole arsenic species in Geona Creek, Finlayson Creek, and South Creek waters, the SSWQO derived for As(V) was adopted for arsenic (0.042 mg/L; APPENDIX E). This was also the lowest of the three SSWQOs and is considered conservative for comparison with total arsenic concentrations.

Alternative approaches to the derivation of SSWQO for cadmium, copper, lead, and zinc were also considered since they are primary COPIs for the Project. Biotic ligand modelling indicated that the time and resource intensive water effects ratio procedure (WERP) would be unlikely to produce higher SSWQO for these specific elements. However, elevated concentrations of dissolved organic carbon (DOC) present year-round in the downstream reach of Finlayson Creek (site KZ-26) and throughout the catchment during spring freshet may confer a buffer against these three elements. This should allow the development of a seasonal (i.e., spring), or DOC-threshold based SSWQO using the WERP. The BCMoE and CCME guidelines used to develop the pWQO for parameters that did not have a SSWQO developed are presented in Table 8-2. The SSWQO for KZK are presented in Table 8-3 which includes aluminum, cadmium, copper, fluoride, and zinc, and the selenium SSWQO equation developed using Finlayson Creek water. The results in the subsequent sections utilise the pWQO provided in Table 8-2 and Table 8-3, but for pWQO parameters that are hardness, sulphate or chloride dependent the modelled concentrations for the dependent parameters were used to calculate the pWQO for that given month's prediction.

Table 8-2: KZK Preliminary Water Quality Objectives Based on CCME and BCMoE Guidelines

Constituent	CCME Guideline Date	BCMoE Guideline Date	Generic Guideline used for Preliminary Water Quality Objectives
Aluminum, Total	1987 [a]	Not available	0.005 mg/L if pH < 6.5; 0.1 mg/L if pH ≥ 6.5
Ammonia-N	2001	2009	Temperature and pH dependent (see Table 3-2 for values)
Antimony, Total	Not available	No final guideline	0.009 mg/L (British Columbia working water quality guideline for antimony (III))
Cadmium, Total	2014	No guideline for total cadmium	0.00004 mg/L if hardness (as $CaCO_3$) < 17 mg/L 10^{0.83(log[hardness]) – 2.46}/1000 (mg/L) if hardness ≥ 17 mg/L and ≤ 280 mg/L 0.00037 mg/L if hardness > 280 mg/L
Copper, Total	1987	1987	0.002 mg/L if hardness ≤ 50 mg/L; (0.04*(hardness))/1000 (mg/L) if hardness > 50 mg/L and < 187 mg/L
Cyanide, Total	1987	Not available	0.005 mg/L (as free CN)
Cyanide, Weak Acid Dissociable	Not available	1986	0.005 mg/L
Lead, Total	1987	1987	(3.31 + e^[1.273 ln (hardness+D3) - 4.704])/1000 (mg/L) if hardness > 8 mg/L
Manganese, Total	Not available	2001	0.0044*hardness + 0.605 mg/L if hardness ≥ 37 mg/L and ≤ 450 mg/L
Mercury, Total	2003	2001	0.000026 mg/L
Molybdenum, Total	1999	1986	0.073 mg/L
Nickel, Total	1987	Same as CCME	0.025 mg/L if hardness (as CaCO3) ≤ 60 mg/L or unknown, (e^{0.76[ln(hardness)]+1.06})/1000 mg/L if hardness > 60 mg/L and ≤ 180 mg/L, 0.15 mg/L if hardness > 180 mg/L
Nitrate-N	2012	2009	3 mg/L
Nitrite-N	1987	2009	0.02 mg/L if chloride <2 mg/L; Guideline increases by 0.02 mg/L increments for every 2 mg/L chloride increase between 2 and 10 mg/L; 0.2 mg/L if chloride >10 mg/L
Selenium, Total	1987	2014	0.002 mg/L
Silver, Total	2015	1996	0.00025 mg/L
Sulphate	Not available	2013	128 mg/L if hardness ≤ 30 mg/L; 218 mg/L if hardness > 30 mg/L and ≤ 75 mg/L; 309 mg/L if hardness > 75 mg/L and ≤ 180 mg/L; 429 mg/L if hardness > 180 mg/L and ≤ 250 mg/L
Thallium, Total	1999	No final guideline	0.0008 mg/L
Uranium, Total	2011	No final guideline	0.015 mg/L
Zinc, Total	1987	1999	0.0075 mg/L if hardness ≤ 90 mg/L; (7.5 + 0.75*(hardness – 90))/1000 mg/L if hardness > 90 mg/L
Aluminum, Dissolved	Not available	2001	e^[1.6–3.327(pH)+0.402(pH)^2] mg/L if pH < 6.5 0.05 mg/L if pH ≥ 6.5
Cadmium, Dissolved	Not available	2015	(e^(0.736*ln(hardness)-4.943))/1000 mg/L for hardness between 3.4 and 285 mg/L

[a] Green shading indicates guideline selected for preliminary water quality objective

Table 8-3: KZK Site Specific Water Quality Objectives

Constituent	Site Specific Water Quality Objectives (mg/L)			
	KZ-13	KZ-37	KZ-15	KZ-26
Aluminum, Total	0.32	0.25	-	0.18
Arsenic, Total	0.042	0.042	0.042	0.042
Iron, Total	0.36	0.92	0.34	1.0
Fluoride	1.1	1.1	1.1	1.1
Selenium, Total	when sulphate >60 mg/L Total Selenium SSWQO (mg/L) = (0.1736*[sulphate]0.597)/1000			
Zinc, Total	0.014	-	-	-

8.5.2 GEONA CREEK

The estimated concentrations for a range of COPIs at site KZ-37 in Geona Creek (Figure 5-1) over the Project life for the various precipitation scenarios are presented in Figure 8-1 to Figure 8-9. The full set of results from the receiving environment water quality model for Geona Creek are presented in APPENDIX F.

8.5.2.1 Mean Precipitation Scenario Water Quality Estimates without CWTS Treatment

During the Construction phase (Years -2 to -1), concentrations of the majority of COPIs at KZ-37 were estimated to be comparable to, or lower than baseline levels. This is due to the diversion of upstream waters containing relatively elevated concentrations of some COPIs (Fault Creek) and dilution from the pit dewatering. The baseline median zinc concentration in May at KZ-37 is 0.036 mg/L, which ostensibly exceeds the hardness-dependant pWQO for zinc (0.0075 mg/L) due to the lower hardness levels in May following dilution from freshet waters. While the zinc concentration was also estimated to be greater than the pWQO in May of the Construction phase year -2 and -1 (0.013 mg/L vs pWQO of 0.0075 mg/L), the model estimated zinc concentration is much lower than baseline conditions (i.e., 0.036 mg/L), and thus, it is not considered a change from baseline.

Most COPI concentrations were estimated to increase during the Operations phase (Years 1 to 10) as loading from accumulating waste rock facilities increases. However, with water treatment and management, no pWQO exceedances were predicted during Operations. Similar to the Construction phase, a zinc concentration in May of year 1 was estimated to be greater than the pWQO (0.012 mg/L vs pWQO of 0.0075 mg/L), but much less than the May baseline for zinc in KZ-37 (0.036 mg/L) and thus is not identified as a change from baseline conditions.

During the Active Closure phase (year 10 through 13), the WTP receives drain-down water from the Class A and Class B Storage Facilities. This drain-down is expected to contain elevated concentrations of COPIs due to accumulation of weathered load in the facilities through the Closure phase and development of acidic drainage conditions in the Class A Storage Facility. As such, higher concentrations of the majority of COPIs are estimated in the Active Closure phase, relative to other phases of the Project. Nitrite-N, from residue left from explosives use, was estimated to marginally exceed its pWQOs in May of Year 13 of Active Closure phase (0.062 mg/L vs. pWQO of 0.06 mg/L). As drain-down is collected and treated in the WTP before release to Geona Creek, other COPIs are below their respective pWQOs during Active Closure.

In Transitional Closure (year 13 to 25), the concentrations of many COPIs were estimated to decrease as decreasing quantities of drain-down water from the Class A and B Storage Facilities are collected and treated at the WTP and released to the receiving environment. Similarly, hardness levels decreased through Transitional Closure due to decreasing drain-down water from the Class A and B Storage Facilities, leading to lower hardness-dependent pWQOs during this period. Zinc concentrations were estimated to be slightly higher in May of year 18 to through to the end of the Transitional Closure phase; however, as discussed for the Construction and Operations phase the estimated concentrations and the magnitude over the pWQO are less than for baseline conditions and thus the estimated zinc concentrations were not considered exceedances or changes from baseline conditions.

Exceedances of the copper pWQO were estimated in March (year 22 to 25) and April (year 23 to 25), due to contribution of seepage from the Class A Storage Facility. The estimated copper concentrations marginally exceeded the pWQO in March (maximum of 0.0078 mg/L vs pWQO of 0.0074 mg/L) and exceeded by slightly more in April (maximum of 0.0098 mg/L vs pWQO of 0.0067 mg/L) due to seepage from the Class A Storage Facility from the assumed liner defects. The maximum copper concentrations, however, were well below the acute copper guideline of 0.018 mg/L (BCMoE, 2017) and based on the definition for determining significance the magnitude would be moderate as the concentrations are all estimated below two times the pWQO (AEG, 2017b). Therefore, no significant effects are anticipated.

In Post-closure, the ABM Lake will be formed and water will discharge to Geona Creek. Due to the extra dilution from the ABM Lake flow, the copper exceedances during Transitional Closure are not estimated in Post-closure. The hardness supplied by ABM Lake leads to an increase in the hardness-dependent pWQOs in Geona Creek. While some COPIs were estimated to increase in Post-closure due to load contributions from the ABM Lake weathering (antimony, cadmium, arsenic), no exceedances were estimated in Post-closure.

8.5.2.2 Water Quality Estimates with CWTS Treatment

The model-estimated input COPI concentrations to the CWTS were all below their respective pWQO. As such, no improvements in CWTS output water quality were modelled. Improvements in water quality may likely be expected from the CWTS and will be informed by pilot testing; however, at present the CWTS may be viewed as providing polishing treatment and redundancy to the closure plan.

8.5.2.3 Wet and Dry Precipitations Scenario Water Quality Estimates

The wet precipitation year scenarios typically returned lower estimated COPI concentrations due to the higher dilution volumes. No exceedances of the nitrite-N pWQO were predicted in the wet year scenario for year 12. In wet year 20, copper was estimated to marginally exceed its pWQO (0.0095 mg/L vs pWQO of 0.0086 mg/L), but by a lower degree than observed in the mean precipitation scenario (0.0096 mg/L).

Due to less dilution in the receiving environment, the dry year scenarios typically returned higher COPI concentrations than the mean precipitation scenario, although no exceedances of any pWQO were estimated in the Construction, Operations or Post-closure phases. In Active Closure, the dry year 12 scenario estimated nitrite-N concentrations in excess of the pWQO for 8 of the 36 active closure phase months (maximum concentration of

0.068 mg/L vs pWQO of 0.06 mg/L). By contrast, nitrite-N was not estimated to exceed in year 12 of the mean precipitation scenario.

The dry year 20 scenario yielded the same number of copper pWQO exceedances as the mean precipitation scenario, but with slightly higher estimated concentrations (maximum concentration of 0.011 mg/L copper vs 0.0081 mg/L in the mean scenario). No exceedances of any pWQO were estimated in dry year 38 of Post-closure.

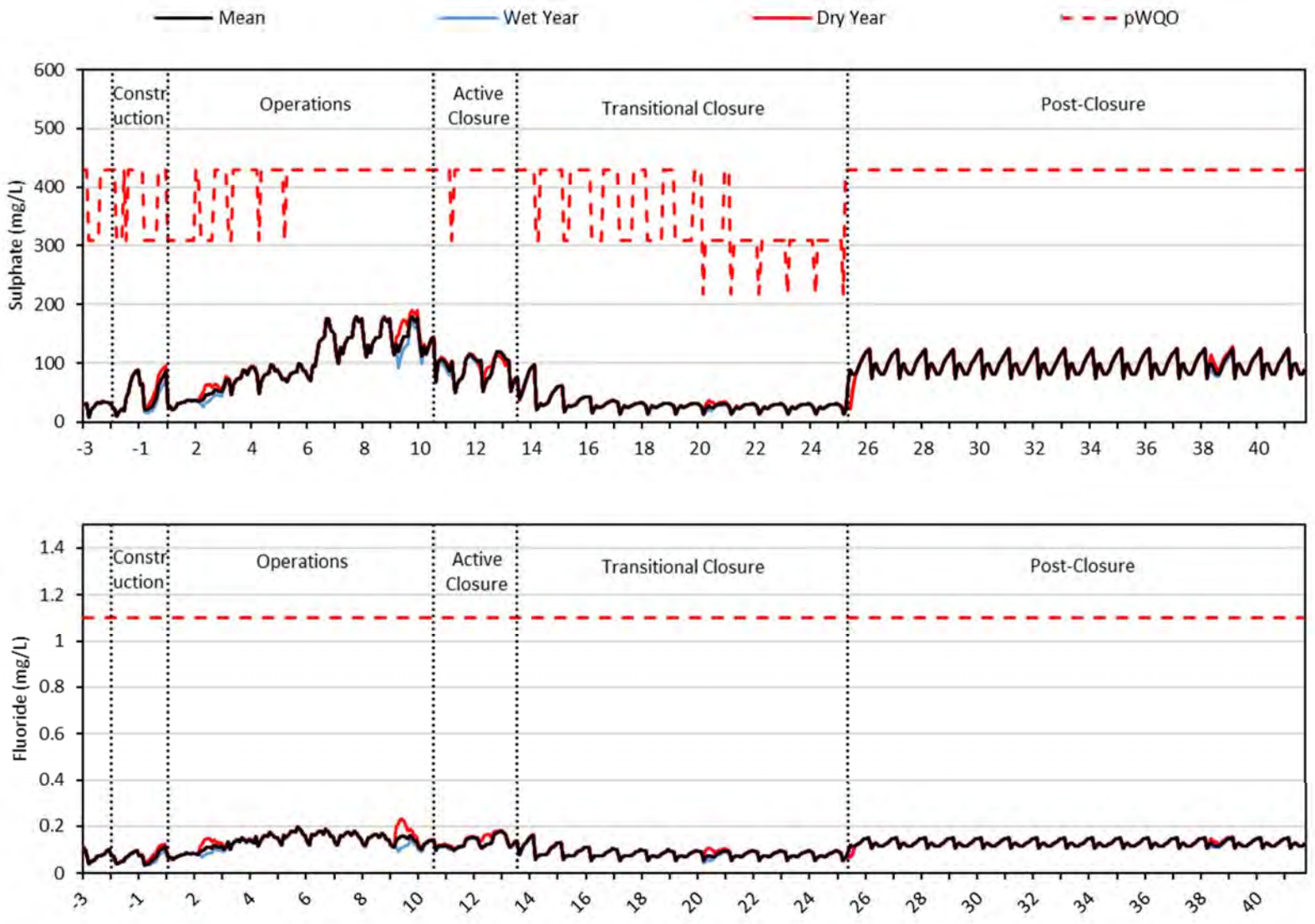


Figure 8-1: Model Estimated Concentrations of Sulphate and Fluoride in Geona Creek at KZ-37

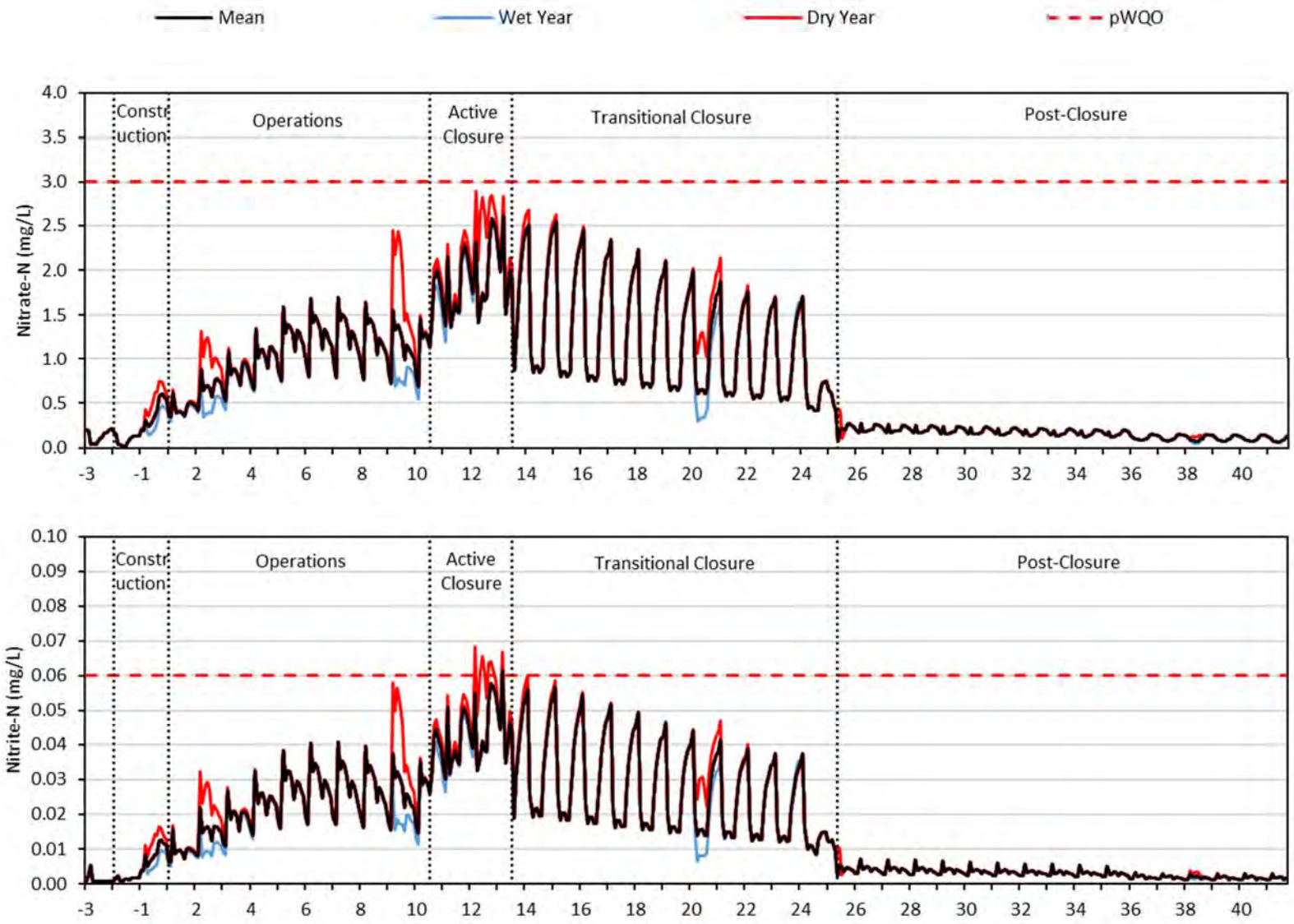


Figure 8-2: Model Estimated Total Concentrations of Nitrate-N and Nitrite-N in Geona Creek at Site KZ-37

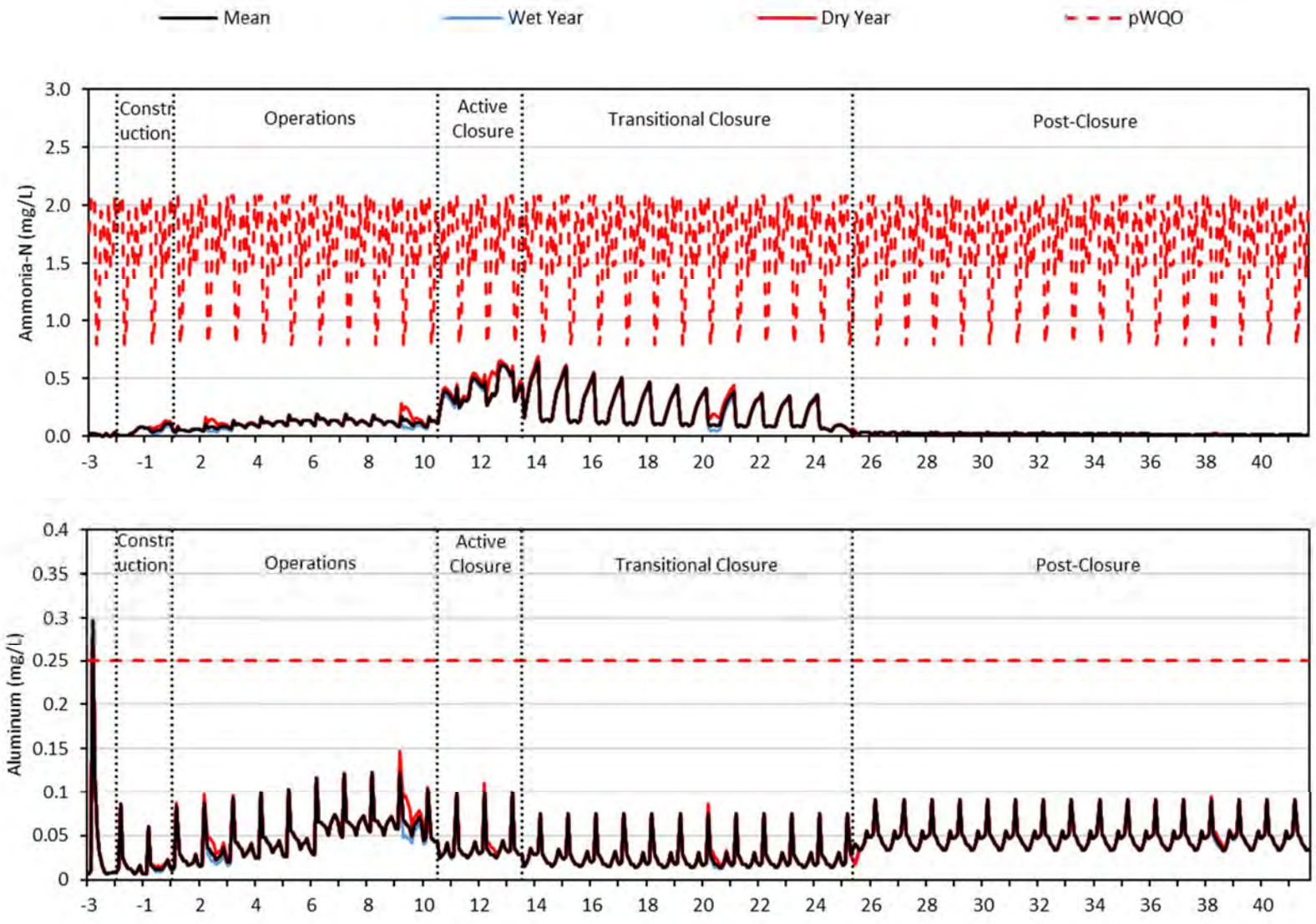


Figure 8-3: Model Estimated Concentrations of Ammonia-N and Total Aluminum in Geona Creek at KZ-37

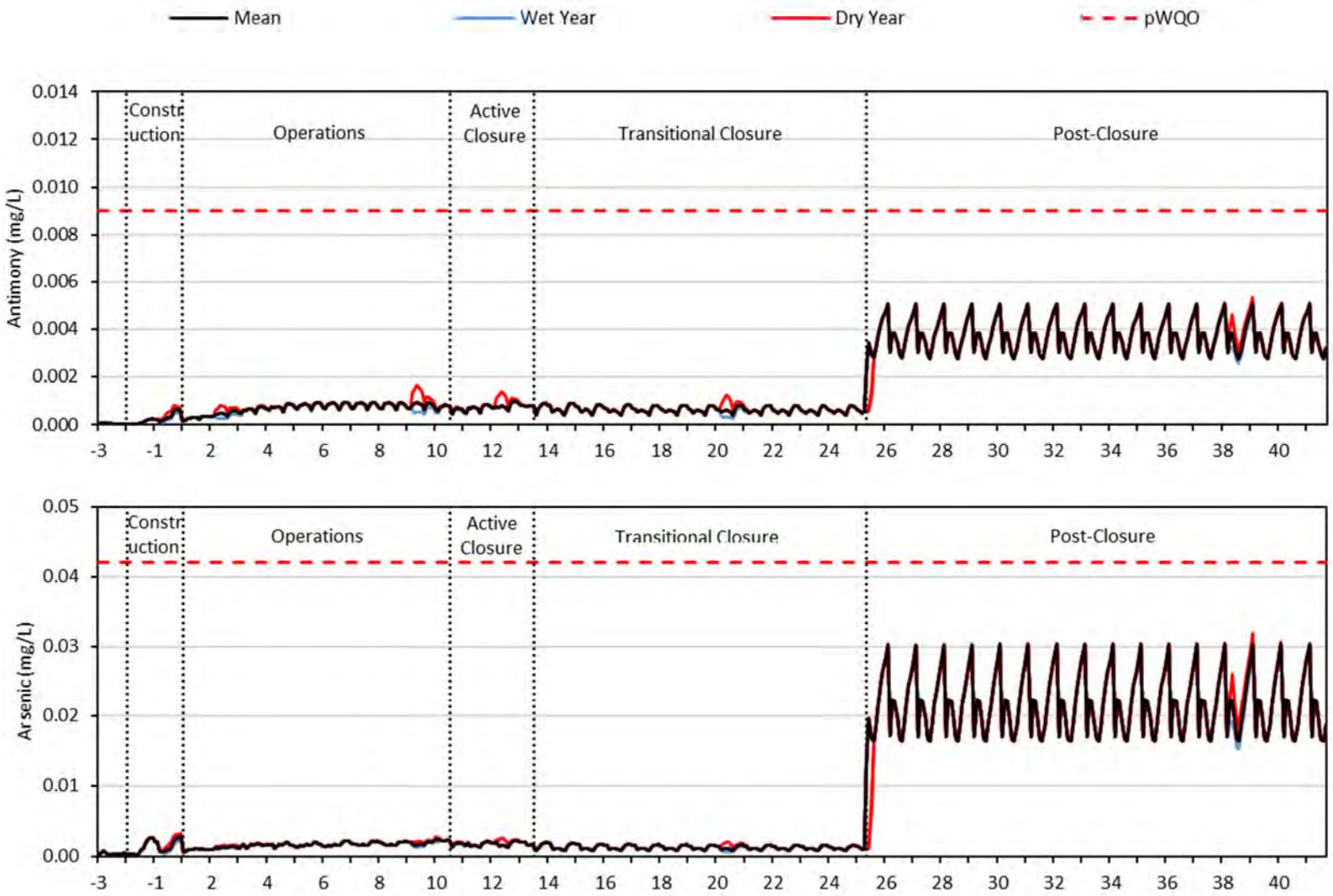


Figure 8-4: Model Estimated Concentrations of Total Antimony and Arsenic in Geona Creek at KZ-37

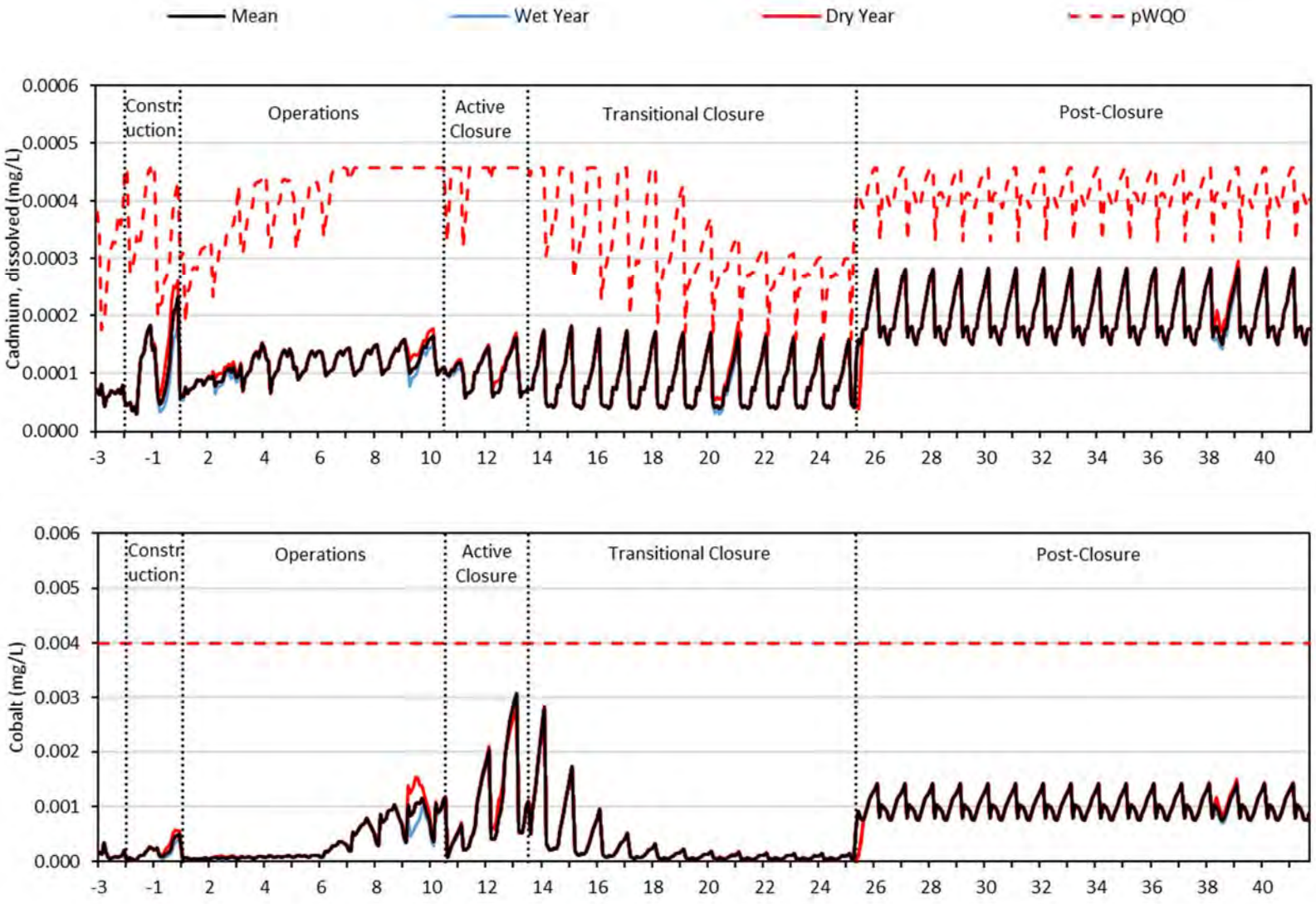


Figure 8-5: Model Estimated Concentrations of Dissolved Cadmium and Total Cobalt in Geona Creek at KZ-37

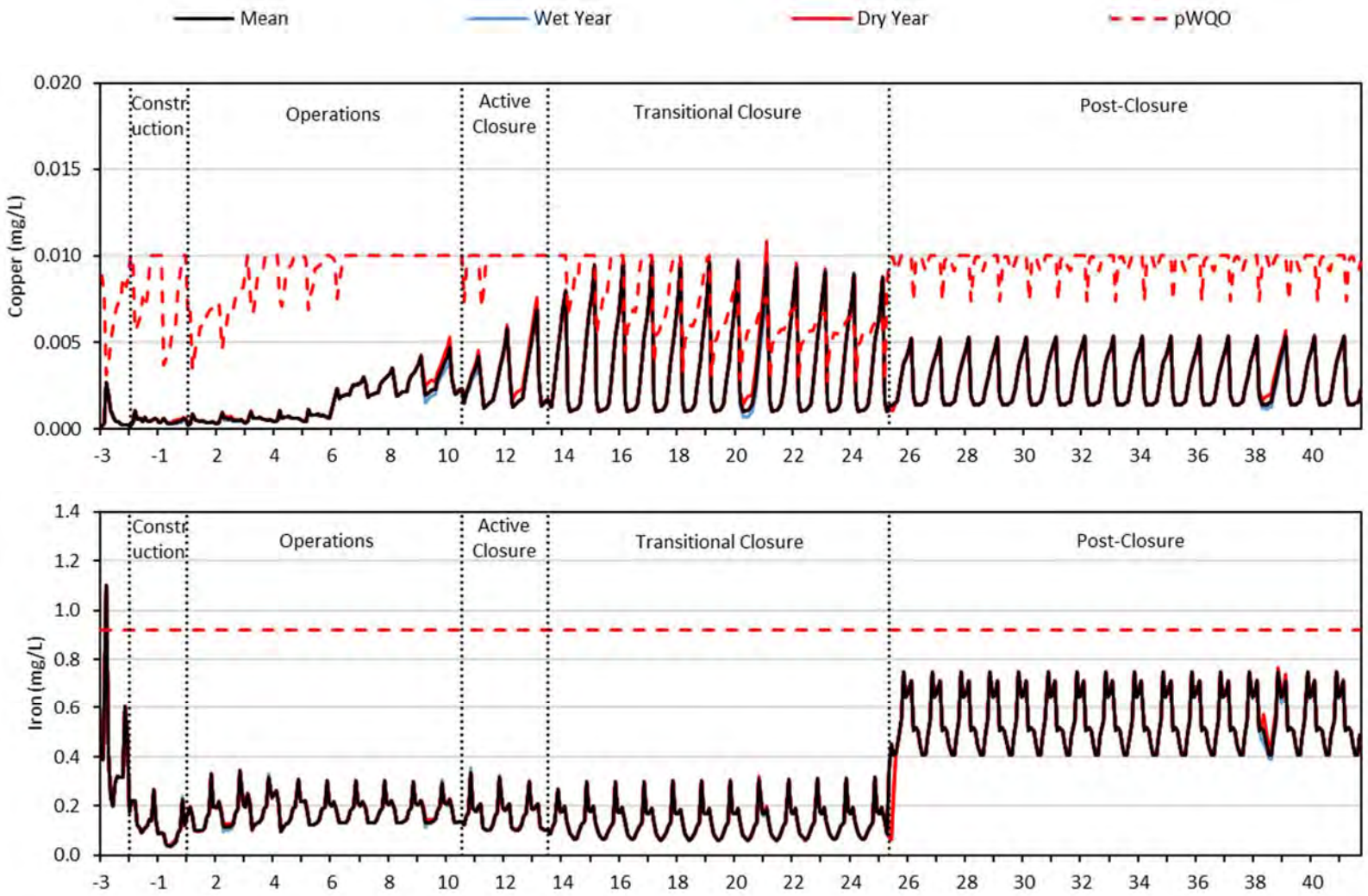


Figure 8-6: Model Estimated Total Concentrations of Copper and Iron in Geona Creek at KZ-37

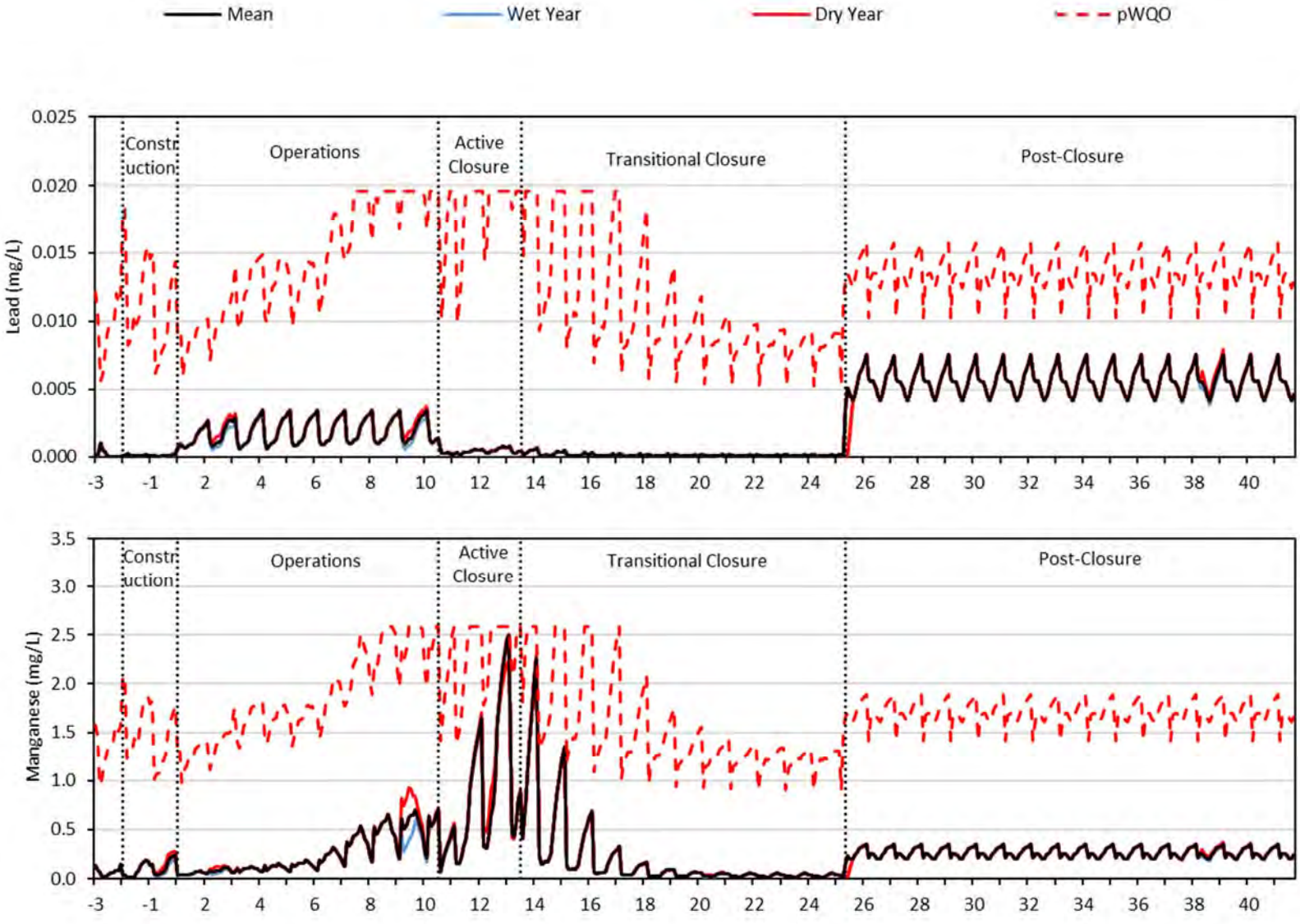


Figure 8-7: Model Estimated Total Concentrations of Lead and Manganese in Geona Creek at KZ-37

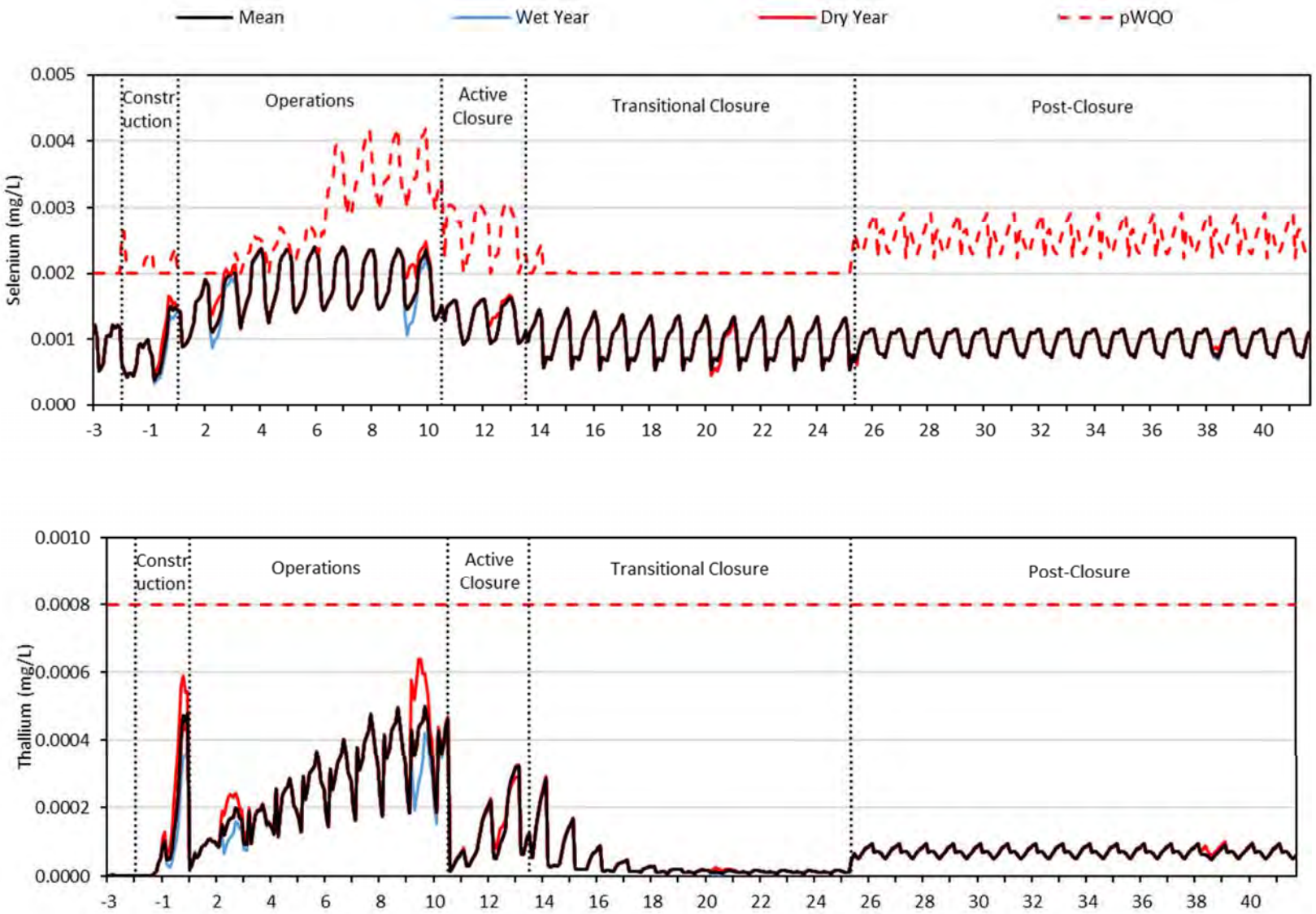


Figure 8-8: Model Estimated Total Concentrations of Selenium and Thallium in Geona Creek at KZ-37

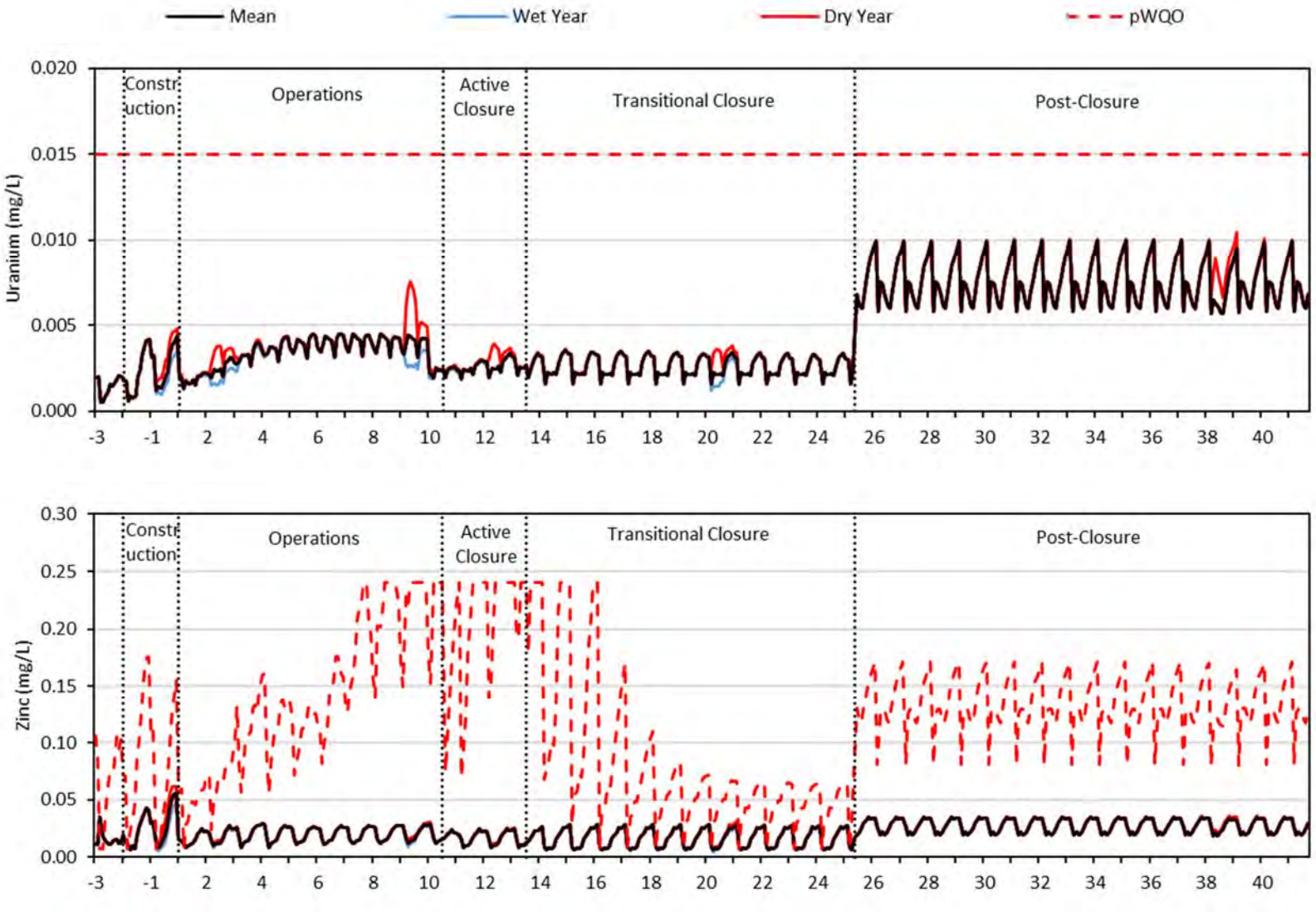


Figure 8-9: Model Estimated Total Concentrations of Uranium and Zinc in Geona Creek at KZ-37

8.5.3 UPPER FINLAYSON CREEK

The estimated concentrations for a range of COPIs at site KZ-15 in upper Finlayson Creek over the Project life for the various water balance scenarios are presented in Figure 8-10 through Figure 8-18. The full set of results from the receiving environment water quality model for upper Finlayson Creek are presented in APPENDIX F.

8.5.3.1 Mean Precipitation Scenario

During the Construction phase (years -2 and -1), most COPI concentrations are less than or at similar levels to baseline due to dilution from dewatering and the re-routing of Fault Creek.

COPI concentrations at KZ-15 during Operations (years 1 through 10) are predicted to be higher than the Construction phase and baseline due to loading from the site upstream in Geona Creek and discharge directly to Finlayson Creek from the WMP. The estimated KZ-15 concentrations for the majority of COPIs showed a slight progressive increase through Years 1 to 10 reflecting the increasing size of the waste rock storage facilities and their associated load. All COPIs were estimated to remain below their respective pWQOs.

Similar to in Geona Creek, several COPIs are predicted to increase from Operations into Active Closure and then decrease through the Transition Closure phase. This estimated increase in COPI concentrations is the result of drain-down water from the Class A and B Storage Facilities that is collected, treated and discharged to Geona Creek. No COPIs were estimated to exceed their respective pWQOs with or without CWTS.

The overspill of the ABM Lake in Year 25 at the start of the Post-closure phase resulted in increases in COPI concentrations at KZ-15; however, no COPIs were estimated to exceed their pWQOs in Post-closure at KZ-15.

8.5.3.2 Wet and Dry Year Scenarios

Estimated COPI concentrations were typically higher and lower in the dry year and wet year precipitation scenarios, respectively, relative to the mean year precipitation scenario. Neither scenario resulted in estimated COPI concentrations in excess of their respective pWQO in Upper Finlayson Creek.

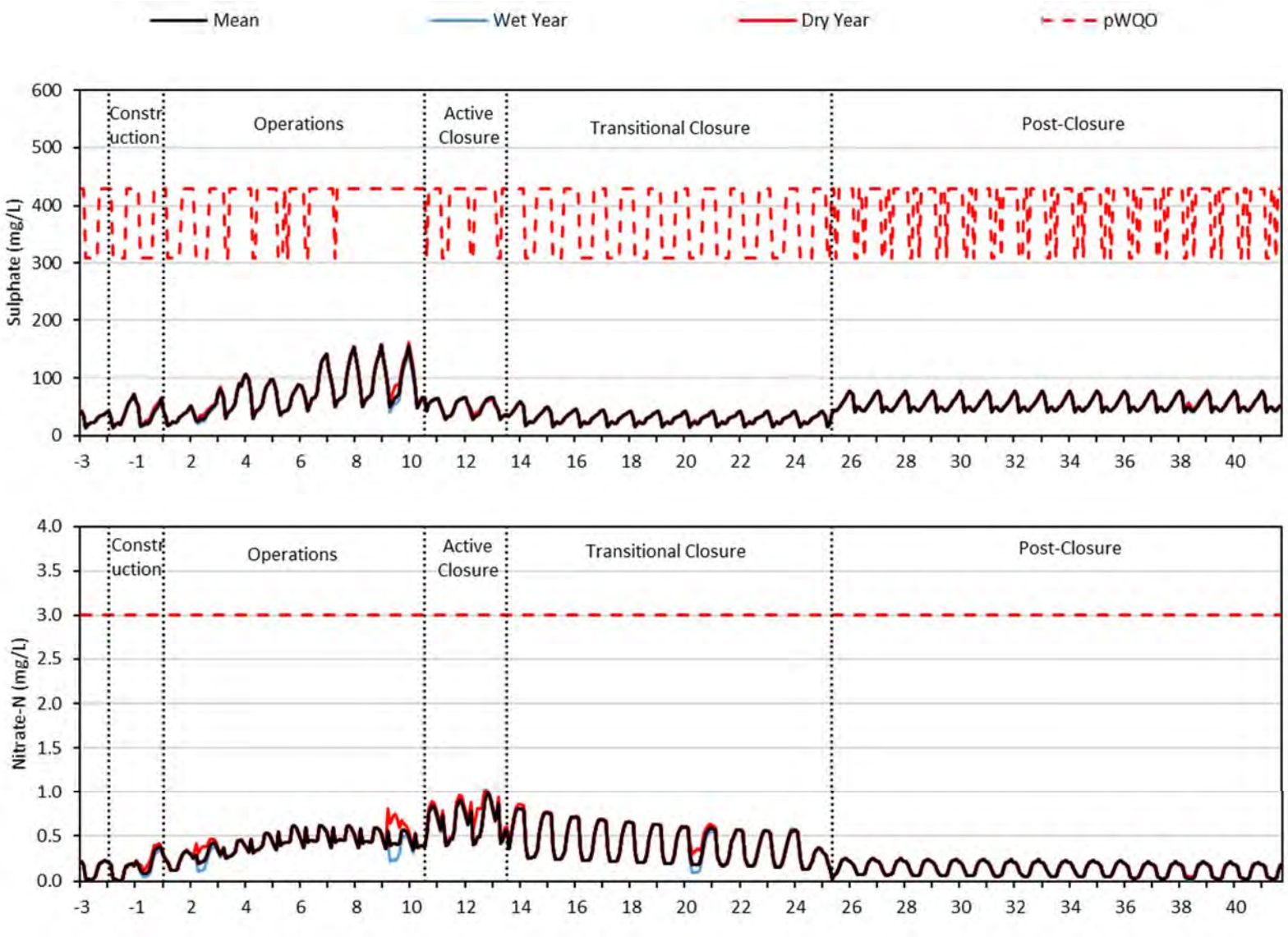


Figure 8-10: Model Estimated Concentrations of Sulphate and Nitrate-N in Upper Finlayson Creek at KZ-15

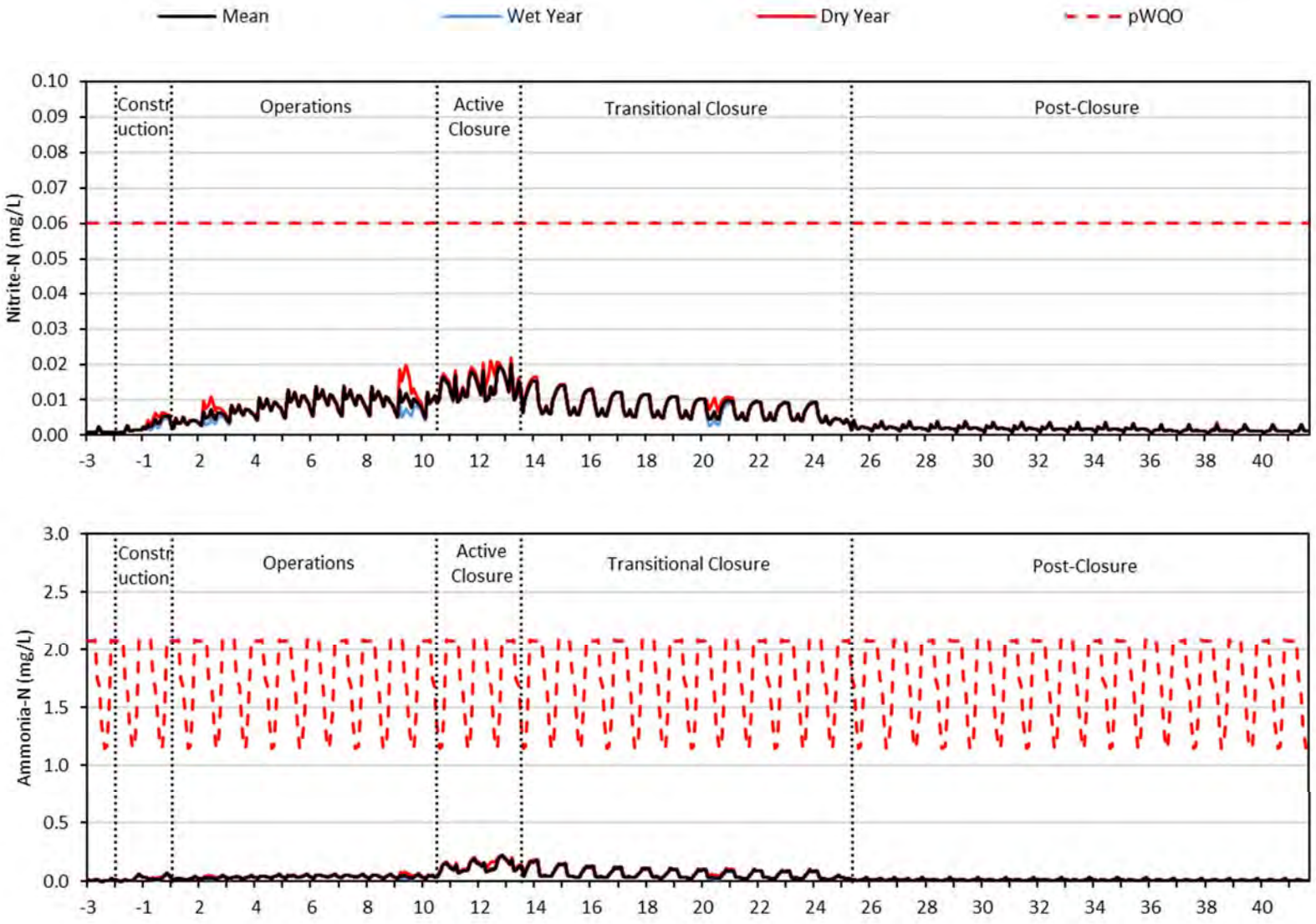


Figure 8-11: Model Estimated Nitrite-N and Ammonia-N in Upper Finlayson Creek at KZ-15

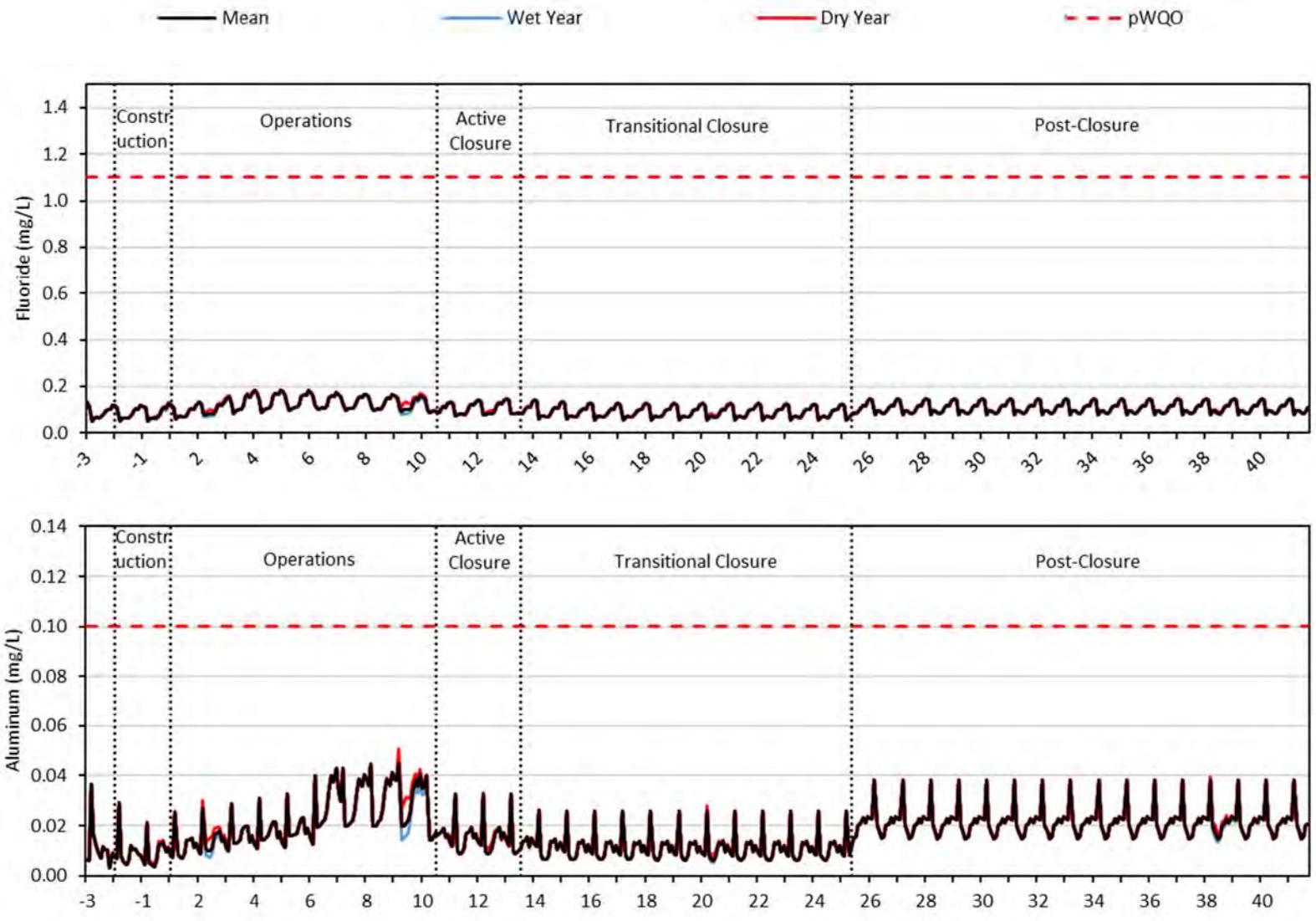


Figure 8-12: Model Estimated Concentrations of Fluoride and Total Aluminum in Upper Finlayson Creek at KZ-15

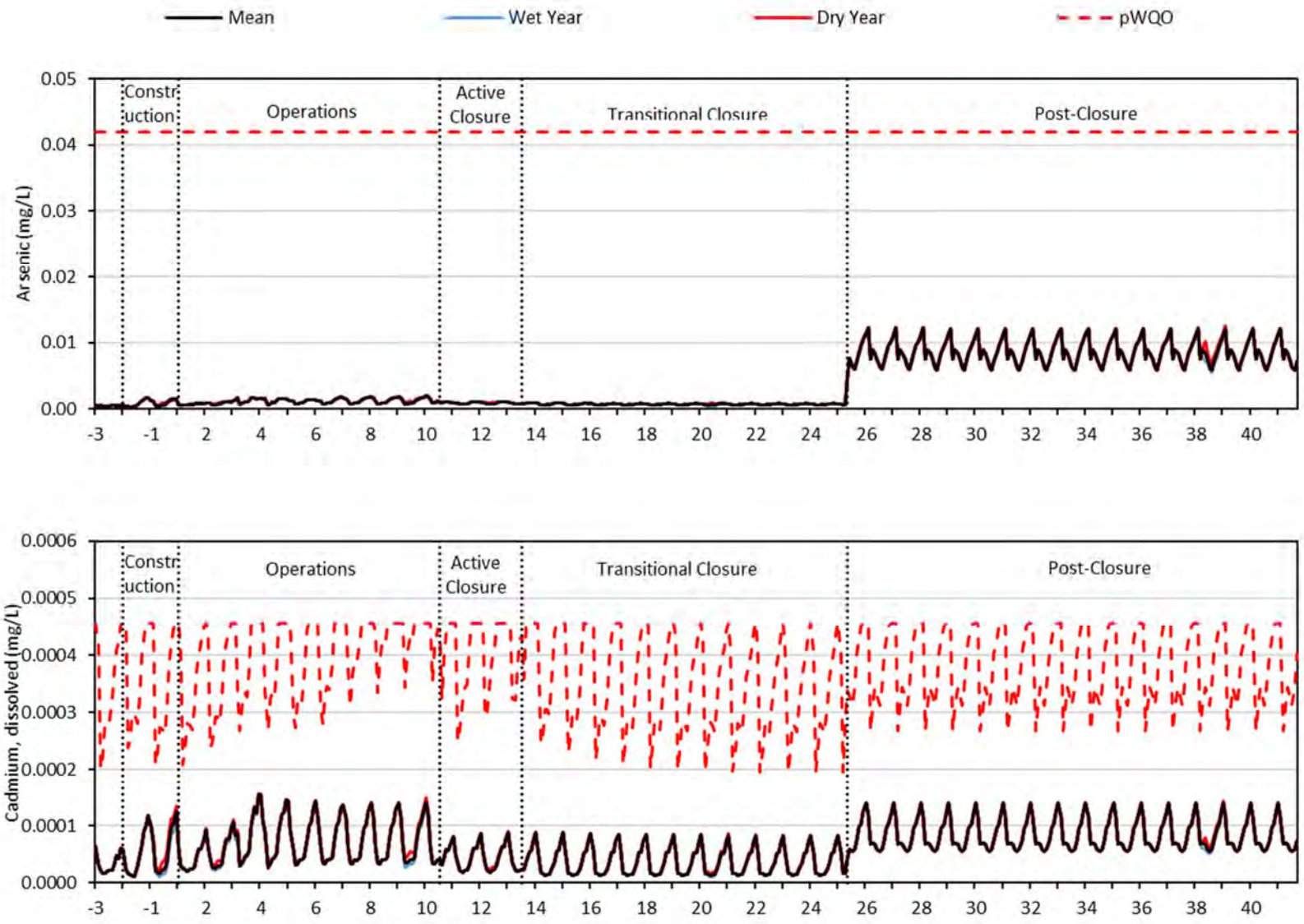


Figure 8-13: Model Estimated Concentrations of Total Arsenic and Dissolved Cadmium in Upper Finlayson Creek at KZ-15

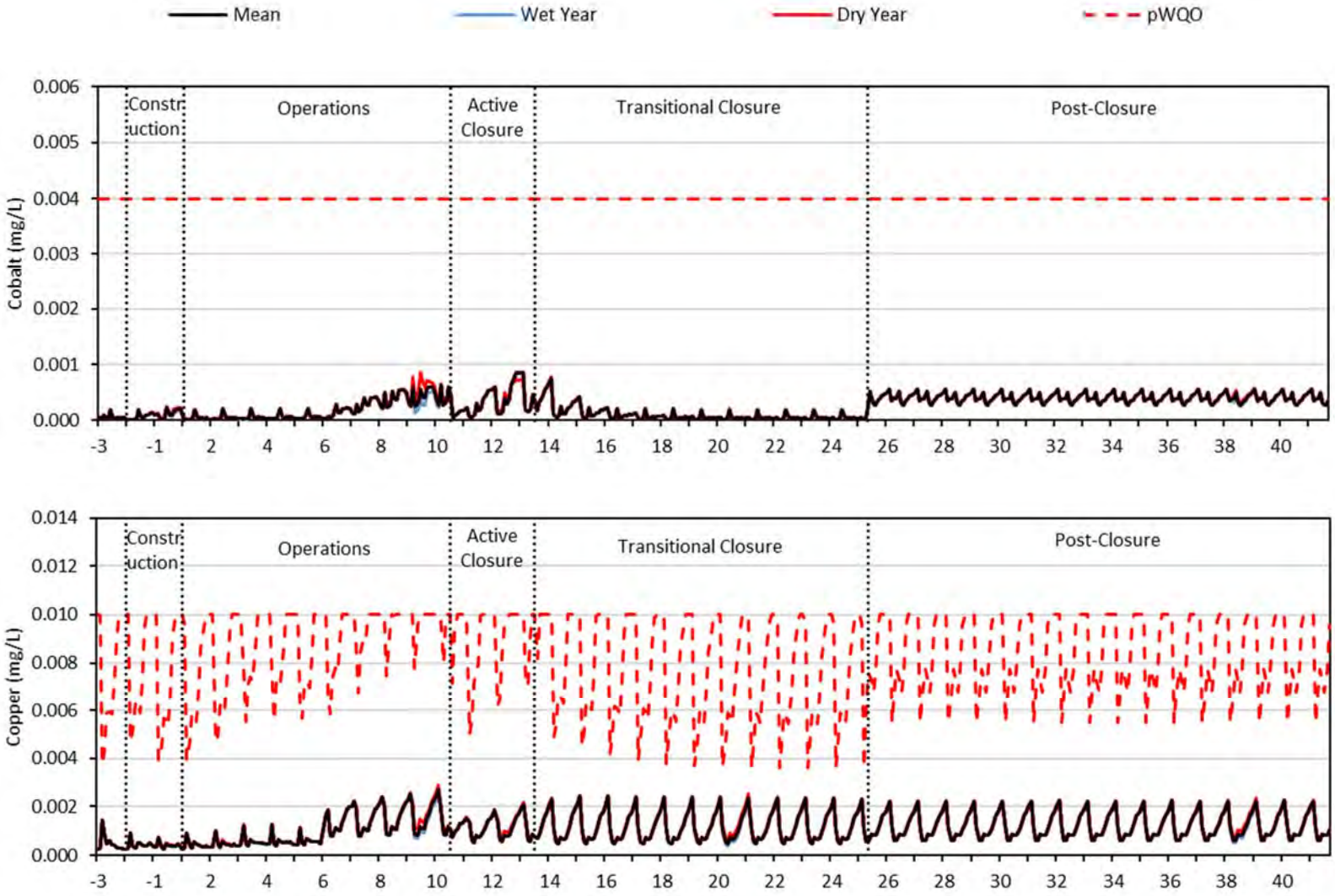


Figure 8-14: Model Estimated Total Concentrations of Cobalt and Copper in Upper Finlayson Creek at KZ-15

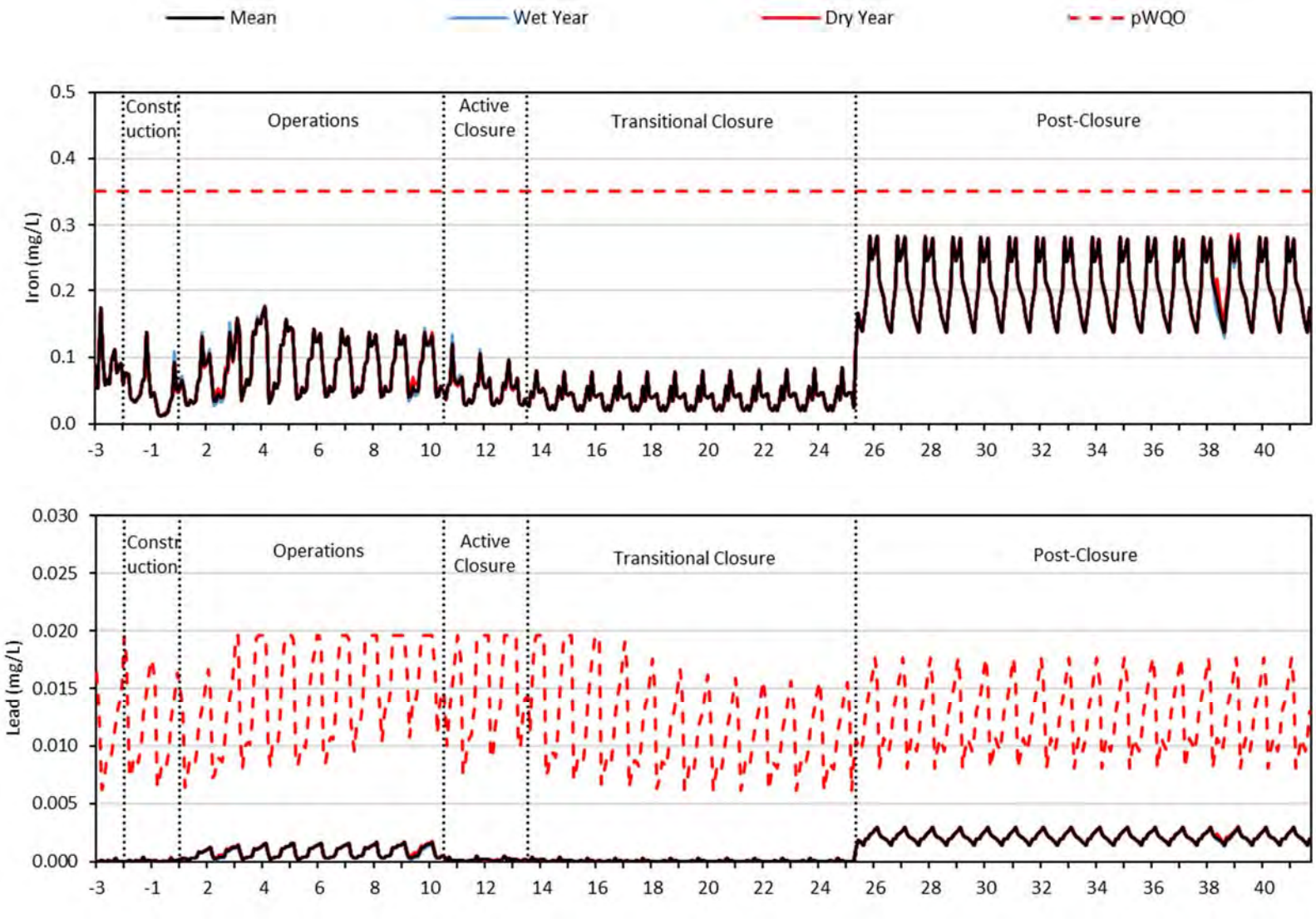


Figure 8-15: Model Estimated Total Concentrations of Iron and Lead in Upper Finlayson Creek at KZ-15

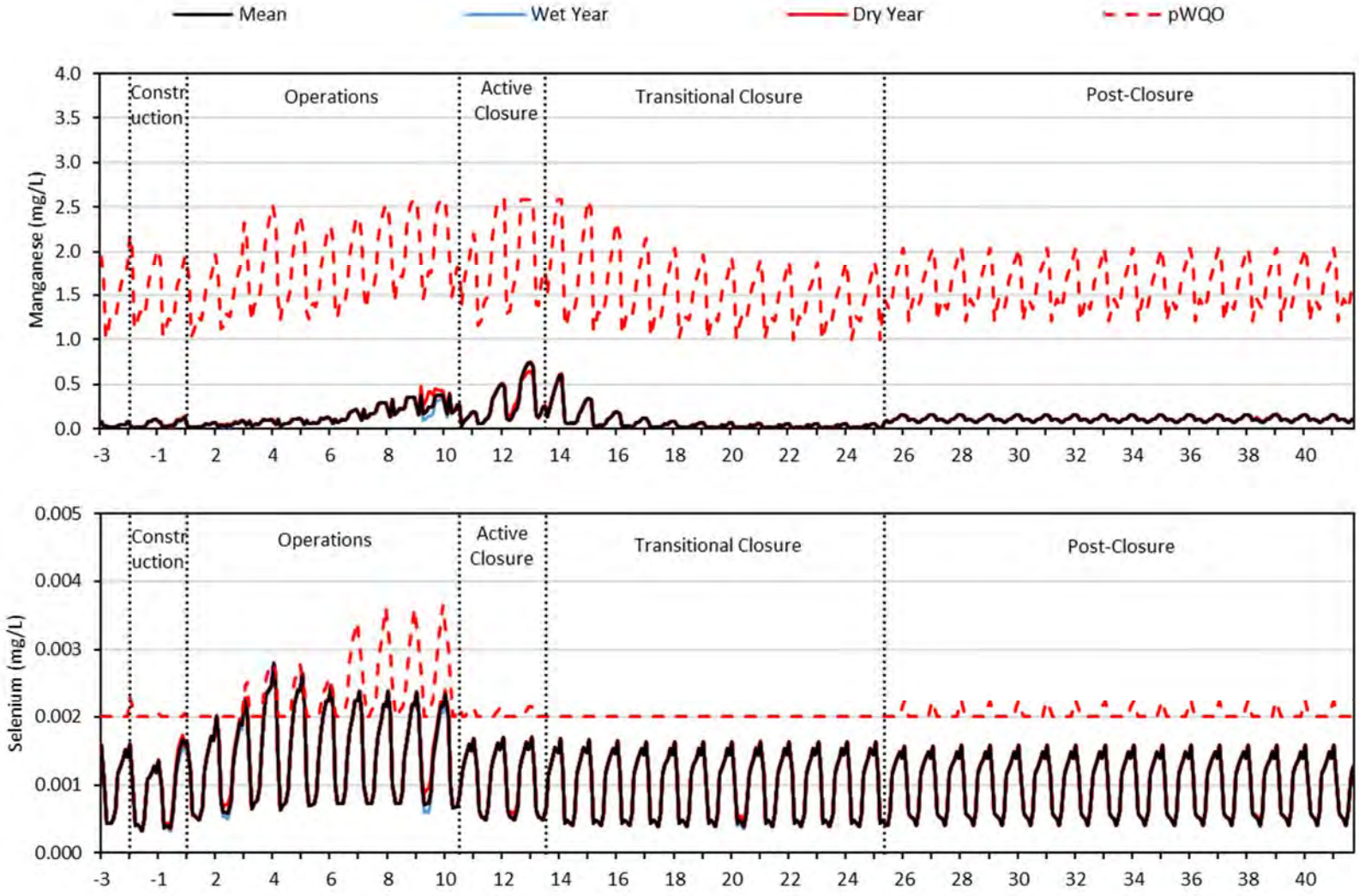


Figure 8-16: Model Estimated Total Concentrations of Manganese and Selenium in Upper Finlayson Creek at KZ-15

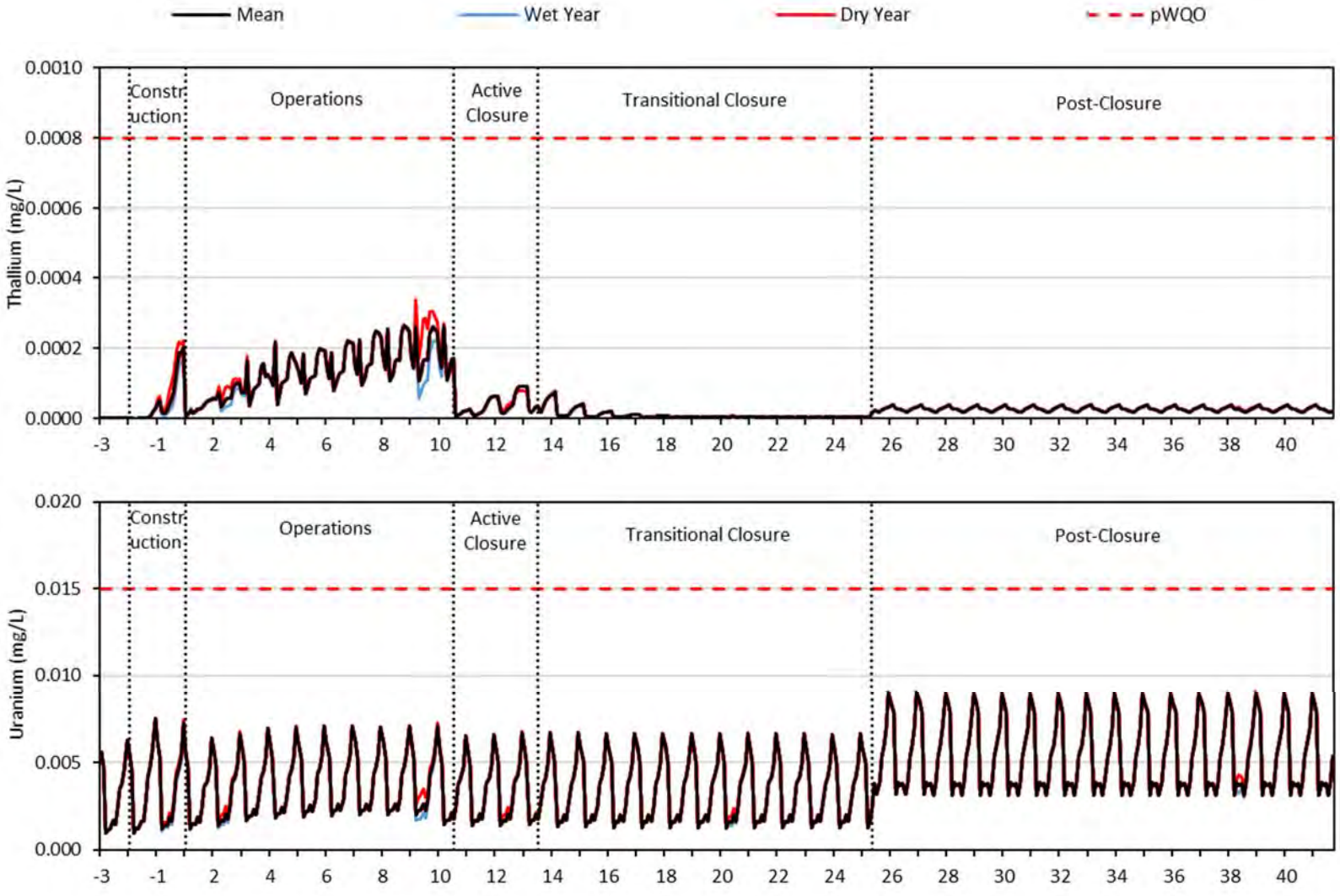


Figure 8-17: Model Estimated Total Concentrations of Thallium and Uranium in Upper Finlayson Creek at KZ-15

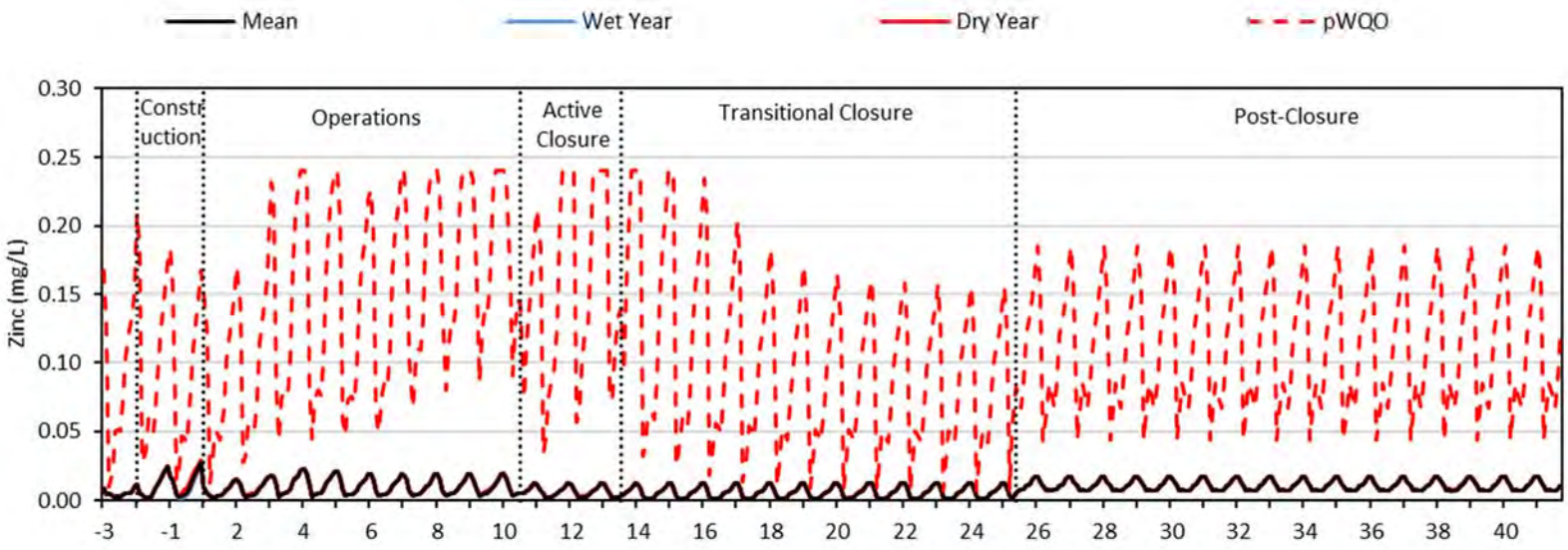


Figure 8-18: Model Estimated Total Concentrations of Zinc in Upper Finlayson Creek at KZ-15

8.5.4 LOWER FINLAYSON CREEK

8.5.4.1 Mean Precipitation Scenario

The estimated concentrations for a range of COPIs at site KZ-26 in Lower Finlayson Creek over the Project life for the various water balance models are presented in Figure 8-19 through

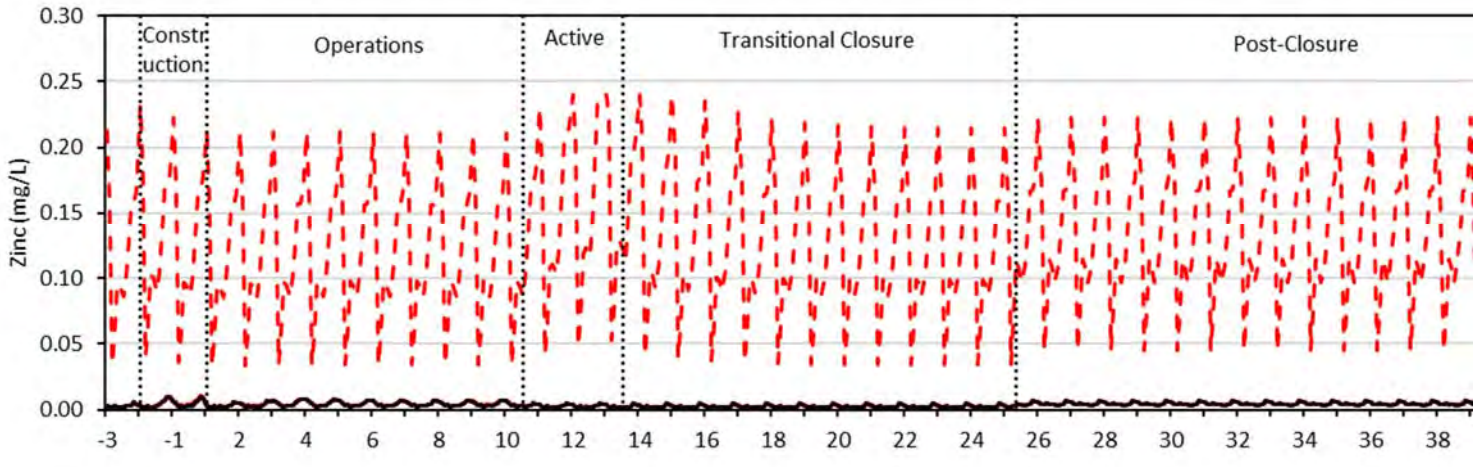


Figure 8-25. The full set of results from the receiving environment water quality model for lower Finlayson Creek are presented in APPENDIX F.

Similar trends in estimated COPI concentrations in upper Finlayson Creek KZ-15 are predicted in the estimated COPI concentrations in lower Finlayson Creek at KZ-26; however, due to higher flow volumes for dilution, the estimated COPI concentrations are depressed at KZ-26 relative to KZ-15. All COPI concentrations are estimated to be below their respective pWQOs.

8.5.4.2 Wet and Dry Year Precipitation Scenarios

As at KZ-15 in Upper Finlayson Creek, the wet and dry year scenarios typically yielded slightly lower and higher COPI concentrations, respectively, but without any estimated pWQO exceedances.

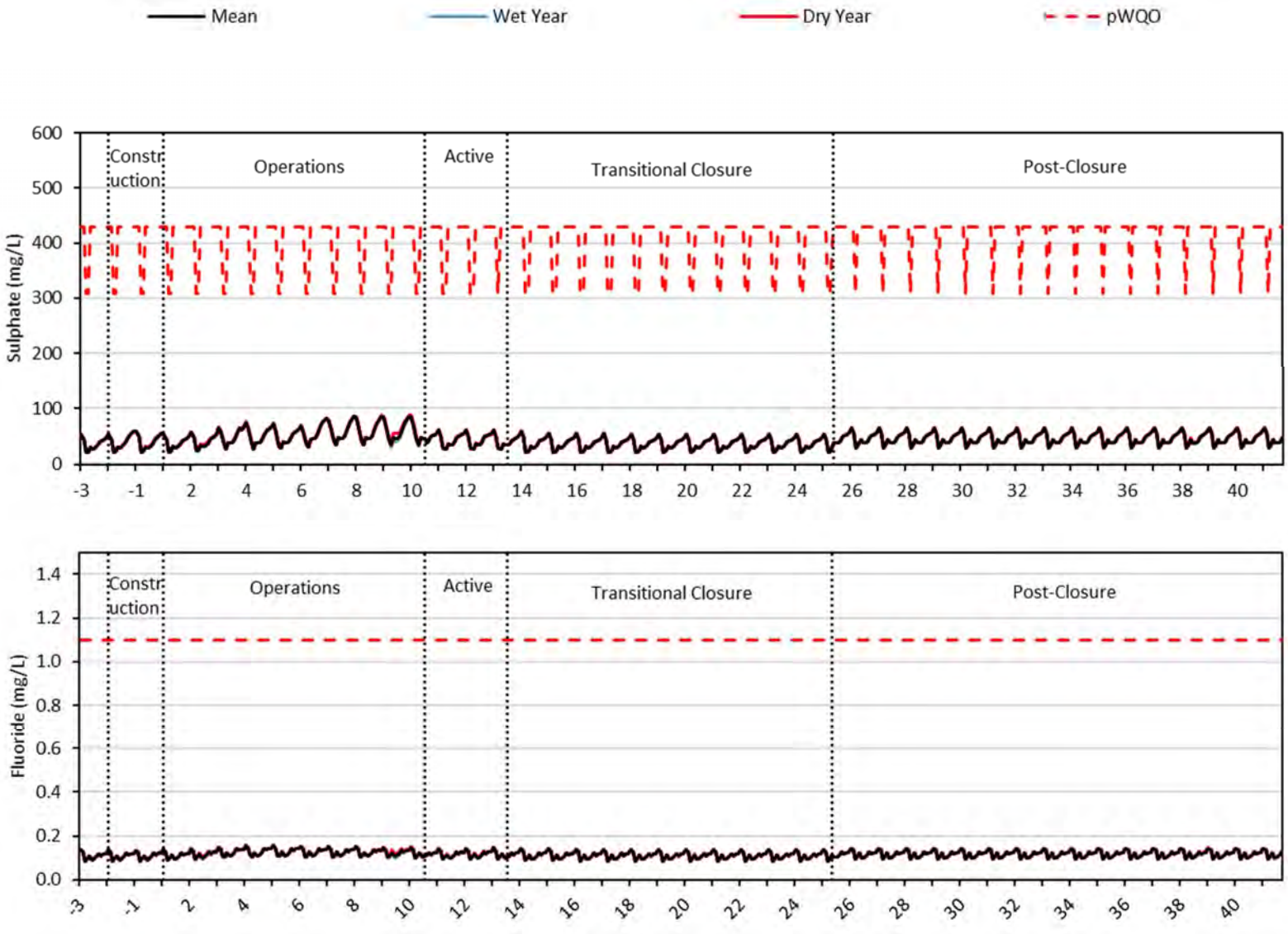


Figure 8-19: Model Estimated Concentrations of Sulphate and Fluoride in Lower Finlayson Creek at KZ-26

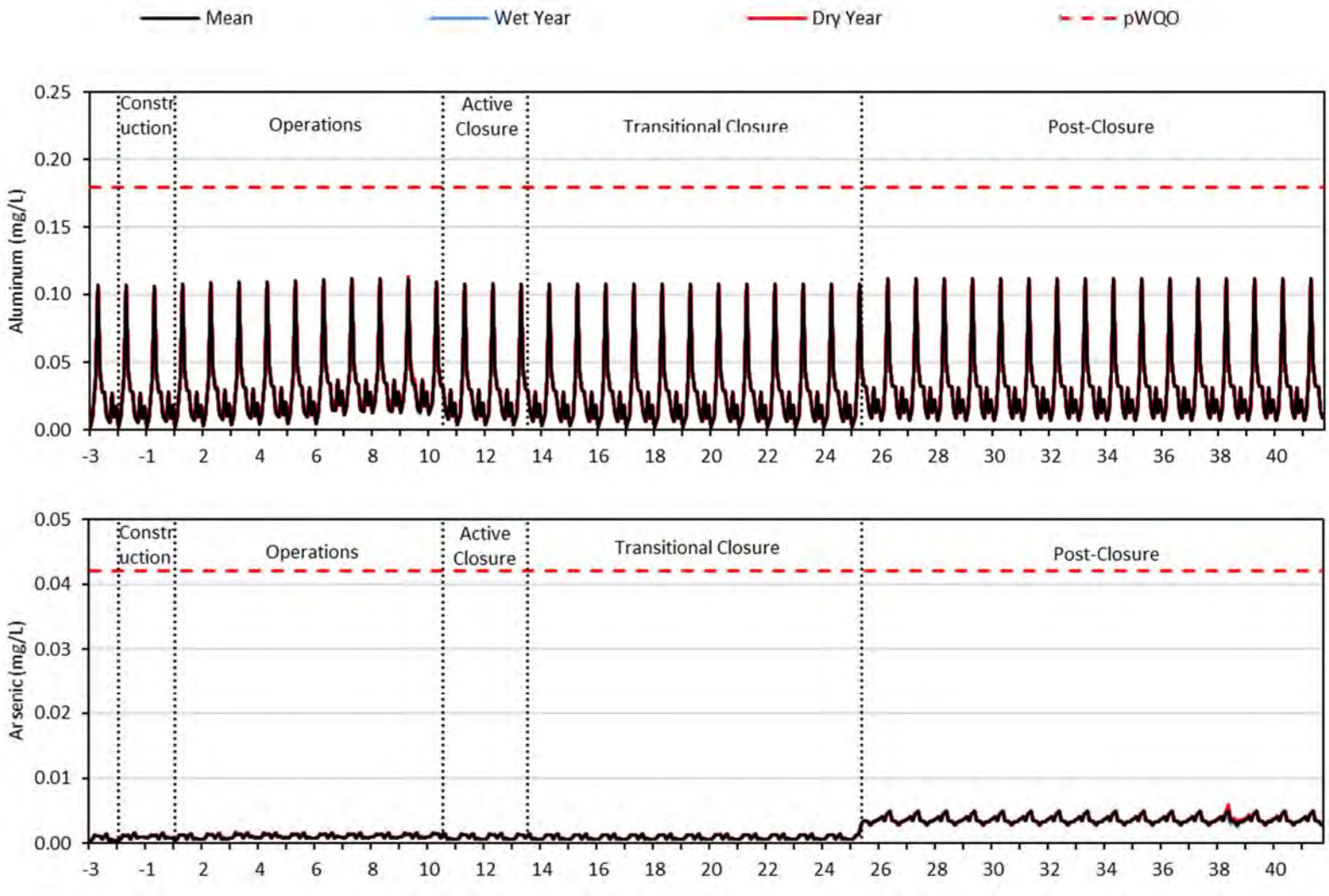


Figure 8-20: Model Estimated Total Concentrations of Aluminum and Arsenic in Lower Finlayson Creek at KZ-26

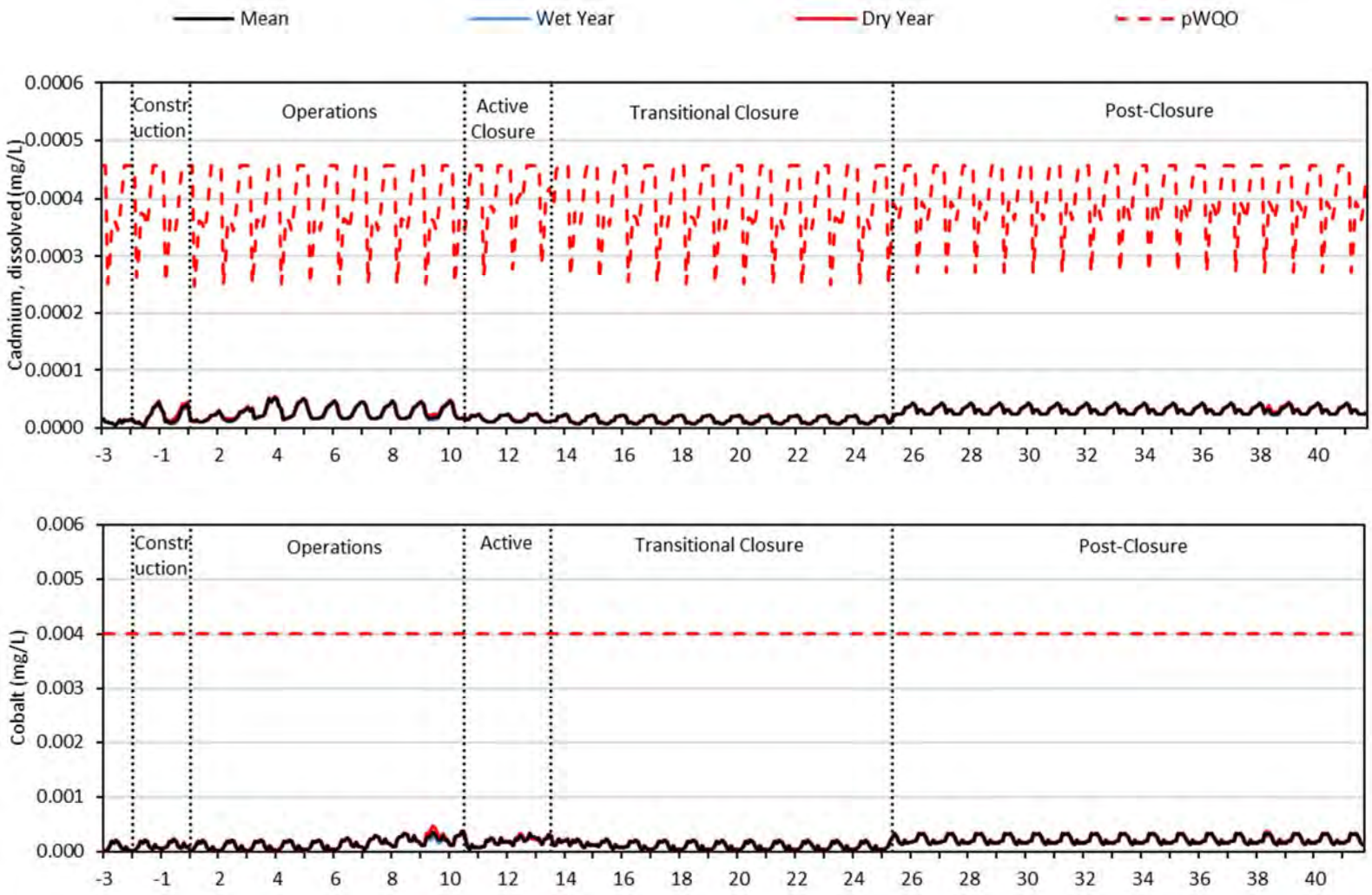


Figure 8-21: Model Estimated Concentrations of Dissolved Cadmium and Total Cobalt in Lower Finlayson Creek at KZ-26

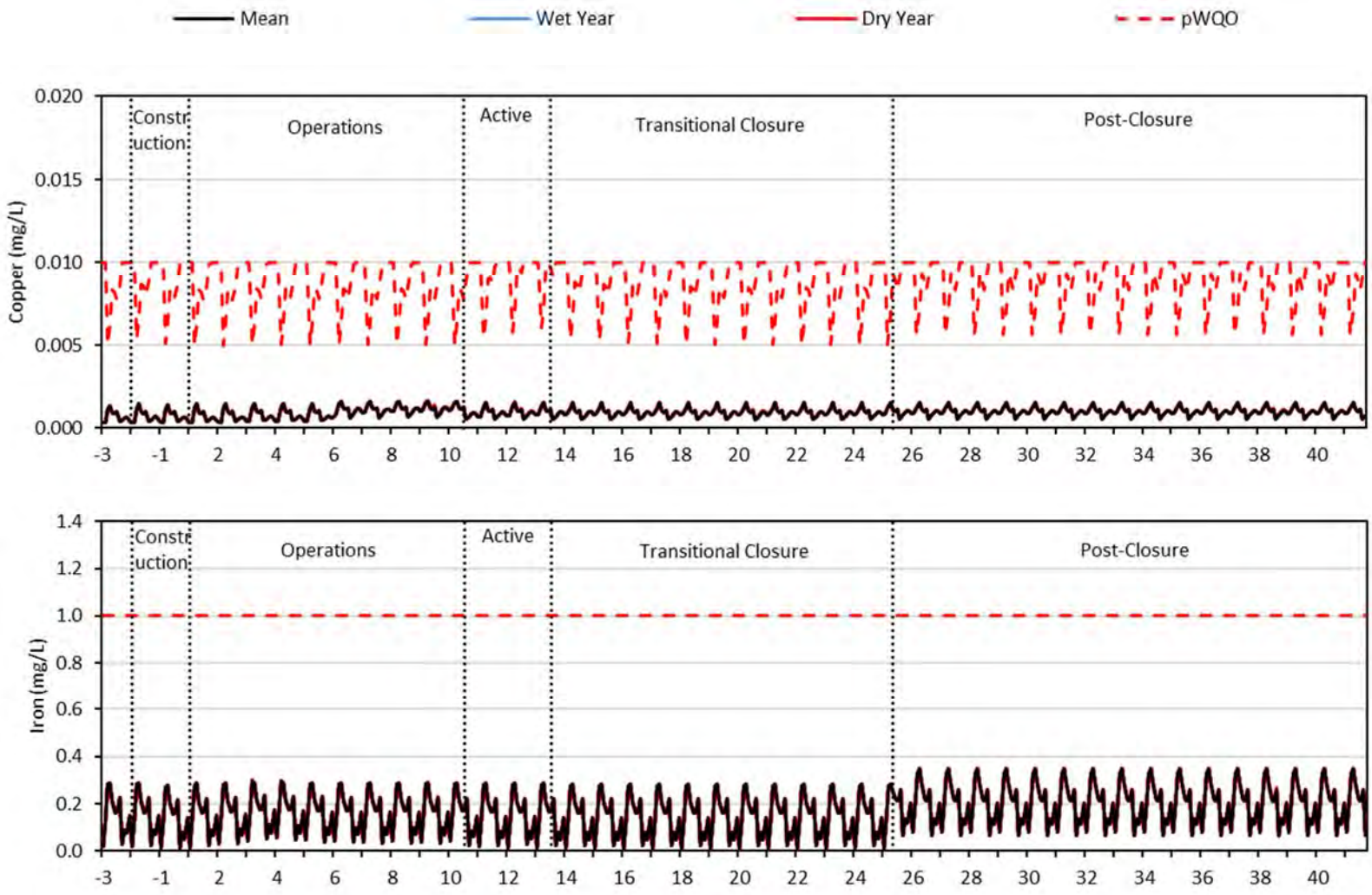


Figure 8-22: Model Estimated Total Concentrations of Copper and Iron in Lower Finlayson Creek at KZ-26

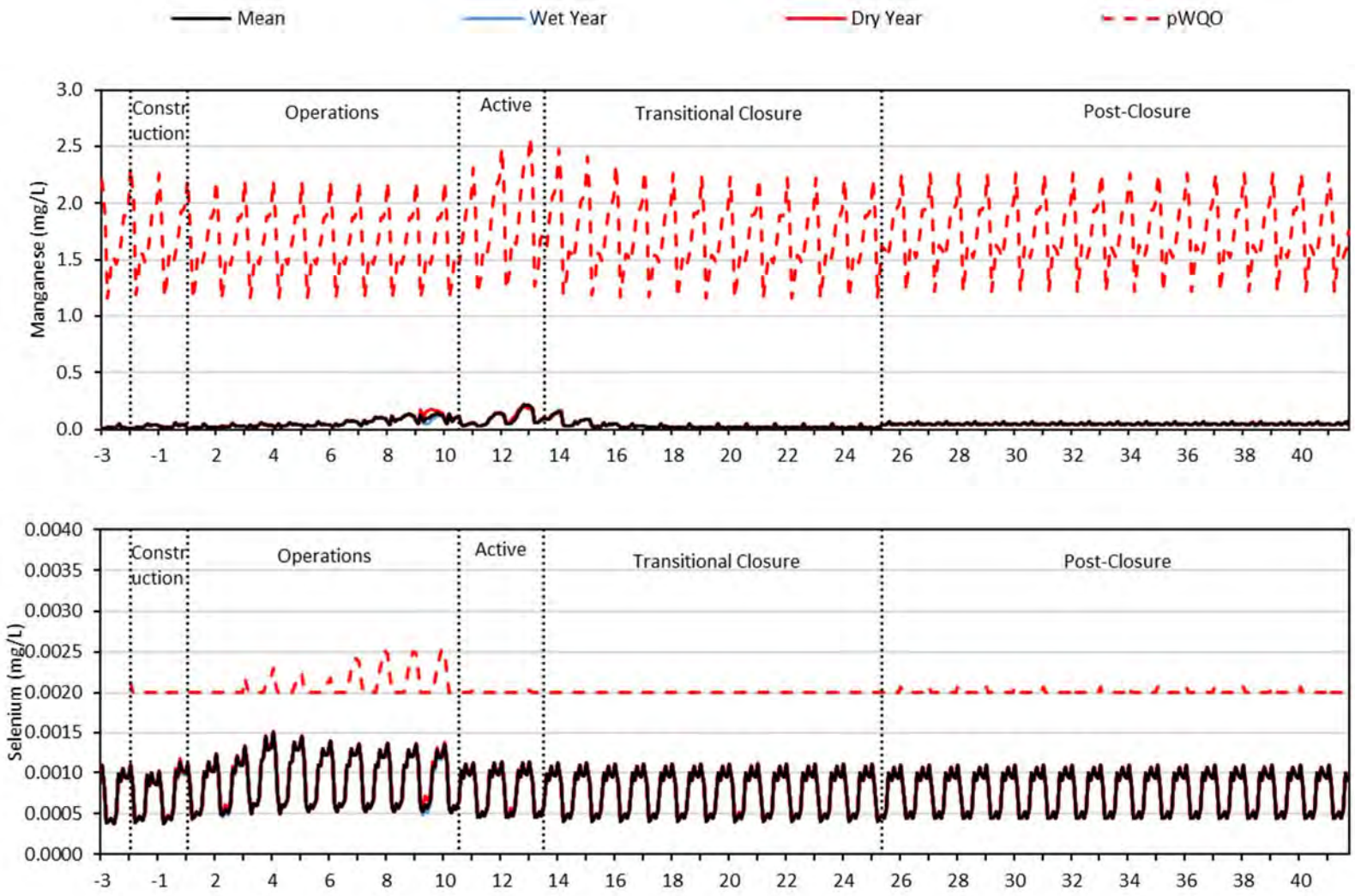


Figure 8-23: Model Estimated Total Concentrations of Manganese and Selenium in Lower Finlayson Creek at KZ-26

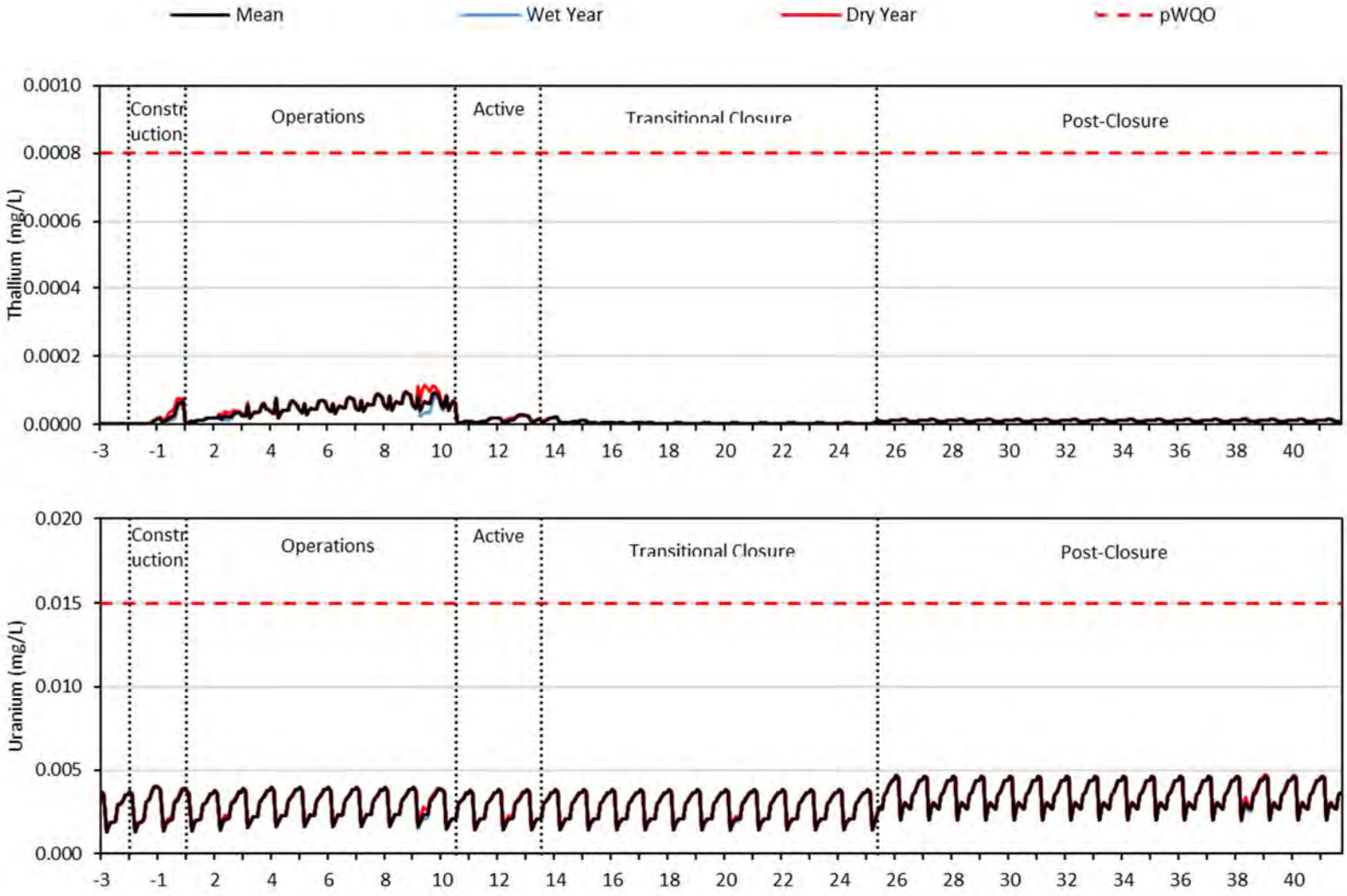


Figure 8-24: Model Estimated Total Concentrations of Thallium and Uranium in Lower Finlayson Creek at KZ-26

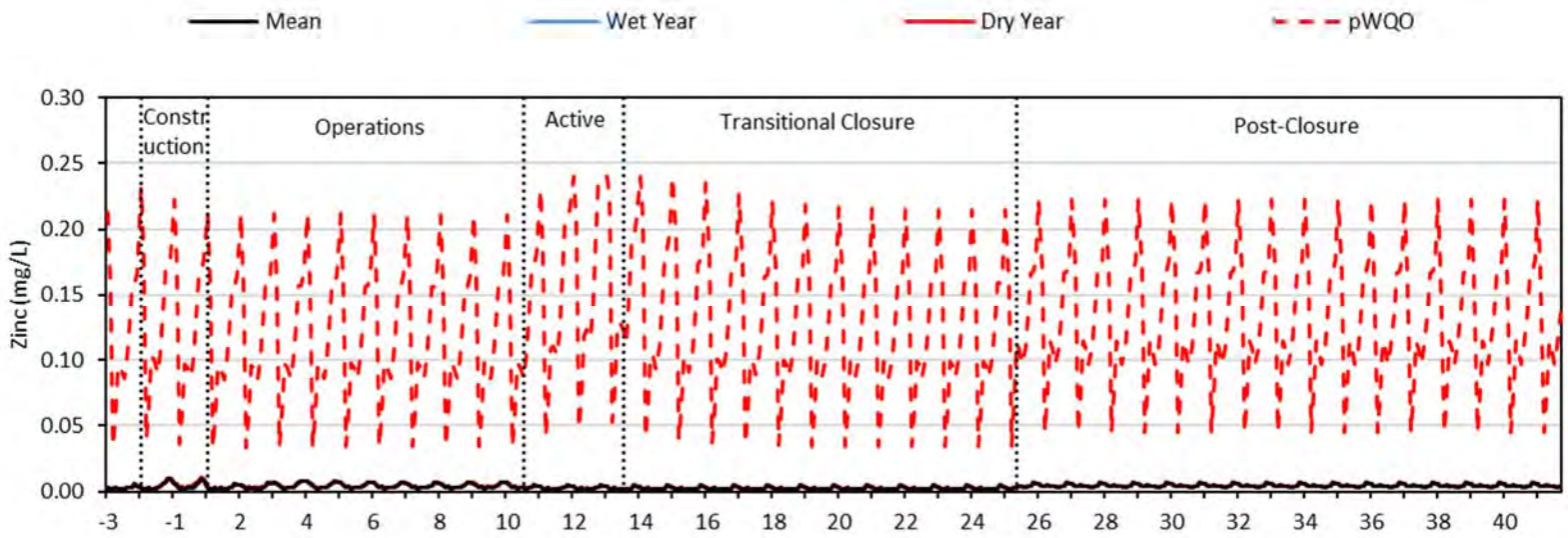


Figure 8-25: Model Estimated Total Concentrations of Zinc in Lower Finlayson Creek at KZ-26

8.5.5 SOUTH CREEK

The estimated concentrations for a range of COPIs at site KZ-13 in South Creek over the Project life for the various water balance models are presented in Figure 8-26 through Figure 8-29. The full set of results from the receiving environment water quality model for lower Finlayson Creek are presented in APPENDIX F.

8.5.5.1 Mean Precipitation Scenario

The diversion of Fault Creek and runoff water from south of the site into the South Creek catchment during the Construction and Operations phase is estimated to result in moderate increases in COPI concentrations at KZ-13. The increased COPI content was most marked for selenium, cadmium, and zinc due to the elevated concentrations of these elements in Fault Creek relative to South Creek (the median concentrations of selenium, cadmium, and zinc in Fault Creek are approximately an order of magnitude higher than those of South Creek; AEG, 2018b). Despite the increased concentrations of these COPI, no pWQO exceedances were observed during the Construction and Operations phases. Following the removal of the diversion berms during the Active Closure phase, the chemistry at Fault Creek is assumed to return to pre-Operations phase baseline conditions, resulting in a reduction in COPI concentrations.

8.5.5.2 Wet and Dry Year Precipitation Scenarios

The wet scenario returned slightly lower estimated COPI concentrations relative to the mean scenario while the dry year scenarios yielded slightly higher estimated COPI concentrations; however, the higher estimated COPI concentrations in the dry years did not result in pWQO exceedances.

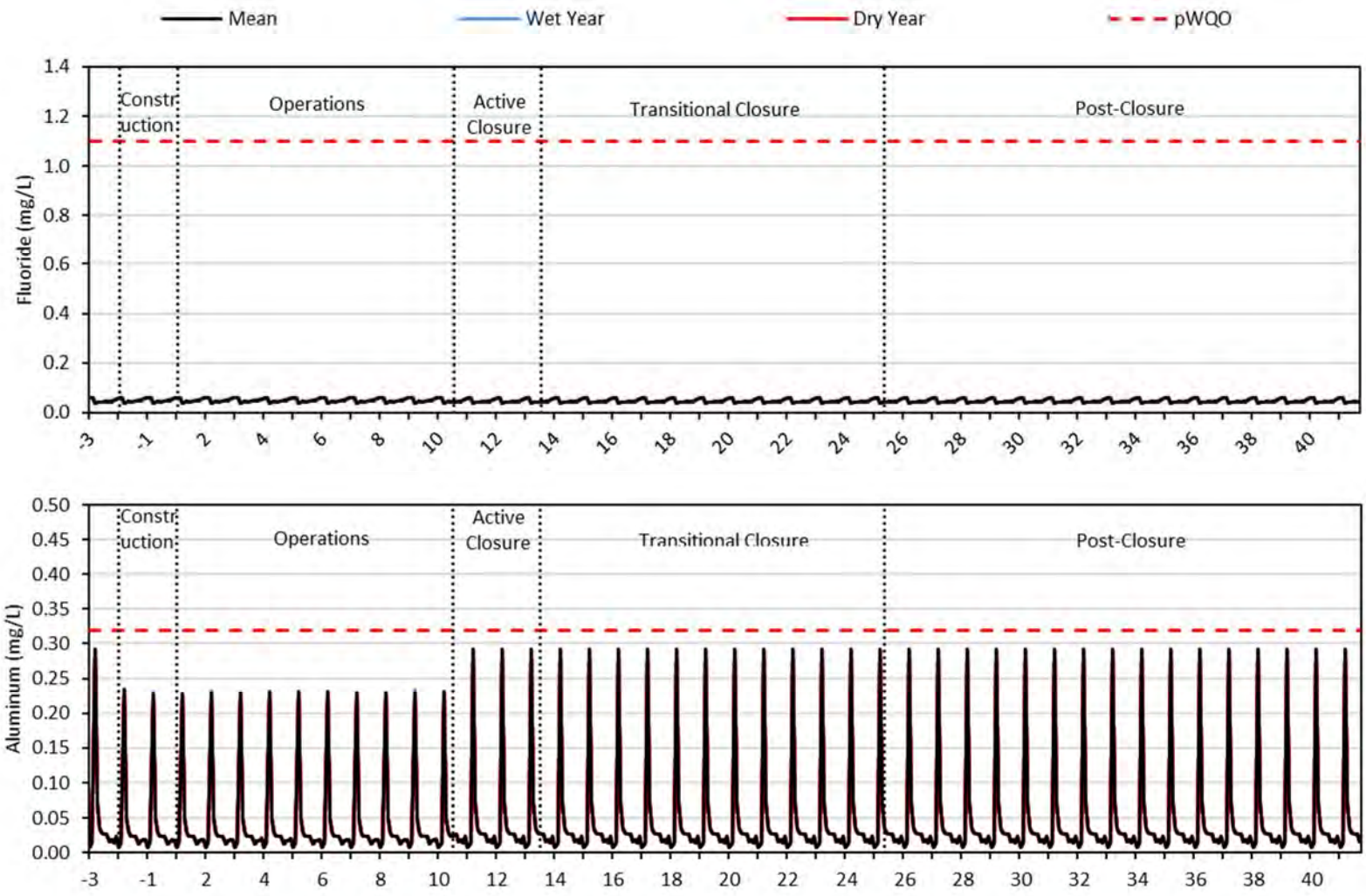


Figure 8-26: Model Estimated Concentrations of Fluoride and Total Aluminum in South Creek at KZ-13

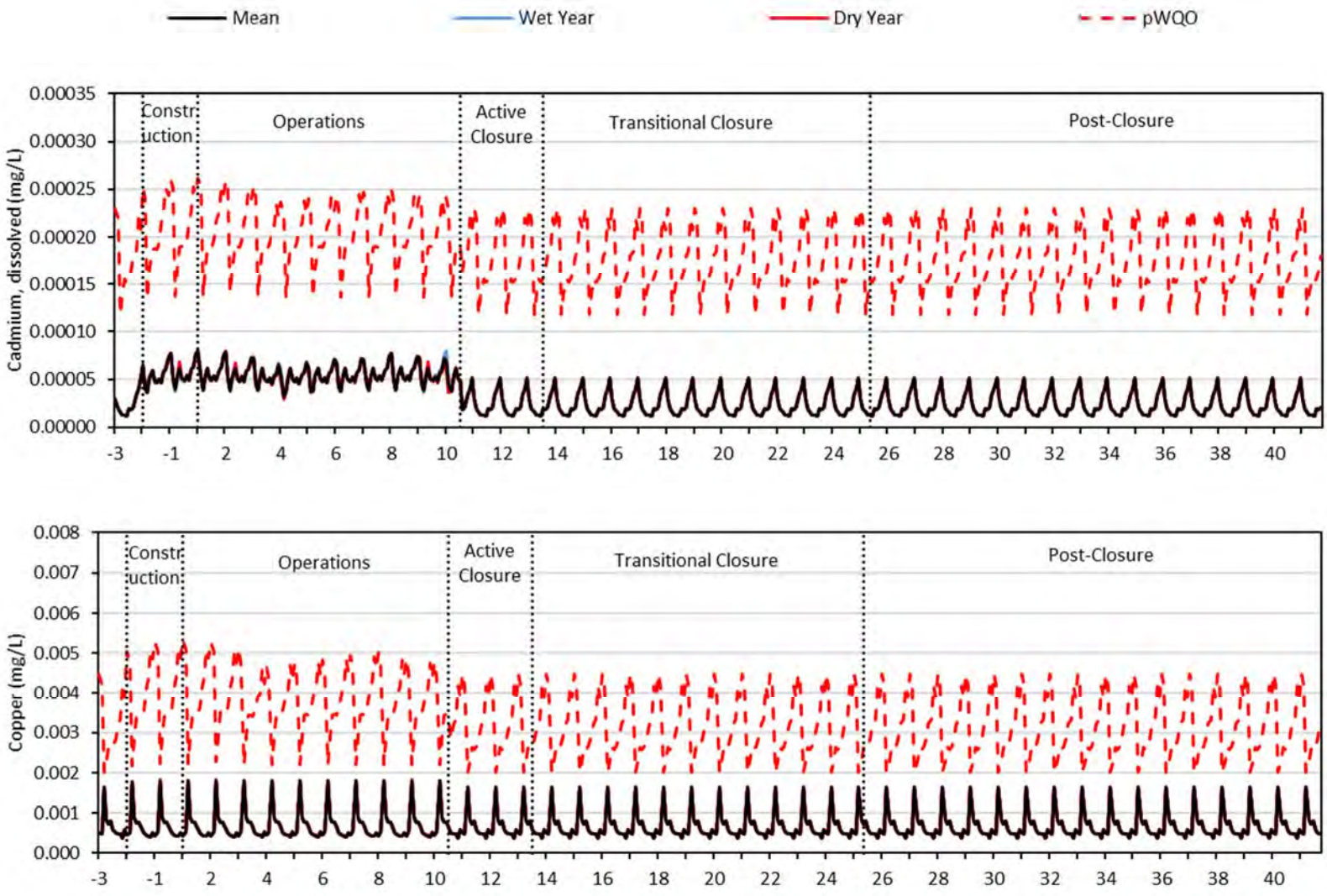


Figure 8-27: Model Estimated Concentrations of Dissolved Cadmium and Total Copper in South Creek at KZ-13

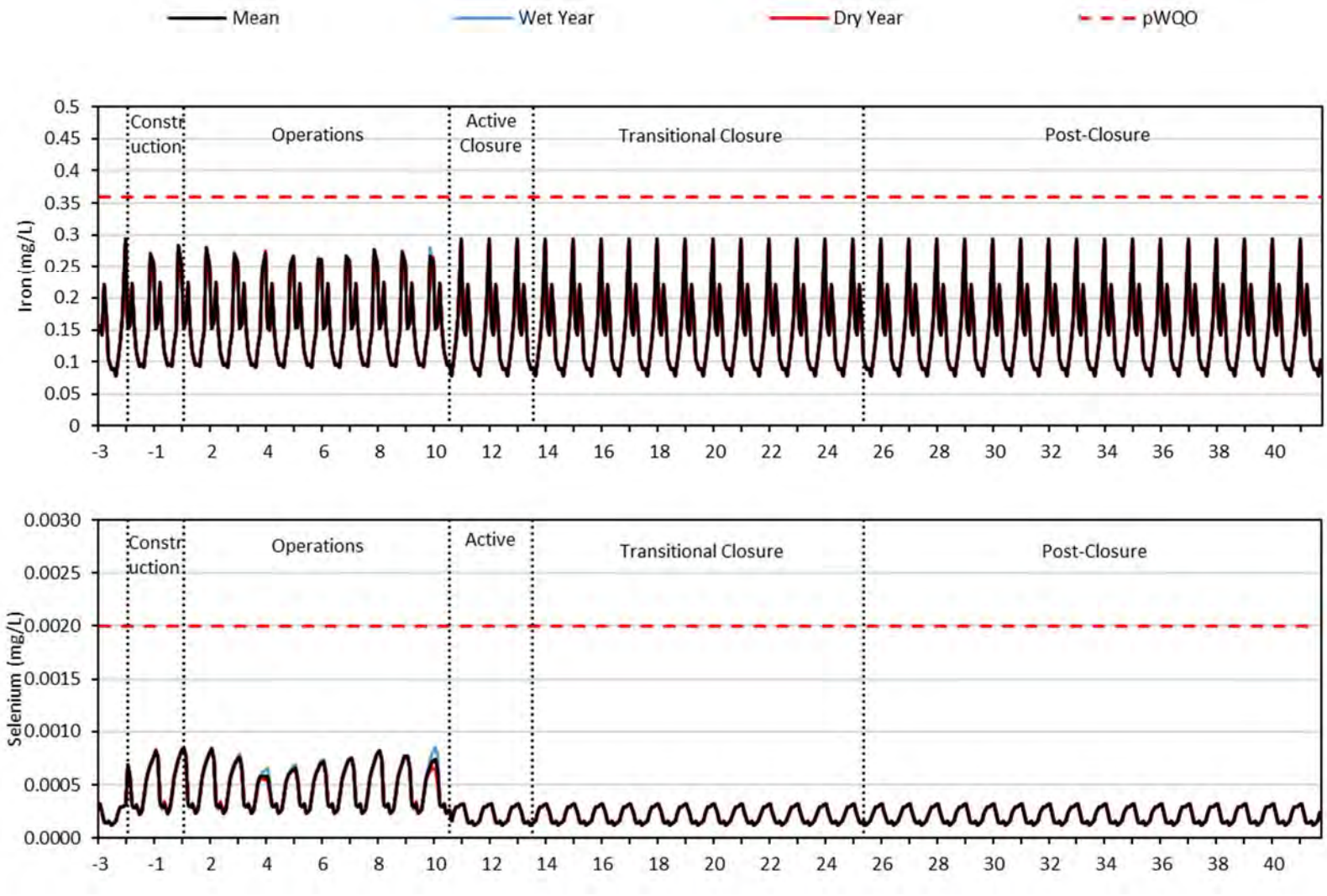


Figure 8-28: Model Estimated Total Concentrations of Iron and Selenium in South Creek at KZ-13

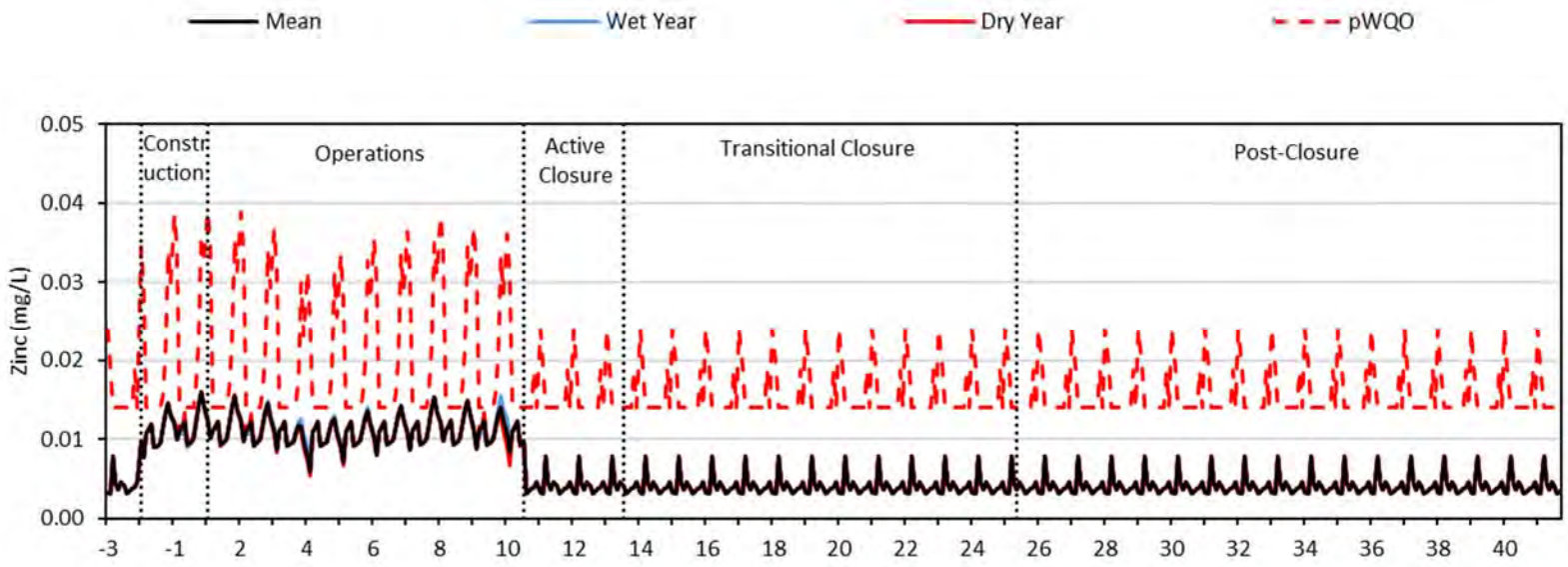


Figure 8-29: Model Estimated Concentrations of Total Zinc in South Creek at KZ-13

9. SUMMARY

Models have been developed to provide estimates of water quality during all Project phases at receiving environment locations and under a range of environmental flow scenarios.

9.1 CONSTRUCTION PHASE

- This phase comprises Years -2 to -1 of the Project.
- The major changes in loading include the diversion of Fault Creek from the Geona Creek catchment to the South Creek catchment and the dewatering of groundwater in the vicinity of the ABM Open Pit, which will be discharged to Geona Creek.
- During this phase, COPI concentrations in the Geona Creek (KZ-37) and upper and lower Finlayson Creek (KZ-15 and KZ-26, respectively) receiving environment were estimated to be comparable to, or slightly lower than baseline levels due to the diversion of upstream waters (Fault Creek) and dilution from the pit dewatering.
- No COPI exceedances are estimated in Geona Creek and Finlayson Creek during the Construction phase for all of the precipitation scenarios.
- Model estimated COPI concentrations in South Creek (KZ-13) increased following the completion of the Fault Creek diversion to the South Creek catchment, with the increases most marked for selenium, cadmium and zinc; however, no pWQO exceedances were estimated.

9.2 OPERATIONS PHASE

- This phase comprises Years 1 to 10 of the Project.
- The major load sources to the receiving environment during this phase are the WMP discharge (to both Geona Creek and upper Finlayson Creek), which receives water from the ABM Open Pit dewatering and the Class A and B Storage Facilities via the WTP, and seepage from the Waste Rock Storage Facilities (to Geona Creek).
- COPI concentrations in the WMP discharge were estimated to increase incrementally during each year of operation as the waste rock accumulates in the Storage Facilities, providing additional load to the WMP with each year of Operations.
- Increases in COPI concentrations were modelled in the receiving environment during this phase; however, no exceedances were estimated in any of the precipitation scenarios in Geona Creek (KZ-37) or Finlayson Creek (KZ-15 and KZ-26).

- In South Creek (KZ-13), increased concentrations of cadmium, selenium and zinc persisted from the Construction Phase through to Operations, but no pWQO exceedances were estimated.

9.3 ACTIVE AND TRANSITION CLOSURE PHASES

- These phases comprise Years 10 to 13 (Active Closure) and Years 13 to 25 (Transition Closure) of the Project.

- During the Active Closure phase, covers are installed on the Class A, B, and C Storage Facilities and the WTP remains active, treating drain-down water from the Class A and B Storage Facilities before discharging to Geona Creek. Discharge from site to the receiving environment is at lower volumes due to the cessation of ABM pit dewatering. The Fault Creek diversion is removed, allowing Fault Creek to flow into the ABM Open Pit.

- For the Transition Closure phase, the Class A, B, and C Storage Facility covers are fully in place. The WTP continues to treat drain-down water from the Class A and B Storage Facilities and discharges water to the receiving environment. CWTS are constructed prior to their operation at Post-closure. The ABM pit fills via groundwater in-flow, direct precipitation, surface runoff and Fault Creek flow.

- COPI concentrations in South Creek (KZ-13) were estimated to return to baseline levels as the Fault Creek diversion is removed, allowing South Creek to revert to its pre-Project flow regime.

- COPI concentrations were estimated to increase in Geona Creek (KZ-37) and Upper Finlayson Creek (KZ-15) over the Active Closure phase as contact water from the site is collected, treated and discharged. COPI concentrations were then estimated to decrease gradually through the Transition Closure phase. Nitrite-N, from blasting residue flushed primarily from the Class C Storage Facility, marginally exceeded its pWQO for one month of Active Closure (by 3%) in Geona Creek (KZ-37) in the mean precipitation scenario; the dry year 12 scenario estimated an additional seven nitrite-N pWQO exceedances (maximum of 13% over pWQO). No nitrite-N pWQO exceedances were estimated in the Transition Closure phase.

- Exceedances of the copper COPI were estimated to occur in March (year 20 to 25) and April (year 21 to 25) at KZ-37 due to loading from Class A Storage Facility seepage.

- No pWQO exceedances of any COPI were estimated in either the Upper or Lower Finlayson Creek monitoring locations in the Active or Transition Closure phases.

9.4 POST-CLOSURE PHASE

- This phase comprises Years 25 and beyond of the Project, although modelling only extended to Year 41.

- The ABM Lake starts to discharge towards Geona Creek via the CWTS at the start of the Post-closure phase. Water quality predictions were made with and without the modelled COPI reduction from the CWTS.

- The ABM Lake contains elevated concentrations of antimony, arsenic, cadmium, copper, lead, selenium, uranium, and zinc due to solubilisation of the load accumulated on the pit floor and walls; however, in situ treatment is anticipated to ameliorate COPI concentrations significantly.

- Discharge from the ABM Lake resulted in COPI concentration increases in Geona Creek and Finlayson Creek; however, no water quality exceedances were estimated for any COPI at in Geona Creek or Upper and Lower Finlayson Creek.

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APPENDIX A.

Monthly Median Surface Water Quality Data (August 1994 to March 2018)

APPENDIX A: Median Monthly Baseline Surface Water Quality

	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus, total-colourimetric	Fluoride	Chloride	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-2														
January	133	63.9	0.164	*0.0010*	0.0158	*0.0010*	0.05	*0.25*	*0.00025*	*0.00025*	0.00318	0.000028	0.000073	0.00022
February	139.5	63.8	0.183	*0.0010*	0.00445	0.00155	0.048	*0.25*	*0.00025*	*0.00025*	0.00421	0.000022	0.000082	0.000238
March	146.0	65	0.179	*0.0010*	0.0079	0.00100	0.05	0.7	*0.00025*	*0.00025*	0.003	0.000027	0.000075	0.000252
April	130.5	48.2	0.124	0.00175	0.0165	0.00125	0.05	0.61	*0.00025*	*0.00025*	0.02020	0.000033	0.000093	0.000223
May	68.5	24.6	0.0536	*0.0010*	0.0164	0.0063	0.043	0.66	0.00065	*0.00025*	0.0475	0.000031	0.000127	0.000194
June	60.0	27.2	0.0788	*0.0010*	0.01095	0.00220	0.033	0.55	0.000560	0.000375	0.02615	0.000028	0.000099	0.000225
July	78.6	35.9	0.0668	*0.0010*	0.016	0.0023	0.035	*0.25*	*0.00025*	0.00064	0.02295	0.000026	0.000094	0.00028
August	90.7	42.2	0.105	*0.0010*	0.00475	0.00280	0.035	*0.25*	0.000375	0.000375	0.02	0.000038	0.000162	0.000312
September	104.5	51.5	0.1165	*0.0010*	0.00380	*0.0010*	0.043	*0.25*	0.000580	0.000550	0.01034	0.000023	0.000076	0.000272
October	112	53.7	0.125	*0.0010*	0.0054	0.0022	0.039	*0.25*	*0.00025*	*0.00025*	0.00637	0.000022	0.000067	0.000217
November	120	56.4	0.146	*0.0010*	*0.0025*	*0.0010*	0.051	0.66	*0.00025*	*0.00025*	0.00676	0.000023	0.000068	0.000216
December	129.0	55.7	0.164	*0.0010*	0.00375	*0.0010*	0.045	*0.25*	*0.00025*	*0.00025*	0.00660	0.000031	0.000081	0.000243
KZ-13														
January	105	17	0.109	*0.0010*	0.014	0.0035	0.051	0.57	*0.00025*	*0.00025*	0.0137	0.000035	0.000242	0.000049
February	97.4	18.6	0.1415	*0.0010*	0.0350	0.0044	0.056	0.605	*0.00025*	*0.00025*	0.0242	0.0000345	0.000295	0.0000482
March	112	18.4	0.114	*0.0010*	0.051	0.0053	0.061	0.250	*0.00069*	0.00054	0.00838	0.000042	0.000225	0.0000595
April	105.4	14.1	0.1178	*0.0010*	0.0099	0.0042	0.061	0.59	*0.0005*	0.000375	0.01446	*0.000025*	0.000182	0.0000235
May	45.5	2.625	0.0322	0.0021	0.00715	0.0217	0.036	0.59	0.00079	0.000745	0.292	*0.000025*	0.000370	0.0000542
June	57.2	9.4	0.0334	*0.0010*	0.0078	0.0062	0.042	0.57	0.000665	0.000375	0.0698	0.000031	0.000242	0.0000230
July	66.0	10.95	0.0193	*0.0010*	0.0141	0.0044	0.043	*0.25*	0.000555	0.00062	0.0352	0.000028	0.000235	0.0000265
August	64.1	9.08	0.0339	0.00175	*0.0025*	0.00450	0.042	*0.25*	*0.0005*	*0.0005*	0.028	*0.000025*	0.000227	0.0000305
September	66.3	12.3	0.0492	*0.0010*	0.007	0.005	0.046	*0.25*	*0.0005*	*0.0005*	0.0262	0.000026	0.000199	0.000028
October	70.9	13.6	0.0618	*0.0010*	0.012	0.0029	0.044	0.57	*0.00025*	*0.00025*	0.0273	0.00003	0.000207	0.000026
November	80.2	16	0.0969	*0.0010*	0.007	0.0029	0.046	*0.25*	0.00057	*0.00025*	0.015	0.000033	0.000184	0.000031
December	83.4	15.8	0.1105	*0.0010*	0.00675	0.0039	0.044	0.58	*0.00025*	*0.00025*	0.0194	0.000034	0.000216	0.000034
KZ-7														
January	186.0	38.0	0.129	*0.0010*	0.0364	0.0025	0.070	0.59	0.000415	0.000460	0.0716	0.000045	0.000802	0.000292
February	179.0	35.6	0.143	*0.0010*	0.028	0.0031	0.073	0.440	*0.00025*	*0.00025*	0.01211	0.000030	0.000405	0.000158
March	186.0	34.4	0.145	*0.0010*	0.0226	0.0026	0.071	*0.25*	*0.00025*	*0.00025*	0.01286	0.000036	0.000290	0.000132
April	178	29.6	0.0973	*0.0025*	0.0116	0.0021	0.068	0.450	*0.0005*	*0.00025*	0.018	0.000042	0.0003	0.0000859
May	114	18.7	0.0524	0.00155	0.0064	0.008	0.055	1.1	0.00062	0.00057	0.0587	0.000066	0.000622	0.00017
June	111	27	*0.01*	*0.0010*	*0.0025*	*0.0015*	0.048	0.480	0.00068	0.0006	0.0206	0.000068	0.0003	0.000071
July	127	31.6	0.0108	*0.0010*	0.0121	0.0044	0.052	0.390	0.000380	0.000450	0.0227	0.000092	0.000398	0.000185
August	136	28.7	0.0104	*0.0025*	0.00585	0.007	0.052	0.575	*0.0005*	*0.0005*	0.0174	0.000080	0.000298	0.00012
September	146.5	33.3	0.0441	0.00175	0.00675	0.0034	0.054	0.78	0.00061	0.00061	0.0314	0.000086	0.000236	0.000203
October	163.0	35.6	0.0954	*0.0010*	0.0091	0.0052	0.078	0.395	0.000395	0.000415	0.0222	0.000049	0.000357	0.000352
November	172.5	38.3	0.1086	0.0021	0.0216	0.00200	0.070	*0.25*	0.000410	0.000450	0.0136	0.000052	0.000352	0.000310
December	182	38.5	0.134	*0.0010*	0.0229	0.002	0.060	0.500	*0.00025*	*0.00025*	0.0200	0.000052	0.000334	0.000223

APPENDIX A

	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-2													
January	42.8	0.000009	0.000526	0.0051	0.000028	0.000105	0.000263	*0.0000025*	0.00225	0.0000028	0.00452	0.0285	0.8
February	44.4	0.0000076	0.000470	0.0055	0.0000309	0.000191	0.000328	*0.0000025*	0.00242	0.0000028	0.00492	0.0288	*0.25*
March	46	0.000008	0.000491	0.0018	0.0000351	0.00013	0.000296	*0.0000025*	0.00263	0.0000031	0.00517	0.0288	0.25
April	41.7	0.0000474	0.001132	0.0422	0.000338	0.000918	0.00049	*0.0000025*	0.00274	0.000003	0.00506	0.0275	1.37
May	22.9	0.0000442	0.00434	0.0711	0.000371	0.0021	0.00074	*0.000005*	0.00125	0.000005	0.00175	0.0239	4.47
June	20.7	0.0000255	0.001595	0.0259	0.0001350	0.001017	0.000525	0.00000375	0.000438	0.000007	0.00106	0.0397	1.72
July	27.6	0.000024	0.000906	0.0198	0.000115	0.000960	0.000398	*0.0000025*	0.000558	0.0000041	0.00133	0.0411	1.4
August	32.2	0.0001030	*0.001*	0.019	0.0001222	0.0006	0.000481	*0.0000025*	0.0005	0.0000055	0.00165	0.0326	0.95
September	36.0	0.000016	0.000725	0.0128	0.000057	0.000502	0.000464	*0.0000025*	0.000731	0.000004	0.00202	0.0361	0.77
October	38.4	0.000011	0.000609	0.007	0.000065	0.000312	0.000327	*0.0000025*	0.00116	0.000003	0.00261	0.0265	1.13
November	39.3	0.000009	0.000524	0.0094	0.000033	0.000183	0.000311	*0.0000025*	0.00178	0.000002	0.00323	0.0253	0.84
December	42.0	0.000007	0.000543	0.0072	0.0001437	0.0004035	0.00035	*0.0000025*	0.00196	0.000003	0.00409	0.0324	0.76
KZ-13													
January	35.6	0.0000507	0.000364	0.171	0.000042	0.0838	0.000373	*0.0000025*	0.000291	*0.0000010*	0.00135	0.00388	2.32
February	33.2	0.0000737	0.000586	0.294	0.0000834	0.1195	0.000477	*0.0000025*	0.000312	*0.0000010*	0.001219	0.00460	2.415
March	36.8	0.0000498	0.000499	0.156	0.000023	0.0926	0.000475	*0.0000025*	0.000324	0.000002	0.00174	0.00321	3.26
April	36.0	0.000068	0.00048	0.1410	0.0001105	0.0599	0.000451	0.00000375	0.000244	0.000002	0.00191	0.00317	3.39
May	15.2	0.000277	0.00165	0.2215	0.0001095	0.0860	0.00149	*0.000005*	0.000146	0.0000047	0.000402	0.0078	9.68
June	19.3	0.000066	0.00084	0.1755	0.0001385	0.0187	0.000570	0.00000550	0.000140	0.000003	0.000433	0.00432	3.77
July	22.4	0.0000592	0.000712	0.1050	0.0000674	0.0291	0.000528	0.00000375	0.000162	0.0000023	0.000568	0.00366	3.9
August	21.7	0.0001193	0.0008	0.0877	0.0000780	0.021	*0.0005*	0.00000375	0.000123	*0.0000010*	0.000456	0.0045	4.63
September	22.5	0.000037	0.000583	0.0884	0.000045	0.019	0.000472	*0.0000025*	0.000135	0.000002	0.00054	0.004	3.97
October	24.1	0.000035	0.000501	0.0779	0.000058	0.0233	0.000484	*0.0000025*	0.000165	*0.0000010*	0.000676	0.00316	3.47
November	27.1	0.000038	0.000474	0.103	0.000077	0.0411	0.000393	*0.0000025*	0.000242	*0.0000010*	0.000804	0.00349	2.5
December	28.2	0.000045	0.000484	0.132	0.00005	0.0520	0.000398	*0.0000025*	0.000296	*0.0000010*	0.00107	0.00377	3.09
KZ-7													
January	61.0	0.000228	0.000814	1.328	0.000556	0.167	0.000762	0.00000375	0.00103	0.000004	0.00156	0.0785	0.930
February	58.8	0.000100	0.000336	0.524	0.000181	0.1016	0.000479	*0.0000025*	0.000941	*0.0000010*	0.00148	0.0546	0.420
March	61.4	0.000089	0.000260	0.414	0.000100	0.0834	0.000479	*0.0000025*	0.000934	0.000002	0.00156	0.0482	*0.25*
April	58.8	0.000085	0.0003	0.525	0.000119	0.081	0.000498	*0.0000025*	0.000777	0.00000150	0.00138	0.034	2.37
May	37.6	0.000076	0.00134	0.506	0.000631	0.0418	0.00067	*0.0000025*	0.000643	0.000003	0.000796	0.035	4.85
June	36.5	0.000057	0.00077	0.3	0.000196	0.032	0.000472	*0.0000025*	0.0006	*0.0000010*	0.000732	0.018	1.90
July	42.1	0.0000434	*0.001*	0.311	0.000157	0.0374	0.000434	0.00000375	0.0007	0.0000028	0.000804	0.0298	2.18
August	45.1	*0.0002*	0.0008	0.226	0.0002	0.03	*0.0005*	*0.000005*	0.000481	0.00000300	0.000784	0.02	2.36
September	49.2	0.000158	0.00174	0.310	0.000339	0.0420	0.000595	0.00000375	0.000480	0.000004	0.001036	0.0361	2.14
October	55.4	0.000087	0.000966	0.347	0.000307	0.0448	0.000500	*0.0000025*	0.00132	0.000002	0.00140	0.0613	2.32
November	57.2	0.000124	0.000485	0.513	0.000144	0.130	0.000540	*0.0000025*	0.00115	0.00000150	0.00136	0.0700	1.23
December	60.7	0.000134	0.000374	0.480	0.000125	0.119	0.000560	*0.0000025*	0.001044	0.000002	0.00142	0.0703	1.67

APPENDIX A

	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-2													
January	0.0022	0.000037	0.000073	0.000225	42.9	0.0000075	0.000467	*0.0005*	0.00004	0.000101	0.000278	*0.0000025*	0.00229
February	0.00183	0.000028	0.000078	0.000244	46.4	0.0000059	0.000536	*0.0005*	0.0000282	0.0000655	0.000328	*0.0000025*	0.00243
March	0.00189	0.000029	0.000079	0.000265	47.6	0.0000063	0.000486	*0.0005*	0.0000219	0.0000510	0.000304	*0.0000025*	0.00262
April	0.00376	0.000032	0.000086	0.000215	42.6	0.0000128	0.000768	0.0046	0.0000360	0.000374	0.00028	*0.0000025*	0.00279
May	0.023	0.000036	0.000103	0.000182	22.6	0.000024	0.00437	0.0212	0.000114	0.00079	0.000751	0.0000075	0.00112
June	0.01330	0.000023	0.000093	0.000218	20.0	0.0000165	0.001550	0.0082	0.0000595	0.000503	0.000528	*0.0000025*	0.000464
July	0.00429	0.000028	0.000091	0.000274	29.7	0.0000082	0.000748	0.0019	0.0000929	0.000133	0.000363	*0.0000025*	0.0006
August	*0.01*	0.000032	0.000102	0.000288	33.1	0.0000580	0.000818	*0.0015*	0.0000362	0.0004	0.000475	*0.0000025*	0.000427
September	0.00480	0.000022	0.000076	0.000256	35.8	0.00001050	0.000650	0.0011	0.000015	0.0001445	0.000453	*0.0000025*	0.000736
October	0.00281	0.000021	0.000076	0.000211	36.8	0.000008	0.000501	*0.0005*	0.000018	0.000052	0.000302	*0.0000025*	0.0011
November	0.00223	0.000022	0.000066	0.000225	39.4	0.000008	0.000535	*0.0005*	0.000015	*0.000025*	0.000333	*0.0000025*	0.00174
December	0.00172	0.000025	0.000054	0.000214	40.6	0.000007	0.000532	0.00080	0.0000251	0.0001210	0.000327	*0.0000025*	0.00196
KZ-13													
January	0.00384	0.000035	0.000187	0.00004	36.3	0.000043	0.000337	0.0594	0.0000064	0.083	0.00044	*0.0000025*	0.000277
February	0.00346	0.0000300	0.000176	0.0000518	33.5	0.0000450	0.000464	0.0516	0.00002990	0.0889	0.000369	*0.0000025*	0.000298
March	0.00345	0.000039	0.000189	0.00003	40.2	0.0000428	0.000418	0.0703	0.0000122	0.0813	0.000419	*0.0000025*	0.000292
April	0.00592	0.000032	0.000188	0.00002	37.7	0.000024	0.000364	0.0660	0.00000555	0.0339	0.000441	*0.0000025*	0.000255
May	0.0348	*0.000010*	0.000204	0.0000160	14.2	0.0000334	0.00085	0.0996	0.0000160	0.025795	0.00074	0.00000375	0.000114
June	0.01314	0.000027	0.000177	0.0000126	19.3	0.000018	0.000697	0.0358	0.00001400	0.00636	0.000483	0.00000375	0.000120
July	0.00827	0.000032	0.000216	0.0000127	22.4	0.0000214	0.000536	0.0326	0.00000775	0.011000	0.000496	*0.0000025*	0.000144
August	0.009	0.000028	0.000193	0.0000120	21.5	0.0001126	0.0005	0.03	0.00003450	0.013	*0.0005*	0.00000375	0.000128
September	0.00915	0.000027	0.00016	0.00002	22.3	0.000023	0.0005	0.035	0.000014	0.012	0.000438	*0.0000025*	0.00015
October	0.00667	0.000027	0.000188	0.000019	23.4	0.000015	0.000437	0.0195	0.000005	0.00972	0.00039	*0.0000025*	0.000174
November	0.00548	0.00003	0.00015	0.000021	26.5	0.000025	0.00042	0.0312	0.000046	0.0247	0.000358	*0.0000025*	0.000246
December	0.00473	0.000029	0.000156	0.000034	27.6	0.000032	0.000401	0.0435	0.000024	0.0386	0.000395	*0.0000025*	0.000306
KZ-7													
January	0.00180	0.000036	0.000132	0.00006	60.1	0.000071	0.000153	0.0220	0.00001575	0.0925	0.000430	*0.0000025*	0.000988
February	0.00264	0.000027	0.000106	0.000048	60.2	0.000054	0.000142	0.0124	*0.0000025*	0.0744	0.000408	*0.0000025*	0.000909
March	0.00318	0.000033	0.000112	0.000054	65.2	0.000049	0.000152	0.0141	0.00000425	0.0663	0.000404	*0.0000025*	0.000926
April	0.00655	0.000068	0.000164	0.00008	60	0.000058	0.0004	0.073	0.000012	0.0592	0.000419	*0.0000025*	0.000811
May	0.00764	0.00006	0.000327	0.000107	37.2	0.000045	0.000853	0.246	0.0000658	0.0348	0.00048	*0.0000025*	0.000562
June	0.00301	0.000066	0.0002	0.000069	38.8	0.0000135	0.000602	0.0553	0.0000232	0.00829	0.00046	*0.000005*	0.000529
July	0.00224	0.000090	0.000250	0.0001098	43.8	0.00000840	0.000628	0.0588	0.0000188	0.00729	0.000401	*0.0000025*	0.000702
August	*0.003*	0.000078	0.000233	0.000064	46.1	*0.0002*	0.000550	0.05	*0.00005*	0.0128	*0.0005*	*0.000005*	*0.0005*
September	0.00437	0.000082	0.000180	0.000100	48.4	0.000114	0.000808	0.0892	0.000082	0.0278	*0.0005*	0.00000375	0.000430
October	0.00310	0.000048	0.000162	0.000226	53.7	0.000024	0.000539	0.0480	0.000028	0.0174	0.000372	*0.0000025*	0.00124
November	0.00416	0.000049	0.000153	0.000104	59.8	0.000099	0.000266	0.0373	0.000007	0.1112	0.000491	*0.0000025*	0.00111
December	0.00117	0.000045	0.000147	0.000101	60	0.000096	0.000196	0.0728	*0.0000025*	0.11	0.000489	*0.0000025*	0.001083

APPENDIX A

	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
	mg/L	mg/L	mg/L
KZ-2			
January	0.000003	0.00457	0.0263
February	0.0000026	0.0049	0.0286
March	0.0000038	0.00521	0.0304
April	0.000003	0.00498	0.0252
May	0.000009	0.00189	0.0235
June	0.000006	0.000997	0.0372
July	0.000004	0.0013	0.0385
August	0.0000059	0.00157	0.0317
September	0.000003	0.00182	0.0328
October	0.000004	0.00251	0.0236
November	0.000004	0.00315	0.027
December	0.000003	0.00388	0.0312
KZ-13			
January	*0.0000010*	0.00141	0.00285
February	*0.0000010*	0.001208	0.00350
March	0.000002	0.00166	0.00306
April	*0.0000010*	0.002	0.00183
May	0.0000023	0.00033	0.00165
June	0.000002	0.000401	0.00182
July	0.000002	0.000565	0.00227
August	*0.0000010*	0.000403	0.003
September	*0.0000010*	0.000521	0.00285
October	*0.0000010*	0.000649	0.00213
November	0.000002	0.000781	0.00241
December	*0.0000010*	0.000939	0.00371
KZ-7			
January	*0.0000010*	0.00148	0.0453
February	*0.0000010*	0.00150	0.0402
March	0.000002	0.00147	0.0390
April	0.00000150	0.00140	0.029
May	0.000003	0.000764	0.0248
June	0.00000200	0.000725	0.015
July	0.0000024	0.000792	0.0218
August	0.000002	0.000734	0.0111
September	0.000002	0.001014	0.0268
October	0.00000200	0.00139	0.0432
November	0.000002	0.00132	0.0558
December	0.00000150	0.00138	0.0522

APPENDIX A: Median Monthly Baseline Surface Water Quality

	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus, total-colourimetric	Fluoride	Chloride	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-9														
January	211	34.1	0.199	*0.0010*	0.0339	0.0047	0.088	0.82	*0.00025*	*0.00025*	0.00854	0.000047	0.000274	0.000075
February	229.5	34.8	0.214	*0.0010*	0.0305	0.0049	0.098	1.03	*0.00025*	*0.00025*	0.0131	0.000033	0.000330	0.0001321
March	239.0	41.7	0.474	*0.0010*	0.022	0.0041	0.083	0.7	*0.00057*	*0.00025*	0.00392	0.00003	0.000132	0.0000489
April	189.5	27.9	0.145	0.00165	0.0214	0.0044	0.097	0.75	0.000505	0.000375	0.0118	0.00003	0.000296	0.0000684
May	95.6	16.6	0.0355	*0.0010*	0.0171	0.0168	0.05	1	0.00072	0.0006	0.175	0.000056	0.000522	0.000105
June	116.0	23.7	0.0262	*0.0010*	0.0170	0.0100	0.048	0.53	0.000720	0.000680	0.0784	0.000063	0.000460	0.000072
July	132.0	27.5	0.034	*0.0010*	0.019	0.004	0.056	*0.25*	*0.00025*	0.00068	0.0280	0.000063	0.000296	0.0000703
August	161.5	25.2	0.028	*0.0025*	0.0051	0.0064	0.063	*0.25*	0.000375	0.000375	0.0209	0.000063	0.000450	0.000058
September	169	33.6	0.0678	*0.0010*	0.00575	0.0042	0.062	0.58	0.000575	0.000600	0.0346	0.000051	0.000268	0.000105
October	172	33.3	0.139	*0.0010*	0.017	0.0038	0.067	0.66	*0.00025*	*0.00025*	0.0227	0.000044	0.000357	0.000096
November	186	34.2	0.171	*0.0010*	0.0194	0.003	0.079	0.62	*0.00025*	*0.00025*	0.0147	0.000042	0.000377	0.000097
December	204.0	33.6	0.178	*0.0010*	0.0242	0.0026	0.083	0.72	*0.00025*	*0.00025*	0.00839	0.000041	0.000242	0.000082
KZ-17														
January	272	37.8	0.274	*0.0010*	0.0078	0.0033	0.072	0.93	*0.00025*	*0.00025*	0.00537	0.000029	0.00028	0.000035
February	289	42	0.304	*0.0010*	0.027	0.0039	0.074	*0.25*	*0.00025*	*0.00025*	0.00662	0.000025	0.000272	0.000049
March	284	41.8	0.225	*0.0010*	0.010	0.0026	0.080	0.71	*0.00025*	0.000520	0.00164	0.000028	0.000226	0.0000346
April	258.0	32.7	0.169	0.00165	0.0202	0.00280	0.12	0.55	0.000375	0.000375	0.00517	0.00003	0.000596	0.0000392
May	122.5	16.200	0.0610	*0.0010*	0.0107	0.0065	0.084	0.850	0.000595	0.000705	0.01280	0.0000295	0.000636	0.0000415
June	144	22.1	0.0149	*0.0010*	0.0115	0.0037	0.084	*0.25*	0.00064	0.00053	0.0073	0.000044	0.0005	0.000023
July	174	26.7	0.0269	*0.0010*	0.0084	0.003	0.098	*0.25*	*0.00025*	0.00065	0.0077	0.000052	0.00054	0.0000341
August	169.5	25.4	0.0144	*0.0025*	*0.0025*	0.0068	0.082	*0.25*	0.000375	*0.00025*	0.00750	0.000061	0.00054	0.000037
September	174.5	27.2	0.0553	*0.0010*	0.00585	0.0027	0.094	0.61	0.000585	0.000590	0.00706	0.000043	0.000299	0.000020
October	165	29.4	0.158	*0.0010*	0.021	0.0047	0.089	0.58	*0.00025*	*0.00025*	0.00137	0.000033	0.000241	0.00002
November	195	32	0.23	*0.0010*	*0.0025*	0.003	0.088	0.66	*0.00025*	0.0005	0.00272	0.000027	0.000271	0.00002
December	230.5	33.2	0.214	*0.0010*	0.00900	0.0034	0.081	0.63	*0.00025*	*0.00025*	0.00266	0.000024	0.000224	0.0000306
KZ-15														
January	256	36.7	0.23	*0.0010*	0.03	0.0037	0.1	0.78	*0.00025*	*0.00025*	0.00305	0.000032	0.000526	0.0000535
February	282	40.4	0.214	*0.0010*	0.0198	0.0029	0.12	0.400	*0.00025*	*0.00025*	0.00889	0.00003	0.000501	0.0000762
March	303	42.8	0.211	*0.0010*	0.017	0.005	0.13	0.62	*0.00055*	0.0005	0.00665	0.000029	0.000543	0.0000684
April	249.0	34.5	0.182	*0.0010*	0.0132	0.0032	0.12	0.61	0.000375	0.000375	0.00600	0.000025	0.000462	0.0000344
May	93.2	12.6	0.03	*0.0010*	0.006	0.0106	0.051	0.755	0.00073	0.00084	0.0366	0.0000290	0.000554	0.00004
June	108	19.5	0.0237	*0.0010*	0.015	0.0054	0.064	0.555	0.00064	0.00053	0.0165	0.0000345	0.000408	0.000027
July	147.0	23.2	0.0136	*0.0010*	0.01625	0.0030	0.066	*0.25*	*0.0005*	0.00069	0.01280	0.000031	0.000364	0.0000214
August	148	22.7	0.0229	*0.0025*	0.006	0.0032	0.065	*0.25*	*0.0005*	*0.0005*	0.01	0.000038	0.000438	0.0000240
September	146.5	24.6	0.05	*0.0010*	0.00375	0.00305	0.066	0.605	0.00061	0.000560	0.00682	0.000030	0.000403	0.000034
October	178	30.7	0.135	*0.0010*	0.0101	0.0036	0.078	0.59	*0.00025*	*0.00025*	0.0118	0.000031	0.000561	0.000038
November	218	33.1	0.188	*0.0010*	0.0089	0.0035	0.094	*0.25*	*0.00025*	*0.00025*	0.0103	0.000036	0.000547	0.000048
December	245.0	34.6	0.200	*0.0010*	0.00970	0.0036	0.1	0.59	*0.00025*	*0.00025*	0.0103	0.000033	0.000505	0.0000463

APPENDIX A

	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-9													
January	70	0.000128	0.000263	1.09	0.000056	0.111	0.000508	*0.0000025*	0.00114	*0.0000010*	0.00171	0.0171	0.84
February	76.8	0.000199	0.000468	0.790	0.0001419	0.138	0.000634	*0.0000025*	0.00121	*0.0000010*	0.00182	0.0190	1.140
March	78.7	0.0000159	0.000206	0.0261	0.0000349	0.0116	0.000161	*0.0000025*	0.00307	*0.0000010*	0.00294	0.00689	1.110
April	62.6	0.000176	0.000415	0.490	0.000106	0.1285	0.000584	0.00000375	0.000935	*0.0000010*	0.00156	0.01155	2.16
May	31.6	0.000258	0.00192	0.671	0.000623	0.0573	0.00099	*0.000005*	0.000529	0.000003	0.000635	0.0231	5.49
June	38.1	0.000174	0.001135	0.463	0.000491	0.0308	0.000591	0.0000085	0.000583	0.000003	0.000624	0.0142	2.63
July	44.2	0.0000864	0.000890	0.278	0.0000966	0.0337	0.000475	*0.000005*	0.000628	0.000002	0.000778	0.0102	2.62
August	52.4	0.0002195	0.000605	0.309	0.000200	0.0560	*0.0005*	*0.0000025*	0.0006	0.000002	0.00112	0.00836	2.3
September	56.5	0.000082	0.000879	0.377	0.000227	0.0431	0.000489	*0.0000025*	0.00104	0.000002	0.00123	0.0202	1.6
October	57.9	0.00011	0.000514	0.548	0.000165	0.0609	0.000504	*0.0000025*	0.00138	*0.0000010*	0.00134	0.0186	1.59
November	61.8	0.000109	0.00038	1.11	0.000078	0.085	0.000414	*0.0000025*	0.00126	*0.0000010*	0.00148	0.0212	1.39
December	68.1	0.000122	0.000312	0.448	0.00006	0.0952	0.000434	*0.0000025*	0.00124	*0.0000010*	0.00164	0.02	1.78
KZ-17													
January	79.3	0.0000189	0.000343	0.0291	0.000044	0.00494	0.000553	*0.0000025*	0.00154	*0.0000010*	0.00331	0.00262	1.15
February	87.2	0.0000176	0.000329	0.0192	0.0000186	0.00335	0.000664	*0.0000025*	0.00169	*0.0000010*	0.00387	0.00288	0.91
March	84.9	0.0000068	0.000281	0.0054	0.0000108	0.00182	0.000618	*0.0000025*	0.00159	*0.0000010*	0.0035	0.00306	0.52
April	74.4	0.0000372	0.000286	0.0748	*0.000025*	0.04420	0.00104	0.00000375	0.00126	*0.0000010*	0.00557	0.00528	1.59
May	37.3	0.000047	0.00150	0.1575	0.00007900	0.028550	0.000895	0.00000375	0.000612	0.00000160	0.000979	0.00435	3.62
June	44.6	0.00003	0.00068	0.11	*0.000025*	0.015	0.000534	*0.0000025*	0.00058	*0.0000010*	0.001835	0.004	2.19
July	52.8	0.000028	0.000671	0.0941	0.0000315	0.0254	0.00059	*0.0000025*	0.000541	*0.0000010*	0.00226	0.00345	1.82
August	52.0	*0.0002*	0.0006	0.1145	*0.0001*	0.03605	0.000644	0.00000375	0.000544	*0.0000010*	0.00233	0.00330	1.7
September	52.8	0.000042	0.000635	0.0926	0.00003250	0.01280	0.000462	*0.0000025*	0.000725	*0.0000010*	0.00189	0.00324	1.58
October	48.7	0.000008	0.000384	0.0037	0.000035	0.000682	0.000369	*0.0000025*	0.000968	*0.0000010*	0.00199	0.00103	1.19
November	59.6	0.000006	0.000337	0.02	0.000086	0.00247	0.000373	*0.0000025*	0.00133	*0.0000010*	0.00246	0.00115	1.51
December	68.2	0.0000108	0.0003	0.0069	0.0000162	0.016740	0.000523	*0.0000025*	0.00142	*0.0000010*	0.00306	0.00158	2.08
KZ-15													
January	74.7	0.000059	0.000305	0.0858	0.000031	0.0473	0.00093	*0.0000025*	0.00152	*0.0000010*	0.00457	0.00644	1.7
February	78.6	0.0000666	0.000243	0.0907	0.000025	0.0838	0.00127	*0.0000025*	0.0014	*0.0000010*	0.00631	0.00987	0.570
March	85.9	0.000059	0.000238	0.0879	0.0000244	0.0797	0.00123	*0.0000025*	0.00159	*0.0000010*	0.0056	0.0089	0.89
April	72.8	0.0000472	0.000278	0.0534	0.0000275	0.0284	0.000903	*0.0000025*	0.00117	*0.0000010*	0.00477	0.00495	1.3
May	28.7	0.00009	0.00146	0.174	0.000133	0.026	0.0009	*0.000005*	0.000434	0.00000250	0.000927	0.0057	3.92
June	35	0.0000524	0.000876	0.0949	0.0000561	0.0176	*0.0005*	*0.000005*	0.000441	*0.0000010*	0.001130	0.00364	2.02
July	46.0	0.0000410	0.000463	0.0580	0.0000538	0.0155	0.000491	*0.0000025*	0.000430	*0.0000010*	0.00121	0.00304	2.54
August	47	*0.0002*	0.000588	0.066	0.0000800	0.019	0.000501	*0.0000025*	*0.0005*	*0.0000010*	0.0017	0.00341	2.02
September	46.4	0.000059	0.000430	0.0607	0.000036	0.0173	*0.0005*	*0.0000025*	0.000650	*0.0000010*	0.00146	0.00313	1.75
October	54.9	0.000047	0.000417	0.0934	0.000049	0.0335	0.000485	*0.0000025*	0.00117	*0.0000010*	0.00234	0.00417	1.17
November	63.5	0.000061	0.000331	0.112	0.000312	0.0473	0.00066	*0.0000025*	0.0013	*0.0000010*	0.00348	0.00576	1.22
December	71.9	0.00004	0.000279	0.0764	0.00002	0.0369	0.000769	*0.0000025*	0.00139	*0.0000010*	0.0038	0.00596	1.58

APPENDIX A

	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-9													
January	0.00202	0.00004	0.000166	0.0000693	71.2	0.00013	0.000254	0.168	0.0000175	0.106	0.000492	*0.0000025*	0.00119
February	0.00246	0.000030	0.000204	0.0000733	75.0	0.000168	0.000208	0.1980	0.00000755	0.126	0.000642	*0.0000025*	0.00122
March	0.00196	0.000044	0.000131	0.0000471	83.8	0.000012	0.000229	0.0038	0.0000139	0.0105	0.000149	*0.0000025*	0.00321
April	0.00330	0.000056	0.000264	0.0000663	67.8	0.000147	0.000399	0.1580	0.0000194	0.1250	0.000606	*0.0000025*	0.000972
May	0.0157	0.000046	0.000309	0.000068	31.9	0.000072	0.00147	0.238	0.000085	0.0436	0.00071	*0.0000025*	0.000626
June	0.00764	0.000063	0.000231	0.0000385	37.6	0.0000395	0.000903	0.0900	0.0000395	0.0167	0.000460	*0.0000025*	0.000570
July	0.00169	0.000066	0.000212	0.000046	49.5	0.000027	0.000499	0.0749	0.000006	0.0266	0.000332	*0.0000025*	0.000625
August	0.00470	0.000059	0.0003	0.0000370	53.6	0.0001300	*0.0005*	0.0931	*0.0001*	0.0482	0.000468	*0.0000025*	*0.0005*
September	0.00386	0.000054	0.000220	0.000078	55.6	0.000052	0.000657	0.174	0.000030	0.0430	0.000377	*0.0000025*	0.000923
October	0.00227	0.00005	0.000185	0.000075	55.6	0.000051	0.000339	0.0735	0.000006	0.0471	0.000323	*0.0000025*	0.00126
November	0.002	0.000039	0.000158	0.000076	62.4	0.000096	0.000241	0.0672	*0.0000025*	0.0761	0.000398	*0.0000025*	0.0012
December	0.00171	0.000034	0.00019	0.000072	67.4	0.000106	0.000232	0.211	0.0000105	0.0950	0.000463	*0.0000025*	0.00128
KZ-17													
January	0.00126	0.00003	0.00022	0.0000288	80	0.0000069	0.000309	*0.0005*	0.000005	0.000269	0.00055	*0.0000025*	0.00152
February	0.001	0.000025	0.000222	0.000032	86.8	0.0000067	0.000245	*0.0005*	*0.0000025*	0.00068	0.000669	*0.0000025*	0.00156
March	0.00253	0.000029	0.000229	0.000037	78.6	0.0000078	0.000263	0.0005	0.000006	0.000586	0.000605	*0.0000025*	0.00146
April	0.00106	0.000038	0.000420	0.0000335	76.1	0.0000143	0.000234	0.0074	0.00000375	0.02520	0.000829	*0.0000025*	0.00123
May	0.00434	0.0000320	0.000422	0.0000265	36.8	0.0000200	0.001420	0.0379	0.00001130	0.011050	0.000747	*0.0000025*	0.000530
June	0.00234	0.000044	0.000455	0.0000213	46.2	0.0000161	0.000584	0.0306	0.000008	0.0051	0.000524	*0.0000025*	0.000705
July	0.00156	0.000054	0.000411	0.000018	53.2	0.000011	0.000459	0.0116	*0.0000025*	0.0054	0.000484	*0.0000025*	0.000503
August	0.00188	0.000056	0.000485	0.000025	52.6	*0.0002*	0.000574	0.0304	0.000072	0.023500	*0.0005*	*0.0000025*	0.000533
September	0.00224	0.000045	0.000276	0.000019	49.4	0.000015	0.000516	0.02455	0.00000575	0.009210	0.000443	*0.0000025*	0.000659
October	0.00092	0.000036	0.000271	0.000019	51.7	0.000009	0.000324	*0.0005*	*0.0000025*	0.000807	0.000371	*0.0000025*	0.00103
November	0.001	0.000027	0.000229	0.000016	54.3	0.000006	0.000278	*0.0005*	*0.0000025*	0.00011	0.000361	*0.0000025*	0.00115
December	0.00073	0.000027	0.000224	0.0000273	70.3	0.0000064	0.000285	*0.0005*	*0.0000025*	0.0075635	0.00049	*0.0000025*	0.00144
KZ-15													
January	0.00185	0.000032	0.000326	0.000043	75.5	0.0000311	0.00025	0.0079	0.000033	0.0395	0.00088	*0.0000025*	0.00151
February	0.00092	0.000028	0.000326	0.0000602	80.0	0.0000404	0.000208	0.0079	*0.0000025*	0.0626	0.001130	*0.0000025*	0.00147
March	0.00099	0.000037	0.000341	0.000065	85.5	0.0000428	0.000241	0.0077	0.000006	0.0623	0.00114	*0.0000025*	0.00159
April	0.00105	0.000033	0.000366	0.0000308	80.8	0.0000245	0.000261	0.0166	*0.0000025*	0.0161	0.000972	*0.0000025*	0.00123
May	0.0157	0.000030	0.00041	0.000023	25	0.000039	0.00129	0.0607	0.000036	0.00842	0.000695	*0.0000025*	0.000442
June	0.00661	0.000037	0.000347	0.000017	31.6	0.000025	0.000773	0.026	0.000014	0.00731	*0.0005*	*0.0000025*	0.000465
July	0.00386	0.000033	0.000319	0.0000174	45.7	0.0000188	0.000462	0.0183	0.00000975	0.00720	0.000450	*0.0000025*	0.000420
August	*0.003*	0.000031	0.0004	0.0000205	47	*0.0002*	0.000484	0.0174	*0.00005*	0.0117	*0.0005*	*0.0000025*	0.000504
September	0.00327	0.000030	0.000344	0.000022	46.4	0.000022	0.000518	0.0190	0.00000700	0.01015	0.000456	*0.0000025*	0.000597
October	0.00156	0.00003	0.000458	0.000022	54.9	0.000021	0.000298	0.0127	*0.0000025*	0.016	0.000409	*0.0000025*	0.00108
November	0.00122	0.000032	0.000344	0.000034	63	0.000025	0.000253	0.0076	*0.0000025*	0.0277	0.000589	*0.0000025*	0.00131
December	0.00088	0.000031	0.000354	0.0000474	70.2	0.00003	0.000226	0.0102	*0.0000025*	0.0282	0.000791	*0.0000025*	0.00155

APPENDIX A

	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
	mg/L	mg/L	mg/L
KZ-9			
January	*0.0000010*	0.00166	0.0157
February	*0.0000010*	0.00174	0.0156
March	*0.0000010*	0.00303	0.0041
April	*0.0000010*	0.00159	0.01065
May	*0.0000010*	0.000637	0.0134
June	0.000002	0.000707	0.01080
July	0.000002	0.000772	0.00646
August	*0.0000010*	0.0011	0.005
September	*0.0000010*	0.00118	0.0137
October	*0.0000010*	0.00138	0.0139
November	*0.0000010*	0.00141	0.0198
December	*0.0000010*	0.00157	0.0197
KZ-17			
January	*0.0000010*	0.00345	0.00199
February	*0.0000010*	0.00419	0.00349
March	*0.0000010*	0.00342	0.00393
April	*0.0000010*	0.00567	0.00448
May	*0.0000010*	0.000958	0.00217
June	*0.0000010*	0.001775	0.00239
July	*0.0000010*	0.00225	0.00106
August	*0.0000010*	0.00196	*0.0025*
September	*0.0000010*	0.00196	0.00260
October	*0.0000010*	0.00203	0.00091
November	*0.0000010*	0.00252	0.00087
December	*0.0000010*	0.00308	0.00187
KZ-15			
January	*0.0000010*	0.00444	0.00737
February	*0.0000010*	0.00600	0.00854
March	*0.0000010*	0.00555	0.00853
April	*0.0000010*	0.00472	0.00458
May	*0.0000010*	0.000879	0.00273
June	*0.0000010*	0.001110	0.00273
July	*0.0000010*	0.00114	0.002085
August	*0.0000010*	0.00164	*0.0025*
September	*0.0000010*	0.00143	0.00224
October	*0.0000010*	0.00229	0.00213
November	*0.0000010*	0.00321	0.00459
December	*0.0000010*	0.00385	0.00636

APPENDIX A: Median Monthly Baseline Surface Water Quality

	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus, total-colourimetric	Fluoride	Chloride	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-16														
January	267	41.5	0.27	*0.0010*	0.023	0.0026	0.082	0.73	*0.00025*	*0.00025*	0.00114	0.000023	0.000195	0.000038
February	290	45.5	0.274	*0.0010*	0.015	*0.0010*	0.08	0.64	*0.00025*	*0.00025*	0.00332	0.000024	0.000199	0.000041
March	300	42.4	0.259	*0.0010*	0.014	0.00260	0.091	0.72	*0.00025*	0.00025	0.00199	0.000021	0.00018	0.0000338
April	254.0	36.8	0.207	0.00175	0.0126	0.0025	0.087	0.51	0.000375	0.000375	0.00166	*0.000010*	0.000254	0.0000260
May	85.2	11.6	0.04	*0.0010*	0.016	0.0055	0.044	0.67	0.00068	0.00072	0.015	0.0000165	0.000292	0.000019
June	90.4	14.4	0.0252	*0.0010*	0.0063	0.0036	0.054	0.610	0.00063	0.00063	0.01	0.000022	0.000234	0.0000131
July	127.5	19.8	0.0139	*0.0010*	0.0117	0.00125	0.053	*0.25*	0.000375	0.00075	0.00494	*0.000010*	0.000246	0.0000146
August	132	21	0.0248	*0.0025*	0.008	0.0032	0.052	*0.25*	*0.0005*	*0.0005*	0.007	0.000022	0.000322	0.0000218
September	135	21.7	0.06	*0.0010*	0.006	*0.0015*	0.054	*0.25*	0.00058	*0.0005*	0.00362	*0.000010*	0.000212	0.000015
October	164.0	27.7	0.172	*0.0010*	0.0111	0.00245	0.057	0.410	0.000540	0.000440	0.00311	*0.000010*	0.000304	0.000016
November	222	33	0.24	*0.0010*	0.005	*0.0010*	0.072	0.75	*0.00025*	*0.00025*	0.00268	0.000022	0.000201	0.000022
December	263	36.6	0.255	*0.0010*	*0.0025*	*0.0010*	0.073	0.54	*0.00025*	*0.00025*	0.0018	*0.000010*	0.00019	0.0000248
KZ-21														
January	359	39.4	0.197	*0.0010*	0.15	0.0131	0.2	0.6	*0.00025*	*0.00025*	0.0072	0.000032	0.00258	0.0000326
February	344	42.5	0.203	*0.0010*	0.14	0.0149	0.23	1.1	*0.00025*	*0.00025*	0.00623	0.000035	0.00272	0.0000238
March	376.0	43.9	0.218	0.00100	0.099	0.0229	0.22	1.1	0.000590	0.00059	0.00784	0.000043	0.00434	0.00002
April	306	42.6	0.0992	0.0027	0.0586	0.0250	0.2	1.1	0.00062	0.000535	0.0093	0.000071	0.00322	0.0000173
May	132	21.4	*0.01*	0.00215	0.0147	0.0267	0.115	0.94	0.0008	0.00083	0.0328	0.000102	0.00373	0.000019
June	174	26.3	0.0039	*0.0010*	0.011	0.017	0.15	0.685	0.00069	0.00063	0.0264	0.000133	0.00224	0.000013
July	228	39.0	0.00330	0.00175	0.0152	0.0202	0.16	0.76	0.00075	0.000760	0.0401	0.000205	0.00284	0.0000224
August	240	35.7	*0.01*	*0.0025*	0.006	0.0129	0.13	0.56	*0.0005*	*0.0005*	0.012	0.00014	0.00264	0.0000128
September	229	38.5	*0.01*	*0.0010*	0.005	0.009	0.15	0.8	0.00056	*0.0005*	0.014	0.000143	0.00219	0.000011
October	240	42	0.0122	*0.0010*	0.022	0.0144	0.15	0.7	0.00057	*0.00025*	0.0128	0.00009	0.0028	0.000013
November	279	42.8	0.0916	0.0026	0.0585	0.012	0.19	0.81	0.00059	*0.00025*	0.00329	0.000057	0.00119	0.000011
December	336	43.7	0.125	0.0021	0.097	0.01	0.19	1.3	0.0006	*0.00025*	0.00736	0.000033	0.00162	0.000018
KZ-22														
January	339	42.8	0.223	*0.0010*	0.069	0.0064	0.16	0.83	*0.00025*	*0.00025*	0.00571	0.000031	0.00163	0.0000234
February	355	47.5	0.254	*0.0010*	0.094	0.0092	0.17	0.85	*0.00025*	*0.00025*	0.00373	0.000034	0.0017	0.000022
March	345.0	50.3	0.247	0.00100	0.061	0.0083	0.18	0.73	0.000570	0.00051	0.00462	0.00003	0.00304	0.000021
April	277	42.9	0.1056	0.00175	0.0451	0.0152	0.16	0.75	0.00053	0.000515	0.00566	0.000055	0.00218	0.0000205
May	117.0	18.00	0.0160	*0.0010*	0.0130	0.0151	0.084	0.845	0.00078	0.00074	0.0270	0.000069	0.00197	0.0000260
June	141	23.2	0.0112	*0.0010*	0.018	0.0097	0.098	0.700	0.00066	0.00063	0.0123	0.000082	0.00117	0.000015
July	188	32.7	0.0074	*0.0010*	0.023	0.0185	0.12	0.5	0.00078	0.00091	0.0195	0.000119	0.00175	0.0000268
August	179.5	31.0	0.0148	*0.0010*	0.0136	0.0087	0.096	*0.25*	0.000375	0.000375	0.0198	0.000097	0.00136	0.0000685
September	185.0	33.0	0.0254	*0.0010*	0.00375	0.0060	0.11	0.74	0.000665	0.00071	0.01090	0.00007	0.00126	0.000020
October	220	35.6	0.0772	*0.0010*	0.054	0.0063	0.11	0.67	0.0005	*0.00025*	0.0102	0.000052	0.00143	0.000019
November	264	40.6	0.131	*0.0010*	0.044	0.0049	0.14	0.63	0.00057	0.00051	0.00519	0.000047	0.00113	0.000017
December	308	46.8	0.184	*0.0010*	0.0438	0.0066	0.14	0.67	0.00057	*0.00025*	0.00459	0.000036	0.00105	0.000022

APPENDIX A

	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-16													
January	78.6	0.000031	0.000257	0.0122	*0.0000025*	0.0121	0.000749	*0.0000025*	0.0016	*0.0000010*	0.00301	0.00193	1.4
February	86.1	0.000038	0.000324	0.0199	0.0000407	0.0141	0.000849	*0.0000025*	0.00172	*0.0000010*	0.00313	0.00176	0.91
March	90.2	0.000051	0.000184	0.0159	0.000007	0.0213	0.000928	*0.0000025*	0.00173	*0.0000010*	0.00283	0.00132	0.89
April	74.3	0.0000753	0.000244	0.0324	0.00000715	0.0224	0.001	*0.0000025*	0.00128	*0.0000010*	0.00268	0.00103	1.46
May	25.9	0.000036	0.00138	0.0677	*0.000025*	0.0094	0.000622	*0.000005*	0.000359	0.00000155	0.000577	0.00109	4.28
June	28.8	0.000024	0.0008	0.019	0.000011	0.0029	0.000497	*0.0000025*	0.000327	*0.0000010*	0.000614	0.0006	1.64
July	40.8	0.0000211	0.000480	0.0161	0.00001250	0.00350	0.000339	*0.0000025*	0.000408	*0.0000010*	0.000704	0.00080	2.2
August	43	*0.0002*	0.0005	0.011	0.00007500	0.0027	0.000426	*0.0000025*	0.000529	*0.0000010*	0.00122	0.002	2.33
September	43.1	0.000026	0.000416	0.013	0.000007	0.0032	0.000408	*0.0000025*	0.000454	*0.0000010*	0.001	0.0007	1.5
October	51.6	0.000027	0.000298	0.0197	0.00000825	0.00686	0.000322	*0.0000025*	0.000972	*0.0000010*	0.00171	0.00062	1.30
November	68	0.000026	0.000246	0.0179	0.000058	0.00916	0.000461	*0.0000025*	0.00126	*0.0000010*	0.0024	0.00077	0.99
December	78	0.000031	0.000236	0.014	0.000007	0.00996	0.000639	*0.0000025*	0.00136	*0.0000010*	0.00265	0.00097	1.58
KZ-21													
January	88.7	0.000318	0.000272	0.804	0.000049	0.238	0.00273	*0.0000025*	0.000593	*0.0000010*	0.00326	0.00225	2.38
February	84.3	0.000316	0.000232	0.743	0.000069	0.267	0.00264	*0.0000025*	0.000544	*0.0000010*	0.00307	0.00244	1.7
March	92.2	0.000279	0.000233	1.47	0.0000739	0.22	0.00272	*0.0000025*	0.000519	*0.0000010*	0.00305	0.00334	3.02
April	72.8	0.000202	0.00046	1.04	0.0000360	0.175	0.00234	*0.000005*	0.000275	*0.0000010*	0.00296	0.0024	6.21
May	32.8	0.000149	0.001	0.811	*0.00005*	0.11	0.00313	*0.000005*	0.000344	0.00000170	0.001470	0.002	7.44
June	45	0.000093	0.00108	0.42	0.00003	0.036	0.003	*0.000005*	0.00041	0.00000150	0.00213	0.0021	6.80
July	55.6	0.000202	0.000964	0.722	0.0000755	0.0672	0.00406	*0.000005*	0.000538	*0.0000010*	0.00224	0.00331	10.3
August	61.5	*0.0002*	0.0006	0.484	0.0000527	0.0553	0.00287	0.00000375	0.000433	*0.0000010*	0.0024	*0.0025*	10
September	57	0.000137	0.000688	0.43	0.000041	0.0572	0.0028	*0.0000025*	0.00065	*0.0000010*	0.00262	0.0028	6.9
October	58.7	0.000116	0.0006	0.581	0.000023	0.0906	0.00208	*0.0000025*	0.000683	*0.0000010*	0.00323	0.0019	4.74
November	70.2	0.000104	0.000273	0.23	0.000005	0.113	0.00207	*0.0000025*	0.000733	*0.0000010*	0.00315	0.00121	3.27
December	85	0.000171	0.000217	0.395	0.0000093	0.204	0.00222	*0.0000025*	0.000697	*0.0000010*	0.00293	0.00145	3.17
KZ-22													
January	89.3	0.000166	0.000246	0.473	0.000024	0.111	0.0015	*0.0000025*	0.00114	*0.0000010*	0.00399	0.0022	1.87
February	94.8	0.0002	0.000283	0.56	0.000023	0.138	0.00186	*0.0000025*	0.000969	*0.0000010*	0.00372	0.00216	1.37
March	92.3	0.000197	0.000263	1.01	0.000036	0.141	0.0016	*0.0000025*	0.00106	*0.0000010*	0.00420	0.00209	1.39
April	71.8	0.000156	0.000288	0.659	0.0000200	0.1215	0.00173	*0.0000025*	0.000736	*0.0000010*	0.00392	0.00156	3.36
May	32.0	0.000088	0.00119	0.398	0.0000660	0.0472	0.00182	*0.000005*	0.000437	*0.0000010*	0.001195	0.0028	5.24
June	38.5	0.000059	0.00086	0.196	0.000037	0.0202	0.00159	*0.000005*	0.000462	*0.0000010*	0.00170	0.0018	4.74
July	50.5	0.000101	0.00096	0.472	0.0000279	0.0514	0.00205	*0.000005*	0.000503	*0.0000010*	0.00181	0.00629	6.29
August	48.5	0.0001465	0.00102	0.211	0.0001370	0.0308	0.002	0.00000375	0.000498	*0.0000010*	0.00194	0.00266	5.14
September	50.3	0.000080	0.000504	0.207	0.000038	0.0382	0.00146	*0.0000025*	0.000652	*0.0000010*	0.00209	0.00184	4.5
October	59.7	0.000079	0.000422	0.243	0.000017	0.0504	0.00125	*0.0000025*	0.001	*0.0000010*	0.00294	0.00164	2.88
November	70.2	0.000085	0.000285	0.255	0.000024	0.0662	0.00115	*0.0000025*	0.000968	*0.0000010*	0.00341	0.00196	2.2
December	82.1	0.000099	0.00026	0.188	0.0000111	0.0871	0.00137	*0.0000025*	0.00112	*0.0000010*	0.00361	0.00206	1.91

APPENDIX A

	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-16													
January	0.00179	0.000022	0.000176	0.000027	81.3	0.00003	0.000239	0.0037	0.0000222	0.0112	0.000718	*0.0000025*	0.00164
February	0.00176	0.000027	0.00016	0.000039	86.7	0.000018	0.00029	0.0028	0.000006	0.00731	0.000935	*0.0000025*	0.00166
March	0.00109	0.000022	0.000173	0.0000358	90.4	0.000048	0.000189	0.0034	0.0000061	0.0207	0.000923	*0.0000025*	0.00166
April	0.00102	0.000027	0.000190	0.0000260	80.6	0.0000596	0.000245	0.0114	*0.0000025*	0.0198	0.00101	*0.0000025*	0.00134
May	0.0138	*0.000010*	0.000238	0.000016	25.9	0.000024	0.001280	0.0223	0.000009	0.00312	0.000637	*0.0000025*	0.000365
June	0.00538	*0.000010*	0.000233	0.000013	26.4	0.000018	0.000776	0.009	*0.0000025*	0.00185	0.000441	*0.0000025*	0.00034
July	0.00343	0.000021	0.000221	0.000012	41.2	0.0000146	0.000382	0.0052	*0.0000025*	0.00170	0.000344	*0.0000025*	0.000389
August	*0.003*	0.00002	0.000320	0.0000198	42	*0.0002*	0.000442	0.007	0.00007500	0.002	0.000477	*0.0000025*	0.000498
September	0.00546	*0.000010*	0.000202	0.000014	41	0.000016	0.000427	0.005	*0.0000025*	0.0028	0.000344	*0.0000025*	0.000401
October	0.00120	*0.000010*	0.000312	0.000014	52.1	0.000020	0.000282	0.0049	*0.0000025*	0.00477	0.000272	*0.0000025*	0.001044
November	0.00099	*0.000010*	0.000206	0.000022	66.9	0.000023	0.000238	0.0046	0.000005	0.00819	0.00048	*0.0000025*	0.00123
December	0.00113	0.00002	0.000201	0.000024	82.2	0.0000274	0.000221	0.0073	0.000017	0.0104	0.000669	*0.0000025*	0.00143
KZ-21													
January	0.00129	0.000034	0.000606	0.000016	90.1	0.000205	0.000209	0.0295	0.0000109	0.223	0.00229	*0.0000025*	0.000555
February	0.00089	0.000028	0.000614	0.000012	88.8	0.000268	0.000194	0.0555	*0.0000025*	0.25	0.00239	*0.0000025*	0.000567
March	0.00137	0.000039	0.000535	0.000017	85.8	0.000232	0.000224	0.0479	0.000008	0.223	0.00265	*0.0000025*	0.000493
April	0.00183	0.000069	0.00139	0.000012	77.2	0.0001790	0.000342	0.1986	0.00000475	0.150	0.00281	*0.0000025*	0.000336
May	0.00619	0.000093	0.00168	0.00001	32.5	0.000078	0.0007	0.273	0.00001	0.0303	0.0025	*0.0000025*	0.000322
June	0.00599	0.000120	0.00151	0.000006	41	0.000066	0.000627	0.19	0.000009	0.0177	0.00267	*0.0000025*	0.000414
July	0.00625	0.000169	0.00163	0.0000087	56.9	0.0000705	0.000749	0.161	0.00001225	0.0207	0.00289	*0.0000025*	0.000545
August	0.005	0.000129	0.001710	0.000006	58.6	*0.0002*	0.000490	0.1	*0.00005*	0.032	0.002	*0.0000025*	0.000457
September	0.0105	0.000132	0.00153	*0.000005*	58.8	0.00009	0.0006	0.115	*0.0000025*	0.035	0.0025	*0.0000025*	0.000624
October	0.00179	0.000087	0.00141	0.000007	60.8	0.00008	0.000287	0.0784	*0.0000025*	0.0658	0.00193	*0.0000025*	0.000716
November	0.00142	0.000058	0.000707	0.00001	71.2	0.000103	0.000326	0.0278	0.000005	0.11	0.00208	*0.0000025*	0.0007
December	0.00119	0.000034	0.000676	0.000021	82.4	0.000151	0.000266	0.076	0.0000091	0.204	0.0022	*0.0000025*	0.000653
KZ-22													
January	0.00171	0.00004	0.000691	0.000016	88.1	0.000102	0.000272	0.0358	0.000006	0.0915	0.00142	*0.0000025*	0.00114
February	0.0014	0.000028	0.000685	0.000021	86.7	0.000145	0.000269	0.0734	0.000006	0.113	0.00177	*0.0000025*	0.000994
March	0.00083	0.000038	0.000553	0.00002	89.8	0.000176	0.000206	0.0317	0.0000025	0.137	0.00157	*0.0000025*	0.00104
April	0.00134	0.000038	0.001072	0.0000119	74.4	0.0001325	0.000254	0.1031	*0.0000025*	0.1102	0.00166	*0.0000025*	0.000809
May	0.01148	0.000058	0.00105	0.0000160	31.7	0.0000580	0.000956	0.1640	0.00001440	0.02180	0.00166	*0.0000025*	0.000394
June	0.00490	0.000080	0.000997	0.0000098	38.2	0.000041	0.000666	0.113	0.00001	0.00822	0.00148	*0.0000025*	0.000472
July	0.00456	0.000108	0.00114	0.0000114	52.1	0.000043	0.000687	0.0897	*0.0000025*	0.0151	0.00171	*0.0000025*	0.000524
August	0.00475	0.000082	0.00106	0.0000136	50.5	0.000049	0.000622	0.0697	0.00000675	0.007800	0.00158	*0.0000025*	0.000467
September	0.00348	0.000071	0.000929	0.000014	51.2	0.000055	0.000518	0.0643	0.00000375	0.01344	0.00136	*0.0000025*	0.000617
October	0.00134	0.000056	0.000989	0.000011	59.7	0.000044	0.000334	0.0532	*0.0000025*	0.027	0.000985	*0.0000025*	0.000936
November	0.00168	0.000047	0.000638	0.000014	70.4	0.000058	0.000332	0.0281	0.000008	0.0486	0.00181	*0.0000025*	0.000994
December	0.00076	0.000037	0.000665	0.000018	79.8	0.0000853	0.000237	0.0386	0.000007	0.0821	0.00126	*0.0000025*	0.00113

APPENDIX A

	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
	mg/L	mg/L	mg/L
KZ-16			
January	*0.0000010*	0.00296	0.00159
February	*0.0000010*	0.00308	0.00177
March	*0.0000010*	0.00281	0.00139
April	*0.0000010*	0.00291	0.00110
May	*0.0000010*	0.000545	0.00066
June	*0.0000010*	0.000576	0.00062
July	*0.0000010*	0.000666	0.000485
August	*0.0000010*	0.000905	0.002
September	*0.0000010*	0.000974	0.00081
October	*0.0000010*	0.00172	0.00032
November	*0.0000010*	0.00226	0.00078
December	*0.0000010*	0.00264	0.00095
KZ-21			
January	*0.0000010*	0.00321	0.00203
February	*0.0000010*	0.00329	0.00184
March	*0.0000010*	0.00308	0.00383
April	*0.0000010*	0.00314	0.00134
May	*0.0000010*	0.001420	0.00073
June	*0.0000010*	0.00217	0.0009
July	*0.0000010*	0.00221	0.00206
August	*0.0000010*	0.00237	0.00195
September	*0.0000010*	0.00272	0.00161
October	*0.0000010*	0.0033	0.0005
November	*0.0000010*	0.0033	0.00125
December	*0.0000010*	0.00306	0.00175
KZ-22			
January	*0.0000010*	0.00416	0.00203
February	*0.0000010*	0.004	0.00191
March	*0.0000010*	0.00413	0.00206
April	*0.0000010*	0.00399	0.00129
May	*0.0000010*	0.001180	0.00146
June	*0.0000010*	0.00168	0.00151
July	*0.0000010*	0.00183	0.00111
August	*0.0000010*	0.00198	0.00132
September	*0.0000010*	0.00211	0.00111
October	*0.0000010*	0.00286	0.00076
November	*0.0000010*	0.00333	0.00179
December	*0.0000010*	0.00368	0.00171

APPENDIX A: Median Monthly Baseline Surface Water Quality

	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus, total-colourimetric	Fluoride	Chloride	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-26														
January	296.5	45.1	0.254	*0.0010*	0.034	0.0076	0.12	0.625	*0.00025*	*0.00025*	0.00660	0.000085	0.000462	0.0000260
February	309	48	0.289	*0.0010*	0.039	0.0052	0.12	0.75	*0.00025*	*0.00025*	0.0173	0.000071	0.000537	0.000022
March	370.0	54.8	0.240	*0.0010*	0.022	0.0039	0.14	0.82	*0.00065*	0.00025	0.00158	0.00006	0.000498	0.000015
April	294.0	45.2	0.230	*0.0010*	0.00720	0.0052	0.13	0.57	0.00055	0.000375	0.00930	0.000067	0.000674	0.0000136
May	126	20.4	0.03	*0.0010*	0.01	0.0187	0.085	1.05	0.0007	0.00062	0.0414	0.000074	0.00131	0.000021
June	157	23.5	0.0127	*0.0010*	0.019	0.01	0.098	0.85	0.00067	*0.0005*	0.11	0.000124	0.00119	0.00004
July	211.5	32.0	0.0130	0.00175	0.013	0.0196	0.11	0.55	0.000550	0.00061	0.0461	0.000159	0.001225	0.0000200
August	210	29.9	*0.01*	*0.0025*	0.0054	0.0128	0.092	*0.25*	*0.0005*	*0.0005*	0.0307	0.000125	0.000584	0.0000140
September	200	31.1	0.03	*0.0010*	0.009	0.006	0.1	0.88	0.00051	0.00053	0.0283	0.000102	0.00114	0.0000187
October	220	35.6	0.0772	*0.0010*	0.054	0.0063	0.11	0.67	0.0005	*0.00025*	0.0102	0.000052	0.00143	0.000019
November	253	41.3	0.148	*0.0010*	0.007	0.0023	0.12	0.54	0.00056	0.00056	0.00537	0.000069	0.000509	0.000011
December	298	43.2	0.2	*0.0010*	0.01	0.0044	0.11	0.69	0.00054	*0.00025*	0.0266	0.000071	0.000661	0.0000212
KZ-6														
January	182	23.9	0.178	*0.0010*	0.0117	0.0037	0.066	*0.25*	*0.00025*	*0.00025*	0.00869	*0.000010*	0.000086	0.000039
February	171.5	25.9	0.176	*0.0010*	0.020	0.0140	0.074	0.70	0.000435	0.000550	0.00676	0.0000170	0.000077	0.000110
March	162.5	24.2	0.188	*0.0010*	0.02	0.0026	0.074	0.5	*0.00041*	*0.00025*	0.00294	*0.000019*	0.000092	0.000088
April	167	20.6	0.2	*0.0010*	0.0069	0.0025	0.068	1.00	*0.0005*	*0.00025*	0.00809	0.0000320	0.000114	0.00003
May	59.4	11.5	0.0209	*0.0010*	*0.0025*	0.0212	0.043	0.84	0.00064	0.00052	0.0525	0.0000175	0.000109	0.000023
June	96.7	14.7	0.0107	*0.0010*	0.01	0.0052	0.045	0.58	0.00073	0.00059	0.0271	*0.000010*	0.000105	0.000029
July	132	18.9	0.0094	*0.0010*	0.018	0.0032	0.056	0.380	*0.00025*	0.000490	0.0159	0.0000300	0.000068	0.0000226
August	148.5	16.8	*0.01*	*0.0010*	0.01	0.0028	0.055	0.615	0.00057	*0.0005*	0.01170	0.0000195	0.000101	0.0000174
September	150	21.3	0.04	*0.0010*	0.005	*0.0015*	0.064	0.64	*0.0005*	*0.0005*	0.0051	*0.000010*	0.000067	0.000018
October	150.0	22.4	0.0762	*0.0010*	0.00675	0.0033	0.062	0.81	*0.00025*	*0.00025*	0.00400	*0.000010*	0.000075	0.000014
November	170.0	24.1	0.146	*0.0010*	0.01375	0.00820	0.07	0.53	0.000380	0.000435	0.00254	*0.000010*	0.000066	0.000012
December	173.5	23.6	0.157	*0.0010*	0.00830	0.0029	0.068	*0.25*	*0.00025*	*0.00025*	0.00511	*0.000010*	0.000077	0.000021
KZ-18														
January	218.0	22.8	0.237	*0.0010*	0.00975	0.0552	0.074	0.495	*0.00025*	*0.00025*	0.01847	0.000093	0.000795	0.0000552
February	224	23.6	0.246	*0.0010*	0.013	0.0671	0.084	*0.25*	*0.00025*	*0.00025*	0.0183	0.000041	0.00107	0.000066
March	220.5	22.7	0.246	*0.0010*	0.016	0.0647	0.088	0.405	*0.000575*	*0.00047*	0.01164	0.000038	0.00113	0.0000483
April	210.0	19.4	0.227	0.00175	0.024	0.0387	0.089	0.74	0.000375	0.000375	0.0134	0.000076	0.00112	0.000042
May	64.6	1.80	0.0296	0.00550	0.0276	0.0341	0.034	1.2	0.00130	0.00114	0.1828	0.0000180	0.000337	0.0000468
June	162.0	14.60	0.0936	*0.0010*	0.0205	0.0357	0.055	0.62	0.00078	0.00064	0.0324	0.000038	0.000548	0.000033
July	147	22.2	0.0168	*0.0010*	0.015	0.0088	0.051	*0.25*	0.00062	0.0015	0.0217	*0.000010*	0.000244	0.0000229
August	187	17.9	0.0395	*0.0010*	0.014	0.0206	0.056	0.485	*0.0005*	*0.00025*	0.0124	0.000028	0.000468	0.000072
September	192	22.1	0.0601	*0.0010*	*0.0025*	0.0223	0.062	0.8	*0.0005*	0.00052	0.0108	0.000024	0.00034	0.000024
October	184	25.5	0.138	*0.0010*	0.0098	0.0289	0.063	0.85	*0.00025*	*0.00025*	0.0091	0.0000215	0.000411	0.000022
November	194.0	23.8	0.190	*0.0010*	0.00675	0.0339	0.068	0.485	0.000480	0.000490	0.00811	0.000031	0.000552	0.000034
December	223.0	23.9	0.220	*0.0010*	0.01075	0.0486	0.072	0.70	0.000500	*0.00025*	0.0150	0.000072	0.000788	0.0000484

APPENDIX A

	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-26													
January	77.4	0.0000234	0.000628	0.0506	0.0007404	0.0108	0.000813	0.00000425	0.000969	*0.0000010*	0.00356	0.00394	1.62
February	82.3	0.000043	0.00053	0.154	0.000208	0.0112	0.000896	*0.0000025*	0.000938	*0.0000010*	0.00355	0.0027	1.63
March	97.1	0.0000182	0.000339	0.0158	0.000019	0.00680	0.000691	*0.0000025*	0.0011	*0.0000010*	0.00376	0.00138	1.92
April	78.4	0.0000370	0.000335	0.122	0.0000220	0.00874	0.00084	*0.0000025*	0.000857	*0.0000010*	0.00363	*0.0005*	1.84
May	35	0.000096	0.00133	0.311	0.000092	0.021	0.00187	*0.000005*	0.000401	0.00000210	0.001305	0.0023	5.49
June	43	*0.0002*	0.00162	0.309	0.000278	0.0174	0.002	0.0000133	0.000427	0.00000365	0.00167	0.0036	4.42
July	56.0	0.000160	0.001042	0.222	0.0001765	0.0161	0.00178	*0.000005*	0.000486	0.000002	0.0019	0.00128	6.5
August	57.6	0.000208	0.000900	0.174	0.000220	0.009	0.00169	*0.000005*	0.000482	0.0000028	0.00195	*0.0025*	5.08
September	54	0.000178	0.001	0.18	0.000058	0.0245	0.00165	*0.000005*	0.000569	*0.0000010*	0.00204	0.002	5.53
October	59.7	0.000079	0.000422	0.243	0.000017	0.0504	0.00125	*0.0000025*	0.001	*0.0000010*	0.00294	0.00164	2.88
November	66.9	0.000022	0.00047	0.0425	0.000013	0.00487	0.000834	*0.0000025*	0.000912	*0.0000010*	0.00301	0.00069	2.46
December	80.5	0.0000985	0.000587	0.0918	0.0000947	0.0223	0.00112	*0.0000025*	0.00108	*0.0000010*	0.00327	0.00182	2.28
KZ-6													
January	60.2	0.000018	0.000216	0.0888	0.0000567	0.0145	0.000199	*0.0000025*	0.00121	*0.0000010*	0.00131	0.00171	1.27
February	56.4	0.0000159	0.000329	0.0241	0.0000536	0.00358	0.000208	*0.0000025*	0.00150	*0.0000010*	0.00130	0.00438	0.720
March	53.2	0.0000086	0.000218	0.0118	0.0000897	0.00194	0.00015	*0.0000025*	0.0015	*0.0000010*	0.00126	0.00518	0.62
April	55.7	0.000027	0.0005	0.0339	0.000045	0.0059	0.000339	*0.000005*	0.00122	*0.0000010*	0.00132	0.00101	2.19
May	20	0.000046	0.00089	0.11	0.000038	0.0118	0.00063	*0.000005*	0.000446	0.000002	0.000446	0.0012	6.68
June	31.8	0.000053	0.000533	0.0613	0.000128	0.00531	*0.0005*	*0.0000025*	0.00034	0.00000150	0.000369	0.0014	3.07
July	45.1	0.0000267	0.00062	0.06	0.0000373	0.00476	0.000263	0.00001375	0.000412	0.00000300	0.000611	*0.0025*	2.7
August	50.2	0.00002	0.000346	0.0692	0.000016	0.00578	0.000315	*0.0000025*	0.000292	*0.0000010*	0.000543	0.00094	2.94
September	49.7	0.000015	0.000214	0.0293	0.000008	0.00174	0.000195	*0.0000025*	0.000619	*0.0000010*	0.000792	0.00058	1.95
October	49.7	0.000012	0.000158	0.0413	0.00000675	0.00628	0.000171	*0.0000025*	0.000704	*0.0000010*	0.000849	0.00056	1.48
November	56.4	0.000007	0.000143	0.0183	0.00013225	0.001451	0.000139	*0.0000025*	0.001020	*0.0000010*	0.001067	0.00034	1.00
December	58.8	0.00001	0.000107	0.0544	0.000014	0.004710	0.000157	*0.0000025*	0.00108	*0.0000010*	0.00111	0.00063	1.29
KZ-18													
January	56.4	0.0000353	0.000253	0.076	0.000251	0.0164	0.000367	0.00000375	0.00138	*0.0000010*	0.00306	0.00228	1.38
February	57.9	0.0000518	0.000192	0.102	0.0000308	0.0188	0.000455	*0.0000025*	0.00141	*0.0000010*	0.0032	0.0023	*0.25*
March	56	0.00005	0.000098	0.1112	0.0000178	0.0224	0.000422	*0.0000025*	0.00154	*0.0000010*	0.0032	0.00205	*0.25*
April	55.2	0.000131	0.00016	0.080	0.000262	0.0142	0.00050	*0.000005*	0.00112	*0.0000010*	0.00326	0.005	1.1
May	16.8	0.000093	0.00123	0.088	0.000028	0.00561	0.00202	*0.000005*	0.000348	0.00000175	0.000558	0.0031	16.40
June	42.2	0.000044	0.000510	0.0386	0.0000215	0.00626	0.000710	0.00000375	0.000706	*0.0000010*	0.00183	0.00169	2.99
July	38.1	0.0000188	0.000345	0.0136	0.0000071	0.00154	0.000636	*0.0000025*	0.00055	*0.0000010*	0.00108	0.00093	3.7
August	49.6	0.000021	0.000325	0.015	0.000132	0.00165	0.000584	*0.0000025*	0.000729	*0.0000010*	0.00148	0.00376	2.66
September	49.7	0.000013	0.000182	0.009	0.000006	0.00342	0.000373	*0.0000025*	0.000996	*0.0000010*	0.00199	0.00133	1.81
October	47.6	0.000016	0.000170	0.0115	0.00000575	0.00443	0.000357	*0.0000025*	0.00113	*0.0000010*	0.00198	0.00096	1.59
November	51.4	0.000015	0.000122	0.0204	0.00000725	0.00630	0.000334	*0.0000025*	0.00138	*0.0000010*	0.00254	0.00102	0.83
December	58.9	0.0000278	0.000188	0.0434	0.0000446	0.0116	0.000375	*0.0000025*	0.00137	0.00000250	0.00281	0.00172	1.67

APPENDIX A

	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-26													
January	0.00238	0.000068	0.000330	0.0000164	81.6	0.0000113	0.000429	0.0077	0.0000714	0.0068	0.000717	*0.0000025*	0.001017
February	0.00112	0.000065	0.000402	0.0000176	83.8	0.0000149	0.00041	0.0053	0.0000201	0.0039	0.000728	*0.0000025*	0.000905
March	0.00115	0.00007	0.000427	0.000017	89.6	0.000014	0.000332	0.0029	0.0000174	0.00459	0.000621	*0.0000025*	0.00101
April	0.00125	0.000055	0.000476	0.0000130	82	0.0000230	0.000367	0.0136	*0.0000025*	0.00436	0.000816	*0.0000025*	0.000861
May	0.00908	0.000066	0.000775	0.000011	35.5	0.000034	0.000995	0.101	0.000015	0.00401	0.00126	*0.0000025*	0.000396
June	0.00664	0.000094	0.000749	0.000011	38	0.000032	0.00086	0.05	0.000023	0.0024	0.00123	*0.0000025*	0.000403
July	0.00588	0.000119	0.000884	0.0000093	56.3	0.000050	0.000712	0.0433	0.00002400	0.00574	0.00136	*0.0000025*	0.000476
August	0.004	0.000097	0.000606	0.0000090	55	*0.0002*	0.000631	0.0335	*0.00005*	0.0037	0.000856	*0.0000025*	0.000454
September	0.00583	0.000092	0.000789	0.000011	53.2	0.000045	0.000771	0.036	0.000009	0.0046	0.00111	*0.0000025*	0.000543
October	0.00134	0.000056	0.000989	0.000011	59.7	0.000044	0.000334	0.0532	*0.0000025*	0.027	0.000985	*0.0000025*	0.000936
November	0.00253	0.000073	0.000413	0.00001	69	0.000013	0.000414	0.0068	0.000007	0.00236	0.000792	*0.0000025*	0.00092
December	0.00089	0.000063	0.000411	0.0000178	78.7	0.000011	0.000416	0.0079	0.0000093	0.00432	0.000742	*0.0000025*	0.00102
KZ-6													
January	0.00209	*0.000010*	0.000094	0.0000212	57.2	0.0000066	0.000195	0.0034	0.000016	0.000315	0.000139	*0.0000025*	0.00116
February	0.00200	0.0000165	0.000083	0.0000521	57.4	0.0000154	0.000296	0.002	0.00002130	0.002613	0.000206	*0.0000025*	0.00151
March													
April	0.00702	*0.000010*	0.000049	0.000013	55.7	0.000018	0.0005	0.0089	*0.0000025*	0.0006	0.000298	*0.0000025*	0.00121
May	0.021	*0.000010*	0.0001	0.000017	19.3	0.00003	0.000856	0.0234	0.000011	0.00284	*0.0005*	0.000005	0.000403
June	0.011	*0.000010*	0.000086	0.000011	31.9	0.000019	0.0005	0.0258	0.000009	0.000949	0.000412	*0.0000025*	0.000395
July	0.00591	*0.000010*	0.000075	0.000011	45.5	0.000011	0.000251	0.0131	0.00000375	0.0006725	0.000224	*0.0000025*	0.000459
August	0.00752	0.0000230	0.00008	0.0000118	49.8	0.000015	0.000372	0.0182	*0.0000025*	0.001470	0.00027	*0.0000025*	0.000276
September	0.00347	*0.000010*	0.000074	0.000016	50.6	0.000011	0.000199	0.015	*0.0000025*	0.0011	0.000189	*0.0000025*	0.000551
October	0.00216	*0.000010*	0.000068	0.000011	46.6	0.000008	0.000134	0.0101	*0.0000025*	0.000606	0.000144	*0.0000025*	0.000626
November	0.00197	*0.000010*	0.000074	0.000014	53.2	0.000008	0.000147	0.0085	0.000016	0.000341	0.000151	*0.0000025*	0.000921
December	0.0014	*0.000010*	0.000066	0.000015	58.4	0.000006	0.000105	0.0083	*0.0000025*	0.000653	0.000134	*0.0000025*	0.00111
KZ-18													
January	0.00330	0.000043	0.000842	0.0000436	54.4	0.0000236	0.000154	0.0252	0.0001964	0.0117	0.000336	*0.0000025*	0.00136
February	0.00238	0.000037	0.000985	0.0000484	56.7	0.0000336	0.000103	0.0433	*0.0000025*	0.0158	0.000326	*0.0000025*	0.00142
March	0.00232	0.000046	0.00106	0.0000564	59	0.0000418	0.0000995	0.0638	0.0000157	0.0198	0.000366	*0.0000025*	0.00148
April	0.00944	0.000031	0.00075	0.000042	56.2	0.00012	0.000126	0.0450	0.00020125	0.01360	0.000498	0.00000375	0.00080
May	0.1587	0.0000200	0.000311	0.0000370	16.2	0.000076	0.00112	0.0622	0.0000096	0.00399	0.00183	0.00000600	0.000358
June	0.0173	0.000037	0.000525	0.000033	40.8	0.000035	0.000393	0.0226	0.00000425	0.00576	0.000740	*0.0000025*	0.000704
July	0.0176	0.000025	0.000262	0.00002	38	0.000013	0.000348	0.0067	*0.0000025*	0.00133	0.000612	*0.0000025*	0.000593
August	0.012	0.000032	0.000493	0.000023	48.1	0.000014	0.000306	0.0089	0.000041	0.00154	0.000568	*0.0000025*	0.000712
September	0.00694	0.000025	0.000352	0.000021	50.1	0.000006	0.000178	0.0047	*0.0000025*	0.00284	0.000349	*0.0000025*	0.000962
October	0.00563	0.0000190	0.000392	0.000022	47.4	0.000010	0.000111	0.0047	*0.0000025*	0.00325	0.000322	*0.0000025*	0.0011
November	0.00362	0.000076	0.000596	0.000031	52.8	0.000013	0.000133	0.0112	*0.0000025*	0.00586	0.000324	*0.0000025*	0.00132
December	0.00292	0.000035	0.000740	0.0000409	58.0	0.0000184	0.000128	0.0215	0.00000745	0.00946	0.000334	*0.0000025*	0.00138

APPENDIX A

	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
	mg/L	mg/L	mg/L
KZ-26			
January	*0.0000010*	0.00352	0.00417
February	*0.0000010*	0.00361	0.00178
March	*0.0000010*	0.00388	0.00260
April	*0.0000010*	0.00365	0.00061
May	*0.0000010*	0.001310	0.00101
June	*0.0000010*	0.00166	0.00064
July	*0.0000010*	0.00182	0.00052
August	*0.0000010*	0.00191	0.002
September	*0.0000010*	0.00202	0.00081
October	*0.0000010*	0.00286	0.00076
November	*0.0000010*	0.00303	0.00057
December	*0.0000010*	0.00322	0.00125
KZ-6			
January	*0.0000010*	0.00124	0.00083
February	*0.0000010*	0.00132	0.00205
March			
April	*0.0000010*	0.00133	0.00061
May	0.00000150	0.000420	0.00091
June	*0.0000010*	0.000345	0.00046
July	*0.0000010*	0.000600	0.000355
August	*0.0000010*	0.000528	0.00070
September	*0.0000010*	0.000784	0.00041
October	0.00000150	0.000872	0.0003
November	0.00000150	0.00102	0.00076
December	*0.0000010*	0.00116	0.00047
KZ-18			
January	*0.0000010*	0.00308	0.00178
February	*0.0000010*	0.00328	0.00188
March	*0.0000010*	0.00319	0.0021
April	*0.0000010*	0.00316	0.00404
May	0.00000150	0.000523	0.00256
June	*0.0000010*	0.00187	0.00148
July	*0.0000010*	0.00107	0.0011
August	*0.0000010*	0.00147	0.00095
September	*0.0000010*	0.00198	0.00092
October	*0.0000010*	0.00198	0.00076
November	*0.0000010*	0.00253	0.00100
December	*0.0000010*	0.00284	0.00148

APPENDIX A: Median Monthly Baseline Surface Water Quality

	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus, total-colourimetric	Fluoride	Chloride	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-37														
January	205	33	0.197	*0.0010*	0.017	0.0154	0.094	*0.25*	*0.00025*	*0.00025*	0.00706	0.000034	0.000415	0.0000659
February	218	30.9	0.213	*0.0010*	0.037	0.0128	0.1	*0.25*	*0.00025*	*0.00025*	0.0086	0.000028	0.000497	0.0000774
March	222	29.4	0.199	*0.0010*	0.028	0.0082	0.11	0.425	*0.00063*	*0.000435*	0.00632	0.00003	0.000412	0.000064
April	196	31.7	0.187	0.0027	0.03	0.0188	0.096	0.85	0.00059	0.00052	0.0101	0.000048	0.000455	0.000064
May	77.3	7.925	0.0403	0.00550	0.031	0.0306	0.040	0.99	0.00128	0.00124	0.2972	0.000057	0.000792	0.000206
June	89.7	20.6	0.0452	*0.0010*	0.019	0.0086	0.049	0.6	0.00073	0.0006	0.114	0.000068	0.000482	0.00009
July	125	25.8	0.037	*0.0010*	0.015	0.0067	0.054	*0.25*	0.00067	0.00123	0.0568	0.00004	0.000292	0.0000795
August	156	30.8	0.0776	*0.0010*	0.011	0.0058	0.059	*0.25*	0.00068	*0.00025*	0.0308	0.000062	0.00027	0.000078
September	174	32.9	0.111	*0.0010*	*0.0025*	0.0066	0.072	0.68	*0.00025*	*0.00025*	0.0146	0.000043	0.000325	0.000083
October	182	31.2	0.119	*0.0010*	0.028	0.0053	0.071	1.1	*0.00025*	*0.00025*	0.00847	0.000039	0.000317	0.000077
November	181	34.5	0.172	*0.0010*	0.011	0.0094	0.076	0.73	0.00053	*0.00025*	0.00636	0.000036	0.000317	0.000079
December	220	32.6	0.173	*0.0010*	*0.0025*	0.0094	0.081	0.62	0.00051	*0.00025*	0.0076	0.00004	0.000365	0.0000724
North Diversion (Average of KZ-6 and KZ-7)														
January	184	30.95	0.1535	*0.0010*	0.02405	0.0031	0.068	*0.42*	*0.0003325*	*0.000355*	0.040145	0.0000275	0.000444	0.0001655
February	175.25	30.75	0.1595	*0.0010*	0.024	0.00855	0.0735	*0.57*	*0.0003425*	*0.0004*	0.009435	0.0000235	0.000241	0.000134
March	174.25	29.3	0.1665	*0.0010*	0.0213	0.0026	0.0725	0.375	*0.00033*	*0.00025*	0.0079	0.00002725	0.000191	0.00011
April	172.5	25.1	0.14865	0.00175	0.00925	0.0023	0.068	0.725	0.0005	0.00025	0.013045	0.000037	0.000207	0.00005795
May	86.7	15.1	0.03665	0.00128	0.00445	0.0146	0.049	0.97	0.00063	0.000545	0.0556	0.00004175	0.0003655	0.0000965
June	103.85	20.85	0.01035	*0.0010*	0.00625	0.00335	0.0465	0.53	0.000705	0.000595	0.02385	0.000039	0.0002025	0.00005
July	129.5	25.25	0.0101	*0.0010*	0.01505	0.0038	0.054	*0.385*	0.000315	0.00047	0.0193	0.000061	0.000233	0.0001038
August	142.25	22.75	0.0102	*0.0018*	0.007925	0.0049	0.0535	*0.595*	0.000535	*0.0005*	0.01455	0.00004975	0.0001995	0.0000687
September	148.25	27.3	0.04205	*0.0014*	*0.005875*	0.00245	0.059	0.71	*0.000555*	*0.000555*	0.01825	0.000048	0.0001515	0.0001105
October	156.5	29	0.0858	*0.0010*	0.007925	0.00425	0.07	0.6025	*0.0003225*	*0.0003325*	0.0131	0.0000295	0.000216	0.000183
November	171.25	31.2	0.1273	*0.0016*	0.017675	0.0051	0.07	0.39	0.000395	*0.0004425*	0.00807	0.000031	0.000209	0.000161
December	177.75	31.05	0.1455	*0.0010*	*0.0156*	0.00245	0.064	0.375	0.00025	*0.00025*	0.012555	0.000031	0.0002055	0.000122

APPENDIX A

	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-37													
January	64	0.000107	0.000208	0.604	0.0000218	0.0834	0.000484	*0.0000025*	0.00122	*0.0000010*	0.00206	0.0123	0.6
February	70.4	0.00022	0.000205	0.493	0.0000176	0.143	0.000647	*0.0000025*	0.00119	*0.0000010*	0.00202	0.013	1.17
March	70.7	0.000178	0.000167	0.391	0.0000166	0.136	0.000556	*0.0000025*	0.00122	*0.0000010*	0.00196	0.0116	0.715
April	61.7	0.00013	0.000307	0.388	0.000025	0.0957	0.000538	*0.0000025*	0.00105	*0.0000010*	0.00201	0.0113	1.88
May	24.6	0.000344	0.00266	1.10	0.001048	0.0706	0.00188	0.0000080	0.000530	0.0000066	0.000526	0.0358	11.30
June	29.3	0.00017	0.00205	0.407	0.000464	0.0235	0.00105	0.000007	0.000568	0.000004	0.00052	0.0187	3.64
July	40.5	0.00008	0.00107	0.241	0.000374	0.0147	0.00062	*0.000005*	0.00063	*0.0000010*	0.000796	0.0153	3.7
August	50	0.0000634	0.000608	0.2	0.000116	0.0252	0.000402	*0.0000025*	0.00105	*0.0000010*	0.00114	0.0129	2.4
September	54.2	0.000071	0.000395	0.294	0.000051	0.0497	0.000417	*0.0000025*	0.00106	*0.0000010*	0.00154	0.0112	1.58
October	56.5	0.000087	0.000406	0.322	0.000033	0.061	0.000457	*0.0000025*	0.00105	*0.0000010*	0.00143	0.0118	1.31
November	57.3	0.000083	0.000265	0.318	0.000024	0.0635	0.000397	*0.0000025*	0.00121	*0.0000010*	0.00161	0.015	1.51
December	70	0.0000989	0.00026	0.317	0.0000192	0.0758	0.000475	*0.0000025*	0.00117	*0.0000010*	0.00184	0.0154	0.95
North Diver													
January	60.6	0.000123	0.000515	0.7084	0.00030635	0.09075	0.0004805	*0.000003125*	0.00112	*0.0000025*	0.001435	0.040105	1.1
February	57.6	0.00005795	0.0003325	0.27405	0.0001173	0.05259	0.0003435	*0.0000025*	0.0012205	*0.0000010*	0.00139	0.02949	0.57
March	57.3	0.0000488	0.000239	0.2129	0.00009485	0.04267	0.0003145	*0.0000025*	0.001217	*0.0000015*	0.00141	0.02669	0.435
April	57.25	0.000056	0.0004	0.27945	0.000082	0.04345	0.0004185	*0.00000375*	0.0009985	*0.0000013*	0.00135	0.017505	2.28
May	28.8	0.000061	0.001115	0.31	0.0003345	0.0268	0.00065	0.0000038	0.000545	0.0000025	0.000621	0.0181	5.77
June	34.15	0.000055	0.0006515	0.18065	0.000162	0.018655	0.000486	0.0000025	0.00047	0.00000125	0.0005505	0.0097	2.485
July	43.6	0.00003505	0.00081	0.1855	0.00009715	0.02108	0.0003485	*0.00000875*	0.000556	*0.0000029*	0.0007075	0.01615	2.44
August	47.65	0.00011	0.000573	0.1476	0.000108	0.01789	0.0004075	*0.00000375*	0.0003865	*0.0000020*	0.0006635	0.01047	2.65
September	49.45	0.0000865	0.000977	0.16965	0.0001735	0.02187	0.000395	*0.000003125*	0.0005495	*0.0000025*	0.000914	0.01834	2.045
October	52.55	0.0000495	0.000562	0.19415	0.000156875	0.02554	0.0003355	*0.0000025*	0.001012	*0.0000015*	0.0011245	0.03093	1.9
November	56.8	0.0000655	0.000314	0.26565	0.000138125	0.0657255	0.0003395	*0.0000025*	0.001085	*0.0000013*	0.0012135	0.03517	1.115
December	59.75	0.000072	0.0002405	0.2672	0.0000695	0.061855	0.0003585	*0.0000025*	0.001062	*0.0000015*	0.001265	0.035465	1.48

APPENDIX A

	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KZ-37													
January	0.00209	0.000041	0.000306	0.0000652	64.7	0.0000934	0.000337	0.145	0.0000399	0.0723	0.000402	*0.0000025*	0.00127
February	0.0021	0.00003	0.000384	0.0000789	67.1	0.000201	0.000171	0.209	*0.0000025*	0.142	0.000656	*0.0000025*	0.00124
March	0.00212	0.00003	0.00034	0.0000722	74	0.00018	0.0001645	0.226	0.0000127	0.1415	0.000598	*0.0000025*	0.00117
April	0.00273	0.000026	0.000395	0.000063	63.7	0.000124	0.000257	0.225	*0.0000025*	0.0994	0.000545	*0.0000025*	0.00112
May	0.0874	0.000042	0.000314	0.000082	23.5	0.000090	0.00163	0.217	0.0000984	0.0296	0.00116	0.00000525	0.000474
June	0.0104	0.000067	0.00026	0.000042	29	0.000042	0.00133	0.127	0.000042	0.0164	0.000581	*0.0000025*	0.000583
July	0.00979	0.000048	0.000223	0.00006	43.4	0.000025	0.000791	0.0719	0.000074	0.0102	0.000456	*0.0000025*	0.000813
August	0.00663	0.000063	0.000211	0.0000617	52.2	0.0000326	0.00045	0.103	0.0000111	0.0223	0.000384	*0.0000025*	0.00104
September	0.00329	0.00004	0.000262	0.00007	53.8	0.000057	0.000328	0.17	0.000006	0.0487	0.000376	*0.0000025*	0.00105
October	0.00259	0.000038	0.00025	0.000069	54.7	0.000068	0.000284	0.196	0.000006	0.0556	0.000384	*0.0000025*	0.00105
November	0.00188	0.000037	0.000265	0.000065	58.2	0.000079	0.000241	0.168	*0.0000025*	0.0626	0.000392	*0.0000025*	0.00118
December	0.00228	0.000035	0.000328	0.0000731	69.5	0.0000973	0.000251	0.157	0.0000124	0.075	0.000454	*0.0000025*	0.00124
North Diver													
January	0.001945	0.000023	0.000113	0.0000406	58.65	0.0000388	0.000174	0.0127	0.000015875	0.0464075	0.0002845	*0.0000025*	0.001074
February	0.00232	0.00002175	0.0000945	0.00005005	58.8	0.0000347	0.000219	0.00705	*0.0000119*	0.0385065	0.000307	*0.0000025*	0.0012095
March	0.00318	0.000033	0.000112	0.000054	65.2	0.000049	0.000152	0.0141	0.00000425	0.0663	0.000404	*0.0000025*	0.000926
April	0.006785	0.000039	0.0001065	0.0000465	57.85	0.000038	0.00045	0.04095	*0.00000725*	0.0299	0.0003585	*0.0000025*	0.0010105
May	0.01432	0.000035	0.0002135	0.000062	28.25	0.000038	0.0008545	0.1347	0.0000384	0.01882	0.00049	0.00000375	0.0004825
June	0.007005	0.000038	0.000143	0.00004	35.35	0.00001625	0.000551	0.04055	0.0000161	0.0046195	0.000436	*0.00000375*	0.000462
July	0.004075	0.00005	0.0001625	0.0000604	44.65	0.0000097	0.0004395	0.03595	0.000011275	0.00398125	0.0003125	*0.0000025*	0.0005805
August	0.00526	0.0000505	0.0001565	0.0000379	47.95	0.0001075	0.000461	0.0341	0.00002625	0.007135	0.000385	*0.00000375*	0.000388
September	0.00392	0.000046	0.000127	0.000058	49.5	0.0000625	0.0005035	0.0521	0.00004225	0.01445	0.0003445	*0.000003125*	0.0004905
October	0.00263	0.000029	0.000115	0.0001185	50.15	0.000016	0.0003365	0.02905	0.00001525	0.009003	0.000258	*0.0000025*	0.000933
November	0.003065	0.0000295	0.0001135	0.000059	56.5	0.0000535	0.0002065	0.0229	*0.0000115*	0.0557705	0.000321	*0.0000025*	0.0010155
December	0.001285	0.0000275	0.0001065	0.000058	59.2	0.000051	0.0001505	0.04055	0.0000025	0.0553265	0.0003115	*0.0000025*	0.0010965

APPENDIX A

	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
	mg/L	mg/L	mg/L
KZ-37			
January	*0.0000010*	0.002	0.0112
February	*0.0000010*	0.00213	0.0128
March	*0.0000010*	0.002	0.01265
April	*0.0000010*	0.002	0.0121
May	0.0000028	0.000474	0.0178
June	0.000002	0.000502	0.0108
July	0.000002	0.000845	0.0111
August	*0.0000010*	0.00116	0.0112
September	*0.0000010*	0.00157	0.0102
October	*0.0000010*	0.00151	0.0107
November	*0.0000010*	0.00167	0.0152
December	*0.0000010*	0.00186	0.0163
North Diver			
January	*0.0000010*	0.00136	0.023065
February	*0.0000010*	0.00141	0.021125
March	*0.0000020*	0.00147	0.039
April	*0.0000013*	0.001365	0.014805
May	0.00000225	0.000592	0.012855
June	0.0000015	0.000535	0.00773
July	0.0000017	0.000696	0.0110775
August	*0.0000015*	0.000631	0.0059
September	*0.0000015*	0.000899	0.013605
October	*0.0000018*	0.001131	0.02175
November	*0.0000018*	0.00117	0.02828
December	*0.0000013*	0.00127	0.026335

APPENDIX B.

Water Management Pond Water Quality Model Results

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L
Water Management Pond - Mean Model												
Production	1	2021-03-01	93	27	0.023	0.00033	0.0041	0.00035	0.027	0.034	0.000026	0.00002
Production	1	2021-04-01	120	34	0.026	0.00044	0.0044	0.00038	0.033	0.048	0.000032	0.00002
Production	1	2021-05-01	120	45	0.023	0.00052	0.0031	0.0034	0.086	0.19	0.00017	0.00015
Production	1	2021-06-01	120	41	0.017	0.00052	0.0032	0.0025	0.079	0.18	0.00026	0.00022
Production	1	2021-07-01	140	47	0.018	0.00057	0.0053	0.0025	0.092	0.16	0.00022	0.00024
Production	1	2021-08-01	150	53	0.018	0.00073	0.0048	0.0027	0.1	0.19	0.00024	0.00024
Production	1	2021-09-01	160	55	0.023	0.00071	0.0041	0.0022	0.11	0.22	0.00025	0.00024
Production	1	2021-10-01	160	55	0.031	0.00063	0.0043	0.0023	0.11	0.21	0.00019	0.00019
Production	1	2021-11-01	170	60	0.04	0.00071	0.0058	0.0024	0.11	0.19	0.00018	0.00019
Production	1	2021-12-01	170	58	0.041	0.00064	0.0059	0.0019	0.11	0.16	0.00014	0.00014
Production	1	2022-01-01	160	56	0.041	0.00059	0.0064	0.0016	0.098	0.13	0.00011	0.00012
Production	1	2022-02-01	160	57	0.042	0.00058	0.0067	0.0017	0.095	0.13	0.0001	0.00011
Production	2	2022-03-01	180	58	0.037	0.0006	0.0065	0.0012	0.082	0.087	0.000067	0.00007
Production	2	2022-04-01	190	60	0.034	0.00063	0.0065	0.00097	0.074	0.063	0.000045	0.000047
Production	2	2022-05-01	200	82	0.17	0.0039	0.0077	0.0033	0.16	0.14	0.00016	0.00015
Production	2	2022-06-01	180	74	0.27	0.0063	0.01	0.003	0.14	0.15	0.00024	0.00021
Production	2	2022-07-01	200	82	0.32	0.0075	0.013	0.0031	0.16	0.13	0.0002	0.00022
Production	2	2022-08-01	210	89	0.34	0.008	0.013	0.0032	0.17	0.15	0.00021	0.00021
Production	2	2022-09-01	220	91	0.34	0.008	0.012	0.0028	0.18	0.17	0.00021	0.00021
Production	2	2022-10-01	220	91	0.32	0.0073	0.012	0.0027	0.18	0.16	0.00016	0.00016
Production	2	2022-11-01	240	100	0.3	0.0068	0.012	0.0025	0.19	0.13	0.00013	0.00013
Production	2	2022-12-01	230	96	0.24	0.0054	0.011	0.0019	0.17	0.088	0.000082	0.000083
Production	2	2023-01-01	230	91	0.19	0.0044	0.0096	0.0015	0.15	0.058	0.00005	0.000051
Production	2	2023-02-01	230	90	0.17	0.0038	0.0091	0.0012	0.14	0.043	0.000034	0.000035
Production	3	2023-03-01	320	120	0.077	0.0019	0.0082	0.0024	0.12	0.025	0.000013	0.000013
Production	3	2023-04-01	460	180	0.068	0.0018	0.011	0.0037	0.16	0.027	0.0000093	0.0000094
Production	3	2023-05-01	410	180	0.33	0.0077	0.015	0.0055	0.24	0.12	0.00013	0.00012
Production	3	2023-06-01	190	85	0.31	0.0073	0.011	0.0029	0.13	0.11	0.00017	0.00015
Production	3	2023-07-01	290	120	0.4	0.0095	0.016	0.0041	0.19	0.11	0.00016	0.00018
Production	3	2023-08-01	340	150	0.43	0.01	0.017	0.0046	0.22	0.13	0.00017	0.00017
Production	3	2023-09-01	350	160	0.43	0.01	0.016	0.0043	0.24	0.14	0.00017	0.00017
Production	3	2023-10-01	380	170	0.38	0.0088	0.015	0.0044	0.24	0.12	0.00011	0.00011
Production	3	2023-11-01	440	190	0.31	0.0072	0.015	0.0045	0.25	0.079	0.00007	0.000071

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Aluminum (Al), total mg/L	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L
Water Management Pond - Mean Model												**Wa**
Production	1	2021-03-01	0.0018	0.00014	0.00089	0.000093	4.8	0.0000075	0.00021	0.18	0.0025	0.023
Production	1	2021-04-01	0.0024	0.00018	0.0011	0.00012	5.1	0.0000089	0.00028	0.23	0.0033	0.028
Production	1	2021-05-01	0.019	0.00017	0.0021	0.00016	6.8	0.000028	0.00054	0.22	0.0021	0.076
Production	1	2021-06-01	0.02	0.00016	0.0021	0.00015	10	0.000029	0.00052	0.19	0.0016	0.064
Production	1	2021-07-01	0.021	0.00018	0.0025	0.00017	14	0.000029	0.0006	0.2	0.0016	0.075
Production	1	2021-08-01	0.02	0.00019	0.0026	0.00018	16	0.000045	0.0006	0.2	0.0017	0.091
Production	1	2021-09-01	0.02	0.00019	0.0026	0.00018	16	0.000047	0.00067	0.2	0.0018	0.098
Production	1	2021-10-01	0.017	0.00018	0.0024	0.00019	17	0.000042	0.0006	0.2	0.0019	0.1
Production	1	2021-11-01	0.015	0.0002	0.0024	0.00021	19	0.000044	0.00059	0.24	0.0023	0.12
Production	1	2021-12-01	0.012	0.00019	0.0021	0.0002	17	0.000041	0.00051	0.24	0.0025	0.11
Production	1	2022-01-01	0.012	0.00019	0.0019	0.0002	15	0.000041	0.00048	0.27	0.0027	0.11
Production	1	2022-02-01	0.0099	0.0002	0.0019	0.00021	14	0.000037	0.00047	0.27	0.0029	0.11
Production	2	2022-03-01	0.0075	0.00021	0.002	0.00021	9.7	0.000028	0.00047	0.29	0.0033	0.088
Production	2	2022-04-01	0.0061	0.00022	0.0021	0.00021	6.9	0.000022	0.00047	0.31	0.0036	0.076
Production	2	2022-05-01	0.023	0.00023	0.003	0.00021	6.2	0.000044	0.00073	0.27	0.0022	0.18
Production	2	2022-06-01	0.027	0.00024	0.0026	0.00018	9.4	0.000042	0.00071	0.23	0.0017	0.15
Production	2	2022-07-01	0.029	0.00026	0.0029	0.0002	12	0.000043	0.0008	0.25	0.0017	0.17
Production	2	2022-08-01	0.028	0.00027	0.0031	0.00021	13	0.000058	0.00081	0.26	0.0019	0.19
Production	2	2022-09-01	0.027	0.00027	0.0031	0.00021	13	0.00006	0.00085	0.25	0.0019	0.2
Production	2	2022-10-01	0.023	0.00026	0.003	0.00021	14	0.000055	0.00078	0.25	0.002	0.2
Production	2	2022-11-01	0.02	0.00028	0.0034	0.00024	12	0.000057	0.00079	0.28	0.0026	0.22
Production	2	2022-12-01	0.015	0.00026	0.0032	0.00024	9	0.000049	0.00071	0.28	0.0029	0.21
Production	2	2023-01-01	0.011	0.00025	0.003	0.00024	6	0.000042	0.00065	0.29	0.0031	0.19
Production	2	2023-02-01	0.0094	0.00025	0.0029	0.00025	4.5	0.000039	0.00063	0.3	0.0033	0.18
Production	3	2023-03-01	0.0052	0.0002	0.0025	0.00018	2.9	0.000019	0.00049	0.32	0.0025	0.097
Production	3	2023-04-01	0.0054	0.00025	0.0031	0.00021	3.3	0.000018	0.0006	0.44	0.0031	0.097
Production	3	2023-05-01	0.025	0.0003	0.0041	0.00026	5.7	0.000051	0.0009	0.4	0.0021	0.24
Production	3	2023-06-01	0.022	0.0002	0.0021	0.00014	7.6	0.000032	0.00055	0.18	0.00085	0.12
Production	3	2023-07-01	0.029	0.00027	0.0032	0.00021	11	0.000042	0.00079	0.26	0.0012	0.17
Production	3	2023-08-01	0.028	0.0003	0.0038	0.00024	12	0.000059	0.00086	0.3	0.0015	0.22
Production	3	2023-09-01	0.028	0.0003	0.0039	0.00025	12	0.000062	0.00091	0.3	0.0015	0.24
Production	3	2023-10-01	0.023	0.00029	0.0041	0.00027	11	0.000056	0.00085	0.32	0.0017	0.24
Production	3	2023-11-01	0.018	0.0003	0.0043	0.00031	8.4	0.000053	0.00084	0.37	0.0021	0.24

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Nickel (Ni), total mg/L	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L
Water Management Pond - Mean Model			ter Management Pond - Mean Model									
Production	1	2021-03-01	0.0001	0.0000036	0.0015	0.0001	0.00021	0.017	0.38	0.0015	0.00014	0.00088
Production	1	2021-04-01	0.00013	0.0000046	0.0019	0.00013	0.00024	0.021	0.54	0.002	0.00018	0.0011
Production	1	2021-05-01	0.00071	0.0000057	0.0017	0.00021	0.00031	0.021	1.5	0.01	0.00017	0.0021
Production	1	2021-06-01	0.00062	0.0000051	0.0015	0.00016	0.00034	0.018	1.3	0.012	0.00016	0.0021
Production	1	2021-07-01	0.00069	0.0000069	0.0017	0.00019	0.00041	0.021	1.4	0.013	0.00018	0.0024
Production	1	2021-08-01	0.00083	0.0000069	0.0017	0.00023	0.00043	0.021	1.4	0.013	0.00019	0.0026
Production	1	2021-09-01	0.00089	0.0000066	0.0017	0.00025	0.00047	0.022	1.3	0.013	0.00019	0.0026
Production	1	2021-10-01	0.00089	0.0000063	0.0017	0.00026	0.00051	0.023	1.2	0.011	0.00018	0.0024
Production	1	2021-11-01	0.00096	0.0000067	0.0019	0.00029	0.00055	0.026	1.1	0.01	0.0002	0.0024
Production	1	2021-12-01	0.0009	0.0000064	0.0018	0.00028	0.00051	0.026	0.95	0.008	0.00019	0.0021
Production	1	2022-01-01	0.00085	0.0000063	0.0019	0.00028	0.00048	0.026	0.84	0.0065	0.00019	0.0019
Production	1	2022-02-01	0.00081	0.0000064	0.002	0.00028	0.00047	0.026	0.78	0.0058	0.0002	0.0018
Production	2	2022-03-01	0.00061	0.0000063	0.0022	0.00025	0.0004	0.028	0.81	0.0048	0.00021	0.002
Production	2	2022-04-01	0.00048	0.0000064	0.0025	0.00023	0.00036	0.029	0.84	0.0042	0.00021	0.0021
Production	2	2022-05-01	0.0015	0.0000081	0.0022	0.00044	0.00041	0.026	1.5	0.015	0.00023	0.003
Production	2	2022-06-01	0.0013	0.0000075	0.0018	0.00036	0.00047	0.021	1.3	0.02	0.00024	0.0026
Production	2	2022-07-01	0.0014	0.0000092	0.0019	0.00039	0.00054	0.023	1.4	0.022	0.00026	0.0029
Production	2	2022-08-01	0.0016	0.0000094	0.002	0.00045	0.00055	0.024	1.4	0.022	0.00027	0.0031
Production	2	2022-09-01	0.0017	0.0000091	0.002	0.00048	0.00057	0.024	1.3	0.021	0.00027	0.0031
Production	2	2022-10-01	0.0017	0.0000087	0.002	0.00049	0.00059	0.025	1.1	0.018	0.00026	0.003
Production	2	2022-11-01	0.0018	0.0000094	0.0023	0.00054	0.00058	0.029	1	0.016	0.00028	0.0034
Production	2	2022-12-01	0.0016	0.0000089	0.0023	0.00052	0.00049	0.028	0.92	0.013	0.00026	0.0031
Production	2	2023-01-01	0.0015	0.0000084	0.0024	0.00048	0.00041	0.028	0.85	0.0099	0.00025	0.0029
Production	2	2023-02-01	0.0014	0.0000083	0.0025	0.00047	0.00037	0.028	0.84	0.0084	0.00025	0.0029
Production	3	2023-03-01	0.00062	0.0000086	0.0024	0.00024	0.00052	0.031	0.97	0.0049	0.0002	0.0025
Production	3	2023-04-01	0.00054	0.000012	0.0031	0.00023	0.00075	0.042	1.3	0.0052	0.00025	0.0031
Production	3	2023-05-01	0.0019	0.000013	0.0029	0.00055	0.00076	0.036	1.8	0.018	0.0003	0.0041
Production	3	2023-06-01	0.00096	0.0000068	0.0013	0.00026	0.0005	0.015	0.95	0.018	0.0002	0.0021
Production	3	2023-07-01	0.0014	0.000011	0.002	0.00039	0.0007	0.024	1.3	0.023	0.00027	0.0032
Production	3	2023-08-01	0.0018	0.000012	0.0024	0.0005	0.00077	0.027	1.4	0.024	0.0003	0.0038
Production	3	2023-09-01	0.0019	0.000012	0.0024	0.00054	0.0008	0.029	1.3	0.023	0.0003	0.0039
Production	3	2023-10-01	0.0019	0.000012	0.0026	0.00054	0.00083	0.031	1.2	0.02	0.00029	0.0041
Production	3	2023-11-01	0.0019	0.000013	0.003	0.00055	0.00085	0.036	1.2	0.016	0.0003	0.0042

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L
Water Management Pond - Mean Model												
Production	1	2021-03-01	0.000089	5.5	0.0000076	0.00021	0.16	0.0025	0.025	0.00011	0.0000036	0.0014
Production	1	2021-04-01	0.00011	5.4	0.0000082	0.00028	0.21	0.0033	0.029	0.00013	0.0000046	0.0018
Production	1	2021-05-01	0.00016	6.8	0.000023	0.00047	0.16	0.0021	0.074	0.00068	0.0000057	0.0017
Production	1	2021-06-01	0.00014	10	0.000019	0.00045	0.12	0.0016	0.06	0.0006	0.0000053	0.0015
Production	1	2021-07-01	0.00016	14	0.000019	0.00048	0.12	0.0016	0.069	0.00067	0.0000057	0.0017
Production	1	2021-08-01	0.00017	16	0.00004	0.00051	0.12	0.0017	0.086	0.00082	0.0000063	0.0017
Production	1	2021-09-01	0.00017	17	0.000041	0.00052	0.13	0.0017	0.094	0.00087	0.0000063	0.0017
Production	1	2021-10-01	0.00017	17	0.000033	0.00048	0.13	0.0018	0.097	0.00087	0.0000061	0.0017
Production	1	2021-11-01	0.00018	18	0.000037	0.00049	0.16	0.0022	0.11	0.00094	0.0000066	0.0018
Production	1	2021-12-01	0.00018	17	0.000034	0.00044	0.17	0.0024	0.11	0.00088	0.0000063	0.0018
Production	1	2022-01-01	0.00018	15	0.000031	0.00042	0.18	0.0026	0.1	0.00082	0.0000062	0.0019
Production	1	2022-02-01	0.00019	14	0.000029	0.00041	0.2	0.0029	0.1	0.00079	0.0000063	0.002
Production	2	2022-03-01	0.00019	9.6	0.000022	0.00043	0.24	0.0033	0.085	0.0006	0.0000063	0.0022
Production	2	2022-04-01	0.0002	6.9	0.000018	0.00045	0.27	0.0036	0.074	0.00047	0.0000064	0.0025
Production	2	2022-05-01	0.00021	6.1	0.00004	0.00066	0.21	0.0022	0.18	0.0014	0.000008	0.0022
Production	2	2022-06-01	0.00017	9.6	0.000033	0.00065	0.16	0.0017	0.15	0.0012	0.0000076	0.0018
Production	2	2022-07-01	0.00019	12	0.000035	0.00069	0.17	0.0017	0.16	0.0014	0.0000082	0.0019
Production	2	2022-08-01	0.0002	13	0.000054	0.00073	0.18	0.0018	0.19	0.0016	0.0000089	0.002
Production	2	2022-09-01	0.0002	13	0.000054	0.00073	0.18	0.0018	0.2	0.0016	0.0000088	0.0019
Production	2	2022-10-01	0.0002	13	0.000048	0.00069	0.2	0.002	0.2	0.0016	0.0000086	0.002
Production	2	2022-11-01	0.00022	12	0.000051	0.00072	0.24	0.0026	0.22	0.0018	0.0000093	0.0022
Production	2	2022-12-01	0.00023	8.9	0.000046	0.00067	0.25	0.0028	0.21	0.0016	0.0000088	0.0023
Production	2	2023-01-01	0.00024	5.9	0.00004	0.00062	0.27	0.0031	0.19	0.0015	0.0000084	0.0024
Production	2	2023-02-01	0.00025	4.4	0.000037	0.00061	0.28	0.0033	0.18	0.0014	0.0000083	0.0025
Production	3	2023-03-01	0.00018	2.9	0.000018	0.00048	0.32	0.0025	0.096	0.00062	0.0000086	0.0024
Production	3	2023-04-01	0.00021	3.2	0.000017	0.0006	0.44	0.0031	0.096	0.00054	0.000012	0.0031
Production	3	2023-05-01	0.00026	5.6	0.000048	0.00084	0.38	0.0021	0.24	0.0019	0.000013	0.0029
Production	3	2023-06-01	0.00013	7.8	0.000024	0.00051	0.15	0.00082	0.11	0.00095	0.000007	0.0013
Production	3	2023-07-01	0.0002	11	0.000035	0.0007	0.23	0.0012	0.17	0.0014	0.0000098	0.002
Production	3	2023-08-01	0.00024	12	0.000056	0.00079	0.27	0.0014	0.22	0.0018	0.000012	0.0024
Production	3	2023-09-01	0.00024	12	0.000058	0.00081	0.28	0.0015	0.23	0.0019	0.000012	0.0024
Production	3	2023-10-01	0.00026	11	0.000051	0.00078	0.29	0.0017	0.23	0.0019	0.000012	0.0026
Production	3	2023-11-01	0.0003	8.3	0.00005	0.0008	0.35	0.002	0.24	0.0019	0.000013	0.003

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
			mg/L	mg/L	mg/L
Water Management Pond - Mean Model					
Production	1	2021-03-01	0.0001	0.00022	0.018
Production	1	2021-04-01	0.00013	0.00024	0.022
Production	1	2021-05-01	0.00021	0.00031	0.021
Production	1	2021-06-01	0.00016	0.00033	0.018
Production	1	2021-07-01	0.00019	0.00041	0.02
Production	1	2021-08-01	0.00023	0.00042	0.02
Production	1	2021-09-01	0.00024	0.00047	0.02
Production	1	2021-10-01	0.00026	0.00051	0.021
Production	1	2021-11-01	0.00029	0.00055	0.024
Production	1	2021-12-01	0.00028	0.00051	0.024
Production	1	2022-01-01	0.00028	0.00048	0.024
Production	1	2022-02-01	0.00028	0.00046	0.024
Production	2	2022-03-01	0.00025	0.00039	0.026
Production	2	2022-04-01	0.00023	0.00036	0.028
Production	2	2022-05-01	0.00044	0.00041	0.025
Production	2	2022-06-01	0.00036	0.00046	0.02
Production	2	2022-07-01	0.00039	0.00053	0.022
Production	2	2022-08-01	0.00045	0.00054	0.023
Production	2	2022-09-01	0.00047	0.00057	0.023
Production	2	2022-10-01	0.00049	0.00058	0.024
Production	2	2022-11-01	0.00054	0.00058	0.027
Production	2	2022-12-01	0.00052	0.00048	0.027
Production	2	2023-01-01	0.00048	0.00041	0.027
Production	2	2023-02-01	0.00047	0.00037	0.028
Production	3	2023-03-01	0.00024	0.00052	0.031
Production	3	2023-04-01	0.00023	0.00075	0.042
Production	3	2023-05-01	0.00055	0.00076	0.036
Production	3	2023-06-01	0.00026	0.00049	0.015
Production	3	2023-07-01	0.00039	0.0007	0.023
Production	3	2023-08-01	0.0005	0.00076	0.026
Production	3	2023-09-01	0.00053	0.0008	0.028
Production	3	2023-10-01	0.00054	0.00083	0.03
Production	3	2023-11-01	0.00055	0.00085	0.035

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L
Production	3	2023-12-01	430	190	0.21	0.005	0.013	0.0041	0.22	0.043	0.000031	0.000031
Production	3	2024-01-01	430	180	0.15	0.0036	0.011	0.0039	0.2	0.027	0.000013	0.000013
Production	3	2024-02-01	520	210	0.15	0.0036	0.013	0.0045	0.22	0.026	0.0000086	0.0000087
Production	4	2024-03-01	580	240	0.12	0.003	0.013	0.0052	0.22	0.026	0.0000061	0.0000062
Production	4	2024-04-01	590	240	0.087	0.0023	0.013	0.0053	0.21	0.024	0.000004	0.0000041
Production	4	2024-05-01	440	200	0.51	0.012	0.019	0.0062	0.3	0.12	0.00014	0.00012
Production	4	2024-06-01	180	85	0.48	0.011	0.015	0.003	0.14	0.11	0.00018	0.00016
Production	4	2024-07-01	290	130	0.66	0.015	0.022	0.0045	0.22	0.11	0.00017	0.00019
Production	4	2024-08-01	360	170	0.71	0.017	0.023	0.0052	0.27	0.14	0.00019	0.00019
Production	4	2024-09-01	370	170	0.71	0.016	0.023	0.0049	0.29	0.15	0.00019	0.00019
Production	4	2024-10-01	400	180	0.65	0.015	0.022	0.005	0.29	0.14	0.00013	0.00013
Production	4	2024-11-01	460	210	0.55	0.013	0.02	0.0052	0.31	0.095	0.000089	0.00009
Production	4	2024-12-01	460	210	0.39	0.009	0.016	0.0047	0.28	0.054	0.000044	0.000045
Production	4	2025-01-01	450	200	0.28	0.0066	0.014	0.0043	0.25	0.033	0.000021	0.000022
Production	4	2025-02-01	480	210	0.23	0.0056	0.013	0.0044	0.24	0.026	0.000012	0.000013
Production	5	2025-03-01	480	200	0.17	0.0041	0.012	0.0043	0.21	0.023	0.0000083	0.0000084
Production	5	2025-04-01	420	170	0.11	0.0027	0.01	0.0037	0.17	0.019	0.0000047	0.0000048
Production	5	2025-05-01	360	170	0.75	0.017	0.023	0.0055	0.3	0.12	0.00015	0.00014
Production	5	2025-06-01	280	140	0.94	0.022	0.027	0.0048	0.25	0.15	0.00024	0.00021
Production	5	2025-07-01	320	160	1.1	0.025	0.033	0.0052	0.28	0.13	0.00021	0.00022
Production	5	2025-08-01	360	180	1.1	0.026	0.033	0.0056	0.32	0.15	0.00022	0.00022
Production	5	2025-09-01	370	180	1.1	0.025	0.031	0.0051	0.33	0.17	0.00022	0.00021
Production	5	2025-10-01	390	190	0.97	0.022	0.029	0.0051	0.34	0.16	0.00015	0.00015
Production	5	2025-11-01	450	220	0.87	0.02	0.028	0.0052	0.36	0.12	0.00011	0.00011
Production	5	2025-12-01	440	210	0.63	0.015	0.022	0.0046	0.33	0.072	0.000065	0.000065
Production	5	2026-01-01	430	200	0.47	0.011	0.018	0.0041	0.29	0.045	0.000036	0.000037
Production	5	2026-02-01	430	200	0.37	0.0087	0.016	0.0039	0.27	0.033	0.000022	0.000023
Production	6	2026-03-01	390	170	0.22	0.0052	0.012	0.0034	0.2	0.024	0.000013	0.000013
Production	6	2026-04-01	390	160	0.15	0.0035	0.01	0.0033	0.17	0.02	0.0000076	0.0000076
Production	6	2026-05-01	400	240	0.87	0.02	0.026	0.0055	0.3	0.12	0.00015	0.00014
Production	6	2026-06-01	350	220	1.1	0.026	0.033	0.0051	0.26	0.15	0.00024	0.00021
Production	6	2026-07-01	400	260	1.2	0.028	0.037	0.0055	0.28	0.13	0.0002	0.00022
Production	6	2026-08-01	480	330	1.2	0.028	0.037	0.0058	0.31	0.15	0.00022	0.00021
Production	6	2026-09-01	510	350	1.2	0.027	0.035	0.0054	0.32	0.16	0.00021	0.00021

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-12-01	0.011	0.00026	0.0037	0.00031	5.2	0.000042	0.00072	0.37	0.0021	0.21
Production	3	2024-01-01	0.0079	0.00024	0.0033	0.00031	3.6	0.000034	0.00064	0.37	0.0022	0.17
Production	3	2024-02-01	0.0077	0.00027	0.0037	0.00038	3.6	0.000034	0.00072	0.45	0.0026	0.18
Production	4	2024-03-01	0.007	0.00031	0.0038	0.00035	3.7	0.000029	0.00073	0.52	0.0033	0.16
Production	4	2024-04-01	0.006	0.00032	0.0036	0.00031	3.5	0.000023	0.0007	0.54	0.0036	0.13
Production	4	2024-05-01	0.029	0.00035	0.004	0.00028	5.9	0.000067	0.001	0.4	0.0022	0.31
Production	4	2024-06-01	0.026	0.00022	0.0019	0.00012	7.8	0.000037	0.00059	0.16	0.00084	0.14
Production	4	2024-07-01	0.035	0.00032	0.0031	0.0002	12	0.000052	0.00091	0.26	0.0013	0.22
Production	4	2024-08-01	0.035	0.00037	0.0038	0.00024	13	0.000075	0.001	0.3	0.0016	0.29
Production	4	2024-09-01	0.034	0.00037	0.0039	0.00025	13	0.000079	0.0011	0.31	0.0017	0.31
Production	4	2024-10-01	0.029	0.00037	0.0041	0.00027	13	0.000074	0.0011	0.32	0.0019	0.31
Production	4	2024-11-01	0.024	0.00038	0.0046	0.00032	10	0.000073	0.0011	0.38	0.0024	0.33
Production	4	2024-12-01	0.016	0.00033	0.004	0.00032	6.5	0.00006	0.00094	0.38	0.0026	0.29
Production	4	2025-01-01	0.011	0.0003	0.0035	0.00032	4.4	0.000048	0.00077	0.38	0.0026	0.24
Production	4	2025-02-01	0.0089	0.0003	0.0034	0.00035	3.7	0.000043	0.00073	0.41	0.0029	0.22
Production	5	2025-03-01	0.0071	0.00031	0.0032	0.00031	3.3	0.000033	0.00068	0.45	0.0035	0.18
Production	5	2025-04-01	0.0052	0.00028	0.0027	0.00025	2.7	0.000023	0.00057	0.42	0.0035	0.12
Production	5	2025-05-01	0.031	0.00035	0.0035	0.00024	5.6	0.000076	0.001	0.31	0.002	0.36
Production	5	2025-06-01	0.038	0.00035	0.0028	0.00018	9.9	0.000066	0.00098	0.25	0.0015	0.27
Production	5	2025-07-01	0.043	0.00041	0.0033	0.00022	13	0.000072	0.0012	0.28	0.0017	0.31
Production	5	2025-08-01	0.042	0.00043	0.0038	0.00024	14	0.000093	0.0013	0.3	0.0019	0.37
Production	5	2025-09-01	0.04	0.00043	0.0038	0.00025	14	0.000096	0.0013	0.3	0.0019	0.38
Production	5	2025-10-01	0.035	0.00042	0.0039	0.00027	14	0.000092	0.0013	0.31	0.0022	0.39
Production	5	2025-11-01	0.03	0.00045	0.0048	0.00031	12	0.000096	0.0014	0.37	0.0028	0.42
Production	5	2025-12-01	0.022	0.00041	0.0044	0.00032	8.2	0.000082	0.0013	0.37	0.0031	0.38
Production	5	2026-01-01	0.015	0.00037	0.0039	0.00032	5.6	0.000068	0.001	0.38	0.0032	0.33
Production	5	2026-02-01	0.012	0.00035	0.0036	0.00033	4.4	0.000059	0.00088	0.39	0.0034	0.29
Production	6	2026-03-01	0.011	0.0003	0.003	0.00033	3.3	0.000043	0.0035	0.39	0.0035	0.2
Production	6	2026-04-01	0.01	0.00029	0.0028	0.00034	2.7	0.000034	0.005	0.4	0.0036	0.14
Production	6	2026-05-01	0.066	0.00036	0.0036	0.00026	5.8	0.00027	0.0047	0.33	0.0021	0.47
Production	6	2026-06-01	0.063	0.00039	0.003	0.0002	10	0.00028	0.0038	0.27	0.0017	0.4
Production	6	2026-07-01	0.072	0.00043	0.0034	0.00023	13	0.00038	0.0043	0.29	0.0017	0.48
Production	6	2026-08-01	0.079	0.00046	0.0038	0.00025	14	0.00058	0.0047	0.31	0.0019	0.62
Production	6	2026-09-01	0.079	0.00045	0.0038	0.00025	14	0.00066	0.0047	0.3	0.002	0.67

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-12-01	0.0016	0.000012	0.0031	0.00047	0.00077	0.035	1.1	0.011	0.00026	0.0037
Production	3	2024-01-01	0.0013	0.000012	0.0031	0.0004	0.00072	0.035	1.1	0.0075	0.00024	0.0033
Production	3	2024-02-01	0.0013	0.000014	0.0038	0.00042	0.00085	0.042	1.4	0.0074	0.00027	0.0037
Production	4	2024-03-01	0.001	0.000015	0.0044	0.00037	0.00095	0.049	1.5	0.0068	0.00031	0.0038
Production	4	2024-04-01	0.00079	0.000015	0.0044	0.00032	0.00097	0.051	1.6	0.0059	0.00032	0.0036
Production	4	2024-05-01	0.0026	0.000015	0.0031	0.00074	0.00083	0.037	1.7	0.022	0.00035	0.004
Production	4	2024-06-01	0.0012	0.0000073	0.0012	0.00031	0.00051	0.014	0.87	0.022	0.00022	0.0019
Production	4	2024-07-01	0.0018	0.000012	0.0019	0.00051	0.00076	0.023	1.3	0.029	0.00032	0.0031
Production	4	2024-08-01	0.0024	0.000014	0.0023	0.00067	0.00085	0.027	1.4	0.03	0.00037	0.0037
Production	4	2024-09-01	0.0026	0.000014	0.0024	0.00072	0.00088	0.029	1.3	0.029	0.00037	0.0039
Production	4	2024-10-01	0.0026	0.000014	0.0026	0.00073	0.00092	0.032	1.2	0.025	0.00036	0.0041
Production	4	2024-11-01	0.0027	0.000016	0.0031	0.00078	0.00095	0.037	1.2	0.021	0.00038	0.0045
Production	4	2024-12-01	0.0023	0.000015	0.0032	0.00068	0.00085	0.036	1.1	0.015	0.00033	0.004
Production	4	2025-01-01	0.0019	0.000014	0.0032	0.00058	0.00077	0.036	1.1	0.01	0.0003	0.0035
Production	4	2025-02-01	0.0017	0.000014	0.0035	0.00054	0.00079	0.039	1.1	0.0085	0.0003	0.0034
Production	5	2025-03-01	0.0013	0.000014	0.0038	0.00045	0.00078	0.042	1.2	0.0069	0.00031	0.0032
Production	5	2025-04-01	0.00084	0.000012	0.0036	0.00033	0.00069	0.04	1.1	0.0051	0.00028	0.0027
Production	5	2025-05-01	0.003	0.000014	0.0026	0.00085	0.00069	0.03	1.5	0.024	0.00035	0.0035
Production	5	2025-06-01	0.0023	0.000012	0.0019	0.00063	0.00073	0.022	1.3	0.031	0.00035	0.0028
Production	5	2025-07-01	0.0026	0.000015	0.0021	0.00072	0.00086	0.026	1.4	0.035	0.0004	0.0033
Production	5	2025-08-01	0.0031	0.000016	0.0024	0.00085	0.0009	0.028	1.5	0.036	0.00043	0.0037
Production	5	2025-09-01	0.0032	0.000016	0.0024	0.00089	0.00092	0.029	1.3	0.034	0.00043	0.0038
Production	5	2025-10-01	0.0033	0.000016	0.0025	0.00092	0.00095	0.031	1.2	0.03	0.00042	0.0039
Production	5	2025-11-01	0.0035	0.000017	0.003	0.001	0.00099	0.036	1.2	0.027	0.00045	0.0048
Production	5	2025-12-01	0.0031	0.000016	0.0031	0.00092	0.00087	0.036	1	0.02	0.00041	0.0044
Production	5	2026-01-01	0.0027	0.000015	0.0032	0.00081	0.00076	0.036	0.98	0.014	0.00037	0.0039
Production	5	2026-02-01	0.0023	0.000015	0.0033	0.00073	0.00072	0.037	0.98	0.011	0.00035	0.0036
Production	6	2026-03-01	0.0015	0.000013	0.0033	0.0005	0.00065	0.037	0.98	0.011	0.0003	0.003
Production	6	2026-04-01	0.001	0.000012	0.0034	0.00038	0.00063	0.038	1	0.0097	0.00029	0.0028
Production	6	2026-05-01	0.0043	0.000019	0.0026	0.00091	0.0007	0.03	1.5	0.061	0.00036	0.0036
Production	6	2026-06-01	0.0038	0.000018	0.002	0.00072	0.00079	0.023	1.4	0.058	0.00039	0.003
Production	6	2026-07-01	0.0047	0.000023	0.0022	0.00079	0.00092	0.026	1.4	0.067	0.00043	0.0034
Production	6	2026-08-01	0.0064	0.000028	0.0024	0.00094	0.00097	0.028	1.5	0.076	0.00046	0.0038
Production	6	2026-09-01	0.0069	0.00003	0.0024	0.00099	0.00099	0.029	1.3	0.076	0.00045	0.0038

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-12-01	0.00031	5.2	0.000041	0.00071	0.36	0.0021	0.21	0.0016	0.000012	0.0031
Production	3	2024-01-01	0.00031	3.5	0.000033	0.00063	0.36	0.0022	0.17	0.0013	0.000012	0.0031
Production	3	2024-02-01	0.00038	3.6	0.000034	0.00071	0.44	0.0026	0.18	0.0013	0.000014	0.0038
Production	4	2024-03-01	0.00035	3.6	0.000028	0.00073	0.52	0.0033	0.16	0.001	0.000015	0.0044
Production	4	2024-04-01	0.00031	3.5	0.000023	0.0007	0.54	0.0036	0.13	0.00079	0.000015	0.0044
Production	4	2024-05-01	0.00027	5.8	0.000064	0.00095	0.35	0.0022	0.31	0.0025	0.000015	0.0031
Production	4	2024-06-01	0.00012	8.1	0.000029	0.00055	0.13	0.00081	0.14	0.0012	0.0000075	0.0012
Production	4	2024-07-01	0.00019	12	0.000045	0.00081	0.21	0.0013	0.22	0.0018	0.000011	0.0019
Production	4	2024-08-01	0.00023	13	0.000072	0.00097	0.26	0.0016	0.29	0.0024	0.000013	0.0023
Production	4	2024-09-01	0.00024	13	0.000074	0.001	0.27	0.0017	0.31	0.0026	0.000014	0.0024
Production	4	2024-10-01	0.00026	12	0.000068	0.00099	0.29	0.0019	0.31	0.0026	0.000014	0.0026
Production	4	2024-11-01	0.00031	10	0.000069	0.001	0.35	0.0024	0.33	0.0027	0.000016	0.0031
Production	4	2024-12-01	0.00032	6.5	0.000058	0.00092	0.36	0.0026	0.28	0.0023	0.000015	0.0032
Production	4	2025-01-01	0.00032	4.4	0.000047	0.00076	0.37	0.0026	0.24	0.0019	0.000014	0.0032
Production	4	2025-02-01	0.00035	3.7	0.000043	0.00073	0.4	0.0029	0.22	0.0017	0.000014	0.0035
Production	5	2025-03-01	0.00031	3.3	0.000033	0.00067	0.44	0.0035	0.18	0.0013	0.000014	0.0038
Production	5	2025-04-01	0.00025	2.7	0.000023	0.00056	0.42	0.0035	0.12	0.00084	0.000012	0.0036
Production	5	2025-05-01	0.00024	5.5	0.000073	0.00095	0.25	0.002	0.35	0.003	0.000014	0.0026
Production	5	2025-06-01	0.00018	10	0.000057	0.00092	0.18	0.0015	0.27	0.0023	0.000012	0.0019
Production	5	2025-07-01	0.00021	13	0.000063	0.0011	0.19	0.0016	0.31	0.0026	0.000014	0.0021
Production	5	2025-08-01	0.00024	14	0.000089	0.0012	0.22	0.0018	0.36	0.0031	0.000015	0.0024
Production	5	2025-09-01	0.00024	14	0.00009	0.0012	0.22	0.0019	0.38	0.0032	0.000015	0.0024
Production	5	2025-10-01	0.00025	14	0.000085	0.0012	0.26	0.0022	0.39	0.0033	0.000016	0.0025
Production	5	2025-11-01	0.0003	12	0.000091	0.0014	0.32	0.0028	0.42	0.0035	0.000017	0.003
Production	5	2025-12-01	0.00031	8.1	0.000079	0.0012	0.35	0.0031	0.38	0.0031	0.000016	0.0031
Production	5	2026-01-01	0.00032	5.6	0.000066	0.00099	0.36	0.0032	0.33	0.0027	0.000015	0.0032
Production	5	2026-02-01	0.00033	4.4	0.000058	0.00087	0.38	0.0034	0.29	0.0023	0.000015	0.0033
Production	6	2026-03-01	0.00033	3.2	0.000043	0.0034	0.38	0.0035	0.19	0.0015	0.000013	0.0033
Production	6	2026-04-01	0.00034	2.7	0.000034	0.0049	0.4	0.0036	0.14	0.001	0.000012	0.0034
Production	6	2026-05-01	0.00026	5.7	0.00027	0.0047	0.31	0.002	0.47	0.0043	0.000019	0.0026
Production	6	2026-06-01	0.0002	10	0.00027	0.0038	0.23	0.0016	0.4	0.0038	0.000018	0.002
Production	6	2026-07-01	0.00022	14	0.00037	0.0042	0.25	0.0017	0.47	0.0047	0.000021	0.0022
Production	6	2026-08-01	0.00024	15	0.00058	0.0046	0.27	0.0019	0.62	0.0063	0.000028	0.0024
Production	6	2026-09-01	0.00024	15	0.00065	0.0046	0.27	0.002	0.67	0.0069	0.000029	0.0024

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Production	3	2023-12-01	0.00047	0.00077	0.035
Production	3	2024-01-01	0.0004	0.00072	0.035
Production	3	2024-02-01	0.00042	0.00085	0.042
Production	4	2024-03-01	0.00037	0.00095	0.049
Production	4	2024-04-01	0.00032	0.00097	0.051
Production	4	2024-05-01	0.00074	0.00083	0.036
Production	4	2024-06-01	0.00031	0.00051	0.013
Production	4	2024-07-01	0.00051	0.00076	0.022
Production	4	2024-08-01	0.00067	0.00084	0.026
Production	4	2024-09-01	0.00072	0.00088	0.028
Production	4	2024-10-01	0.00073	0.00092	0.03
Production	4	2024-11-01	0.00078	0.00095	0.035
Production	4	2024-12-01	0.00068	0.00085	0.036
Production	4	2025-01-01	0.00058	0.00077	0.036
Production	4	2025-02-01	0.00054	0.00079	0.038
Production	5	2025-03-01	0.00045	0.00078	0.042
Production	5	2025-04-01	0.00033	0.00069	0.04
Production	5	2025-05-01	0.00085	0.00069	0.03
Production	5	2025-06-01	0.00063	0.00073	0.021
Production	5	2025-07-01	0.00072	0.00086	0.025
Production	5	2025-08-01	0.00085	0.00089	0.027
Production	5	2025-09-01	0.00089	0.00091	0.028
Production	5	2025-10-01	0.00092	0.00095	0.03
Production	5	2025-11-01	0.001	0.00099	0.035
Production	5	2025-12-01	0.00092	0.00087	0.035
Production	5	2026-01-01	0.00081	0.00076	0.036
Production	5	2026-02-01	0.00073	0.00072	0.037
Production	6	2026-03-01	0.0005	0.00065	0.037
Production	6	2026-04-01	0.00038	0.00063	0.038
Production	6	2026-05-01	0.00091	0.0007	0.029
Production	6	2026-06-01	0.00072	0.00079	0.023
Production	6	2026-07-01	0.00079	0.00091	0.025
Production	6	2026-08-01	0.00094	0.00096	0.027
Production	6	2026-09-01	0.00099	0.00099	0.028

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-10-01	550	370	1	0.024	0.033	0.0054	0.32	0.15	0.00015	0.00015
Production	6	2026-11-01	630	450	0.91	0.021	0.031	0.0055	0.34	0.11	0.00011	0.00011
Production	6	2026-12-01	620	450	0.66	0.015	0.024	0.0048	0.3	0.068	0.000061	0.000062
Production	6	2027-01-01	590	430	0.48	0.011	0.02	0.0043	0.26	0.043	0.000034	0.000034
Production	6	2027-02-01	580	410	0.38	0.0089	0.017	0.0041	0.24	0.032	0.000021	0.000021
Production	7	2027-03-01	490	310	0.23	0.0056	0.013	0.0036	0.19	0.023	0.000012	0.000012
Production	7	2027-04-01	450	260	0.16	0.0038	0.011	0.0035	0.16	0.02	0.0000077	0.0000078
Production	7	2027-05-01	660	330	0.92	0.021	0.03	0.0061	0.29	0.12	0.00015	0.00014
Production	7	2027-06-01	580	280	1.2	0.028	0.037	0.0058	0.25	0.15	0.00024	0.00021
Production	7	2027-07-01	650	320	1.3	0.03	0.042	0.0062	0.27	0.13	0.00021	0.00022
Production	7	2027-08-01	740	360	1.3	0.03	0.042	0.0065	0.3	0.15	0.00022	0.00021
Production	7	2027-09-01	780	360	1.2	0.029	0.04	0.0061	0.3	0.16	0.00021	0.00021
Production	7	2027-10-01	830	370	1.1	0.026	0.037	0.0062	0.31	0.15	0.00015	0.00015
Production	7	2027-11-01	930	440	0.97	0.022	0.035	0.0064	0.32	0.11	0.00011	0.00011
Production	7	2027-12-01	870	460	0.71	0.016	0.028	0.0056	0.29	0.069	0.000064	0.000064
Production	7	2028-01-01	800	480	0.52	0.012	0.023	0.0049	0.26	0.044	0.000036	0.000037
Production	7	2028-02-01	750	490	0.41	0.0094	0.019	0.0046	0.23	0.032	0.000022	0.000023
Production	8	2028-03-01	590	360	0.24	0.0058	0.014	0.0039	0.18	0.023	0.000013	0.000013
Production	8	2028-04-01	510	300	0.16	0.0039	0.012	0.0036	0.15	0.019	0.0000079	0.000008
Production	8	2028-05-01	890	350	0.89	0.021	0.031	0.0065	0.26	0.11	0.00015	0.00014
Production	8	2028-06-01	760	290	1.2	0.027	0.038	0.0062	0.23	0.15	0.00023	0.0002
Production	8	2028-07-01	820	320	1.3	0.029	0.042	0.0065	0.25	0.13	0.0002	0.00021
Production	8	2028-08-01	940	360	1.2	0.029	0.042	0.0069	0.28	0.14	0.00021	0.00021
Production	8	2028-09-01	980	360	1.2	0.027	0.04	0.0065	0.28	0.16	0.0002	0.0002
Production	8	2028-10-01	1000	370	1	0.024	0.037	0.0065	0.28	0.14	0.00014	0.00014
Production	8	2028-11-01	1100	440	0.9	0.021	0.035	0.0067	0.29	0.1	0.0001	0.0001
Production	8	2028-12-01	1000	460	0.65	0.015	0.028	0.0058	0.26	0.064	0.000058	0.000058
Production	8	2029-01-01	930	470	0.48	0.011	0.023	0.0051	0.23	0.041	0.000033	0.000033
Production	8	2029-02-01	870	490	0.38	0.0089	0.02	0.0048	0.21	0.03	0.00002	0.000021
Production	9	2029-03-01	660	370	0.23	0.0055	0.015	0.004	0.16	0.022	0.000012	0.000012
Production	9	2029-04-01	560	310	0.16	0.0038	0.012	0.0037	0.14	0.019	0.0000074	0.0000075
Production	9	2029-05-01	1000	350	0.83	0.019	0.031	0.0066	0.24	0.11	0.00015	0.00014
Production	9	2029-06-01	840	290	1.1	0.025	0.037	0.0063	0.22	0.14	0.00023	0.0002
Production	9	2029-07-01	910	330	1.2	0.027	0.041	0.0067	0.24	0.13	0.0002	0.00021

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-10-01	0.081	0.00046	0.0039	0.00027	15	0.00079	0.0048	0.31	0.0023	0.75
Production	6	2026-11-01	0.097	0.00049	0.0048	0.00031	13	0.00088	0.0058	0.37	0.0029	0.82
Production	6	2026-12-01	0.1	0.00044	0.005	0.00031	8.9	0.00085	0.006	0.37	0.0032	0.77
Production	6	2027-01-01	0.1	0.00038	0.0052	0.00032	6.4	0.00078	0.0062	0.37	0.0033	0.69
Production	6	2027-02-01	0.11	0.00036	0.0054	0.00033	5.1	0.00071	0.0065	0.38	0.0034	0.62
Production	7	2027-03-01	0.088	0.00032	0.0045	0.00033	3.8	0.00046	0.0065	0.39	0.0036	0.41
Production	7	2027-04-01	0.075	0.00031	0.0041	0.00034	3.2	0.00033	0.0068	0.4	0.0038	0.3
Production	7	2027-05-01	0.081	0.0004	0.0039	0.00026	7.3	0.0013	0.0052	0.33	0.0022	1
Production	7	2027-06-01	0.067	0.00043	0.0031	0.0002	12	0.0012	0.0039	0.27	0.0018	0.89
Production	7	2027-07-01	0.073	0.00048	0.0034	0.00023	15	0.0014	0.0043	0.29	0.0019	1
Production	7	2027-08-01	0.079	0.00051	0.0038	0.00024	16	0.0016	0.0047	0.31	0.0021	1.2
Production	7	2027-09-01	0.079	0.00051	0.0038	0.00025	16	0.0018	0.0047	0.3	0.0022	1.3
Production	7	2027-10-01	0.08	0.00052	0.0039	0.00026	16	0.0019	0.0048	0.31	0.0025	1.3
Production	7	2027-11-01	0.095	0.00056	0.0047	0.0003	15	0.0021	0.0057	0.36	0.0032	1.5
Production	7	2027-12-01	0.099	0.0005	0.0049	0.00031	11	0.0019	0.0059	0.36	0.0034	1.3
Production	7	2028-01-01	0.1	0.00043	0.005	0.00031	7.9	0.0016	0.0061	0.37	0.0035	1.1
Production	7	2028-02-01	0.11	0.0004	0.0052	0.00032	6.3	0.0015	0.0063	0.37	0.0037	1
Production	8	2028-03-01	0.1	0.00034	0.0048	0.00032	4.5	0.00091	0.0064	0.38	0.0037	0.64
Production	8	2028-04-01	0.095	0.00031	0.0045	0.00033	3.5	0.00062	0.0066	0.39	0.0038	0.45
Production	8	2028-05-01	0.086	0.00042	0.004	0.00026	8.5	0.0023	0.0052	0.33	0.0023	1.5
Production	8	2028-06-01	0.069	0.00046	0.0031	0.0002	12	0.0019	0.004	0.27	0.0019	1.3
Production	8	2028-07-01	0.074	0.00051	0.0034	0.00023	15	0.0021	0.0043	0.29	0.002	1.4
Production	8	2028-08-01	0.08	0.00055	0.0038	0.00025	17	0.0025	0.0047	0.31	0.0022	1.6
Production	8	2028-09-01	0.079	0.00055	0.0038	0.00025	17	0.0026	0.0047	0.3	0.0023	1.7
Production	8	2028-10-01	0.08	0.00055	0.0039	0.00026	17	0.0027	0.0048	0.31	0.0026	1.7
Production	8	2028-11-01	0.095	0.0006	0.0047	0.0003	15	0.0028	0.0057	0.36	0.0033	1.8
Production	8	2028-12-01	0.098	0.00053	0.0049	0.00031	11	0.0025	0.0059	0.36	0.0035	1.6
Production	8	2029-01-01	0.1	0.00045	0.005	0.00031	8.4	0.0022	0.0061	0.36	0.0035	1.4
Production	8	2029-02-01	0.11	0.00042	0.0053	0.00032	6.9	0.002	0.0063	0.38	0.0037	1.3
Production	9	2029-03-01	0.11	0.00035	0.0051	0.00032	4.8	0.0012	0.0064	0.38	0.0037	0.8
Production	9	2029-04-01	0.11	0.00032	0.0049	0.00033	3.8	0.00085	0.0067	0.39	0.0039	0.56
Production	9	2029-05-01	0.09	0.00043	0.0041	0.00027	9.1	0.0028	0.0052	0.33	0.0024	1.8
Production	9	2029-06-01	0.071	0.00048	0.0032	0.00021	13	0.0023	0.004	0.27	0.002	1.4
Production	9	2029-07-01	0.075	0.00055	0.0035	0.00023	16	0.0025	0.0044	0.29	0.0021	1.5

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-10-01	0.0079	0.000033	0.0025	0.001	0.001	0.031	1.2	0.078	0.00046	0.0039
Production	6	2026-11-01	0.0087	0.000037	0.003	0.0011	0.0011	0.036	1.1	0.095	0.00049	0.0047
Production	6	2026-12-01	0.0082	0.000035	0.0031	0.001	0.00095	0.036	1	0.1	0.00044	0.005
Production	6	2027-01-01	0.0074	0.000033	0.0031	0.0009	0.00083	0.036	0.96	0.1	0.00038	0.0052
Production	6	2027-02-01	0.0066	0.000031	0.0033	0.00082	0.00077	0.036	0.97	0.11	0.00036	0.0054
Production	7	2027-03-01	0.0043	0.000023	0.0033	0.00057	0.00068	0.036	0.93	0.087	0.00032	0.0045
Production	7	2027-04-01	0.003	0.00002	0.0034	0.00045	0.00065	0.038	0.95	0.075	0.00031	0.0041
Production	7	2027-05-01	0.012	0.000046	0.0026	0.0011	0.00081	0.03	1.4	0.076	0.0004	0.0038
Production	7	2027-06-01	0.01	0.000042	0.002	0.0009	0.00091	0.023	1.3	0.062	0.00043	0.0031
Production	7	2027-07-01	0.011	0.000048	0.0022	0.00097	0.0011	0.026	1.4	0.068	0.00048	0.0034
Production	7	2027-08-01	0.013	0.000055	0.0024	0.0011	0.0011	0.028	1.4	0.076	0.00051	0.0038
Production	7	2027-09-01	0.015	0.000059	0.0024	0.0012	0.0011	0.029	1.3	0.076	0.00051	0.0038
Production	7	2027-10-01	0.015	0.000063	0.0025	0.0012	0.0012	0.031	1.1	0.077	0.00052	0.0039
Production	7	2027-11-01	0.017	0.000069	0.0029	0.0013	0.0013	0.035	1.1	0.093	0.00056	0.0047
Production	7	2027-12-01	0.015	0.000063	0.003	0.0012	0.0011	0.035	0.94	0.098	0.0005	0.0049
Production	7	2028-01-01	0.013	0.000055	0.0031	0.0011	0.00094	0.035	0.88	0.1	0.00043	0.005
Production	7	2028-02-01	0.012	0.00005	0.0032	0.00095	0.00085	0.036	0.87	0.1	0.0004	0.0052
Production	8	2028-03-01	0.0073	0.000035	0.0032	0.00064	0.00072	0.036	0.87	0.1	0.00034	0.0048
Production	8	2028-04-01	0.005	0.000027	0.0033	0.00048	0.00067	0.037	0.91	0.095	0.00031	0.0045
Production	8	2028-05-01	0.018	0.000071	0.0026	0.0012	0.0009	0.03	1.4	0.082	0.00042	0.004
Production	8	2028-06-01	0.015	0.00006	0.002	0.001	0.001	0.023	1.3	0.064	0.00046	0.0031
Production	8	2028-07-01	0.016	0.000066	0.0022	0.0011	0.0011	0.026	1.4	0.069	0.00051	0.0034
Production	8	2028-08-01	0.019	0.000076	0.0024	0.0012	0.0012	0.028	1.4	0.077	0.00055	0.0038
Production	8	2028-09-01	0.02	0.000079	0.0024	0.0013	0.0013	0.029	1.2	0.076	0.00055	0.0038
Production	8	2028-10-01	0.02	0.000081	0.0025	0.0013	0.0013	0.031	1.1	0.078	0.00055	0.0039
Production	8	2028-11-01	0.022	0.000087	0.0029	0.0014	0.0014	0.035	1	0.093	0.0006	0.0046
Production	8	2028-12-01	0.019	0.000079	0.003	0.0013	0.0012	0.035	0.91	0.097	0.00053	0.0049
Production	8	2029-01-01	0.017	0.000069	0.0031	0.0011	0.001	0.035	0.86	0.1	0.00045	0.005
Production	8	2029-02-01	0.015	0.000063	0.0032	0.001	0.00092	0.036	0.87	0.11	0.00042	0.0053
Production	9	2029-03-01	0.0093	0.000043	0.0032	0.00068	0.00076	0.036	0.86	0.11	0.00035	0.0051
Production	9	2029-04-01	0.0064	0.000033	0.0033	0.00051	0.00069	0.037	0.9	0.11	0.00032	0.0049
Production	9	2029-05-01	0.021	0.000083	0.0026	0.0013	0.00095	0.03	1.4	0.086	0.00043	0.0041
Production	9	2029-06-01	0.017	0.000069	0.002	0.001	0.0011	0.024	1.3	0.066	0.00048	0.0032
Production	9	2029-07-01	0.018	0.000076	0.0022	0.0011	0.0012	0.027	1.4	0.071	0.00054	0.0035

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-10-01	0.00025	14	0.00078	0.0047	0.28	0.0023	0.74	0.0079	0.000033	0.0025
Production	6	2026-11-01	0.0003	12	0.00087	0.0057	0.34	0.0029	0.82	0.0087	0.000037	0.003
Production	6	2026-12-01	0.00031	8.8	0.00084	0.006	0.35	0.0031	0.76	0.0081	0.000035	0.0031
Production	6	2027-01-01	0.00031	6.4	0.00078	0.0062	0.36	0.0033	0.69	0.0074	0.000033	0.0031
Production	6	2027-02-01	0.00032	5.1	0.00071	0.0065	0.38	0.0034	0.62	0.0066	0.000031	0.0032
Production	7	2027-03-01	0.00033	3.8	0.00046	0.0065	0.38	0.0036	0.41	0.0043	0.000023	0.0033
Production	7	2027-04-01	0.00034	3.1	0.00033	0.0068	0.4	0.0038	0.3	0.003	0.00002	0.0034
Production	7	2027-05-01	0.00026	7.2	0.0013	0.0051	0.31	0.0022	1	0.012	0.000046	0.0026
Production	7	2027-06-01	0.0002	12	0.0012	0.0039	0.23	0.0018	0.89	0.01	0.000042	0.002
Production	7	2027-07-01	0.00022	15	0.0014	0.0042	0.25	0.0019	0.99	0.011	0.000047	0.0022
Production	7	2027-08-01	0.00024	16	0.0016	0.0046	0.27	0.0021	1.2	0.013	0.000055	0.0024
Production	7	2027-09-01	0.00024	16	0.0018	0.0046	0.27	0.0022	1.3	0.015	0.000059	0.0024
Production	7	2027-10-01	0.00025	16	0.0019	0.0047	0.28	0.0025	1.3	0.015	0.000062	0.0025
Production	7	2027-11-01	0.00029	14	0.0021	0.0056	0.33	0.0032	1.5	0.017	0.000069	0.0029
Production	7	2027-12-01	0.0003	11	0.0019	0.0059	0.34	0.0034	1.3	0.015	0.000063	0.003
Production	7	2028-01-01	0.00031	7.8	0.0016	0.0061	0.35	0.0035	1.1	0.013	0.000055	0.0031
Production	7	2028-02-01	0.00032	6.3	0.0015	0.0063	0.37	0.0036	1	0.012	0.00005	0.0032
Production	8	2028-03-01	0.00032	4.4	0.00091	0.0064	0.37	0.0037	0.64	0.0073	0.000035	0.0032
Production	8	2028-04-01	0.00033	3.5	0.00062	0.0066	0.39	0.0038	0.45	0.005	0.000027	0.0033
Production	8	2028-05-01	0.00026	8.4	0.0023	0.0051	0.31	0.0023	1.5	0.018	0.000071	0.0026
Production	8	2028-06-01	0.0002	13	0.0019	0.0039	0.23	0.0019	1.3	0.015	0.000061	0.002
Production	8	2028-07-01	0.00022	16	0.0021	0.0042	0.25	0.002	1.3	0.016	0.000065	0.0022
Production	8	2028-08-01	0.00024	17	0.0025	0.0046	0.27	0.0022	1.6	0.019	0.000076	0.0024
Production	8	2028-09-01	0.00024	17	0.0026	0.0046	0.27	0.0023	1.7	0.02	0.000079	0.0024
Production	8	2028-10-01	0.00025	16	0.0026	0.0047	0.28	0.0026	1.7	0.02	0.000081	0.0025
Production	8	2028-11-01	0.00029	15	0.0028	0.0056	0.33	0.0033	1.8	0.022	0.000087	0.0029
Production	8	2028-12-01	0.0003	11	0.0025	0.0059	0.34	0.0034	1.6	0.019	0.000079	0.003
Production	8	2029-01-01	0.00031	8.3	0.0022	0.006	0.35	0.0035	1.4	0.017	0.000069	0.0031
Production	8	2029-02-01	0.00032	6.9	0.002	0.0063	0.37	0.0037	1.3	0.015	0.000063	0.0032
Production	9	2029-03-01	0.00032	4.8	0.0012	0.0064	0.37	0.0037	0.8	0.0093	0.000043	0.0032
Production	9	2029-04-01	0.00033	3.8	0.00084	0.0067	0.39	0.0039	0.56	0.0064	0.000033	0.0033
Production	9	2029-05-01	0.00026	9	0.0028	0.0052	0.31	0.0024	1.7	0.021	0.000083	0.0026
Production	9	2029-06-01	0.0002	13	0.0023	0.004	0.24	0.002	1.4	0.017	0.000069	0.002
Production	9	2029-07-01	0.00022	16	0.0024	0.0043	0.25	0.0021	1.5	0.018	0.000075	0.0022

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Production	6	2026-10-01	0.001	0.001	0.029
Production	6	2026-11-01	0.0011	0.0011	0.035
Production	6	2026-12-01	0.001	0.00095	0.035
Production	6	2027-01-01	0.0009	0.00082	0.035
Production	6	2027-02-01	0.00082	0.00077	0.036
Production	7	2027-03-01	0.00057	0.00068	0.036
Production	7	2027-04-01	0.00045	0.00065	0.038
Production	7	2027-05-01	0.0011	0.00081	0.029
Production	7	2027-06-01	0.0009	0.00091	0.023
Production	7	2027-07-01	0.00097	0.001	0.025
Production	7	2027-08-01	0.0011	0.0011	0.027
Production	7	2027-09-01	0.0012	0.0011	0.027
Production	7	2027-10-01	0.0012	0.0012	0.029
Production	7	2027-11-01	0.0013	0.0013	0.034
Production	7	2027-12-01	0.0012	0.0011	0.034
Production	7	2028-01-01	0.0011	0.00094	0.034
Production	7	2028-02-01	0.00095	0.00085	0.035
Production	8	2028-03-01	0.00064	0.00072	0.036
Production	8	2028-04-01	0.00048	0.00067	0.037
Production	8	2028-05-01	0.0012	0.0009	0.029
Production	8	2028-06-01	0.001	0.001	0.023
Production	8	2028-07-01	0.0011	0.0011	0.025
Production	8	2028-08-01	0.0012	0.0012	0.027
Production	8	2028-09-01	0.0013	0.0013	0.027
Production	8	2028-10-01	0.0013	0.0013	0.029
Production	8	2028-11-01	0.0014	0.0014	0.034
Production	8	2028-12-01	0.0013	0.0012	0.034
Production	8	2029-01-01	0.0011	0.001	0.034
Production	8	2029-02-01	0.001	0.00092	0.035
Production	9	2029-03-01	0.00068	0.00076	0.035
Production	9	2029-04-01	0.00051	0.00069	0.037
Production	9	2029-05-01	0.0013	0.00094	0.029
Production	9	2029-06-01	0.001	0.001	0.023
Production	9	2029-07-01	0.0011	0.0012	0.026

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L
Production	9	2029-08-01	1000	360	1.2	0.027	0.041	0.0071	0.26	0.14	0.00021	0.00021
Production	9	2029-09-01	1100	360	1.1	0.025	0.039	0.0067	0.26	0.15	0.0002	0.0002
Production	9	2029-10-01	1100	370	0.96	0.022	0.036	0.0067	0.26	0.14	0.00014	0.00014
Production	9	2029-11-01	1200	440	0.83	0.019	0.034	0.0069	0.28	0.1	0.0001	0.0001
Production	9	2029-12-01	1100	460	0.61	0.014	0.028	0.006	0.25	0.063	0.000058	0.000058
Production	9	2030-01-01	990	480	0.45	0.011	0.023	0.0053	0.22	0.041	0.000033	0.000033
Production	9	2030-02-01	920	500	0.36	0.0085	0.02	0.0049	0.2	0.03	0.000021	0.000021
Production	10	2030-03-01	690	380	0.22	0.0053	0.015	0.0041	0.16	0.022	0.000012	0.000012
Production	10	2030-04-01	590	320	0.15	0.0036	0.012	0.0038	0.14	0.019	0.0000076	0.0000077
Production	10	2030-05-01	1100	360	0.76	0.018	0.03	0.0066	0.22	0.1	0.00015	0.00013
Production	10	2030-06-01	910	300	1	0.023	0.035	0.0064	0.2	0.14	0.00023	0.0002
Production	10	2030-07-01	990	330	1.1	0.025	0.039	0.0069	0.22	0.12	0.00019	0.00021
Production	10	2030-08-01	1100	370	1	0.024	0.039	0.0073	0.24	0.13	0.0002	0.0002
Production	10	2030-09-01	1200	370	1	0.023	0.037	0.0071	0.25	0.14	0.0002	0.00019
Water Management Pond - Dry Year 2 Model												
Production	2	2022-03-01	180	58	0.037	0.00061	0.0065	0.0012	0.082	0.088	0.000067	0.00007
Production	2	2022-04-01	190	60	0.034	0.00063	0.0065	0.00097	0.074	0.064	0.000045	0.000048
Production	2	2022-05-01	240	100	0.21	0.0048	0.0095	0.0033	0.19	0.12	0.00013	0.00012
Production	2	2022-06-01	220	99	0.36	0.0083	0.013	0.0034	0.19	0.13	0.00019	0.00017
Production	2	2022-07-01	250	110	0.45	0.01	0.016	0.0036	0.21	0.11	0.00016	0.00017
Production	2	2022-08-01	260	120	0.48	0.011	0.017	0.0036	0.23	0.1	0.00015	0.00015
Production	2	2022-09-01	260	120	0.48	0.011	0.016	0.0032	0.24	0.11	0.00015	0.00014
Production	2	2022-10-01	250	110	0.41	0.0095	0.014	0.0028	0.22	0.095	0.0001	0.0001
Production	2	2022-11-01	260	120	0.36	0.0083	0.014	0.0024	0.22	0.07	0.000073	0.000073
Production	2	2022-12-01	250	110	0.28	0.0065	0.012	0.0019	0.19	0.048	0.000046	0.000046
Production	2	2023-01-01	250	110	0.23	0.0053	0.011	0.0015	0.18	0.035	0.00003	0.00003
Production	2	2023-02-01	260	110	0.2	0.0047	0.01	0.0013	0.17	0.029	0.000021	0.000021
Water Management Pond - Wet Year 2 Model												
Production	2	2022-03-01	180	58	0.036	0.0006	0.0065	0.0012	0.082	0.087	0.000066	0.00007
Production	2	2022-04-01	190	60	0.034	0.00063	0.0065	0.00097	0.074	0.063	0.000045	0.000047
Production	2	2022-05-01	170	67	0.14	0.0032	0.0063	0.0031	0.13	0.14	0.00018	0.00016
Production	2	2022-06-01	130	49	0.17	0.0041	0.0071	0.0023	0.096	0.16	0.00027	0.00024
Production	2	2022-07-01	160	57	0.21	0.0049	0.01	0.0026	0.11	0.15	0.00023	0.00025
Production	2	2022-08-01	170	63	0.22	0.0054	0.01	0.0029	0.13	0.19	0.00026	0.00026

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	9	2029-08-01	0.081	0.00059	0.0039	0.00025	17	0.0029	0.0047	0.31	0.0024	1.8
Production	9	2029-09-01	0.08	0.0006	0.0039	0.00025	17	0.003	0.0048	0.31	0.0024	1.8
Production	9	2029-10-01	0.081	0.00061	0.0039	0.00026	17	0.003	0.0048	0.31	0.0028	1.8
Production	9	2029-11-01	0.096	0.00067	0.0047	0.0003	15	0.0032	0.0057	0.36	0.0035	2
Production	9	2029-12-01	0.1	0.0006	0.0049	0.00031	12	0.0029	0.0059	0.36	0.0036	1.8
Production	9	2030-01-01	0.1	0.0005	0.0051	0.00031	8.7	0.0025	0.0061	0.37	0.0037	1.5
Production	9	2030-02-01	0.11	0.00045	0.0053	0.00032	7.3	0.0022	0.0064	0.38	0.0038	1.4
Production	10	2030-03-01	0.11	0.00037	0.0052	0.00033	5	0.0014	0.0065	0.38	0.0038	0.86
Production	10	2030-04-01	0.11	0.00034	0.005	0.00034	4	0.00094	0.0067	0.4	0.0039	0.6
Production	10	2030-05-01	0.091	0.00043	0.0042	0.00027	6.5	0.0031	0.0053	0.33	0.0024	1.9
Production	10	2030-06-01	0.072	0.0005	0.0033	0.00021	5.3	0.0025	0.0041	0.27	0.0021	1.6
Production	10	2030-07-01	0.076	0.00059	0.0036	0.00023	5.8	0.0028	0.0044	0.29	0.0022	1.7
Production	10	2030-08-01	0.082	0.00065	0.0039	0.00025	6.6	0.0032	0.0048	0.31	0.0025	1.9
Production	10	2030-09-01	0.082	0.00068	0.004	0.00026	6.9	0.0034	0.0049	0.31	0.0026	2.1
Water Management Pond - Dry Year 2 Model												**Wate**
Production	2	2022-03-01	0.0075	0.00021	0.002	0.00021	9.7	0.000028	0.00047	0.29	0.0033	0.088
Production	2	2022-04-01	0.0061	0.00022	0.0021	0.00021	6.9	0.000022	0.00047	0.31	0.0036	0.076
Production	2	2022-05-01	0.025	0.00029	0.0031	0.00022	6.4	0.000052	0.00082	0.3	0.0028	0.22
Production	2	2022-06-01	0.032	0.00032	0.003	0.0002	8.3	0.000052	0.00084	0.27	0.0023	0.21
Production	2	2022-07-01	0.036	0.00036	0.0033	0.00022	9.3	0.000055	0.00095	0.28	0.0023	0.24
Production	2	2022-08-01	0.035	0.00037	0.0036	0.00023	9	0.000065	0.00097	0.28	0.0024	0.27
Production	2	2022-09-01	0.033	0.00037	0.0035	0.00023	8.9	0.000067	0.00098	0.27	0.0024	0.28
Production	2	2022-10-01	0.027	0.00033	0.0034	0.00022	8.3	0.00006	0.00087	0.26	0.0025	0.26
Production	2	2022-11-01	0.022	0.00033	0.0037	0.00024	6.7	0.000059	0.00085	0.28	0.0029	0.27
Production	2	2022-12-01	0.017	0.0003	0.0035	0.00025	4.8	0.000052	0.00078	0.29	0.0032	0.24
Production	2	2023-01-01	0.013	0.00029	0.0033	0.00026	3.6	0.000046	0.00073	0.3	0.0035	0.22
Production	2	2023-02-01	0.011	0.00029	0.0033	0.00028	3	0.000043	0.00072	0.32	0.0038	0.21
Water Management Pond - Wet Year 2 Model												**Water**
Production	2	2022-03-01	0.0075	0.00021	0.002	0.0002	9.7	0.000028	0.00047	0.29	0.0033	0.088
Production	2	2022-04-01	0.006	0.00021	0.0021	0.0002	6.9	0.000022	0.00047	0.31	0.0036	0.076
Production	2	2022-05-01	0.022	0.00019	0.003	0.00021	5.8	0.000037	0.00066	0.24	0.0019	0.14
Production	2	2022-06-01	0.022	0.00016	0.0023	0.00015	10	0.000033	0.00057	0.19	0.0012	0.093
Production	2	2022-07-01	0.023	0.00018	0.0026	0.00018	14	0.000033	0.00068	0.21	0.0013	0.11
Production	2	2022-08-01	0.023	0.00019	0.0028	0.00019	16	0.000052	0.00068	0.21	0.0014	0.12

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Nickel (Ni), total mg/L	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L
Production	9	2029-08-01	0.021	0.000087	0.0024	0.0013	0.0013	0.028	1.4	0.078	0.00059	0.0039
Production	9	2029-09-01	0.022	0.000089	0.0024	0.0013	0.0014	0.029	1.2	0.077	0.0006	0.0038
Production	9	2029-10-01	0.022	0.00009	0.0025	0.0013	0.0014	0.031	1.1	0.079	0.00061	0.0039
Production	9	2029-11-01	0.024	0.000096	0.0029	0.0014	0.0015	0.035	1	0.094	0.00067	0.0047
Production	9	2029-12-01	0.021	0.000088	0.003	0.0013	0.0014	0.035	0.89	0.099	0.0006	0.0049
Production	9	2030-01-01	0.019	0.000076	0.0031	0.0011	0.0011	0.035	0.85	0.1	0.0005	0.0051
Production	9	2030-02-01	0.016	0.000069	0.0032	0.001	0.00098	0.036	0.86	0.11	0.00045	0.0053
Production	10	2030-03-01	0.01	0.000046	0.0032	0.00069	0.0008	0.036	0.86	0.11	0.00037	0.0052
Production	10	2030-04-01	0.007	0.000035	0.0034	0.00052	0.00072	0.037	0.9	0.11	0.00034	0.005
Production	10	2030-05-01	0.023	0.000089	0.0026	0.0013	0.00096	0.03	1.4	0.087	0.00043	0.0042
Production	10	2030-06-01	0.019	0.000076	0.0021	0.001	0.0011	0.024	1.3	0.067	0.0005	0.0033
Production	10	2030-07-01	0.02	0.000084	0.0022	0.0011	0.0013	0.027	1.3	0.072	0.00059	0.0035
Production	10	2030-08-01	0.024	0.000096	0.0024	0.0013	0.0014	0.028	1.3	0.079	0.00065	0.0039
Production	10	2030-09-01	0.025	0.0001	0.0025	0.0013	0.0015	0.029	1.2	0.08	0.00068	0.004
Water Management Pond - Dry Year 2 Model			**r Management Pond - Dry Year 2 Model**									
Production	2	2022-03-01	0.00061	0.0000063	0.0022	0.00025	0.0004	0.028	0.81	0.0048	0.00021	0.002
Production	2	2022-04-01	0.00048	0.0000064	0.0025	0.00023	0.00036	0.029	0.85	0.0042	0.00022	0.0021
Production	2	2022-05-01	0.0018	0.000010	0.0023	0.00055	0.00049	0.028	1.4	0.018	0.00029	0.003
Production	2	2022-06-01	0.0017	0.000010	0.002	0.0005	0.00057	0.024	1.3	0.026	0.00032	0.0029
Production	2	2022-07-01	0.0019	0.000012	0.0022	0.00057	0.00064	0.026	1.3	0.03	0.00036	0.0033
Production	2	2022-08-01	0.0022	0.000012	0.0022	0.00064	0.00064	0.026	1.2	0.03	0.00037	0.0035
Production	2	2022-09-01	0.0023	0.000012	0.0022	0.00067	0.00064	0.026	1.1	0.029	0.00036	0.0035
Production	2	2022-10-01	0.0021	0.000011	0.0021	0.00064	0.00059	0.025	0.96	0.024	0.00033	0.0033
Production	2	2022-11-01	0.0021	0.000011	0.0023	0.00066	0.00054	0.027	0.91	0.02	0.00033	0.0037
Production	2	2022-12-01	0.0019	0.000010	0.0024	0.00061	0.00046	0.028	0.86	0.015	0.0003	0.0035
Production	2	2023-01-01	0.0017	0.0000096	0.0026	0.00057	0.00041	0.029	0.85	0.012	0.00029	0.0033
Production	2	2023-02-01	0.0016	0.0000096	0.0027	0.00055	0.0004	0.031	0.89	0.01	0.00029	0.0033
Water Management Pond - Wet Year 2 Model			**Management Pond - Wet Year 2 Model**									
Production	2	2022-03-01	0.00061	0.0000063	0.0022	0.00025	0.0004	0.028	0.81	0.0048	0.00021	0.002
Production	2	2022-04-01	0.00048	0.0000064	0.0025	0.00023	0.00036	0.029	0.84	0.0042	0.00021	0.0021
Production	2	2022-05-01	0.0012	0.0000069	0.0022	0.00035	0.00035	0.026	1.5	0.013	0.00019	0.0029
Production	2	2022-06-01	0.00082	0.0000053	0.0015	0.00022	0.00036	0.018	1.3	0.014	0.00016	0.0023
Production	2	2022-07-01	0.00092	0.0000074	0.0017	0.00025	0.00045	0.022	1.4	0.015	0.00018	0.0026
Production	2	2022-08-01	0.0011	0.0000073	0.0018	0.00029	0.00047	0.022	1.5	0.015	0.00019	0.0028

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	9	2029-08-01	0.00024	17	0.0029	0.0047	0.28	0.0023	1.8	0.021	0.000086	0.0024
Production	9	2029-09-01	0.00024	17	0.003	0.0047	0.28	0.0024	1.8	0.022	0.000089	0.0024
Production	9	2029-10-01	0.00025	17	0.003	0.0048	0.28	0.0027	1.8	0.022	0.000089	0.0025
Production	9	2029-11-01	0.00029	15	0.0032	0.0057	0.33	0.0034	2	0.024	0.000096	0.0029
Production	9	2029-12-01	0.0003	11	0.0029	0.0059	0.35	0.0036	1.8	0.021	0.000087	0.003
Production	9	2030-01-01	0.00031	8.7	0.0025	0.0061	0.36	0.0037	1.5	0.018	0.000076	0.0031
Production	9	2030-02-01	0.00032	7.2	0.0022	0.0064	0.37	0.0038	1.4	0.016	0.000069	0.0032
Production	10	2030-03-01	0.00032	5	0.0014	0.0065	0.38	0.0038	0.86	0.01	0.000046	0.0032
Production	10	2030-04-01	0.00034	4	0.00094	0.0067	0.39	0.0039	0.6	0.007	0.000035	0.0034
Production	10	2030-05-01	0.00027	9.3	0.0031	0.0053	0.32	0.0024	1.9	0.023	0.000089	0.0026
Production	10	2030-06-01	0.00021	13	0.0026	0.0041	0.24	0.002	1.6	0.019	0.000077	0.0021
Production	10	2030-07-01	0.00023	16	0.0028	0.0044	0.26	0.0022	1.7	0.02	0.000083	0.0023
Production	10	2030-08-01	0.00024	17	0.0032	0.0048	0.28	0.0025	1.9	0.024	0.000096	0.0024
Production	10	2030-09-01	0.00025	17	0.0034	0.0048	0.28	0.0026	2.1	0.025	0.0001	0.0025
Water Management Pond - Dry Year 2 Model												
Production	2	2022-03-01	0.00019	9.6	0.000022	0.00043	0.24	0.0033	0.085	0.0006	0.0000063	0.0022
Production	2	2022-04-01	0.0002	6.9	0.000018	0.00045	0.27	0.0036	0.074	0.00047	0.0000064	0.0025
Production	2	2022-05-01	0.00022	6.3	0.000048	0.00076	0.26	0.0027	0.22	0.0018	0.0000096	0.0023
Production	2	2022-06-01	0.00019	8.4	0.000044	0.00079	0.22	0.0023	0.21	0.0017	0.0000098	0.002
Production	2	2022-07-01	0.00021	9.5	0.000049	0.00087	0.23	0.0023	0.24	0.0019	0.000011	0.0022
Production	2	2022-08-01	0.00022	9.1	0.000062	0.00091	0.25	0.0024	0.27	0.0022	0.000012	0.0022
Production	2	2022-09-01	0.00022	8.9	0.000063	0.0009	0.25	0.0024	0.28	0.0023	0.000011	0.0022
Production	2	2022-10-01	0.00021	8.2	0.000056	0.00082	0.24	0.0025	0.26	0.0021	0.000011	0.0021
Production	2	2022-11-01	0.00023	6.6	0.000056	0.00081	0.26	0.0029	0.27	0.0021	0.000011	0.0023
Production	2	2022-12-01	0.00024	4.8	0.00005	0.00075	0.28	0.0032	0.24	0.0019	0.00001	0.0024
Production	2	2023-01-01	0.00026	3.6	0.000045	0.00071	0.29	0.0035	0.22	0.0017	0.0000096	0.0026
Production	2	2023-02-01	0.00027	3	0.000042	0.00071	0.32	0.0038	0.21	0.0016	0.0000096	0.0027
Water Management Pond - Wet Year 2 Model												
Production	2	2022-03-01	0.00019	9.6	0.000022	0.00043	0.24	0.0033	0.085	0.0006	0.0000063	0.0022
Production	2	2022-04-01	0.0002	6.8	0.000018	0.00044	0.27	0.0036	0.074	0.00047	0.0000064	0.0025
Production	2	2022-05-01	0.00021	5.7	0.000033	0.00058	0.17	0.0018	0.14	0.0012	0.0000068	0.0021
Production	2	2022-06-01	0.00015	10	0.000022	0.0005	0.1	0.0012	0.089	0.0008	0.0000055	0.0015
Production	2	2022-07-01	0.00017	15	0.000024	0.00054	0.11	0.0013	0.1	0.0009	0.000006	0.0017
Production	2	2022-08-01	0.00018	16	0.000047	0.00058	0.12	0.0014	0.12	0.0011	0.0000067	0.0018

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Production	9	2029-08-01	0.0013	0.0013	0.027
Production	9	2029-09-01	0.0013	0.0014	0.028
Production	9	2029-10-01	0.0013	0.0014	0.029
Production	9	2029-11-01	0.0014	0.0015	0.034
Production	9	2029-12-01	0.0013	0.0013	0.034
Production	9	2030-01-01	0.0011	0.0011	0.035
Production	9	2030-02-01	0.001	0.00098	0.036
Production	10	2030-03-01	0.00069	0.0008	0.036
Production	10	2030-04-01	0.00052	0.00072	0.037
Production	10	2030-05-01	0.0013	0.00096	0.03
Production	10	2030-06-01	0.001	0.0011	0.024
Production	10	2030-07-01	0.0011	0.0013	0.026
Production	10	2030-08-01	0.0013	0.0014	0.027
Production	10	2030-09-01	0.0013	0.0015	0.028
Water Management Pond - Dry Year 2 Model					
Production	2	2022-03-01	0.00025	0.0004	0.026
Production	2	2022-04-01	0.00023	0.00036	0.028
Production	2	2022-05-01	0.00055	0.00048	0.027
Production	2	2022-06-01	0.0005	0.00056	0.023
Production	2	2022-07-01	0.00057	0.00064	0.025
Production	2	2022-08-01	0.00064	0.00064	0.025
Production	2	2022-09-01	0.00067	0.00063	0.025
Production	2	2022-10-01	0.00064	0.00059	0.024
Production	2	2022-11-01	0.00066	0.00054	0.027
Production	2	2022-12-01	0.00061	0.00046	0.027
Production	2	2023-01-01	0.00057	0.00041	0.029
Production	2	2023-02-01	0.00055	0.0004	0.03
Water Management Pond - Wet Year 2 Model					
Production	2	2022-03-01	0.00025	0.00039	0.026
Production	2	2022-04-01	0.00023	0.00035	0.028
Production	2	2022-05-01	0.00035	0.00035	0.025
Production	2	2022-06-01	0.00022	0.00036	0.018
Production	2	2022-07-01	0.00025	0.00045	0.02
Production	2	2022-08-01	0.00029	0.00046	0.021

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	2	2022-09-01	180	67	0.24	0.0056	0.0095	0.0025	0.13	0.22	0.00027	0.00026
Production	2	2022-10-01	190	73	0.24	0.0055	0.0099	0.0026	0.14	0.22	0.00021	0.00021
Production	2	2022-11-01	220	85	0.25	0.0055	0.012	0.0027	0.16	0.19	0.00018	0.00019
Production	2	2022-12-01	210	82	0.2	0.0044	0.01	0.002	0.14	0.13	0.00012	0.00012
Production	2	2023-01-01	200	77	0.16	0.0035	0.0093	0.0015	0.13	0.093	0.00008	0.000082
Production	2	2023-02-01	200	76	0.14	0.0031	0.0087	0.0013	0.12	0.073	0.000057	0.00006
Water Management Pond - Dry Year 9 Model												
Production	9	2029-03-01	180	58	0.037	0.0006	0.0065	0.0012	0.082	0.087	0.000067	0.00007
Production	9	2029-04-01	190	60	0.034	0.00063	0.0065	0.00097	0.074	0.063	0.000045	0.000047
Production	9	2029-05-01	200	82	0.17	0.0039	0.0077	0.0033	0.16	0.14	0.00016	0.00015
Production	9	2029-06-01	180	74	0.27	0.0063	0.01	0.003	0.14	0.15	0.00024	0.00021
Production	9	2029-07-01	200	82	0.32	0.0075	0.013	0.0031	0.16	0.13	0.0002	0.00022
Production	9	2029-08-01	210	89	0.34	0.008	0.013	0.0032	0.17	0.15	0.00021	0.00021
Production	9	2029-09-01	220	91	0.34	0.008	0.012	0.0028	0.18	0.17	0.00021	0.00021
Production	9	2029-10-01	220	91	0.32	0.0073	0.012	0.0027	0.18	0.16	0.00016	0.00016
Production	9	2029-11-01	240	100	0.3	0.0068	0.012	0.0025	0.19	0.13	0.00013	0.00013
Production	9	2029-12-01	230	96	0.24	0.0054	0.011	0.0019	0.17	0.088	0.000082	0.000083
Production	9	2030-01-01	230	91	0.19	0.0044	0.0096	0.0015	0.15	0.058	0.00005	0.000051
Production	9	2030-02-01	230	90	0.17	0.0038	0.0091	0.0012	0.14	0.043	0.000034	0.000035
Water Management Pond - Wet Year 9 Model												
Production	9	2029-03-01	180	58	0.037	0.0006	0.0065	0.0012	0.082	0.087	0.000067	0.00007
Production	9	2029-04-01	190	60	0.034	0.00063	0.0065	0.00097	0.074	0.063	0.000045	0.000047
Production	9	2029-05-01	200	82	0.17	0.0039	0.0077	0.0033	0.16	0.14	0.00016	0.00015
Production	9	2029-06-01	180	74	0.27	0.0063	0.01	0.003	0.14	0.15	0.00024	0.00021
Production	9	2029-07-01	200	82	0.32	0.0075	0.013	0.0031	0.16	0.13	0.0002	0.00022
Production	9	2029-08-01	210	89	0.34	0.008	0.013	0.0032	0.17	0.15	0.00021	0.00021
Production	9	2029-09-01	220	91	0.34	0.008	0.012	0.0028	0.18	0.17	0.00021	0.00021
Production	9	2029-10-01	220	91	0.32	0.0073	0.012	0.0027	0.18	0.16	0.00016	0.00016
Production	9	2029-11-01	240	100	0.3	0.0068	0.012	0.0025	0.19	0.13	0.00013	0.00013
Production	9	2029-12-01	230	96	0.24	0.0054	0.011	0.0019	0.17	0.088	0.000082	0.000083
Production	9	2030-01-01	230	91	0.19	0.0044	0.0096	0.0015	0.15	0.058	0.00005	0.000051
Production	9	2030-02-01	230	90	0.17	0.0038	0.0091	0.0012	0.14	0.043	0.000034	0.000035

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	2	2022-09-01	0.023	0.0002	0.0028	0.0002	17	0.000055	0.00076	0.22	0.0015	0.14
Production	2	2022-10-01	0.02	0.00021	0.0027	0.00021	18	0.000051	0.00072	0.24	0.0017	0.15
Production	2	2022-11-01	0.018	0.00023	0.003	0.00024	18	0.000055	0.00074	0.28	0.0023	0.18
Production	2	2022-12-01	0.014	0.00022	0.0027	0.00023	14	0.000048	0.00064	0.27	0.0024	0.17
Production	2	2023-01-01	0.011	0.00021	0.0025	0.00022	11	0.000043	0.00058	0.28	0.0026	0.16
Production	2	2023-02-01	0.0089	0.00021	0.0024	0.00023	8.1	0.000037	0.00055	0.28	0.0028	0.15
Water Management Pond - Dry Year 9 Model												**Wate**
Production	9	2029-03-01	0.0075	0.00021	0.002	0.00021	9.7	0.000028	0.00047	0.29	0.0033	0.088
Production	9	2029-04-01	0.0061	0.00022	0.0021	0.00021	6.9	0.000022	0.00047	0.31	0.0036	0.076
Production	9	2029-05-01	0.023	0.00023	0.003	0.00021	6.2	0.000044	0.00073	0.27	0.0022	0.18
Production	9	2029-06-01	0.027	0.00024	0.0026	0.00018	9.4	0.000042	0.00071	0.23	0.0017	0.15
Production	9	2029-07-01	0.029	0.00026	0.0029	0.0002	12	0.000043	0.0008	0.25	0.0017	0.17
Production	9	2029-08-01	0.028	0.00027	0.0031	0.00021	13	0.000058	0.00081	0.26	0.0019	0.19
Production	9	2029-09-01	0.027	0.00027	0.0031	0.00021	13	0.00006	0.00085	0.25	0.0019	0.2
Production	9	2029-10-01	0.023	0.00026	0.003	0.00021	14	0.000055	0.00078	0.25	0.002	0.2
Production	9	2029-11-01	0.02	0.00028	0.0034	0.00024	12	0.000057	0.00079	0.28	0.0026	0.22
Production	9	2029-12-01	0.015	0.00026	0.0032	0.00024	9	0.000049	0.00071	0.28	0.0029	0.21
Production	9	2030-01-01	0.011	0.00025	0.003	0.00024	6	0.000042	0.00065	0.29	0.0031	0.19
Production	9	2030-02-01	0.0094	0.00025	0.0029	0.00025	4.5	0.000039	0.00063	0.3	0.0033	0.18
Water Management Pond - Wet Year 9 Model												**Water**
Production	9	2029-03-01	0.0075	0.00021	0.002	0.00021	9.7	0.000028	0.00047	0.29	0.0033	0.088
Production	9	2029-04-01	0.0061	0.00022	0.0021	0.00021	6.9	0.000022	0.00047	0.31	0.0036	0.076
Production	9	2029-05-01	0.023	0.00023	0.003	0.00021	6.2	0.000044	0.00073	0.27	0.0022	0.18
Production	9	2029-06-01	0.027	0.00024	0.0026	0.00018	9.4	0.000042	0.00071	0.23	0.0017	0.15
Production	9	2029-07-01	0.029	0.00026	0.0029	0.0002	12	0.000043	0.0008	0.25	0.0017	0.17
Production	9	2029-08-01	0.028	0.00027	0.0031	0.00021	13	0.000058	0.00081	0.26	0.0019	0.19
Production	9	2029-09-01	0.027	0.00027	0.0031	0.00021	13	0.00006	0.00085	0.25	0.0019	0.2
Production	9	2029-10-01	0.023	0.00026	0.003	0.00021	14	0.000055	0.00078	0.25	0.002	0.2
Production	9	2029-11-01	0.02	0.00028	0.0034	0.00024	12	0.000057	0.00079	0.28	0.0026	0.22
Production	9	2029-12-01	0.015	0.00026	0.0032	0.00024	9	0.000049	0.00071	0.28	0.0029	0.21
Production	9	2030-01-01	0.011	0.00025	0.003	0.00024	6	0.000042	0.00065	0.29	0.0031	0.19
Production	9	2030-02-01	0.0094	0.00025	0.0029	0.00025	4.5	0.000039	0.00063	0.3	0.0033	0.18

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Nickel (Ni), total mg/L	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L
Production	2	2022-09-01	0.0012	0.0000072	0.0018	0.00032	0.00053	0.023	1.4	0.015	0.0002	0.0028
Production	2	2022-10-01	0.0013	0.0000073	0.0019	0.00036	0.0006	0.026	1.3	0.014	0.00021	0.0027
Production	2	2022-11-01	0.0015	0.0000082	0.0022	0.00044	0.00063	0.03	1.2	0.013	0.00023	0.003
Production	2	2022-12-01	0.0014	0.0000076	0.0021	0.00042	0.00053	0.028	1	0.01	0.00022	0.0027
Production	2	2023-01-01	0.0012	0.0000072	0.0021	0.00039	0.00045	0.027	0.86	0.0079	0.00021	0.0025
Production	2	2023-02-01	0.0011	0.000007	0.0022	0.00038	0.0004	0.027	0.8	0.0067	0.00021	0.0024
Water Management Pond - Dry Year 9 Model			**r Management Pond - Dry Year 9 Model**									
Production	9	2029-03-01	0.00061	0.0000063	0.0022	0.00025	0.0004	0.028	0.81	0.0048	0.00021	0.002
Production	9	2029-04-01	0.00048	0.0000064	0.0025	0.00023	0.00036	0.029	0.84	0.0042	0.00021	0.0021
Production	9	2029-05-01	0.0015	0.0000081	0.0022	0.00044	0.00041	0.026	1.5	0.015	0.00023	0.003
Production	9	2029-06-01	0.0013	0.0000075	0.0018	0.00036	0.00047	0.021	1.3	0.02	0.00024	0.0026
Production	9	2029-07-01	0.0014	0.0000092	0.0019	0.00039	0.00054	0.023	1.4	0.022	0.00026	0.0029
Production	9	2029-08-01	0.0016	0.0000094	0.0020	0.00045	0.00055	0.024	1.4	0.022	0.00027	0.0031
Production	9	2029-09-01	0.0017	0.0000091	0.0020	0.00048	0.00057	0.024	1.3	0.021	0.00027	0.0031
Production	9	2029-10-01	0.0017	0.0000087	0.0020	0.00049	0.00059	0.025	1.1	0.018	0.00026	0.003
Production	9	2029-11-01	0.0018	0.0000094	0.0023	0.00054	0.00058	0.029	1	0.016	0.00028	0.0034
Production	9	2029-12-01	0.0016	0.0000089	0.0023	0.00052	0.00049	0.028	0.92	0.013	0.00026	0.0031
Production	9	2030-01-01	0.0015	0.0000084	0.0024	0.00048	0.00041	0.028	0.85	0.0099	0.00025	0.0029
Production	9	2030-02-01	0.0014	0.0000083	0.0025	0.00047	0.00037	0.028	0.84	0.0084	0.00025	0.0029
Water Management Pond - Wet Year 9 Model			**Management Pond - Wet Year 9 Model**									
Production	9	2029-03-01	0.00061	0.0000063	0.0022	0.00025	0.0004	0.028	0.81	0.0048	0.00021	0.002
Production	9	2029-04-01	0.00048	0.0000064	0.0025	0.00023	0.00036	0.029	0.84	0.0042	0.00021	0.0021
Production	9	2029-05-01	0.0015	0.0000081	0.0022	0.00044	0.00041	0.026	1.5	0.015	0.00023	0.003
Production	9	2029-06-01	0.0013	0.0000075	0.0018	0.00036	0.00047	0.021	1.3	0.02	0.00024	0.0026
Production	9	2029-07-01	0.0014	0.0000092	0.0019	0.00039	0.00054	0.023	1.4	0.022	0.00026	0.0029
Production	9	2029-08-01	0.0016	0.0000094	0.002	0.00045	0.00055	0.024	1.4	0.022	0.00027	0.0031
Production	9	2029-09-01	0.0017	0.0000091	0.002	0.00048	0.00057	0.024	1.3	0.021	0.00027	0.0031
Production	9	2029-10-01	0.0017	0.0000087	0.002	0.00049	0.00059	0.025	1.1	0.018	0.00026	0.003
Production	9	2029-11-01	0.0018	0.0000094	0.0023	0.00054	0.00058	0.029	1	0.016	0.00028	0.0034
Production	9	2029-12-01	0.0016	0.0000089	0.0023	0.00052	0.00049	0.028	0.92	0.013	0.00026	0.0031
Production	9	2030-01-01	0.0015	0.0000084	0.0024	0.00048	0.00041	0.028	0.85	0.0099	0.00025	0.0029
Production	9	2030-02-01	0.0014	0.0000083	0.0025	0.00047	0.00037	0.028	0.84	0.0084	0.00025	0.0029

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	2	2022-09-01	0.00018	17	0.000048	0.0006	0.13	0.0014	0.13	0.0012	0.0000069	0.0018
Production	2	2022-10-01	0.00019	18	0.000042	0.00059	0.15	0.0017	0.15	0.0013	0.0000071	0.0019
Production	2	2022-11-01	0.00022	18	0.000048	0.00064	0.2	0.0022	0.18	0.0015	0.0000081	0.0022
Production	2	2022-12-01	0.00021	14	0.000043	0.00058	0.21	0.0024	0.17	0.0014	0.0000076	0.0021
Production	2	2023-01-01	0.00021	10	0.000037	0.00053	0.22	0.0026	0.16	0.0012	0.0000071	0.0021
Production	2	2023-02-01	0.00022	8	0.000033	0.00052	0.24	0.0028	0.15	0.0011	0.000007	0.0022
Water Management Pond - Dry Year 9 Model												
Production	9	2029-03-01	0.00019	9.6	0.000022	0.00043	0.24	0.0033	0.085	0.0006	0.0000063	0.0022
Production	9	2029-04-01	0.0002	6.9	0.000018	0.00045	0.27	0.0036	0.074	0.00047	0.0000064	0.0025
Production	9	2029-05-01	0.00021	6.1	0.00004	0.00066	0.21	0.0022	0.18	0.0014	0.000008	0.0022
Production	9	2029-06-01	0.00017	9.6	0.000033	0.00065	0.16	0.0017	0.15	0.0012	0.0000076	0.0018
Production	9	2029-07-01	0.00019	12	0.000035	0.00069	0.17	0.0017	0.16	0.0014	0.0000082	0.0019
Production	9	2029-08-01	0.0002	13	0.000054	0.00073	0.18	0.0018	0.19	0.0016	0.0000089	0.002
Production	9	2029-09-01	0.0002	13	0.000054	0.00073	0.18	0.0018	0.2	0.0016	0.0000088	0.0019
Production	9	2029-10-01	0.0002	13	0.000048	0.00069	0.2	0.002	0.2	0.0016	0.0000086	0.002
Production	9	2029-11-01	0.00022	12	0.000051	0.00072	0.24	0.0026	0.22	0.0018	0.0000093	0.0022
Production	9	2029-12-01	0.00023	8.9	0.000046	0.00067	0.25	0.0028	0.21	0.0016	0.0000088	0.0023
Production	9	2030-01-01	0.00024	5.9	0.00004	0.00062	0.27	0.0031	0.19	0.0015	0.0000084	0.0024
Production	9	2030-02-01	0.00025	4.4	0.000037	0.00061	0.28	0.0033	0.18	0.0014	0.0000083	0.0025
Water Management Pond - Wet Year 9 Model												
Production	9	2029-03-01	0.00019	9.6	0.000022	0.00043	0.24	0.0033	0.085	0.0006	0.0000063	0.0022
Production	9	2029-04-01	0.0002	6.9	0.000018	0.00045	0.27	0.0036	0.074	0.00047	0.0000064	0.0025
Production	9	2029-05-01	0.00021	6.1	0.00004	0.00066	0.21	0.0022	0.18	0.0014	0.000008	0.0022
Production	9	2029-06-01	0.00017	9.6	0.000033	0.00065	0.16	0.0017	0.15	0.0012	0.0000076	0.0018
Production	9	2029-07-01	0.00019	12	0.000035	0.00069	0.17	0.0017	0.16	0.0014	0.0000082	0.0019
Production	9	2029-08-01	0.0002	13	0.000054	0.00073	0.18	0.0018	0.19	0.0016	0.0000089	0.002
Production	9	2029-09-01	0.0002	13	0.000054	0.00073	0.18	0.0018	0.2	0.0016	0.0000088	0.0019
Production	9	2029-10-01	0.0002	13	0.000048	0.00069	0.2	0.002	0.2	0.0016	0.0000086	0.002
Production	9	2029-11-01	0.00022	12	0.000051	0.00072	0.24	0.0026	0.22	0.0018	0.0000093	0.0022
Production	9	2029-12-01	0.00023	8.9	0.000046	0.00067	0.25	0.0028	0.21	0.0016	0.0000088	0.0023
Production	9	2030-01-01	0.00024	5.9	0.00004	0.00062	0.27	0.0031	0.19	0.0015	0.0000084	0.0024
Production	9	2030-02-01	0.00025	4.4	0.000037	0.00061	0.28	0.0033	0.18	0.0014	0.0000083	0.0025

Appendix B: Water Management Pond Water Quality Model Results

Phase	Year	Date	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Production	2	2022-09-01	0.00032	0.00052	0.022
Production	2	2022-10-01	0.00036	0.00059	0.024
Production	2	2022-11-01	0.00044	0.00063	0.028
Production	2	2022-12-01	0.00042	0.00053	0.026
Production	2	2023-01-01	0.00039	0.00045	0.025
Production	2	2023-02-01	0.00038	0.0004	0.026
Water Management Pond - Dry Year 9 Model					
Production	9	2029-03-01	0.00025	0.00039	0.026
Production	9	2029-04-01	0.00023	0.00036	0.028
Production	9	2029-05-01	0.00044	0.00041	0.025
Production	9	2029-06-01	0.00036	0.00046	0.02
Production	9	2029-07-01	0.00039	0.00053	0.022
Production	9	2029-08-01	0.00045	0.00054	0.023
Production	9	2029-09-01	0.00047	0.00057	0.023
Production	9	2029-10-01	0.00049	0.00058	0.024
Production	9	2029-11-01	0.00054	0.00058	0.027
Production	9	2029-12-01	0.00052	0.00048	0.027
Production	9	2030-01-01	0.00048	0.00041	0.027
Production	9	2030-02-01	0.00047	0.00037	0.028
Water Management Pond - Wet Year 9 Model					
Production	9	2029-03-01	0.00025	0.00039	0.026
Production	9	2029-04-01	0.00023	0.00036	0.028
Production	9	2029-05-01	0.00044	0.00041	0.025
Production	9	2029-06-01	0.00036	0.00046	0.02
Production	9	2029-07-01	0.00039	0.00053	0.022
Production	9	2029-08-01	0.00045	0.00054	0.023
Production	9	2029-09-01	0.00047	0.00057	0.023
Production	9	2029-10-01	0.00049	0.00058	0.024
Production	9	2029-11-01	0.00054	0.00058	0.027
Production	9	2029-12-01	0.00052	0.00048	0.027
Production	9	2030-01-01	0.00048	0.00041	0.027
Production	9	2030-02-01	0.00047	0.00037	0.028

APPENDIX C.
ABM Pit Lake Water Quality Model Results

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L
ABM Pit Lake Model												
Active Closure	10	2030-10-01	300	110	0.073	0.00097	0.019	0.0075	0.13	0.56	0.00018	0.00018
Active Closure	10	2030-11-01	350	130	0.07	0.001	0.022	0.0085	0.15	0.65	0.00016	0.00016
Active Closure	10	2030-12-01	390	150	0.066	0.001	0.025	0.01	0.17	0.67	0.00014	0.00014
Active Closure	10	2031-01-01	460	190	0.061	0.001	0.027	0.016	0.21	0.69	0.00013	0.00013
Active Closure	10	2031-02-01	560	260	0.059	0.001	0.028	0.026	0.26	0.71	0.00012	0.00012
Active Closure	11	2031-03-01	630	310	0.055	0.001	0.03	0.033	0.3	0.74	0.00011	0.00011
Active Closure	11	2031-04-01	700	350	0.051	0.001	0.031	0.039	0.34	0.76	0.0001	0.0001
Active Closure	11	2031-05-01	590	310	0.041	0.00088	0.026	0.036	0.29	0.67	0.00014	0.00011
Active Closure	11	2031-06-01	440	230	0.047	0.00091	0.02	0.027	0.22	0.62	0.00029	0.00021
Active Closure	11	2031-07-01	370	190	0.046	0.00091	0.02	0.022	0.18	0.54	0.00027	0.00029
Active Closure	11	2031-08-01	340	170	0.047	0.00092	0.018	0.019	0.17	0.52	0.00027	0.00029
Active Closure	11	2031-09-01	340	170	0.049	0.00092	0.018	0.018	0.17	0.51	0.00028	0.00029
Active Closure	11	2031-10-01	340	170	0.05	0.00093	0.018	0.018	0.16	0.51	0.00028	0.00029
Active Closure	11	2031-11-01	340	170	0.05	0.00093	0.018	0.018	0.16	0.52	0.00027	0.00028
Active Closure	11	2031-12-01	340	170	0.05	0.00093	0.018	0.017	0.17	0.53	0.00027	0.00027
Active Closure	11	2032-01-01	360	170	0.05	0.00093	0.019	0.018	0.17	0.54	0.00026	0.00027
Active Closure	11	2032-02-01	370	180	0.05	0.00094	0.019	0.019	0.18	0.54	0.00026	0.00026
Active Closure	12	2032-03-01	390	190	0.049	0.00094	0.02	0.021	0.19	0.55	0.00025	0.00026
Active Closure	12	2032-04-01	400	200	0.048	0.00094	0.02	0.022	0.2	0.56	0.00025	0.00026
Active Closure	12	2032-05-01	400	200	0.046	0.00091	0.02	0.022	0.19	0.56	0.00025	0.00025
Active Closure	12	2032-06-01	380	190	0.047	0.00092	0.019	0.021	0.19	0.56	0.00028	0.00026
Active Closure	12	2032-07-01	360	180	0.047	0.00092	0.019	0.02	0.18	0.53	0.00027	0.00029
Active Closure	12	2032-08-01	350	170	0.047	0.00093	0.018	0.019	0.17	0.52	0.00028	0.00029
Active Closure	12	2032-09-01	340	170	0.048	0.00093	0.018	0.018	0.17	0.52	0.00028	0.00029
Active Closure	12	2032-10-01	340	170	0.049	0.00093	0.018	0.018	0.17	0.52	0.00028	0.00029
Active Closure	12	2032-11-01	340	170	0.049	0.00093	0.018	0.018	0.17	0.53	0.00027	0.00028
Active Closure	12	2032-12-01	340	170	0.049	0.00093	0.018	0.018	0.17	0.53	0.00027	0.00028
Active Closure	12	2033-01-01	350	170	0.048	0.00093	0.019	0.018	0.17	0.53	0.00027	0.00028
Active Closure	12	2033-02-01	360	170	0.048	0.00093	0.019	0.018	0.17	0.54	0.00027	0.00027
Active Closure	13	2033-03-01	370	180	0.048	0.00093	0.019	0.019	0.18	0.54	0.00026	0.00027
Active Closure	13	2033-04-01	400	200	0.047	0.00093	0.02	0.021	0.2	0.55	0.00026	0.00027
Active Closure	13	2033-05-01	400	200	0.046	0.00092	0.019	0.021	0.2	0.54	0.00026	0.00026

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Aluminum (Al), total mg/L	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L
ABM Pit Lake Model											
Active Closure	10	2030-10-01	0.0065	0.00041	0.00095	0.00014	83	0.000046	0.00047	0.42	0.00031
Active Closure	10	2030-11-01	0.0059	0.0005	0.0012	0.00013	94	0.000051	0.00043	0.51	0.00036
Active Closure	10	2030-12-01	0.015	0.0042	0.01	0.0018	100	0.0008	0.0068	1.2	0.011
Active Closure	10	2031-01-01	0.032	0.0084	0.021	0.003	120	0.0015	0.012	1.6	0.018
Active Closure	10	2031-02-01	0.061	0.016	0.041	0.0052	150	0.0027	0.023	2.3	0.033
Active Closure	11	2031-03-01	0.083	0.021	0.055	0.0068	170	0.0036	0.03	2.9	0.043
Active Closure	11	2031-04-01	0.1	0.026	0.067	0.0082	180	0.0043	0.037	3.3	0.052
Active Closure	11	2031-05-01	0.11	0.028	0.069	0.011	150	0.0055	0.046	4	0.07
Active Closure	11	2031-06-01	0.097	0.023	0.056	0.0097	120	0.0047	0.041	3.7	0.061
Active Closure	11	2031-07-01	0.079	0.018	0.043	0.0074	98	0.0036	0.031	2.8	0.046
Active Closure	11	2031-08-01	0.069	0.015	0.036	0.0063	91	0.003	0.026	2.4	0.039
Active Closure	11	2031-09-01	0.072	0.017	0.04	0.0077	91	0.0035	0.031	3.2	0.046
Active Closure	11	2031-10-01	0.068	0.016	0.037	0.0072	91	0.0033	0.029	3	0.043
Active Closure	11	2031-11-01	0.066	0.015	0.036	0.007	92	0.0032	0.028	2.9	0.041
Active Closure	11	2031-12-01	0.064	0.015	0.035	0.0068	93	0.0031	0.027	2.9	0.04
Active Closure	11	2032-01-01	0.065	0.015	0.036	0.0068	96	0.0031	0.027	2.9	0.04
Active Closure	11	2032-02-01	0.069	0.016	0.038	0.007	100	0.0032	0.028	2.9	0.042
Active Closure	12	2032-03-01	0.072	0.017	0.041	0.0072	100	0.0034	0.029	3	0.043
Active Closure	12	2032-04-01	0.075	0.018	0.043	0.0075	110	0.0035	0.03	3.1	0.045
Active Closure	12	2032-05-01	0.075	0.017	0.042	0.0072	110	0.0034	0.03	3	0.043
Active Closure	12	2032-06-01	0.08	0.019	0.048	0.008	100	0.0036	0.032	3.4	0.047
Active Closure	12	2032-07-01	0.074	0.017	0.043	0.0072	97	0.0033	0.029	3	0.042
Active Closure	12	2032-08-01	0.07	0.016	0.04	0.0067	94	0.003	0.027	2.8	0.039
Active Closure	12	2032-09-01	0.067	0.015	0.038	0.0063	92	0.0029	0.025	2.7	0.037
Active Closure	12	2032-10-01	0.065	0.015	0.037	0.0061	92	0.0028	0.025	2.6	0.036
Active Closure	12	2032-11-01	0.064	0.015	0.036	0.006	92	0.0028	0.024	2.6	0.035
Active Closure	12	2032-12-01	0.063	0.014	0.036	0.0059	93	0.0027	0.024	2.6	0.035
Active Closure	12	2033-01-01	0.063	0.015	0.036	0.0059	95	0.0027	0.024	2.6	0.035
Active Closure	12	2033-02-01	0.065	0.015	0.037	0.006	97	0.0028	0.024	2.6	0.035
Active Closure	13	2033-03-01	0.066	0.015	0.038	0.006	99	0.0028	0.025	2.6	0.036
Active Closure	13	2033-04-01	0.078	0.02	0.05	0.0073	110	0.0034	0.029	3	0.044
Active Closure	13	2033-05-01	0.078	0.019	0.049	0.0071	110	0.0034	0.029	2.9	0.042

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L
ABM Pit Lake Model			**ABM Pit Lake Model**								
Active Closure	10	2030-10-01	0.06	0.00032	0.000008	0.00073	0.0000047	0.0065	0.02	1.3	0.0027
Active Closure	10	2030-11-01	0.073	0.00032	0.0000094	0.00073	0.0000052	0.0078	0.018	1.2	0.0026
Active Closure	10	2030-12-01	0.33	0.0044	0.000012	0.0027	0.000048	0.012	0.15	1.2	0.012
Active Closure	10	2031-01-01	0.63	0.0072	0.000016	0.005	0.000089	0.018	0.25	1.1	0.029
Active Closure	10	2031-02-01	1.2	0.012	0.000023	0.0091	0.00016	0.03	0.43	1.1	0.059
Active Closure	11	2031-03-01	1.6	0.016	0.000028	0.012	0.00022	0.038	0.56	1.1	0.081
Active Closure	11	2031-04-01	1.9	0.02	0.000033	0.015	0.00027	0.045	0.67	1.1	0.1
Active Closure	11	2031-05-01	2.1	0.026	0.00003	0.017	0.00031	0.042	0.89	1.4	0.11
Active Closure	11	2031-06-01	1.8	0.023	0.000023	0.015	0.00027	0.033	0.8	1.5	0.09
Active Closure	11	2031-07-01	1.4	0.018	0.000019	0.011	0.00021	0.026	0.61	1.5	0.07
Active Closure	11	2031-08-01	1.2	0.015	0.000017	0.0095	0.00017	0.022	0.52	1.5	0.06
Active Closure	11	2031-09-01	1.4	0.018	0.000017	0.011	0.0002	0.023	0.6	1.4	0.063
Active Closure	11	2031-10-01	1.3	0.017	0.000017	0.01	0.00019	0.022	0.57	1.4	0.06
Active Closure	11	2031-11-01	1.3	0.017	0.000016	0.01	0.00018	0.022	0.55	1.4	0.058
Active Closure	11	2031-12-01	1.3	0.016	0.000016	0.0099	0.00017	0.021	0.53	1.4	0.056
Active Closure	11	2032-01-01	1.3	0.016	0.000017	0.01	0.00018	0.022	0.54	1.4	0.057
Active Closure	11	2032-02-01	1.3	0.017	0.000018	0.01	0.00019	0.024	0.56	1.4	0.061
Active Closure	12	2032-03-01	1.4	0.017	0.000019	0.011	0.00019	0.025	0.57	1.4	0.064
Active Closure	12	2032-04-01	1.5	0.018	0.00002	0.011	0.0002	0.026	0.59	1.4	0.068
Active Closure	12	2032-05-01	1.4	0.017	0.00002	0.011	0.0002	0.026	0.57	1.4	0.067
Active Closure	12	2032-06-01	1.5	0.019	0.00002	0.012	0.00022	0.027	0.62	1.5	0.072
Active Closure	12	2032-07-01	1.4	0.017	0.000019	0.011	0.00019	0.025	0.56	1.5	0.065
Active Closure	12	2032-08-01	1.3	0.016	0.000018	0.01	0.00018	0.023	0.52	1.4	0.061
Active Closure	12	2032-09-01	1.2	0.015	0.000017	0.0096	0.00017	0.022	0.49	1.4	0.058
Active Closure	12	2032-10-01	1.2	0.015	0.000017	0.0093	0.00017	0.022	0.48	1.4	0.056
Active Closure	12	2032-11-01	1.2	0.014	0.000017	0.0092	0.00016	0.022	0.47	1.4	0.055
Active Closure	12	2032-12-01	1.1	0.014	0.000017	0.0091	0.00016	0.022	0.47	1.4	0.055
Active Closure	12	2033-01-01	1.1	0.014	0.000017	0.0091	0.00016	0.022	0.46	1.4	0.055
Active Closure	12	2033-02-01	1.2	0.014	0.000017	0.0093	0.00017	0.023	0.47	1.4	0.057
Active Closure	13	2033-03-01	1.2	0.014	0.000018	0.0094	0.00017	0.023	0.48	1.4	0.058
Active Closure	13	2033-04-01	1.4	0.018	0.000021	0.012	0.00021	0.028	0.58	1.4	0.07
Active Closure	13	2033-05-01	1.3	0.017	0.00002	0.011	0.00021	0.028	0.56	1.4	0.069

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L
ABM Pit Lake Model											
Active Closure	10	2030-10-01	0.0004	0.00093	0.00012	82	0.000037	0.00037	0.38	0.00026	0.056
Active Closure	10	2030-11-01	0.0005	0.0011	0.00011	93	0.000044	0.00037	0.47	0.00032	0.07
Active Closure	10	2030-12-01	0.0042	0.01	0.0018	100	0.00079	0.0068	1.2	0.011	0.33
Active Closure	10	2031-01-01	0.0083	0.021	0.003	120	0.0015	0.012	1.6	0.018	0.63
Active Closure	10	2031-02-01	0.016	0.041	0.0052	150	0.0027	0.023	2.3	0.033	1.2
Active Closure	11	2031-03-01	0.021	0.055	0.0068	170	0.0036	0.03	2.9	0.043	1.6
Active Closure	11	2031-04-01	0.026	0.067	0.0082	180	0.0043	0.037	3.3	0.052	1.9
Active Closure	11	2031-05-01	0.028	0.069	0.011	150	0.0055	0.046	4	0.07	2.1
Active Closure	11	2031-06-01	0.023	0.056	0.0097	120	0.0047	0.041	3.7	0.061	1.8
Active Closure	11	2031-07-01	0.018	0.043	0.0074	99	0.0036	0.031	2.8	0.046	1.4
Active Closure	11	2031-08-01	0.015	0.036	0.0062	91	0.003	0.026	2.4	0.039	1.2
Active Closure	11	2031-09-01	0.017	0.04	0.0077	92	0.0035	0.031	3.1	0.046	1.4
Active Closure	11	2031-10-01	0.016	0.037	0.0072	91	0.0033	0.029	3	0.043	1.3
Active Closure	11	2031-11-01	0.015	0.036	0.007	92	0.0031	0.028	2.9	0.041	1.3
Active Closure	11	2031-12-01	0.015	0.035	0.0068	93	0.0031	0.027	2.8	0.04	1.3
Active Closure	11	2032-01-01	0.015	0.036	0.0068	96	0.0031	0.027	2.8	0.04	1.3
Active Closure	11	2032-02-01	0.016	0.038	0.007	100	0.0032	0.028	2.9	0.042	1.3
Active Closure	12	2032-03-01	0.017	0.041	0.0072	100	0.0034	0.029	3	0.043	1.4
Active Closure	12	2032-04-01	0.018	0.043	0.0074	110	0.0035	0.03	3	0.045	1.5
Active Closure	12	2032-05-01	0.017	0.042	0.0072	110	0.0034	0.029	2.9	0.043	1.4
Active Closure	12	2032-06-01	0.019	0.048	0.008	100	0.0036	0.032	3.3	0.047	1.5
Active Closure	12	2032-07-01	0.017	0.043	0.0072	97	0.0033	0.029	3	0.042	1.4
Active Closure	12	2032-08-01	0.016	0.04	0.0066	94	0.003	0.027	2.8	0.039	1.3
Active Closure	12	2032-09-01	0.015	0.038	0.0063	92	0.0029	0.025	2.7	0.037	1.2
Active Closure	12	2032-10-01	0.015	0.037	0.0061	92	0.0028	0.025	2.6	0.036	1.2
Active Closure	12	2032-11-01	0.015	0.036	0.006	93	0.0027	0.024	2.5	0.035	1.2
Active Closure	12	2032-12-01	0.014	0.036	0.0059	93	0.0027	0.024	2.5	0.035	1.1
Active Closure	12	2033-01-01	0.015	0.036	0.0059	95	0.0027	0.024	2.5	0.035	1.1
Active Closure	12	2033-02-01	0.015	0.037	0.006	97	0.0028	0.024	2.5	0.035	1.2
Active Closure	13	2033-03-01	0.015	0.038	0.006	99	0.0028	0.024	2.6	0.036	1.2
Active Closure	13	2033-04-01	0.02	0.05	0.0073	110	0.0034	0.029	3	0.044	1.4
Active Closure	13	2033-05-01	0.019	0.049	0.0071	110	0.0033	0.029	2.9	0.042	1.3

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
ABM Pit Lake Model								
Active Closure	10	2030-10-01	0.00029	0.000008	0.00069	0.0000052	0.0065	0.016
Active Closure	10	2030-11-01	0.0003	0.0000094	0.0007	0.0000058	0.0078	0.016
Active Closure	10	2030-12-01	0.0044	0.000012	0.0027	0.000049	0.012	0.15
Active Closure	10	2031-01-01	0.0071	0.000016	0.005	0.00009	0.018	0.24
Active Closure	10	2031-02-01	0.012	0.000023	0.0091	0.00017	0.029	0.43
Active Closure	11	2031-03-01	0.016	0.000028	0.012	0.00022	0.038	0.56
Active Closure	11	2031-04-01	0.02	0.000033	0.015	0.00027	0.045	0.67
Active Closure	11	2031-05-01	0.026	0.00003	0.017	0.00032	0.042	0.89
Active Closure	11	2031-06-01	0.023	0.000023	0.015	0.00027	0.033	0.8
Active Closure	11	2031-07-01	0.018	0.000019	0.011	0.00021	0.026	0.61
Active Closure	11	2031-08-01	0.015	0.000017	0.0095	0.00017	0.022	0.51
Active Closure	11	2031-09-01	0.018	0.000017	0.011	0.0002	0.023	0.6
Active Closure	11	2031-10-01	0.017	0.000016	0.01	0.00019	0.022	0.57
Active Closure	11	2031-11-01	0.017	0.000016	0.01	0.00018	0.022	0.55
Active Closure	11	2031-12-01	0.016	0.000016	0.0099	0.00017	0.021	0.53
Active Closure	11	2032-01-01	0.016	0.000017	0.01	0.00018	0.022	0.54
Active Closure	11	2032-02-01	0.017	0.000018	0.01	0.00019	0.024	0.55
Active Closure	12	2032-03-01	0.017	0.000019	0.011	0.00019	0.025	0.57
Active Closure	12	2032-04-01	0.018	0.00002	0.011	0.0002	0.026	0.59
Active Closure	12	2032-05-01	0.017	0.000019	0.011	0.0002	0.026	0.57
Active Closure	12	2032-06-01	0.019	0.00002	0.012	0.00022	0.027	0.62
Active Closure	12	2032-07-01	0.017	0.000018	0.011	0.00019	0.025	0.56
Active Closure	12	2032-08-01	0.016	0.000017	0.01	0.00018	0.023	0.52
Active Closure	12	2032-09-01	0.015	0.000017	0.0096	0.00017	0.022	0.49
Active Closure	12	2032-10-01	0.015	0.000016	0.0093	0.00017	0.022	0.48
Active Closure	12	2032-11-01	0.014	0.000016	0.0092	0.00016	0.022	0.47
Active Closure	12	2032-12-01	0.014	0.000016	0.009	0.00016	0.022	0.46
Active Closure	12	2033-01-01	0.014	0.000017	0.0091	0.00016	0.022	0.46
Active Closure	12	2033-02-01	0.014	0.000017	0.0093	0.00017	0.023	0.47
Active Closure	13	2033-03-01	0.014	0.000018	0.0094	0.00017	0.023	0.47
Active Closure	13	2033-04-01	0.018	0.00002	0.012	0.00021	0.028	0.57
Active Closure	13	2033-05-01	0.017	0.00002	0.011	0.00021	0.028	0.56

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	13	2033-06-01	380	190	0.047	0.00092	0.019	0.02	0.19	0.55	0.00028	0.00027
Active Closure	13	2033-07-01	360	180	0.047	0.00092	0.019	0.019	0.18	0.53	0.00028	0.00029
Active Closure	13	2033-08-01	360	180	0.047	0.00093	0.018	0.018	0.17	0.53	0.00028	0.00029
Active Closure	13	2033-09-01	350	170	0.047	0.00093	0.018	0.018	0.17	0.52	0.00028	0.00029
Transitional Closure	13	2033-10-01	370	180	0.048	0.00093	0.018	0.019	0.18	0.52	0.00028	0.00029
Transitional Closure	13	2033-11-01	370	180	0.048	0.00093	0.018	0.019	0.18	0.53	0.00028	0.00028
Transitional Closure	13	2033-12-01	370	180	0.048	0.00093	0.019	0.019	0.18	0.53	0.00027	0.00028
Transitional Closure	13	2034-01-01	370	190	0.048	0.00093	0.019	0.019	0.18	0.53	0.00027	0.00028
Transitional Closure	13	2034-02-01	380	190	0.048	0.00093	0.019	0.019	0.19	0.54	0.00027	0.00028
Transitional Closure	14	2034-03-01	390	190	0.047	0.00093	0.019	0.02	0.19	0.54	0.00027	0.00028
Transitional Closure	14	2034-04-01	390	200	0.047	0.00093	0.019	0.02	0.19	0.54	0.00027	0.00027
Transitional Closure	14	2034-05-01	390	190	0.046	0.00093	0.019	0.02	0.19	0.54	0.00026	0.00027
Transitional Closure	14	2034-06-01	380	190	0.047	0.00093	0.019	0.019	0.18	0.54	0.00028	0.00028
Transitional Closure	14	2034-07-01	370	180	0.047	0.00093	0.019	0.019	0.18	0.53	0.00028	0.00029
Transitional Closure	14	2034-08-01	360	180	0.047	0.00093	0.018	0.018	0.18	0.53	0.00028	0.00029
Transitional Closure	14	2034-09-01	380	190	0.047	0.00093	0.018	0.019	0.19	0.53	0.00028	0.00029
Transitional Closure	14	2034-10-01	380	190	0.048	0.00093	0.018	0.019	0.19	0.53	0.00028	0.00029
Transitional Closure	14	2034-11-01	380	190	0.048	0.00093	0.018	0.019	0.19	0.53	0.00028	0.00029
Transitional Closure	14	2034-12-01	380	190	0.048	0.00093	0.019	0.019	0.19	0.53	0.00027	0.00028
Transitional Closure	14	2035-01-01	380	190	0.048	0.00093	0.019	0.019	0.19	0.53	0.00027	0.00028
Transitional Closure	14	2035-02-01	390	190	0.047	0.00093	0.019	0.019	0.19	0.54	0.00027	0.00028
Transitional Closure	15	2035-03-01	390	200	0.047	0.00093	0.019	0.02	0.19	0.54	0.00027	0.00028
Transitional Closure	15	2035-04-01	400	200	0.047	0.00094	0.019	0.02	0.19	0.54	0.00027	0.00028
Transitional Closure	15	2035-05-01	390	200	0.046	0.00093	0.019	0.02	0.19	0.54	0.00027	0.00027
Transitional Closure	15	2035-06-01	380	190	0.047	0.00093	0.019	0.019	0.19	0.54	0.00028	0.00028
Transitional Closure	15	2035-07-01	370	190	0.047	0.00093	0.019	0.019	0.18	0.53	0.00028	0.00029
Transitional Closure	15	2035-08-01	370	180	0.047	0.00093	0.019	0.018	0.18	0.53	0.00028	0.00029
Transitional Closure	15	2035-09-01	370	180	0.047	0.00093	0.018	0.018	0.18	0.53	0.00028	0.00029
Transitional Closure	15	2035-10-01	370	180	0.048	0.00093	0.018	0.018	0.18	0.53	0.00028	0.00029
Transitional Closure	15	2035-11-01	390	200	0.048	0.00093	0.018	0.019	0.19	0.53	0.00028	0.00029
Transitional Closure	15	2035-12-01	390	200	0.048	0.00094	0.019	0.019	0.19	0.53	0.00028	0.00029
Transitional Closure	15	2036-01-01	390	200	0.048	0.00094	0.019	0.019	0.19	0.53	0.00027	0.00028
Transitional Closure	15	2036-02-01	390	200	0.048	0.00094	0.019	0.02	0.19	0.53	0.00027	0.00028

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	13	2033-06-01	0.074	0.018	0.046	0.0066	100	0.0031	0.027	2.7	0.039
Active Closure	13	2033-07-01	0.071	0.017	0.043	0.0062	98	0.0029	0.025	2.5	0.037
Active Closure	13	2033-08-01	0.068	0.016	0.041	0.0059	96	0.0028	0.024	2.4	0.035
Active Closure	13	2033-09-01	0.066	0.016	0.04	0.0057	95	0.0027	0.023	2.4	0.034
Transitional Closure	13	2033-10-01	0.073	0.018	0.048	0.0063	99	0.003	0.025	2.6	0.037
Transitional Closure	13	2033-11-01	0.072	0.018	0.047	0.0062	99	0.0029	0.025	2.6	0.037
Transitional Closure	13	2033-12-01	0.071	0.018	0.047	0.0061	100	0.0029	0.025	2.6	0.037
Transitional Closure	13	2034-01-01	0.071	0.018	0.047	0.0061	100	0.0029	0.025	2.6	0.037
Transitional Closure	13	2034-02-01	0.072	0.018	0.048	0.0061	100	0.0029	0.025	2.6	0.037
Transitional Closure	14	2034-03-01	0.073	0.019	0.048	0.0062	100	0.003	0.025	2.6	0.037
Transitional Closure	14	2034-04-01	0.074	0.019	0.049	0.0062	110	0.003	0.025	2.6	0.037
Transitional Closure	14	2034-05-01	0.073	0.018	0.048	0.0061	100	0.0029	0.025	2.5	0.037
Transitional Closure	14	2034-06-01	0.071	0.018	0.046	0.0057	100	0.0028	0.024	2.4	0.035
Transitional Closure	14	2034-07-01	0.069	0.017	0.044	0.0055	98	0.0027	0.022	2.3	0.033
Transitional Closure	14	2034-08-01	0.067	0.016	0.042	0.0053	97	0.0026	0.022	2.2	0.032
Transitional Closure	14	2034-09-01	0.075	0.019	0.05	0.0059	100	0.0029	0.024	2.4	0.036
Transitional Closure	14	2034-10-01	0.074	0.019	0.049	0.0058	100	0.0029	0.024	2.4	0.035
Transitional Closure	14	2034-11-01	0.073	0.019	0.049	0.0058	100	0.0028	0.024	2.4	0.035
Transitional Closure	14	2034-12-01	0.073	0.019	0.049	0.0057	100	0.0028	0.023	2.4	0.035
Transitional Closure	14	2035-01-01	0.073	0.019	0.049	0.0057	100	0.0028	0.023	2.4	0.035
Transitional Closure	14	2035-02-01	0.073	0.019	0.049	0.0057	100	0.0028	0.023	2.4	0.035
Transitional Closure	15	2035-03-01	0.073	0.019	0.049	0.0057	110	0.0028	0.024	2.4	0.035
Transitional Closure	15	2035-04-01	0.074	0.019	0.05	0.0058	110	0.0029	0.024	2.4	0.035
Transitional Closure	15	2035-05-01	0.074	0.019	0.049	0.0057	110	0.0028	0.023	2.3	0.035
Transitional Closure	15	2035-06-01	0.072	0.018	0.047	0.0054	100	0.0027	0.022	2.2	0.033
Transitional Closure	15	2035-07-01	0.07	0.017	0.045	0.0052	100	0.0026	0.022	2.1	0.032
Transitional Closure	15	2035-08-01	0.068	0.017	0.044	0.0051	100	0.0026	0.021	2.1	0.031
Transitional Closure	15	2035-09-01	0.067	0.017	0.043	0.005	99	0.0025	0.021	2.1	0.03
Transitional Closure	15	2035-10-01	0.066	0.016	0.043	0.0049	99	0.0025	0.02	2	0.03
Transitional Closure	15	2035-11-01	0.076	0.02	0.053	0.0054	100	0.0028	0.023	2.1	0.034
Transitional Closure	15	2035-12-01	0.075	0.02	0.052	0.0054	100	0.0028	0.023	2.1	0.034
Transitional Closure	15	2036-01-01	0.075	0.02	0.052	0.0054	110	0.0028	0.023	2.1	0.034
Transitional Closure	15	2036-02-01	0.075	0.02	0.052	0.0054	110	0.0028	0.023	2.1	0.034

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L
Active Closure	13	2033-06-01	1.2	0.016	0.000019	0.011	0.00019	0.027	0.52	1.4	0.066
Active Closure	13	2033-07-01	1.2	0.015	0.000019	0.0099	0.00018	0.025	0.49	1.4	0.062
Active Closure	13	2033-08-01	1.1	0.014	0.000018	0.0095	0.00017	0.024	0.47	1.4	0.06
Active Closure	13	2033-09-01	1.1	0.014	0.000018	0.0092	0.00017	0.023	0.45	1.4	0.058
Transitional Closure	13	2033-10-01	1.2	0.015	0.000019	0.01	0.00019	0.027	0.5	1.4	0.064
Transitional Closure	13	2033-11-01	1.2	0.015	0.000019	0.01	0.00019	0.026	0.49	1.4	0.064
Transitional Closure	13	2033-12-01	1.1	0.015	0.000019	0.01	0.00019	0.026	0.49	1.4	0.063
Transitional Closure	13	2034-01-01	1.1	0.015	0.000019	0.01	0.00019	0.027	0.49	1.4	0.063
Transitional Closure	13	2034-02-01	1.2	0.015	0.000019	0.01	0.00019	0.027	0.49	1.4	0.064
Transitional Closure	14	2034-03-01	1.2	0.015	0.00002	0.01	0.00019	0.027	0.49	1.4	0.065
Transitional Closure	14	2034-04-01	1.2	0.015	0.00002	0.01	0.0002	0.028	0.49	1.4	0.066
Transitional Closure	14	2034-05-01	1.1	0.015	0.00002	0.01	0.00019	0.028	0.49	1.4	0.065
Transitional Closure	14	2034-06-01	1.1	0.014	0.000019	0.0097	0.00018	0.027	0.46	1.4	0.063
Transitional Closure	14	2034-07-01	1	0.013	0.000019	0.0093	0.00017	0.025	0.44	1.4	0.06
Transitional Closure	14	2034-08-01	0.99	0.013	0.000018	0.009	0.00017	0.025	0.43	1.4	0.058
Transitional Closure	14	2034-09-01	1.1	0.014	0.00002	0.01	0.0002	0.029	0.48	1.4	0.066
Transitional Closure	14	2034-10-01	1.1	0.014	0.00002	0.01	0.00019	0.028	0.47	1.4	0.065
Transitional Closure	14	2034-11-01	1.1	0.014	0.00002	0.01	0.00019	0.028	0.47	1.4	0.065
Transitional Closure	14	2034-12-01	1.1	0.014	0.00002	0.01	0.00019	0.028	0.46	1.4	0.064
Transitional Closure	14	2035-01-01	1.1	0.014	0.00002	0.01	0.00019	0.028	0.46	1.4	0.064
Transitional Closure	14	2035-02-01	1.1	0.014	0.00002	0.01	0.00019	0.028	0.46	1.4	0.065
Transitional Closure	15	2035-03-01	1.1	0.014	0.00002	0.01	0.00019	0.029	0.46	1.4	0.065
Transitional Closure	15	2035-04-01	1.1	0.014	0.000021	0.01	0.00019	0.029	0.47	1.4	0.066
Transitional Closure	15	2035-05-01	1.1	0.014	0.00002	0.01	0.00019	0.029	0.46	1.4	0.065
Transitional Closure	15	2035-06-01	1	0.013	0.00002	0.0097	0.00018	0.028	0.44	1.4	0.063
Transitional Closure	15	2035-07-01	0.97	0.013	0.000019	0.0093	0.00018	0.027	0.43	1.4	0.061
Transitional Closure	15	2035-08-01	0.95	0.012	0.000019	0.0091	0.00017	0.026	0.41	1.4	0.06
Transitional Closure	15	2035-09-01	0.93	0.012	0.000019	0.0089	0.00017	0.026	0.41	1.4	0.059
Transitional Closure	15	2035-10-01	0.92	0.012	0.000019	0.0088	0.00017	0.026	0.4	1.4	0.058
Transitional Closure	15	2035-11-01	0.98	0.013	0.000021	0.01	0.0002	0.03	0.45	1.4	0.067
Transitional Closure	15	2035-12-01	0.98	0.013	0.000021	0.0099	0.0002	0.03	0.45	1.4	0.067
Transitional Closure	15	2036-01-01	0.98	0.013	0.000021	0.0099	0.0002	0.03	0.45	1.4	0.067
Transitional Closure	15	2036-02-01	0.98	0.013	0.000021	0.01	0.0002	0.03	0.45	1.4	0.067

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L
Active Closure	13	2033-06-01	0.018	0.046	0.0066	100	0.0031	0.027	2.7	0.039	1.2
Active Closure	13	2033-07-01	0.017	0.043	0.0061	98	0.0029	0.025	2.5	0.037	1.2
Active Closure	13	2033-08-01	0.016	0.041	0.0059	96	0.0028	0.024	2.4	0.035	1.1
Active Closure	13	2033-09-01	0.016	0.04	0.0057	95	0.0027	0.023	2.3	0.034	1.1
Transitional Closure	13	2033-10-01	0.018	0.048	0.0063	99	0.003	0.025	2.6	0.037	1.2
Transitional Closure	13	2033-11-01	0.018	0.047	0.0062	100	0.0029	0.025	2.5	0.037	1.2
Transitional Closure	13	2033-12-01	0.018	0.047	0.0061	100	0.0029	0.025	2.5	0.037	1.1
Transitional Closure	13	2034-01-01	0.018	0.047	0.0061	100	0.0029	0.025	2.5	0.037	1.1
Transitional Closure	13	2034-02-01	0.018	0.048	0.0061	100	0.0029	0.025	2.5	0.037	1.2
Transitional Closure	14	2034-03-01	0.019	0.048	0.0062	100	0.003	0.025	2.5	0.037	1.2
Transitional Closure	14	2034-04-01	0.019	0.049	0.0062	110	0.003	0.025	2.5	0.037	1.2
Transitional Closure	14	2034-05-01	0.018	0.048	0.006	100	0.0029	0.025	2.5	0.037	1.1
Transitional Closure	14	2034-06-01	0.018	0.046	0.0057	100	0.0028	0.024	2.3	0.035	1.1
Transitional Closure	14	2034-07-01	0.017	0.044	0.0055	99	0.0027	0.022	2.2	0.033	1
Transitional Closure	14	2034-08-01	0.016	0.042	0.0053	97	0.0026	0.022	2.2	0.032	0.99
Transitional Closure	14	2034-09-01	0.019	0.05	0.0059	100	0.0029	0.024	2.4	0.036	1.1
Transitional Closure	14	2034-10-01	0.019	0.049	0.0058	100	0.0029	0.024	2.4	0.035	1.1
Transitional Closure	14	2034-11-01	0.019	0.049	0.0058	100	0.0028	0.024	2.4	0.035	1.1
Transitional Closure	14	2034-12-01	0.019	0.049	0.0057	100	0.0028	0.023	2.3	0.035	1.1
Transitional Closure	14	2035-01-01	0.019	0.048	0.0057	100	0.0028	0.023	2.3	0.035	1.1
Transitional Closure	14	2035-02-01	0.019	0.049	0.0057	100	0.0028	0.023	2.3	0.035	1.1
Transitional Closure	15	2035-03-01	0.019	0.049	0.0057	110	0.0028	0.023	2.3	0.035	1.1
Transitional Closure	15	2035-04-01	0.019	0.05	0.0057	110	0.0029	0.024	2.3	0.035	1.1
Transitional Closure	15	2035-05-01	0.019	0.049	0.0057	110	0.0028	0.023	2.3	0.035	1.1
Transitional Closure	15	2035-06-01	0.018	0.047	0.0054	100	0.0027	0.022	2.2	0.033	1
Transitional Closure	15	2035-07-01	0.017	0.045	0.0052	100	0.0026	0.022	2.1	0.032	0.97
Transitional Closure	15	2035-08-01	0.017	0.044	0.0051	100	0.0025	0.021	2.1	0.031	0.94
Transitional Closure	15	2035-09-01	0.017	0.043	0.005	99	0.0025	0.021	2	0.03	0.93
Transitional Closure	15	2035-10-01	0.016	0.043	0.0049	99	0.0025	0.02	2	0.03	0.91
Transitional Closure	15	2035-11-01	0.02	0.052	0.0054	100	0.0028	0.023	2.1	0.034	0.98
Transitional Closure	15	2035-12-01	0.02	0.052	0.0054	110	0.0028	0.022	2.1	0.034	0.98
Transitional Closure	15	2036-01-01	0.02	0.052	0.0054	110	0.0028	0.022	2.1	0.034	0.97
Transitional Closure	15	2036-02-01	0.02	0.052	0.0054	110	0.0028	0.022	2.1	0.034	0.97

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Active Closure	13	2033-06-01	0.016	0.000019	0.011	0.00019	0.027	0.52
Active Closure	13	2033-07-01	0.015	0.000018	0.0099	0.00018	0.025	0.49
Active Closure	13	2033-08-01	0.014	0.000018	0.0095	0.00017	0.024	0.47
Active Closure	13	2033-09-01	0.014	0.000017	0.0092	0.00017	0.023	0.45
Transitional Closure	13	2033-10-01	0.015	0.000019	0.01	0.00019	0.027	0.5
Transitional Closure	13	2033-11-01	0.015	0.000019	0.01	0.00019	0.026	0.49
Transitional Closure	13	2033-12-01	0.015	0.000019	0.01	0.00019	0.026	0.49
Transitional Closure	13	2034-01-01	0.015	0.000019	0.01	0.00019	0.026	0.48
Transitional Closure	13	2034-02-01	0.015	0.000019	0.01	0.00019	0.027	0.49
Transitional Closure	14	2034-03-01	0.015	0.000019	0.01	0.00019	0.027	0.49
Transitional Closure	14	2034-04-01	0.015	0.00002	0.01	0.00019	0.028	0.49
Transitional Closure	14	2034-05-01	0.015	0.00002	0.01	0.00019	0.028	0.48
Transitional Closure	14	2034-06-01	0.014	0.000019	0.0097	0.00018	0.027	0.46
Transitional Closure	14	2034-07-01	0.013	0.000018	0.0093	0.00017	0.025	0.44
Transitional Closure	14	2034-08-01	0.013	0.000018	0.009	0.00017	0.025	0.42
Transitional Closure	14	2034-09-01	0.014	0.00002	0.01	0.0002	0.029	0.48
Transitional Closure	14	2034-10-01	0.014	0.00002	0.01	0.00019	0.028	0.47
Transitional Closure	14	2034-11-01	0.014	0.000019	0.01	0.00019	0.028	0.46
Transitional Closure	14	2034-12-01	0.014	0.000019	0.01	0.00019	0.028	0.46
Transitional Closure	14	2035-01-01	0.014	0.00002	0.01	0.00019	0.028	0.46
Transitional Closure	14	2035-02-01	0.014	0.00002	0.01	0.00019	0.028	0.46
Transitional Closure	15	2035-03-01	0.014	0.00002	0.01	0.00019	0.029	0.46
Transitional Closure	15	2035-04-01	0.014	0.00002	0.01	0.00019	0.029	0.46
Transitional Closure	15	2035-05-01	0.014	0.00002	0.01	0.00019	0.029	0.46
Transitional Closure	15	2035-06-01	0.013	0.00002	0.0097	0.00018	0.028	0.44
Transitional Closure	15	2035-07-01	0.013	0.000019	0.0093	0.00018	0.027	0.42
Transitional Closure	15	2035-08-01	0.012	0.000019	0.0091	0.00017	0.026	0.41
Transitional Closure	15	2035-09-01	0.012	0.000018	0.0089	0.00017	0.026	0.4
Transitional Closure	15	2035-10-01	0.012	0.000018	0.0088	0.00017	0.025	0.4
Transitional Closure	15	2035-11-01	0.013	0.00002	0.01	0.0002	0.03	0.45
Transitional Closure	15	2035-12-01	0.013	0.00002	0.0099	0.0002	0.03	0.45
Transitional Closure	15	2036-01-01	0.013	0.00002	0.0099	0.0002	0.03	0.45
Transitional Closure	15	2036-02-01	0.013	0.000021	0.01	0.0002	0.03	0.45

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	16	2036-03-01	400	200	0.047	0.00094	0.019	0.02	0.2	0.54	0.00027	0.00028
Transitional Closure	16	2036-04-01	400	200	0.047	0.00094	0.019	0.02	0.2	0.54	0.00027	0.00028
Transitional Closure	16	2036-05-01	400	200	0.047	0.00093	0.019	0.02	0.2	0.54	0.00027	0.00028
Transitional Closure	16	2036-06-01	390	200	0.047	0.00093	0.019	0.019	0.19	0.54	0.00028	0.00028
Transitional Closure	16	2036-07-01	380	190	0.047	0.00093	0.019	0.019	0.19	0.53	0.00028	0.00029
Transitional Closure	16	2036-08-01	380	190	0.047	0.00094	0.019	0.019	0.19	0.53	0.00028	0.00029
Transitional Closure	16	2036-09-01	380	190	0.047	0.00094	0.018	0.018	0.18	0.53	0.00028	0.00029
Transitional Closure	16	2036-10-01	370	190	0.048	0.00094	0.018	0.018	0.18	0.53	0.00028	0.00029
Transitional Closure	16	2036-11-01	370	190	0.048	0.00094	0.019	0.018	0.18	0.53	0.00028	0.00029
Transitional Closure	16	2036-12-01	380	190	0.048	0.00094	0.019	0.018	0.18	0.53	0.00028	0.00029
Transitional Closure	16	2037-01-01	380	190	0.048	0.00094	0.019	0.018	0.18	0.53	0.00028	0.00029
Transitional Closure	16	2037-02-01	380	190	0.048	0.00094	0.019	0.018	0.19	0.53	0.00028	0.00028
Transitional Closure	17	2037-03-01	380	190	0.048	0.00094	0.019	0.018	0.19	0.54	0.00027	0.00028
Transitional Closure	17	2037-04-01	380	190	0.047	0.00094	0.019	0.019	0.19	0.54	0.00027	0.00028
Transitional Closure	17	2037-05-01	420	220	0.047	0.00093	0.019	0.021	0.21	0.54	0.00027	0.00028
Transitional Closure	17	2037-06-01	410	210	0.047	0.00094	0.019	0.02	0.2	0.54	0.00028	0.00028
Transitional Closure	17	2037-07-01	400	210	0.047	0.00094	0.019	0.02	0.2	0.53	0.00028	0.00029
Transitional Closure	17	2037-08-01	400	200	0.047	0.00094	0.019	0.02	0.2	0.53	0.00028	0.00029
Transitional Closure	17	2037-09-01	400	200	0.048	0.00094	0.018	0.02	0.2	0.53	0.00028	0.00029
Transitional Closure	17	2037-10-01	400	200	0.048	0.00094	0.018	0.019	0.2	0.53	0.00028	0.00029
Transitional Closure	17	2037-11-01	400	200	0.048	0.00094	0.019	0.019	0.2	0.53	0.00028	0.00029
Transitional Closure	17	2037-12-01	400	200	0.048	0.00094	0.019	0.019	0.2	0.53	0.00028	0.00029
Transitional Closure	17	2038-01-01	400	200	0.048	0.00094	0.019	0.019	0.2	0.53	0.00028	0.00029
Transitional Closure	17	2038-02-01	400	200	0.048	0.00094	0.019	0.019	0.2	0.53	0.00028	0.00029
Transitional Closure	18	2038-03-01	400	200	0.048	0.00094	0.019	0.02	0.2	0.54	0.00028	0.00029
Transitional Closure	18	2038-04-01	400	210	0.048	0.00094	0.019	0.02	0.2	0.54	0.00027	0.00028
Transitional Closure	18	2038-05-01	400	200	0.047	0.00094	0.019	0.02	0.2	0.54	0.00027	0.00028
Transitional Closure	18	2038-06-01	400	200	0.048	0.00094	0.019	0.019	0.2	0.54	0.00028	0.00029
Transitional Closure	18	2038-07-01	420	220	0.047	0.00094	0.019	0.021	0.21	0.53	0.00028	0.00029
Transitional Closure	18	2038-08-01	420	220	0.048	0.00094	0.019	0.021	0.21	0.53	0.00028	0.00029
Transitional Closure	18	2038-09-01	410	210	0.048	0.00094	0.018	0.02	0.21	0.53	0.00028	0.00029
Transitional Closure	18	2038-10-01	410	210	0.048	0.00094	0.018	0.02	0.21	0.53	0.00028	0.00029
Transitional Closure	18	2038-11-01	410	210	0.048	0.00094	0.019	0.02	0.21	0.53	0.00028	0.00029

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Aluminum (Al), total mg/L	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L
Transitional Closure	16	2036-03-01	0.076	0.02	0.053	0.0054	110	0.0028	0.023	2.1	0.034
Transitional Closure	16	2036-04-01	0.076	0.02	0.053	0.0054	110	0.0028	0.023	2.1	0.034
Transitional Closure	16	2036-05-01	0.076	0.02	0.052	0.0053	110	0.0028	0.022	2.1	0.034
Transitional Closure	16	2036-06-01	0.074	0.019	0.051	0.0051	110	0.0027	0.022	2	0.033
Transitional Closure	16	2036-07-01	0.073	0.018	0.049	0.005	100	0.0026	0.021	1.9	0.032
Transitional Closure	16	2036-08-01	0.071	0.018	0.048	0.0049	100	0.0026	0.021	1.9	0.031
Transitional Closure	16	2036-09-01	0.07	0.018	0.047	0.0048	100	0.0025	0.02	1.9	0.03
Transitional Closure	16	2036-10-01	0.069	0.017	0.047	0.0047	100	0.0025	0.02	1.9	0.03
Transitional Closure	16	2036-11-01	0.069	0.017	0.046	0.0047	100	0.0025	0.02	1.9	0.03
Transitional Closure	16	2036-12-01	0.069	0.017	0.046	0.0047	100	0.0025	0.02	1.8	0.03
Transitional Closure	16	2037-01-01	0.069	0.017	0.046	0.0047	100	0.0025	0.02	1.8	0.03
Transitional Closure	16	2037-02-01	0.069	0.017	0.046	0.0047	100	0.0025	0.02	1.8	0.03
Transitional Closure	17	2037-03-01	0.069	0.017	0.046	0.0047	100	0.0025	0.02	1.8	0.03
Transitional Closure	17	2037-04-01	0.069	0.017	0.047	0.0047	100	0.0025	0.02	1.8	0.03
Transitional Closure	17	2037-05-01	0.082	0.021	0.057	0.0052	110	0.0029	0.023	1.8	0.035
Transitional Closure	17	2037-06-01	0.08	0.02	0.055	0.0051	110	0.0029	0.022	1.8	0.034
Transitional Closure	17	2037-07-01	0.078	0.02	0.054	0.0049	110	0.0028	0.022	1.7	0.033
Transitional Closure	17	2037-08-01	0.077	0.019	0.053	0.0048	110	0.0027	0.021	1.7	0.032
Transitional Closure	17	2037-09-01	0.076	0.019	0.052	0.0048	110	0.0027	0.021	1.7	0.032
Transitional Closure	17	2037-10-01	0.076	0.019	0.052	0.0047	110	0.0027	0.021	1.7	0.032
Transitional Closure	17	2037-11-01	0.075	0.019	0.051	0.0047	110	0.0027	0.021	1.7	0.031
Transitional Closure	17	2037-12-01	0.075	0.019	0.051	0.0047	110	0.0026	0.02	1.7	0.031
Transitional Closure	17	2038-01-01	0.075	0.019	0.051	0.0047	110	0.0026	0.02	1.7	0.031
Transitional Closure	17	2038-02-01	0.075	0.019	0.051	0.0047	110	0.0026	0.02	1.7	0.031
Transitional Closure	18	2038-03-01	0.075	0.019	0.051	0.0047	110	0.0027	0.02	1.7	0.031
Transitional Closure	18	2038-04-01	0.075	0.019	0.052	0.0047	110	0.0027	0.02	1.7	0.031
Transitional Closure	18	2038-05-01	0.075	0.019	0.051	0.0046	110	0.0026	0.02	1.7	0.031
Transitional Closure	18	2038-06-01	0.074	0.018	0.05	0.0045	110	0.0026	0.02	1.6	0.03
Transitional Closure	18	2038-07-01	0.084	0.021	0.06	0.0049	110	0.0029	0.022	1.6	0.034
Transitional Closure	18	2038-08-01	0.082	0.021	0.059	0.0048	110	0.0028	0.022	1.6	0.033
Transitional Closure	18	2038-09-01	0.082	0.02	0.058	0.0048	110	0.0028	0.021	1.6	0.033
Transitional Closure	18	2038-10-01	0.081	0.02	0.058	0.0047	110	0.0028	0.021	1.6	0.033
Transitional Closure	18	2038-11-01	0.081	0.02	0.057	0.0047	110	0.0028	0.021	1.6	0.033

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L
Transitional Closure	16	2036-03-01	0.98	0.013	0.000021	0.01	0.0002	0.03	0.45	1.4	0.067
Transitional Closure	16	2036-04-01	0.98	0.013	0.000021	0.01	0.0002	0.03	0.45	1.4	0.068
Transitional Closure	16	2036-05-01	0.97	0.013	0.000021	0.0099	0.0002	0.03	0.45	1.4	0.067
Transitional Closure	16	2036-06-01	0.93	0.013	0.000021	0.0096	0.00019	0.029	0.43	1.4	0.066
Transitional Closure	16	2036-07-01	0.9	0.012	0.00002	0.0093	0.00018	0.028	0.42	1.4	0.064
Transitional Closure	16	2036-08-01	0.88	0.012	0.00002	0.0091	0.00018	0.028	0.41	1.4	0.062
Transitional Closure	16	2036-09-01	0.87	0.012	0.00002	0.009	0.00018	0.027	0.4	1.4	0.061
Transitional Closure	16	2036-10-01	0.86	0.012	0.000019	0.0089	0.00017	0.027	0.4	1.4	0.061
Transitional Closure	16	2036-11-01	0.86	0.012	0.000019	0.0088	0.00017	0.027	0.4	1.4	0.06
Transitional Closure	16	2036-12-01	0.85	0.012	0.000019	0.0088	0.00017	0.027	0.4	1.4	0.06
Transitional Closure	16	2037-01-01	0.85	0.012	0.000019	0.0088	0.00017	0.027	0.39	1.4	0.06
Transitional Closure	16	2037-02-01	0.85	0.012	0.00002	0.0088	0.00017	0.027	0.4	1.4	0.06
Transitional Closure	17	2037-03-01	0.85	0.012	0.00002	0.0089	0.00017	0.027	0.4	1.4	0.061
Transitional Closure	17	2037-04-01	0.85	0.012	0.00002	0.0089	0.00017	0.028	0.4	1.4	0.061
Transitional Closure	17	2037-05-01	0.91	0.013	0.000023	0.01	0.0002	0.032	0.46	1.4	0.073
Transitional Closure	17	2037-06-01	0.88	0.013	0.000022	0.01	0.0002	0.032	0.45	1.4	0.071
Transitional Closure	17	2037-07-01	0.86	0.012	0.000022	0.0098	0.00019	0.031	0.43	1.4	0.07
Transitional Closure	17	2037-08-01	0.84	0.012	0.000021	0.0096	0.00019	0.03	0.43	1.4	0.068
Transitional Closure	17	2037-09-01	0.83	0.012	0.000021	0.0095	0.00019	0.03	0.42	1.4	0.068
Transitional Closure	17	2037-10-01	0.83	0.012	0.000021	0.0094	0.00018	0.03	0.42	1.4	0.067
Transitional Closure	17	2037-11-01	0.82	0.012	0.000021	0.0094	0.00018	0.03	0.41	1.4	0.067
Transitional Closure	17	2037-12-01	0.82	0.012	0.000021	0.0093	0.00018	0.029	0.41	1.4	0.066
Transitional Closure	17	2038-01-01	0.82	0.012	0.000021	0.0093	0.00018	0.03	0.41	1.4	0.066
Transitional Closure	17	2038-02-01	0.82	0.012	0.000021	0.0094	0.00018	0.03	0.41	1.4	0.067
Transitional Closure	18	2038-03-01	0.82	0.012	0.000021	0.0094	0.00018	0.03	0.41	1.4	0.067
Transitional Closure	18	2038-04-01	0.82	0.012	0.000021	0.0094	0.00018	0.03	0.41	1.4	0.067
Transitional Closure	18	2038-05-01	0.81	0.012	0.000021	0.0093	0.00018	0.03	0.41	1.4	0.067
Transitional Closure	18	2038-06-01	0.79	0.011	0.000021	0.0091	0.00018	0.029	0.4	1.4	0.065
Transitional Closure	18	2038-07-01	0.84	0.013	0.000023	0.01	0.0002	0.032	0.44	1.4	0.075
Transitional Closure	18	2038-08-01	0.82	0.012	0.000023	0.01	0.0002	0.032	0.44	1.4	0.074
Transitional Closure	18	2038-09-01	0.81	0.012	0.000023	0.0099	0.00019	0.032	0.43	1.4	0.073
Transitional Closure	18	2038-10-01	0.81	0.012	0.000023	0.0098	0.00019	0.031	0.43	1.4	0.072
Transitional Closure	18	2038-11-01	0.8	0.012	0.000023	0.0098	0.00019	0.031	0.43	1.4	0.072

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L
Transitional Closure	16	2036-03-01	0.02	0.053	0.0054	110	0.0028	0.023	2.1	0.034	0.98
Transitional Closure	16	2036-04-01	0.02	0.053	0.0054	110	0.0028	0.023	2.1	0.034	0.98
Transitional Closure	16	2036-05-01	0.02	0.052	0.0053	110	0.0028	0.022	2	0.034	0.96
Transitional Closure	16	2036-06-01	0.019	0.051	0.0051	110	0.0027	0.022	2	0.033	0.93
Transitional Closure	16	2036-07-01	0.018	0.049	0.005	100	0.0026	0.021	1.9	0.032	0.9
Transitional Closure	16	2036-08-01	0.018	0.048	0.0049	100	0.0026	0.02	1.9	0.031	0.88
Transitional Closure	16	2036-09-01	0.018	0.047	0.0048	100	0.0025	0.02	1.8	0.03	0.87
Transitional Closure	16	2036-10-01	0.017	0.047	0.0047	100	0.0025	0.02	1.8	0.03	0.86
Transitional Closure	16	2036-11-01	0.017	0.046	0.0047	100	0.0025	0.02	1.8	0.03	0.85
Transitional Closure	16	2036-12-01	0.017	0.046	0.0047	100	0.0025	0.02	1.8	0.03	0.85
Transitional Closure	16	2037-01-01	0.017	0.046	0.0047	100	0.0025	0.02	1.8	0.03	0.85
Transitional Closure	16	2037-02-01	0.017	0.046	0.0047	100	0.0025	0.02	1.8	0.03	0.85
Transitional Closure	17	2037-03-01	0.017	0.046	0.0047	100	0.0025	0.02	1.8	0.03	0.85
Transitional Closure	17	2037-04-01	0.017	0.047	0.0047	100	0.0025	0.02	1.8	0.03	0.85
Transitional Closure	17	2037-05-01	0.021	0.057	0.0052	110	0.0029	0.023	1.8	0.035	0.91
Transitional Closure	17	2037-06-01	0.02	0.055	0.0051	110	0.0028	0.022	1.8	0.034	0.88
Transitional Closure	17	2037-07-01	0.02	0.054	0.0049	110	0.0028	0.021	1.7	0.033	0.86
Transitional Closure	17	2037-08-01	0.019	0.053	0.0048	110	0.0027	0.021	1.7	0.032	0.84
Transitional Closure	17	2037-09-01	0.019	0.052	0.0048	110	0.0027	0.021	1.7	0.032	0.83
Transitional Closure	17	2037-10-01	0.019	0.052	0.0047	110	0.0027	0.021	1.7	0.032	0.82
Transitional Closure	17	2037-11-01	0.019	0.051	0.0047	110	0.0026	0.02	1.6	0.031	0.82
Transitional Closure	17	2037-12-01	0.019	0.051	0.0047	110	0.0026	0.02	1.6	0.031	0.82
Transitional Closure	17	2038-01-01	0.019	0.051	0.0047	110	0.0026	0.02	1.6	0.031	0.81
Transitional Closure	17	2038-02-01	0.019	0.051	0.0047	110	0.0026	0.02	1.6	0.031	0.82
Transitional Closure	18	2038-03-01	0.019	0.051	0.0047	110	0.0026	0.02	1.6	0.031	0.82
Transitional Closure	18	2038-04-01	0.019	0.052	0.0047	110	0.0026	0.02	1.6	0.031	0.82
Transitional Closure	18	2038-05-01	0.019	0.051	0.0046	110	0.0026	0.02	1.6	0.031	0.81
Transitional Closure	18	2038-06-01	0.018	0.05	0.0045	110	0.0026	0.02	1.6	0.03	0.79
Transitional Closure	18	2038-07-01	0.021	0.06	0.0049	110	0.0029	0.022	1.6	0.034	0.83
Transitional Closure	18	2038-08-01	0.021	0.059	0.0048	110	0.0028	0.021	1.6	0.033	0.82
Transitional Closure	18	2038-09-01	0.02	0.058	0.0048	110	0.0028	0.021	1.6	0.033	0.81
Transitional Closure	18	2038-10-01	0.02	0.058	0.0047	110	0.0028	0.021	1.5	0.033	0.8
Transitional Closure	18	2038-11-01	0.02	0.057	0.0047	110	0.0028	0.021	1.5	0.033	0.8

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Transitional Closure	16	2036-03-01	0.013	0.000021	0.01	0.0002	0.03	0.45
Transitional Closure	16	2036-04-01	0.013	0.000021	0.01	0.0002	0.03	0.45
Transitional Closure	16	2036-05-01	0.013	0.000021	0.0099	0.0002	0.03	0.44
Transitional Closure	16	2036-06-01	0.013	0.00002	0.0096	0.00019	0.029	0.43
Transitional Closure	16	2036-07-01	0.012	0.00002	0.0093	0.00018	0.028	0.42
Transitional Closure	16	2036-08-01	0.012	0.000019	0.0091	0.00018	0.028	0.41
Transitional Closure	16	2036-09-01	0.012	0.000019	0.009	0.00018	0.027	0.4
Transitional Closure	16	2036-10-01	0.012	0.000019	0.0089	0.00017	0.027	0.4
Transitional Closure	16	2036-11-01	0.012	0.000019	0.0088	0.00017	0.027	0.4
Transitional Closure	16	2036-12-01	0.012	0.000019	0.0088	0.00017	0.027	0.39
Transitional Closure	16	2037-01-01	0.012	0.000019	0.0088	0.00017	0.027	0.39
Transitional Closure	16	2037-02-01	0.012	0.000019	0.0088	0.00017	0.027	0.39
Transitional Closure	17	2037-03-01	0.012	0.000019	0.0089	0.00017	0.027	0.39
Transitional Closure	17	2037-04-01	0.012	0.00002	0.0089	0.00017	0.028	0.39
Transitional Closure	17	2037-05-01	0.013	0.000022	0.01	0.0002	0.032	0.46
Transitional Closure	17	2037-06-01	0.013	0.000022	0.01	0.0002	0.032	0.44
Transitional Closure	17	2037-07-01	0.012	0.000021	0.0098	0.00019	0.031	0.43
Transitional Closure	17	2037-08-01	0.012	0.000021	0.0096	0.00019	0.03	0.42
Transitional Closure	17	2037-09-01	0.012	0.000021	0.0095	0.00019	0.03	0.42
Transitional Closure	17	2037-10-01	0.012	0.000021	0.0094	0.00018	0.03	0.41
Transitional Closure	17	2037-11-01	0.012	0.000021	0.0094	0.00018	0.03	0.41
Transitional Closure	17	2037-12-01	0.012	0.000021	0.0093	0.00018	0.029	0.41
Transitional Closure	17	2038-01-01	0.012	0.000021	0.0093	0.00018	0.029	0.41
Transitional Closure	17	2038-02-01	0.012	0.000021	0.0094	0.00018	0.03	0.41
Transitional Closure	18	2038-03-01	0.012	0.000021	0.0094	0.00018	0.03	0.41
Transitional Closure	18	2038-04-01	0.012	0.000021	0.0094	0.00018	0.03	0.41
Transitional Closure	18	2038-05-01	0.012	0.000021	0.0093	0.00018	0.03	0.41
Transitional Closure	18	2038-06-01	0.011	0.000021	0.0091	0.00018	0.029	0.4
Transitional Closure	18	2038-07-01	0.013	0.000023	0.01	0.0002	0.032	0.44
Transitional Closure	18	2038-08-01	0.012	0.000023	0.01	0.0002	0.032	0.44
Transitional Closure	18	2038-09-01	0.012	0.000022	0.0099	0.00019	0.032	0.43
Transitional Closure	18	2038-10-01	0.012	0.000022	0.0098	0.00019	0.031	0.43
Transitional Closure	18	2038-11-01	0.012	0.000022	0.0098	0.00019	0.031	0.43

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	18	2038-12-01	410	210	0.048	0.00094	0.019	0.02	0.21	0.53	0.00028	0.00029
Transitional Closure	18	2039-01-01	410	210	0.048	0.00094	0.019	0.02	0.21	0.53	0.00028	0.00029
Transitional Closure	18	2039-02-01	420	210	0.048	0.00094	0.019	0.02	0.21	0.53	0.00028	0.00029
Transitional Closure	19	2039-03-01	420	220	0.048	0.00094	0.019	0.02	0.21	0.54	0.00028	0.00029
Transitional Closure	19	2039-04-01	420	220	0.048	0.00094	0.019	0.02	0.21	0.54	0.00028	0.00029
Transitional Closure	19	2039-05-01	420	220	0.048	0.00094	0.019	0.02	0.21	0.54	0.00028	0.00028
Transitional Closure	19	2039-06-01	410	210	0.048	0.00094	0.019	0.02	0.2	0.54	0.00028	0.00029
Transitional Closure	19	2039-07-01	410	210	0.048	0.00094	0.019	0.02	0.2	0.53	0.00028	0.00029
Transitional Closure	19	2039-08-01	400	210	0.048	0.00094	0.019	0.02	0.2	0.53	0.00028	0.00029
Transitional Closure	19	2039-09-01	400	200	0.048	0.00094	0.018	0.019	0.2	0.53	0.00028	0.00029
Transitional Closure	19	2039-10-01	400	200	0.048	0.00094	0.018	0.019	0.2	0.53	0.00028	0.00029
Transitional Closure	19	2039-11-01	400	200	0.048	0.00094	0.019	0.019	0.2	0.53	0.00028	0.00029
Transitional Closure	19	2039-12-01	400	200	0.048	0.00094	0.019	0.019	0.2	0.53	0.00028	0.00029
Transitional Closure	19	2040-01-01	400	200	0.048	0.00094	0.019	0.019	0.2	0.53	0.00028	0.00029
Transitional Closure	19	2040-02-01	400	210	0.048	0.00094	0.019	0.019	0.2	0.53	0.00028	0.00029
Transitional Closure	20	2040-03-01	400	210	0.048	0.00094	0.019	0.019	0.2	0.54	0.00028	0.00029
Transitional Closure	20	2040-04-01	410	210	0.048	0.00094	0.019	0.019	0.2	0.54	0.00028	0.00029
Transitional Closure	20	2040-05-01	440	230	0.048	0.00094	0.019	0.022	0.22	0.54	0.00028	0.00029
Transitional Closure	20	2040-06-01	440	230	0.048	0.00094	0.019	0.022	0.22	0.54	0.00028	0.00029
Transitional Closure	20	2040-07-01	430	230	0.048	0.00094	0.019	0.021	0.22	0.53	0.00028	0.00029
Transitional Closure	20	2040-08-01	430	220	0.048	0.00094	0.019	0.021	0.21	0.53	0.00028	0.00029
Transitional Closure	20	2040-09-01	430	220	0.048	0.00094	0.018	0.021	0.21	0.53	0.00028	0.00029
Transitional Closure	20	2040-10-01	430	220	0.048	0.00094	0.018	0.021	0.21	0.53	0.00028	0.00029
Transitional Closure	20	2040-11-01	430	220	0.048	0.00094	0.019	0.021	0.21	0.53	0.00028	0.00029
Transitional Closure	20	2040-12-01	430	220	0.048	0.00094	0.019	0.021	0.21	0.53	0.00028	0.00029
Transitional Closure	20	2041-01-01	430	220	0.048	0.00094	0.019	0.021	0.21	0.53	0.00028	0.00029
Transitional Closure	20	2041-02-01	430	220	0.048	0.00094	0.019	0.021	0.21	0.53	0.00028	0.00029
Transitional Closure	21	2041-03-01	430	220	0.048	0.00094	0.019	0.021	0.21	0.54	0.00028	0.00029
Transitional Closure	21	2041-04-01	430	220	0.048	0.00094	0.019	0.021	0.21	0.54	0.00028	0.00029
Transitional Closure	21	2041-05-01	430	220	0.048	0.00094	0.019	0.021	0.21	0.54	0.00028	0.00029
Transitional Closure	21	2041-06-01	420	220	0.048	0.00094	0.019	0.021	0.21	0.54	0.00028	0.00029
Transitional Closure	21	2041-07-01	420	220	0.048	0.00094	0.019	0.02	0.21	0.53	0.00028	0.00029
Transitional Closure	21	2041-08-01	420	220	0.048	0.00094	0.019	0.02	0.21	0.53	0.00028	0.00029

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	18	2038-12-01	0.08	0.02	0.057	0.0047	110	0.0028	0.021	1.6	0.032
Transitional Closure	18	2039-01-01	0.08	0.02	0.057	0.0047	110	0.0028	0.021	1.6	0.032
Transitional Closure	18	2039-02-01	0.08	0.02	0.057	0.0047	110	0.0028	0.021	1.6	0.032
Transitional Closure	19	2039-03-01	0.08	0.02	0.057	0.0047	110	0.0028	0.021	1.6	0.032
Transitional Closure	19	2039-04-01	0.081	0.02	0.057	0.0047	110	0.0028	0.021	1.6	0.033
Transitional Closure	19	2039-05-01	0.08	0.02	0.057	0.0047	110	0.0028	0.021	1.6	0.032
Transitional Closure	19	2039-06-01	0.079	0.019	0.056	0.0046	110	0.0027	0.02	1.5	0.032
Transitional Closure	19	2039-07-01	0.078	0.019	0.055	0.0045	110	0.0026	0.02	1.5	0.031
Transitional Closure	19	2039-08-01	0.077	0.019	0.054	0.0044	110	0.0026	0.02	1.5	0.03
Transitional Closure	19	2039-09-01	0.076	0.019	0.053	0.0043	110	0.0026	0.019	1.5	0.03
Transitional Closure	19	2039-10-01	0.076	0.018	0.053	0.0043	110	0.0026	0.019	1.5	0.03
Transitional Closure	19	2039-11-01	0.075	0.018	0.053	0.0043	110	0.0025	0.019	1.5	0.03
Transitional Closure	19	2039-12-01	0.075	0.018	0.052	0.0043	110	0.0025	0.019	1.5	0.03
Transitional Closure	19	2040-01-01	0.075	0.018	0.052	0.0043	110	0.0025	0.019	1.5	0.03
Transitional Closure	19	2040-02-01	0.075	0.018	0.052	0.0043	110	0.0025	0.019	1.5	0.03
Transitional Closure	20	2040-03-01	0.075	0.018	0.052	0.0043	110	0.0025	0.019	1.5	0.03
Transitional Closure	20	2040-04-01	0.075	0.018	0.052	0.0043	110	0.0025	0.019	1.5	0.03
Transitional Closure	20	2040-05-01	0.088	0.021	0.062	0.0048	120	0.0029	0.022	1.5	0.034
Transitional Closure	20	2040-06-01	0.087	0.021	0.061	0.0047	120	0.0029	0.021	1.5	0.033
Transitional Closure	20	2040-07-01	0.086	0.021	0.06	0.0046	120	0.0028	0.021	1.5	0.033
Transitional Closure	20	2040-08-01	0.085	0.02	0.059	0.0045	120	0.0028	0.021	1.4	0.032
Transitional Closure	20	2040-09-01	0.084	0.02	0.059	0.0045	120	0.0028	0.02	1.4	0.032
Transitional Closure	20	2040-10-01	0.083	0.02	0.058	0.0045	110	0.0027	0.02	1.4	0.032
Transitional Closure	20	2040-11-01	0.083	0.02	0.058	0.0045	110	0.0027	0.02	1.4	0.032
Transitional Closure	20	2040-12-01	0.083	0.02	0.058	0.0044	110	0.0027	0.02	1.4	0.031
Transitional Closure	20	2041-01-01	0.083	0.02	0.058	0.0044	120	0.0027	0.02	1.4	0.031
Transitional Closure	20	2041-02-01	0.083	0.02	0.058	0.0044	120	0.0027	0.02	1.4	0.031
Transitional Closure	21	2041-03-01	0.083	0.02	0.058	0.0044	120	0.0027	0.02	1.4	0.031
Transitional Closure	21	2041-04-01	0.083	0.02	0.058	0.0044	120	0.0027	0.02	1.4	0.031
Transitional Closure	21	2041-05-01	0.083	0.02	0.057	0.0044	120	0.0027	0.02	1.4	0.031
Transitional Closure	21	2041-06-01	0.082	0.019	0.056	0.0043	110	0.0027	0.02	1.4	0.031
Transitional Closure	21	2041-07-01	0.081	0.019	0.055	0.0043	110	0.0026	0.019	1.4	0.03
Transitional Closure	21	2041-08-01	0.08	0.019	0.055	0.0042	110	0.0026	0.019	1.4	0.03

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L
Transitional Closure	18	2038-12-01	0.8	0.012	0.000022	0.0098	0.00019	0.031	0.43	1.4	0.072
Transitional Closure	18	2039-01-01	0.8	0.012	0.000022	0.0098	0.00019	0.031	0.42	1.4	0.072
Transitional Closure	18	2039-02-01	0.8	0.012	0.000023	0.0098	0.00019	0.031	0.43	1.4	0.072
Transitional Closure	19	2039-03-01	0.8	0.012	0.000023	0.0098	0.00019	0.031	0.43	1.4	0.072
Transitional Closure	19	2039-04-01	0.8	0.012	0.000023	0.0098	0.00019	0.032	0.43	1.4	0.072
Transitional Closure	19	2039-05-01	0.79	0.012	0.000023	0.0097	0.00019	0.031	0.42	1.4	0.072
Transitional Closure	19	2039-06-01	0.78	0.012	0.000022	0.0095	0.00019	0.031	0.41	1.4	0.07
Transitional Closure	19	2039-07-01	0.76	0.011	0.000022	0.0093	0.00018	0.03	0.41	1.4	0.069
Transitional Closure	19	2039-08-01	0.75	0.011	0.000022	0.0092	0.00018	0.03	0.4	1.4	0.068
Transitional Closure	19	2039-09-01	0.74	0.011	0.000022	0.0091	0.00018	0.03	0.4	1.4	0.067
Transitional Closure	19	2039-10-01	0.74	0.011	0.000021	0.0091	0.00018	0.029	0.39	1.4	0.067
Transitional Closure	19	2039-11-01	0.73	0.011	0.000021	0.009	0.00018	0.029	0.39	1.4	0.067
Transitional Closure	19	2039-12-01	0.73	0.011	0.000021	0.009	0.00017	0.029	0.39	1.4	0.067
Transitional Closure	19	2040-01-01	0.73	0.011	0.000021	0.009	0.00017	0.029	0.39	1.4	0.066
Transitional Closure	19	2040-02-01	0.73	0.011	0.000021	0.009	0.00017	0.029	0.39	1.4	0.067
Transitional Closure	20	2040-03-01	0.73	0.011	0.000022	0.009	0.00017	0.029	0.39	1.4	0.067
Transitional Closure	20	2040-04-01	0.73	0.011	0.000022	0.009	0.00018	0.029	0.39	1.4	0.067
Transitional Closure	20	2040-05-01	0.8	0.012	0.000025	0.011	0.0002	0.035	0.44	1.4	0.08
Transitional Closure	20	2040-06-01	0.79	0.012	0.000024	0.01	0.0002	0.034	0.43	1.4	0.078
Transitional Closure	20	2040-07-01	0.77	0.012	0.000024	0.01	0.00019	0.033	0.43	1.4	0.077
Transitional Closure	20	2040-08-01	0.76	0.012	0.000024	0.01	0.00019	0.033	0.42	1.4	0.076
Transitional Closure	20	2040-09-01	0.76	0.012	0.000024	0.0099	0.00019	0.033	0.42	1.4	0.075
Transitional Closure	20	2040-10-01	0.75	0.012	0.000023	0.0098	0.00019	0.033	0.41	1.4	0.075
Transitional Closure	20	2040-11-01	0.75	0.011	0.000023	0.0098	0.00019	0.033	0.41	1.4	0.075
Transitional Closure	20	2040-12-01	0.75	0.011	0.000023	0.0098	0.00019	0.032	0.41	1.4	0.074
Transitional Closure	20	2041-01-01	0.75	0.011	0.000023	0.0098	0.00019	0.032	0.41	1.4	0.074
Transitional Closure	20	2041-02-01	0.75	0.011	0.000023	0.0098	0.00019	0.033	0.41	1.4	0.074
Transitional Closure	21	2041-03-01	0.75	0.011	0.000024	0.0098	0.00019	0.033	0.41	1.4	0.074
Transitional Closure	21	2041-04-01	0.75	0.011	0.000024	0.0098	0.00019	0.033	0.41	1.4	0.074
Transitional Closure	21	2041-05-01	0.74	0.011	0.000023	0.0097	0.00019	0.032	0.41	1.4	0.074
Transitional Closure	21	2041-06-01	0.73	0.011	0.000023	0.0096	0.00018	0.032	0.4	1.4	0.073
Transitional Closure	21	2041-07-01	0.72	0.011	0.000023	0.0094	0.00018	0.031	0.4	1.4	0.072
Transitional Closure	21	2041-08-01	0.71	0.011	0.000023	0.0093	0.00018	0.031	0.39	1.4	0.071

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L
Transitional Closure	18	2038-12-01	0.02	0.057	0.0047	110	0.0028	0.021	1.5	0.032	0.8
Transitional Closure	18	2039-01-01	0.02	0.057	0.0047	110	0.0027	0.021	1.5	0.032	0.8
Transitional Closure	18	2039-02-01	0.02	0.057	0.0047	110	0.0028	0.021	1.5	0.032	0.8
Transitional Closure	19	2039-03-01	0.02	0.057	0.0047	110	0.0028	0.021	1.5	0.032	0.8
Transitional Closure	19	2039-04-01	0.02	0.057	0.0047	110	0.0028	0.021	1.5	0.032	0.8
Transitional Closure	19	2039-05-01	0.02	0.057	0.0046	110	0.0027	0.021	1.5	0.032	0.79
Transitional Closure	19	2039-06-01	0.019	0.056	0.0045	110	0.0027	0.02	1.5	0.032	0.78
Transitional Closure	19	2039-07-01	0.019	0.055	0.0045	110	0.0026	0.02	1.5	0.031	0.76
Transitional Closure	19	2039-08-01	0.019	0.054	0.0044	110	0.0026	0.02	1.4	0.03	0.75
Transitional Closure	19	2039-09-01	0.019	0.053	0.0043	110	0.0026	0.019	1.4	0.03	0.74
Transitional Closure	19	2039-10-01	0.018	0.053	0.0043	110	0.0025	0.019	1.4	0.03	0.74
Transitional Closure	19	2039-11-01	0.018	0.053	0.0043	110	0.0025	0.019	1.4	0.03	0.73
Transitional Closure	19	2039-12-01	0.018	0.052	0.0043	110	0.0025	0.019	1.4	0.03	0.73
Transitional Closure	19	2040-01-01	0.018	0.052	0.0043	110	0.0025	0.019	1.4	0.03	0.73
Transitional Closure	19	2040-02-01	0.018	0.052	0.0043	110	0.0025	0.019	1.4	0.03	0.73
Transitional Closure	20	2040-03-01	0.018	0.052	0.0043	110	0.0025	0.019	1.4	0.03	0.73
Transitional Closure	20	2040-04-01	0.018	0.052	0.0043	110	0.0025	0.019	1.4	0.03	0.73
Transitional Closure	20	2040-05-01	0.021	0.062	0.0048	120	0.0029	0.022	1.5	0.034	0.8
Transitional Closure	20	2040-06-01	0.021	0.061	0.0047	120	0.0029	0.021	1.5	0.033	0.79
Transitional Closure	20	2040-07-01	0.021	0.06	0.0046	120	0.0028	0.021	1.4	0.033	0.77
Transitional Closure	20	2040-08-01	0.02	0.059	0.0045	120	0.0028	0.021	1.4	0.032	0.76
Transitional Closure	20	2040-09-01	0.02	0.058	0.0045	120	0.0028	0.02	1.4	0.032	0.75
Transitional Closure	20	2040-10-01	0.02	0.058	0.0045	120	0.0027	0.02	1.4	0.032	0.75
Transitional Closure	20	2040-11-01	0.02	0.058	0.0044	120	0.0027	0.02	1.4	0.031	0.75
Transitional Closure	20	2040-12-01	0.02	0.058	0.0044	120	0.0027	0.02	1.4	0.031	0.75
Transitional Closure	20	2041-01-01	0.02	0.058	0.0044	120	0.0027	0.02	1.4	0.031	0.74
Transitional Closure	20	2041-02-01	0.02	0.058	0.0044	120	0.0027	0.02	1.4	0.031	0.74
Transitional Closure	21	2041-03-01	0.02	0.058	0.0044	120	0.0027	0.02	1.4	0.031	0.75
Transitional Closure	21	2041-04-01	0.02	0.058	0.0044	120	0.0027	0.02	1.4	0.031	0.75
Transitional Closure	21	2041-05-01	0.02	0.057	0.0044	120	0.0027	0.02	1.4	0.031	0.74
Transitional Closure	21	2041-06-01	0.019	0.056	0.0043	110	0.0027	0.02	1.4	0.031	0.73
Transitional Closure	21	2041-07-01	0.019	0.055	0.0042	110	0.0026	0.019	1.3	0.03	0.72
Transitional Closure	21	2041-08-01	0.019	0.055	0.0042	110	0.0026	0.019	1.3	0.03	0.71

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Transitional Closure	18	2038-12-01	0.012	0.000022	0.0098	0.00019	0.031	0.42
Transitional Closure	18	2039-01-01	0.012	0.000022	0.0098	0.00019	0.031	0.42
Transitional Closure	18	2039-02-01	0.012	0.000022	0.0098	0.00019	0.031	0.42
Transitional Closure	19	2039-03-01	0.012	0.000022	0.0098	0.00019	0.031	0.42
Transitional Closure	19	2039-04-01	0.012	0.000022	0.0098	0.00019	0.032	0.42
Transitional Closure	19	2039-05-01	0.012	0.000022	0.0097	0.00019	0.031	0.42
Transitional Closure	19	2039-06-01	0.012	0.000022	0.0095	0.00019	0.031	0.41
Transitional Closure	19	2039-07-01	0.011	0.000022	0.0093	0.00018	0.03	0.4
Transitional Closure	19	2039-08-01	0.011	0.000021	0.0092	0.00018	0.03	0.4
Transitional Closure	19	2039-09-01	0.011	0.000021	0.0091	0.00018	0.029	0.39
Transitional Closure	19	2039-10-01	0.011	0.000021	0.0091	0.00018	0.029	0.39
Transitional Closure	19	2039-11-01	0.011	0.000021	0.009	0.00018	0.029	0.39
Transitional Closure	19	2039-12-01	0.011	0.000021	0.009	0.00017	0.029	0.39
Transitional Closure	19	2040-01-01	0.011	0.000021	0.009	0.00017	0.029	0.39
Transitional Closure	19	2040-02-01	0.011	0.000021	0.009	0.00017	0.029	0.39
Transitional Closure	20	2040-03-01	0.011	0.000021	0.009	0.00017	0.029	0.39
Transitional Closure	20	2040-04-01	0.011	0.000021	0.009	0.00017	0.029	0.39
Transitional Closure	20	2040-05-01	0.012	0.000024	0.01	0.0002	0.035	0.44
Transitional Closure	20	2040-06-01	0.012	0.000024	0.01	0.0002	0.034	0.43
Transitional Closure	20	2040-07-01	0.012	0.000024	0.01	0.00019	0.033	0.42
Transitional Closure	20	2040-08-01	0.012	0.000023	0.01	0.00019	0.033	0.42
Transitional Closure	20	2040-09-01	0.012	0.000023	0.0099	0.00019	0.033	0.41
Transitional Closure	20	2040-10-01	0.011	0.000023	0.0098	0.00019	0.033	0.41
Transitional Closure	20	2040-11-01	0.011	0.000023	0.0098	0.00019	0.032	0.41
Transitional Closure	20	2040-12-01	0.011	0.000023	0.0098	0.00019	0.032	0.41
Transitional Closure	20	2041-01-01	0.011	0.000023	0.0098	0.00019	0.032	0.41
Transitional Closure	20	2041-02-01	0.011	0.000023	0.0098	0.00019	0.032	0.41
Transitional Closure	21	2041-03-01	0.011	0.000023	0.0098	0.00019	0.033	0.41
Transitional Closure	21	2041-04-01	0.011	0.000023	0.0098	0.00019	0.033	0.41
Transitional Closure	21	2041-05-01	0.011	0.000023	0.0097	0.00019	0.032	0.41
Transitional Closure	21	2041-06-01	0.011	0.000023	0.0096	0.00018	0.032	0.4
Transitional Closure	21	2041-07-01	0.011	0.000022	0.0094	0.00018	0.031	0.39
Transitional Closure	21	2041-08-01	0.011	0.000022	0.0093	0.00018	0.031	0.39

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	21	2041-09-01	410	210	0.048	0.00094	0.018	0.02	0.21	0.53	0.00028	0.00029
Transitional Closure	21	2041-10-01	410	210	0.049	0.00094	0.018	0.02	0.21	0.53	0.00028	0.00029
Transitional Closure	21	2041-11-01	410	210	0.049	0.00095	0.019	0.02	0.21	0.53	0.00028	0.00029
Transitional Closure	21	2041-12-01	440	230	0.049	0.00095	0.019	0.022	0.22	0.53	0.00028	0.00029
Transitional Closure	21	2042-01-01	440	230	0.049	0.00095	0.019	0.022	0.22	0.53	0.00028	0.00029
Transitional Closure	21	2042-02-01	440	240	0.049	0.00095	0.019	0.022	0.22	0.53	0.00028	0.00029
Transitional Closure	22	2042-03-01	450	240	0.049	0.00095	0.019	0.022	0.22	0.54	0.00028	0.00029
Transitional Closure	22	2042-04-01	450	240	0.048	0.00095	0.019	0.022	0.23	0.54	0.00028	0.00029
Transitional Closure	22	2042-05-01	450	240	0.048	0.00094	0.019	0.022	0.22	0.54	0.00028	0.00029
Transitional Closure	22	2042-06-01	440	230	0.048	0.00094	0.019	0.022	0.22	0.54	0.00028	0.00029
Transitional Closure	22	2042-07-01	440	230	0.048	0.00094	0.019	0.021	0.22	0.53	0.00028	0.00029
Transitional Closure	22	2042-08-01	430	230	0.049	0.00095	0.019	0.021	0.22	0.53	0.00028	0.00029
Transitional Closure	22	2042-09-01	430	230	0.049	0.00095	0.018	0.021	0.22	0.53	0.00029	0.0003
Transitional Closure	22	2042-10-01	430	230	0.049	0.00095	0.018	0.021	0.22	0.53	0.00028	0.00029
Transitional Closure	22	2042-11-01	430	230	0.049	0.00095	0.018	0.021	0.22	0.53	0.00028	0.00029
Transitional Closure	22	2042-12-01	430	230	0.049	0.00095	0.019	0.021	0.22	0.53	0.00028	0.00029
Transitional Closure	22	2043-01-01	430	230	0.049	0.00095	0.019	0.021	0.22	0.53	0.00028	0.00029
Transitional Closure	22	2043-02-01	430	230	0.049	0.00095	0.019	0.021	0.22	0.53	0.00028	0.00029
Transitional Closure	23	2043-03-01	430	230	0.049	0.00095	0.019	0.021	0.22	0.53	0.00028	0.00029
Transitional Closure	23	2043-04-01	430	230	0.049	0.00095	0.019	0.021	0.22	0.54	0.00028	0.00029
Transitional Closure	23	2043-05-01	430	230	0.048	0.00095	0.019	0.021	0.22	0.54	0.00028	0.00029
Transitional Closure	23	2043-06-01	430	220	0.049	0.00095	0.019	0.021	0.21	0.54	0.00029	0.00029
Transitional Closure	23	2043-07-01	420	220	0.049	0.00095	0.019	0.021	0.21	0.53	0.00029	0.0003
Transitional Closure	23	2043-08-01	420	220	0.049	0.00095	0.018	0.02	0.21	0.53	0.00029	0.0003
Transitional Closure	23	2043-09-01	420	220	0.049	0.00095	0.018	0.02	0.21	0.53	0.00029	0.0003
Transitional Closure	23	2043-10-01	420	220	0.049	0.00095	0.018	0.02	0.21	0.53	0.00029	0.0003
Transitional Closure	23	2043-11-01	420	220	0.049	0.00095	0.018	0.02	0.21	0.53	0.00029	0.0003
Transitional Closure	23	2043-12-01	460	240	0.049	0.00095	0.018	0.023	0.23	0.53	0.00029	0.0003
Transitional Closure	23	2044-01-01	460	240	0.049	0.00095	0.018	0.023	0.23	0.53	0.00028	0.00029
Transitional Closure	23	2044-02-01	460	240	0.049	0.00095	0.019	0.023	0.23	0.53	0.00028	0.00029
Transitional Closure	24	2044-03-01	460	250	0.049	0.00095	0.019	0.023	0.23	0.53	0.00028	0.00029
Transitional Closure	24	2044-04-01	460	250	0.049	0.00095	0.019	0.023	0.23	0.53	0.00028	0.00029
Transitional Closure	24	2044-05-01	460	240	0.049	0.00095	0.019	0.023	0.23	0.53	0.00028	0.00029

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	21	2041-09-01	0.079	0.019	0.054	0.0042	110	0.0026	0.019	1.3	0.03
Transitional Closure	21	2041-10-01	0.079	0.019	0.054	0.0041	110	0.0026	0.019	1.3	0.029
Transitional Closure	21	2041-11-01	0.079	0.018	0.054	0.0041	110	0.0026	0.019	1.3	0.029
Transitional Closure	21	2041-12-01	0.089	0.021	0.063	0.0044	120	0.0028	0.02	1.3	0.032
Transitional Closure	21	2042-01-01	0.089	0.021	0.063	0.0044	120	0.0028	0.02	1.3	0.032
Transitional Closure	21	2042-02-01	0.089	0.021	0.063	0.0044	120	0.0028	0.02	1.3	0.032
Transitional Closure	22	2042-03-01	0.089	0.021	0.063	0.0044	120	0.0028	0.02	1.3	0.032
Transitional Closure	22	2042-04-01	0.089	0.021	0.063	0.0044	120	0.0028	0.02	1.3	0.032
Transitional Closure	22	2042-05-01	0.088	0.021	0.062	0.0044	120	0.0028	0.02	1.3	0.032
Transitional Closure	22	2042-06-01	0.087	0.02	0.061	0.0043	120	0.0028	0.02	1.3	0.031
Transitional Closure	22	2042-07-01	0.086	0.02	0.06	0.0043	120	0.0027	0.02	1.3	0.031
Transitional Closure	22	2042-08-01	0.086	0.02	0.06	0.0042	120	0.0027	0.02	1.3	0.031
Transitional Closure	22	2042-09-01	0.085	0.02	0.059	0.0042	120	0.0027	0.019	1.3	0.03
Transitional Closure	22	2042-10-01	0.084	0.02	0.059	0.0042	120	0.0027	0.019	1.3	0.03
Transitional Closure	22	2042-11-01	0.084	0.02	0.059	0.0042	120	0.0027	0.019	1.3	0.03
Transitional Closure	22	2042-12-01	0.084	0.02	0.059	0.0041	120	0.0026	0.019	1.3	0.03
Transitional Closure	22	2043-01-01	0.084	0.02	0.058	0.0041	120	0.0026	0.019	1.3	0.03
Transitional Closure	22	2043-02-01	0.084	0.02	0.058	0.0041	120	0.0026	0.019	1.3	0.03
Transitional Closure	23	2043-03-01	0.084	0.02	0.058	0.0041	120	0.0026	0.019	1.3	0.03
Transitional Closure	23	2043-04-01	0.084	0.02	0.058	0.0041	120	0.0026	0.019	1.3	0.03
Transitional Closure	23	2043-05-01	0.084	0.019	0.058	0.0041	120	0.0026	0.019	1.3	0.03
Transitional Closure	23	2043-06-01	0.083	0.019	0.057	0.0041	120	0.0026	0.019	1.3	0.029
Transitional Closure	23	2043-07-01	0.082	0.019	0.056	0.004	110	0.0026	0.019	1.2	0.029
Transitional Closure	23	2043-08-01	0.081	0.019	0.056	0.004	110	0.0025	0.018	1.2	0.029
Transitional Closure	23	2043-09-01	0.081	0.019	0.055	0.0039	110	0.0025	0.018	1.2	0.028
Transitional Closure	23	2043-10-01	0.08	0.018	0.055	0.0039	110	0.0025	0.018	1.2	0.028
Transitional Closure	23	2043-11-01	0.08	0.018	0.055	0.0039	110	0.0025	0.018	1.2	0.028
Transitional Closure	23	2043-12-01	0.093	0.021	0.064	0.0044	120	0.0029	0.02	1.3	0.032
Transitional Closure	23	2044-01-01	0.093	0.021	0.064	0.0043	120	0.0029	0.02	1.3	0.032
Transitional Closure	23	2044-02-01	0.093	0.021	0.064	0.0043	120	0.0029	0.02	1.3	0.032
Transitional Closure	24	2044-03-01	0.093	0.021	0.064	0.0043	120	0.0029	0.02	1.3	0.032
Transitional Closure	24	2044-04-01	0.093	0.021	0.064	0.0043	120	0.0029	0.02	1.3	0.032
Transitional Closure	24	2044-05-01	0.093	0.021	0.064	0.0043	120	0.0029	0.02	1.3	0.032

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L
Transitional Closure	21	2041-09-01	0.7	0.011	0.000022	0.0092	0.00018	0.031	0.39	1.4	0.07
Transitional Closure	21	2041-10-01	0.7	0.011	0.000022	0.0092	0.00017	0.031	0.39	1.4	0.07
Transitional Closure	21	2041-11-01	0.7	0.011	0.000022	0.0091	0.00017	0.031	0.38	1.4	0.07
Transitional Closure	21	2041-12-01	0.74	0.012	0.000025	0.01	0.00019	0.035	0.42	1.4	0.08
Transitional Closure	21	2042-01-01	0.74	0.012	0.000025	0.01	0.00019	0.035	0.42	1.4	0.08
Transitional Closure	21	2042-02-01	0.74	0.012	0.000025	0.01	0.00019	0.035	0.42	1.4	0.08
Transitional Closure	22	2042-03-01	0.74	0.012	0.000025	0.01	0.00019	0.035	0.42	1.4	0.08
Transitional Closure	22	2042-04-01	0.74	0.012	0.000025	0.01	0.00019	0.035	0.42	1.4	0.08
Transitional Closure	22	2042-05-01	0.74	0.011	0.000025	0.01	0.00019	0.035	0.42	1.4	0.08
Transitional Closure	22	2042-06-01	0.72	0.011	0.000025	0.01	0.00019	0.034	0.41	1.4	0.079
Transitional Closure	22	2042-07-01	0.71	0.011	0.000024	0.0098	0.00019	0.034	0.4	1.4	0.077
Transitional Closure	22	2042-08-01	0.71	0.011	0.000024	0.0097	0.00018	0.033	0.4	1.4	0.077
Transitional Closure	22	2042-09-01	0.7	0.011	0.000024	0.0097	0.00018	0.033	0.4	1.4	0.076
Transitional Closure	22	2042-10-01	0.7	0.011	0.000024	0.0096	0.00018	0.033	0.39	1.4	0.076
Transitional Closure	22	2042-11-01	0.69	0.011	0.000024	0.0096	0.00018	0.033	0.39	1.4	0.075
Transitional Closure	22	2042-12-01	0.69	0.011	0.000024	0.0096	0.00018	0.033	0.39	1.4	0.075
Transitional Closure	22	2043-01-01	0.69	0.011	0.000024	0.0095	0.00018	0.033	0.39	1.4	0.075
Transitional Closure	22	2043-02-01	0.69	0.011	0.000024	0.0096	0.00018	0.033	0.39	1.4	0.075
Transitional Closure	23	2043-03-01	0.69	0.011	0.000024	0.0096	0.00018	0.033	0.39	1.4	0.075
Transitional Closure	23	2043-04-01	0.69	0.011	0.000024	0.0096	0.00018	0.033	0.39	1.4	0.075
Transitional Closure	23	2043-05-01	0.69	0.011	0.000024	0.0095	0.00018	0.033	0.39	1.4	0.075
Transitional Closure	23	2043-06-01	0.68	0.011	0.000024	0.0094	0.00018	0.032	0.38	1.5	0.074
Transitional Closure	23	2043-07-01	0.67	0.01	0.000023	0.0092	0.00018	0.032	0.38	1.5	0.073
Transitional Closure	23	2043-08-01	0.66	0.01	0.000023	0.0092	0.00017	0.032	0.38	1.5	0.072
Transitional Closure	23	2043-09-01	0.66	0.01	0.000023	0.0091	0.00017	0.032	0.37	1.4	0.072
Transitional Closure	23	2043-10-01	0.66	0.01	0.000023	0.0091	0.00017	0.031	0.37	1.4	0.072
Transitional Closure	23	2043-11-01	0.65	0.01	0.000023	0.009	0.00017	0.031	0.37	1.4	0.071
Transitional Closure	23	2043-12-01	0.72	0.011	0.000026	0.01	0.0002	0.037	0.42	1.4	0.084
Transitional Closure	23	2044-01-01	0.72	0.011	0.000026	0.01	0.0002	0.037	0.42	1.4	0.084
Transitional Closure	23	2044-02-01	0.72	0.011	0.000026	0.01	0.0002	0.037	0.42	1.4	0.084
Transitional Closure	24	2044-03-01	0.72	0.011	0.000026	0.01	0.0002	0.037	0.42	1.4	0.084
Transitional Closure	24	2044-04-01	0.72	0.011	0.000026	0.01	0.0002	0.037	0.42	1.4	0.084
Transitional Closure	24	2044-05-01	0.72	0.011	0.000026	0.01	0.0002	0.037	0.42	1.4	0.084

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L
Transitional Closure	21	2041-09-01	0.019	0.054	0.0042	110	0.0026	0.019	1.3	0.029	0.7
Transitional Closure	21	2041-10-01	0.019	0.054	0.0041	110	0.0025	0.019	1.3	0.029	0.7
Transitional Closure	21	2041-11-01	0.018	0.054	0.0041	110	0.0025	0.019	1.3	0.029	0.7
Transitional Closure	21	2041-12-01	0.021	0.063	0.0044	120	0.0028	0.02	1.3	0.032	0.74
Transitional Closure	21	2042-01-01	0.021	0.063	0.0044	120	0.0028	0.02	1.3	0.032	0.74
Transitional Closure	21	2042-02-01	0.021	0.063	0.0044	120	0.0028	0.02	1.3	0.032	0.74
Transitional Closure	22	2042-03-01	0.021	0.063	0.0044	120	0.0028	0.02	1.3	0.032	0.74
Transitional Closure	22	2042-04-01	0.021	0.063	0.0044	120	0.0028	0.02	1.3	0.032	0.74
Transitional Closure	22	2042-05-01	0.021	0.062	0.0044	120	0.0028	0.02	1.3	0.032	0.73
Transitional Closure	22	2042-06-01	0.02	0.061	0.0043	120	0.0028	0.02	1.3	0.031	0.72
Transitional Closure	22	2042-07-01	0.02	0.06	0.0043	120	0.0027	0.02	1.3	0.031	0.71
Transitional Closure	22	2042-08-01	0.02	0.06	0.0042	120	0.0027	0.019	1.3	0.03	0.7
Transitional Closure	22	2042-09-01	0.02	0.059	0.0042	120	0.0027	0.019	1.3	0.03	0.7
Transitional Closure	22	2042-10-01	0.02	0.059	0.0042	120	0.0026	0.019	1.2	0.03	0.69
Transitional Closure	22	2042-11-01	0.02	0.059	0.0041	120	0.0026	0.019	1.2	0.03	0.69
Transitional Closure	22	2042-12-01	0.02	0.059	0.0041	120	0.0026	0.019	1.2	0.03	0.69
Transitional Closure	22	2043-01-01	0.02	0.058	0.0041	120	0.0026	0.019	1.2	0.03	0.69
Transitional Closure	22	2043-02-01	0.02	0.058	0.0041	120	0.0026	0.019	1.2	0.03	0.69
Transitional Closure	23	2043-03-01	0.02	0.058	0.0041	120	0.0026	0.019	1.2	0.03	0.69
Transitional Closure	23	2043-04-01	0.02	0.058	0.0041	120	0.0026	0.019	1.2	0.03	0.69
Transitional Closure	23	2043-05-01	0.019	0.058	0.0041	120	0.0026	0.019	1.2	0.03	0.69
Transitional Closure	23	2043-06-01	0.019	0.057	0.004	120	0.0026	0.019	1.2	0.029	0.68
Transitional Closure	23	2043-07-01	0.019	0.056	0.004	110	0.0025	0.018	1.2	0.029	0.67
Transitional Closure	23	2043-08-01	0.019	0.056	0.0039	110	0.0025	0.018	1.2	0.029	0.66
Transitional Closure	23	2043-09-01	0.019	0.055	0.0039	110	0.0025	0.018	1.2	0.028	0.66
Transitional Closure	23	2043-10-01	0.018	0.055	0.0039	110	0.0025	0.018	1.2	0.028	0.65
Transitional Closure	23	2043-11-01	0.018	0.055	0.0039	110	0.0025	0.018	1.2	0.028	0.65
Transitional Closure	23	2043-12-01	0.021	0.064	0.0043	120	0.0029	0.02	1.2	0.032	0.72
Transitional Closure	23	2044-01-01	0.021	0.064	0.0043	120	0.0028	0.02	1.2	0.032	0.72
Transitional Closure	23	2044-02-01	0.021	0.064	0.0043	120	0.0029	0.02	1.2	0.032	0.72
Transitional Closure	24	2044-03-01	0.021	0.064	0.0043	120	0.0029	0.02	1.2	0.032	0.72
Transitional Closure	24	2044-04-01	0.021	0.064	0.0043	120	0.0029	0.02	1.2	0.032	0.72
Transitional Closure	24	2044-05-01	0.021	0.064	0.0043	120	0.0028	0.02	1.2	0.032	0.71

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Transitional Closure	21	2041-09-01	0.011	0.000022	0.0092	0.00018	0.031	0.39
Transitional Closure	21	2041-10-01	0.011	0.000022	0.0092	0.00017	0.031	0.38
Transitional Closure	21	2041-11-01	0.011	0.000022	0.0091	0.00017	0.031	0.38
Transitional Closure	21	2041-12-01	0.012	0.000025	0.01	0.00019	0.035	0.42
Transitional Closure	21	2042-01-01	0.012	0.000025	0.01	0.00019	0.035	0.42
Transitional Closure	21	2042-02-01	0.012	0.000025	0.01	0.00019	0.035	0.42
Transitional Closure	22	2042-03-01	0.012	0.000025	0.01	0.00019	0.035	0.42
Transitional Closure	22	2042-04-01	0.012	0.000025	0.01	0.00019	0.035	0.42
Transitional Closure	22	2042-05-01	0.011	0.000025	0.01	0.00019	0.035	0.41
Transitional Closure	22	2042-06-01	0.011	0.000024	0.01	0.00019	0.034	0.41
Transitional Closure	22	2042-07-01	0.011	0.000024	0.0098	0.00019	0.034	0.4
Transitional Closure	22	2042-08-01	0.011	0.000024	0.0097	0.00018	0.033	0.4
Transitional Closure	22	2042-09-01	0.011	0.000024	0.0097	0.00018	0.033	0.39
Transitional Closure	22	2042-10-01	0.011	0.000024	0.0096	0.00018	0.033	0.39
Transitional Closure	22	2042-11-01	0.011	0.000023	0.0096	0.00018	0.033	0.39
Transitional Closure	22	2042-12-01	0.011	0.000023	0.0096	0.00018	0.033	0.39
Transitional Closure	22	2043-01-01	0.011	0.000023	0.0095	0.00018	0.033	0.39
Transitional Closure	22	2043-02-01	0.011	0.000023	0.0095	0.00018	0.033	0.39
Transitional Closure	23	2043-03-01	0.011	0.000024	0.0096	0.00018	0.033	0.39
Transitional Closure	23	2043-04-01	0.011	0.000024	0.0096	0.00018	0.033	0.39
Transitional Closure	23	2043-05-01	0.011	0.000023	0.0095	0.00018	0.033	0.39
Transitional Closure	23	2043-06-01	0.011	0.000023	0.0094	0.00018	0.032	0.38
Transitional Closure	23	2043-07-01	0.01	0.000023	0.0092	0.00018	0.032	0.38
Transitional Closure	23	2043-08-01	0.01	0.000023	0.0092	0.00017	0.032	0.37
Transitional Closure	23	2043-09-01	0.01	0.000023	0.0091	0.00017	0.032	0.37
Transitional Closure	23	2043-10-01	0.01	0.000023	0.009	0.00017	0.031	0.37
Transitional Closure	23	2043-11-01	0.01	0.000023	0.009	0.00017	0.031	0.37
Transitional Closure	23	2043-12-01	0.011	0.000026	0.01	0.0002	0.037	0.42
Transitional Closure	23	2044-01-01	0.011	0.000026	0.01	0.0002	0.037	0.42
Transitional Closure	23	2044-02-01	0.011	0.000026	0.01	0.0002	0.037	0.42
Transitional Closure	24	2044-03-01	0.011	0.000026	0.01	0.0002	0.037	0.42
Transitional Closure	24	2044-04-01	0.011	0.000026	0.01	0.0002	0.037	0.42
Transitional Closure	24	2044-05-01	0.011	0.000026	0.01	0.0002	0.037	0.41

Appendix C: ABM Pit Lake Water Quality Model Results

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	24	2044-06-01	450	240	0.049	0.00095	0.018	0.023	0.23	0.54	0.00029	0.00029
Transitional Closure	24	2044-07-01	450	240	0.049	0.00095	0.018	0.022	0.23	0.53	0.00029	0.0003
Transitional Closure	24	2044-08-01	450	240	0.049	0.00095	0.018	0.022	0.23	0.53	0.00029	0.0003
Transitional Closure	24	2044-09-01	450	240	0.049	0.00095	0.018	0.022	0.23	0.53	0.00029	0.0003
Transitional Closure	24	2044-10-01	440	240	0.049	0.00095	0.018	0.022	0.23	0.53	0.00029	0.0003
Transitional Closure	24	2044-11-01	440	240	0.049	0.00095	0.018	0.022	0.23	0.53	0.00029	0.0003
Transitional Closure	24	2044-12-01	440	240	0.049	0.00095	0.018	0.022	0.23	0.53	0.00029	0.0003
Transitional Closure	24	2045-01-01	440	240	0.049	0.00095	0.018	0.022	0.23	0.53	0.00029	0.0003
Transitional Closure	24	2045-02-01	450	240	0.049	0.00095	0.018	0.022	0.23	0.53	0.00029	0.0003
Transitional Closure	25	2045-03-01	450	240	0.049	0.00095	0.018	0.022	0.23	0.53	0.00029	0.0003
Transitional Closure	25	2045-04-01	450	240	0.049	0.00095	0.018	0.022	0.23	0.53	0.00029	0.0003
Transitional Closure	25	2045-05-01	450	240	0.049	0.00095	0.018	0.022	0.23	0.53	0.00029	0.00029
Transitional Closure	25	2045-06-01	440	230	0.049	0.00095	0.018	0.022	0.22	0.53	0.00029	0.0003

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	24	2044-06-01	0.092	0.021	0.063	0.0043	120	0.0028	0.02	1.2	0.031
Transitional Closure	24	2044-07-01	0.091	0.021	0.062	0.0042	120	0.0028	0.02	1.2	0.031
Transitional Closure	24	2044-08-01	0.09	0.02	0.061	0.0042	120	0.0028	0.02	1.2	0.031
Transitional Closure	24	2044-09-01	0.09	0.02	0.061	0.0041	120	0.0027	0.019	1.2	0.03
Transitional Closure	24	2044-10-01	0.089	0.02	0.061	0.0041	120	0.0027	0.019	1.2	0.03
Transitional Closure	24	2044-11-01	0.089	0.02	0.061	0.0041	120	0.0027	0.019	1.2	0.03
Transitional Closure	24	2044-12-01	0.089	0.02	0.061	0.0041	120	0.0027	0.019	1.2	0.03
Transitional Closure	24	2045-01-01	0.089	0.02	0.06	0.0041	120	0.0027	0.019	1.2	0.03
Transitional Closure	24	2045-02-01	0.089	0.02	0.06	0.0041	120	0.0027	0.019	1.2	0.03
Transitional Closure	25	2045-03-01	0.089	0.02	0.06	0.0041	120	0.0027	0.019	1.2	0.03
Transitional Closure	25	2045-04-01	0.089	0.02	0.06	0.0041	120	0.0027	0.019	1.2	0.03
Transitional Closure	25	2045-05-01	0.089	0.02	0.06	0.0041	120	0.0027	0.019	1.2	0.03
Transitional Closure	25	2045-06-01	0.088	0.02	0.059	0.004	120	0.0027	0.019	1.2	0.03

Appendix C: ABM Pit Lake Water Quality Model Results

			Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	24	2044-06-01	0.71	0.011	0.000026	0.01	0.00019	0.037	0.41	1.5	0.083
Transitional Closure	24	2044-07-01	0.7	0.011	0.000026	0.01	0.00019	0.036	0.4	1.5	0.082
Transitional Closure	24	2044-08-01	0.69	0.011	0.000025	0.01	0.00019	0.036	0.4	1.5	0.081
Transitional Closure	24	2044-09-01	0.69	0.011	0.000025	0.0099	0.00019	0.036	0.4	1.5	0.081
Transitional Closure	24	2044-10-01	0.68	0.011	0.000025	0.0099	0.00019	0.036	0.4	1.4	0.08
Transitional Closure	24	2044-11-01	0.68	0.011	0.000025	0.0099	0.00019	0.035	0.4	1.4	0.08
Transitional Closure	24	2044-12-01	0.68	0.011	0.000025	0.0099	0.00019	0.035	0.4	1.4	0.08
Transitional Closure	24	2045-01-01	0.68	0.011	0.000025	0.0099	0.00019	0.035	0.39	1.4	0.08
Transitional Closure	24	2045-02-01	0.68	0.011	0.000025	0.0099	0.00019	0.035	0.39	1.4	0.08
Transitional Closure	25	2045-03-01	0.68	0.011	0.000025	0.0099	0.00019	0.035	0.39	1.4	0.08
Transitional Closure	25	2045-04-01	0.68	0.011	0.000025	0.0099	0.00019	0.035	0.39	1.4	0.08
Transitional Closure	25	2045-05-01	0.68	0.011	0.000025	0.0098	0.00018	0.035	0.39	1.5	0.08
Transitional Closure	25	2045-06-01	0.67	0.011	0.000025	0.0097	0.00018	0.035	0.39	1.5	0.079

Appendix C: ABM Pit Lake Water Quality Model Results

Phase	Year	Date	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L
Transitional Closure	24	2044-06-01	0.021	0.063	0.0043	120	0.0028	0.02	1.2	0.031	0.7
Transitional Closure	24	2044-07-01	0.021	0.062	0.0042	120	0.0028	0.02	1.2	0.031	0.69
Transitional Closure	24	2044-08-01	0.02	0.061	0.0042	120	0.0027	0.019	1.2	0.031	0.69
Transitional Closure	24	2044-09-01	0.02	0.061	0.0041	120	0.0027	0.019	1.2	0.03	0.68
Transitional Closure	24	2044-10-01	0.02	0.061	0.0041	120	0.0027	0.019	1.2	0.03	0.68
Transitional Closure	24	2044-11-01	0.02	0.061	0.0041	120	0.0027	0.019	1.2	0.03	0.68
Transitional Closure	24	2044-12-01	0.02	0.061	0.0041	120	0.0027	0.019	1.2	0.03	0.68
Transitional Closure	24	2045-01-01	0.02	0.06	0.0041	120	0.0027	0.019	1.2	0.03	0.68
Transitional Closure	24	2045-02-01	0.02	0.06	0.0041	120	0.0027	0.019	1.2	0.03	0.68
Transitional Closure	25	2045-03-01	0.02	0.06	0.0041	120	0.0027	0.019	1.2	0.03	0.68
Transitional Closure	25	2045-04-01	0.02	0.06	0.0041	120	0.0027	0.019	1.2	0.03	0.68
Transitional Closure	25	2045-05-01	0.02	0.06	0.0041	120	0.0027	0.019	1.2	0.03	0.68
Transitional Closure	25	2045-06-01	0.02	0.059	0.004	120	0.0027	0.019	1.2	0.03	0.67

Appendix C: ABM Pit Lake Water Quality Model Results

			Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	**Year**	**Date**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Transitional Closure	24	2044-06-01	0.011	0.000025	0.01	0.00019	0.037	0.41
Transitional Closure	24	2044-07-01	0.011	0.000025	0.01	0.00019	0.036	0.4
Transitional Closure	24	2044-08-01	0.011	0.000025	0.01	0.00019	0.036	0.4
Transitional Closure	24	2044-09-01	0.011	0.000025	0.0099	0.00019	0.036	0.4
Transitional Closure	24	2044-10-01	0.011	0.000025	0.0099	0.00019	0.035	0.4
Transitional Closure	24	2044-11-01	0.011	0.000025	0.0099	0.00019	0.035	0.39
Transitional Closure	24	2044-12-01	0.011	0.000025	0.0099	0.00019	0.035	0.39
Transitional Closure	24	2045-01-01	0.011	0.000025	0.0098	0.00019	0.035	0.39
Transitional Closure	24	2045-02-01	0.011	0.000025	0.0099	0.00019	0.035	0.39
Transitional Closure	25	2045-03-01	0.011	0.000025	0.0099	0.00019	0.035	0.39
Transitional Closure	25	2045-04-01	0.011	0.000025	0.0099	0.00019	0.035	0.39
Transitional Closure	25	2045-05-01	0.011	0.000025	0.0098	0.00018	0.035	0.39
Transitional Closure	25	2045-06-01	0.011	0.000024	0.0097	0.00018	0.035	0.39

APPENDIX D.

Preliminary Water Quality Objective for Fluoride for the Kudz Ze Kayah Project

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June 15, 2018

Ms. Kelli Bergh
Environmental Manager
BMC Minerals (No.1) Ltd. Kudz Ze Kayah Project
530 – 1130 West Pender
Vancouver, BC
V6C 4A4

Dear Ms. Bergh,

Re: Re-Evaluation of the Preliminary Fluoride SSWQO for the BMC Minerals Kudz Ze Kayah Project

Minnow Environmental Inc. (Minnow) is pleased to provide a brief summary of the re-evaluation and development of a preliminary site-specific water quality objective (SSWQO) for fluoride at the BMC Minerals (No. 1) Ltd. (BMC) Kudz Ze Kayah Project. Concordance of a recently proposed chronic fluoride water quality guideline (McPherson et al. 2014) with Canadian Council of Ministers of the Environment (CCME) Type A guideline requirements (i.e., CCME 2007) was carefully assessed, and recommendations for SSWQO adoption are provided.

Project Background

The Kudz Ze Kayah Project (KZK) is currently undergoing Assessment under the Yukon Environmental and Socio-economic Assessment Act (YESAA) and is at the "Seeking Public Comment Complete/Considering Comments" stage. During a previous stage ("Adequacy Review"), BMC completed updates to the original project plan, including water management and associated predictions of receiving environment water quality (Alexco 2017). Based on a combination of existing conditions and water quality predictions, a total of eight Contaminants of Potential Concern (COPCs) have been identified (arsenic, cadmium, copper, fluoride, iron, lead, selenium, and zinc), and preliminary SSWQOs have been proposed (Alexco 2017). During a previous re-evaluation of the preliminary SSWQO for fluoride, it was determined that the generic guideline proposed as the preliminary SSWQO (i.e., CCME 2002) had not been updated since 2001, utilized older guideline derivation protocols, and was likely overly protective (Minnow 2018). Adopting a chronic fluoride benchmark (McPherson et al. 2014) derived from the current guidance for developing a CCME Type A guideline was recommended (Minnow 2018). At the request of

BMC, the technical basis of a newly proposed chronic fluoride SSWQO was compared to the most recent CCME guideline derivation requirements (CCME 2007), and the merit of adopting this benchmark or others was discussed.

Technical Background

CCME Guideline Types

In 2007, CCME revised the protocol for developing water quality guidelines for the protection of aquatic life in order to incorporate recent advances in aquatic toxicology (CCME 2007). A significant change to the previous protocol was the division of guidelines into three groups in descending preference based on the quality of available data: Type A, Type B1, and Type B2 (CCME 2007). The Type A chronic guideline is developed using a minimum number of published data of the highest available quality (Table 1) for the lowest observed toxic effects for the most sensitive species/life stage. Using a statistical method, the Species Sensitivity Distribution (SSD) (a non-linear regression approach), a concentration is determined that would prevent 95% of aquatic life from documented low-level chronic effects (i.e., although preference is given to no effect thresholds, other effect concentrations can be used in order to meet the minimum data requirements; refer to "Preferred Toxicity Endpoints" in Table 1). Type B guidelines are developed when the minimum data requirements for Type A guidelines cannot be met, and a safety factor is applied to the lowest observed low-effect concentration.

The current interim CCME guideline for fluoride (CCME 2002) was derived using older guideline development protocols (CCME 1991). The guideline (0.12 mg/L) was derived by multiplying the lowest observed effect level (LOEL) for acute toxicity in the caddisfly *Hydropsyche bronta* (144-hour LC_{50} value of 11.5 mg/L) by a 100-fold safety factor.

Minimum Guideline Requirements

Two minimum requirements must be met for the development of a Type A guideline, and can be separated into data and statistical requirements:

1. Data requirements: a minimum toxicological data set must be available, including three fish species (at least one salmonid and one non-salmonid), three aquatic or semi-aquatic invertebrates (at least one planktonic crustacean), and at least one aquatic plant or algae species (if a plant or algae is the most sensitive species, then three studies on plants/algae are required) (Table 1); and
2. Statistical requirements: the non-linear curve fitting of the SSD approach sufficiently and adequately describes the relationship between analyte concentration and the cumulative number of species, including the appropriate statistical goodness-of-fit tests and rationale for the chosen model fit (CCME 2007).

Table 1: CCME Type A Water Quality Guideline Requirements [1]

Category	Minimum Guideline Requirements	
Test Organisms [2]	Fish	Three species (minimum one salmonid and one non-salmonid).
	Invertebrates	Three aquatic or semi-aquatic species (minimum one planktonic crustacean). Life stages of semi-aquatic species must be aquatic.
	Aquatic Plants and Algae	Minimum one vascular plant or algal species. If a plant/algal species is among the most sensitive species, then three species are required.
Exposure Periods	Fish and Amphibians	Eggs and Larvae: ≥ 7 days Juvenile and Adult stages: ≥ 21 days
	Invertebrates	Short-lived species: ≥ 96 hours Long-lived species (chronic endpoint): ≥ 7 days Long-lived species (lethal endpoint): ≥ 21 days
	Aquatic Plants and Algae	Plants: assessed case-by-case Algae: ≥ 24 hours
Accepted Exposure Effects	Traditional endpoints (e.g., embryonic development, hatching, germination, growth, reproduction, and survival) are preferred. Non-traditional endpoints (e.g., behavior and physiology) can be used if their ecological relevance can be shown. When more than one record exists for an endpoint, then the geometric mean is used in the guideline derivation.	
Preferred Toxicity Endpoints [3]	Non-lethal no effect endpoints (i.e., EC_{10}/IC_{10}) determined using regression models are preferred. If the minimum data requirements cannot be met, then non-lethal and lethal low-effect endpoints (i.e., $EC_{11\text{-}25}/IC_{11\text{-}25}$ and $LC_{11\text{-}25}$, respectively) can be used. If neither are available for a particular species, then MATC, NOEC, and LOEC (in descending preference) can be used. Least preferred endpoints are non-lethal $EC_{26\text{-}49}/IC_{26\text{-}49}$ followed by EC_{50}/IC_{50}.	
Data Requirements [4]	Primary Data	Substance of interest was measured at the beginning and end of the exposure.
		Substance of interest was below the water solubility limit of the substance.
		Key supporting water quality data are reported, including: temperature, pH, water hardness, salinity, dissolved organic matter, and other potential exposure and toxicity modifying factors.
		Static tests are not considered primary unless the substance concentrations did not change during the test.
		Appropriate replication and dilutions steps were performed.
		Positive (i.e., reference toxicant) and negative controls were performed.
		A clear dose-response relationship was observed.
		Statistical procedures must be reported and be appropriate.
	Secondary Data [5]	Static tests are acceptable, or concentrations of substance of interest can be calculated.
		Pseudo-replication is acceptable.
		Multiple stresses are acceptable (e.g., high salinity, lack of food).
		Pathological and behavioral (if ecological relevance can be demonstrated), as well as physiological endpoints are acceptable.

[1] CCME(2007)

[2] Although a minimum of 7 species are required, it is anticipated that a larger number of species will be included in order to improve the model fit (CCME 2007).

[3] Maximum acceptable toxicant concentration (MATC), no observed effect concentration (NOEC), and lowest observed effect concentration (LOEC) are derived using statistical hypothesis testing, but not using regression analysis. The MATC is the geometric mean of the NOEC and LOEC. The NOEC is the highest concentration tested for which no effect was observed, while the LOEC is the lowest concentration tested for which an effect was observed.

[4] Primary and secondary data for no-effect and low-effect endpoints can be used, but preference should be placed on primary data when available.

[5] Exceptions to primary data; otherwise, all requirements listed under primary data apply to secondary data

Resident species in Canada are preferred when developing guidelines, but non-resident species can be used if they can be considered acceptable surrogate species for Canadian residents (e.g., from the same taxonomic group), and the studies were performed under conditions representative of Canadian aquatic ecosystems (CCME 2007). No guidance is provided as to which taxonomic level should be considered when evaluating whether a species is an acceptable surrogate (e.g., sharing an order, family, or genus). The compiled toxicological data set must include studies with an appropriate exposure period for a given test organism (refer to Table 1), and can be separated into three types: primary, secondary, and unacceptable. When available, the toxicological data set should be comprised of primary data (preferred), while secondary data can be included if the minimum data requirements cannot be met with primary data. Primary data sources must meet a number of requirements, including those concerning test conditions (e.g., substance of interest is below the water solubility limit; key water quality data are reported), test design (e.g., positive and negative controls are present; appropriate replication was performed), and test execution (e.g., substance of interest was measured at the beginning and end of the exposure; non-static, regular renewal of test water) (Table 1). Secondary data must meet most of the requirements of primary data, but can accommodate a few exceptions, such as the inclusion of static tests (but test concentrations must be below the water solubility of the analyte), pseudo-replication, multiple test stresses, and alternative toxicity endpoints (Table 1). Toxicological data not meeting either primary or secondary requirements are considered unacceptable, and should not be used in the development of either Type A or B guidelines. However, if additional information can be obtained from the study authors, unacceptable data can upgraded to primary or secondary (CCME 2007). Although there is no minimum number of observations required for a Type A guideline, CCME (2007) advises that 10 to 15 observations are included in the SSD in order to increase statistical power and satisfy the requirements for a statistically significant non-linear regression model fit.

Type B guidelines can be developed when the minimum requirements (i.e., either data or statistical requirements) of a Type A guideline cannot be met. A Type B1 guideline is developed when limited amount of primary toxicological information is available, and has the same minimum requirements for organisms, exposure period, accepted effects, preferred endpoints, and data requirements as Type A guidelines (Table 1). However, primary data for low-effect thresholds must be used to meet the minimum data requirements. A low-effect threshold for a species should be used as the critical study which is multiplied by a safety factor (0.1) to produce the guideline. For a Type B2 guideline, the minimum requirements for organisms is reduced compared to a Type A or Type B1 guideline, and includes two fish (at least one salmonid), two aquatic invertebrates (at least one planktonic crustacean), and two aquatic plants/algae if a plant or algae exhibits the most sensitive response to toxicity. Either primary or secondary data can be used to satisfy the minimum requirements, and be used as the critical study to define the guideline. For persistent

substances (like fluoride), the critical study endpoint concentration is multiplied by either a 0.1 or 0.01 safety factor if the test is a chronic or acute effect, respectively.

Accepted Effects and Preferred Toxicity Endpoints

For Type A guidelines, accepted chronic effects include traditional effects, such as embryonic development, hatching, germination, survival, growth, and reproduction (Table 1). Non-traditional effects (e.g., behavioral and physiological) can be used only if their ecological relevance can be clearly demonstrated. If more than one record exists for a given species endpoint, then the geometric mean of the results is calculated and used in the SSD model fit. Non-lethal no effect endpoints (e.g., effect/inhibition concentrations resulting in a 10% observed effect; EC_{10}/IC_{10}) determined using regression models are preferred. If the minimum data requirements cannot be met using non-lethal no effect endpoints, then non-lethal and lethal low-effect endpoints ($EC_{11\text{-}25}/IC_{11\text{-}25}$ and $LC_{11\text{-}25}$, respectively) can be used. If these are not available for a given species, then the maximum acceptable toxicant concentration (MATC), no observed effect concentration (NOEC), and lowest observed effect concentration (LOEC) can be used in descending preference[1]. Lastly, if the latter endpoints are not available, then non-lethal $EC_{26\text{-}49}/IC_{26\text{-}49}$ can be used, followed by nonlethal EC_{50}/IC_{50}. For Type B guidelines, lethal LC_{50} values can also be used as the least preferred endpoint.

Approach

Recent efforts by McPherson et al. (2014) have demonstrated that a chronic benchmark could be developed for fluoride following the CCME guidance for developing a Type A guideline. After reviewing published literature, and screening for test results that would likely be accepted in a Type A guideline, McPherson et al. (2014) compiled chronic toxicity endpoint concentrations of 16 species from 10 studies, and developed a chronic benchmark (1.03 to 1.94 mg/L; guideline value depends on model fit and data treatment; refer to Sinclair and MacDonald 2015; Chapman et al. 2015). This guideline is at least 8.5-times higher than the current interim CCME fluoride guideline (0.12 mg/L; CCME 2002). However, McPherson et al. (2014) did not report all supporting evidence that the toxicological results for all 16 species met the minimum data requirements for a Type A guideline. Thus, the toxicological studies used by McPherson et al. (2014) were evaluated herein with respect to the minimum requirements for a Type A guideline (Table 1). In addition, a brief literature review was conducted in order to identify published studies not assessed by McPherson et al. (2014), or studies published thereafter. This

[1] The NOEC is the highest concentration tested for which no effect was observed, while the LOEC is the lowest concentration tested for which an effect was observed using hypothesis based statistical testing. The MATC is the geometric mean of the NOEC and LOEC reported within the same study.

literature review was focused on traditional toxicity test endpoints for resident species in Canada, or suitable surrogate species. If the studies used by McPherson et al. (2014) satisfy the minimum guideline requirements, then the reported non-linear regression model fits of the data and supporting statistical goodness-of-fit tests (e.g., Sinclair and MacDonald 2015; Chapman et al. 2015) will be evaluated. Alternatively, if Type A guideline requirements are not met by the chronic benchmark proposed by McPherson et al. (2014), then a recommendation for further SSWQO refinement will be provided.

Methods

Primary literature (and supplementary information when available) cited by McPherson et al. (2014) were acquired electronically, and information was extracted and tabulated to compare with Type A guideline requirements (Table 1).

Fluorine containing minerals formed with alkaline earth metals (e.g., calcium fluoride) are known to have low solubility in hard water (e.g., Giguère and Campbell 2004). Given that fluoride solubility is a requirement for acceptable data sources (i.e., both primary and secondary), the solubility of fluoride in the test solutions was assessed with the modelling software PHREEQC (Version 3.3.8.11728) using the thermodynamic database MINTEQ V4. When available, major ion chemistry, temperature, and pH of the toxicity test solutions was compiled from the literature (Attachment Table A.1), and the solubility of fluoride at equilibrium with calcium fluoride was estimated. For studies that did not report major ion chemistry, calcium and magnesium concentrations were estimated from hardness, assuming that 100% of hardness concentrations were due to calcium and magnesium, and the ratio of calcium:magnesium was 2:1. This ratio is the same as the median ion ratio reported for North America based on over 60,000 observations (Windward 2017). Special consideration was given to the determination of dissolved carbonate concentrations since carbonates can indirectly increase fluoride solubility through complexation to calcium, which decreases the effective concentration of calcium in equilibrium with calcium fluoride. Thus, if carbonate concentrations are higher, then fluoride solubility will also be higher. When available, carbonate concentrations were modelled from alkalinity values and pH (assuming all alkalinity is from carbonates, hydroxide, phosphate, and sulphate). When alkalinity was not available, carbonate species were assumed to be in equilibrium with atmospheric carbon dioxide. Since there are other potential sources of carbonate to the test water that would not be accounted for under this assumption, these estimates represent the minimum carbonate concentrations. Since lower carbonate concentrations result in lower fluoride solubility, this is a conservative approach for estimating fluoride solubility with respect to screening toxicity test results against CCME minimum data requirements.

If the toxicity test results used by McPherson et al. (2014) to derive their chronic fluoride benchmark did not meet the minimum CCME data requirements, then the possibility of deriving a revised guideline following CCME guidance was assessed. If the minimum number of toxicity test results of suitable data quality for deriving a Type A guideline were identified during the literature assessment (i.e., Table 1), then a revised guideline was derived using the software SSD Master Ver 3.0 (CCME 2012). This software is currently used by the CCME and Environment Canada to derive water quality guidelines, and so it is appropriate to use here. Only one endpoint per species was included in the SSD, and preference was given to endpoints as described by CCME guidance (i.e., low-effect endpoints were preferred over LOEC or NOEC endpoints; Table 1). The resulting endpoints were ranked from lowest to highest (with the most sensitive species given a rank of 1), and their relative rank was calculated as a Hazen percentile:

$$Percentile = (Rank - 0.5)/N$$

Where N is the total number of species. Following log-transformation of the endpoint concentrations, four models were fit to the resulting ranks in order to create the resulting SSD, including the normal, logistic, extreme value, and Gumbel models. The Anderson-Darling (A-D) goodness-of-fit test was used to identify models that did not adequately describe the SSD, and the model with the smallest A-D that passed the goodness-of-fit test was identified as the model that most appropriately described the SSD (Zajdlik 2006). Visual assessment of the model fits were also carried out, and the lower tail mean squared error (MSE) of the models were compared in order to identify which models provided predictions in the lower tails with the least variability. Following CCME guidance (CCME 2007), extrapolation of the best model to the 5th percentile was used to derive a hazardous concentration to 5% of species (HC_5).

Results

Assessment of McPherson et al. (2014)

The minimum Type A guideline requirements for test organisms, exposure periods, accepted exposure effects, and preferred toxicity endpoints (i.e., Table 1) were met for all available studies reported by McPherson et al. (2014) (Table 2). Toxicity endpoints for a total of 16 organisms were used, including five fish (two salmonids and three non-salmonids), 7 aquatic invertebrates (including two planktonic crustaceans), and four aquatic plants and/or algae (Table 2). The exposure periods for deriving chronic effect endpoints were within the minimum requirements for all tests except for *Oncorhynchus mykiss* and *Cyprinus carpio* survival (20 days) (Table 2). However, given the small deviation compared to the required exposure time for lethal endpoints in fish (21 days), professional best-judgement would suggest that these tests satisfy the requirement for a chronic exposure period.

Table 2: CCME Type A Water Quality Guideline Requirement Assessment of McPherson et al. (2014) Chronic Fluoride Benchmark

Category	Observed Requirements		Minimum Requirement Met [1]
Test Organisms	Fish	2 Salmonids: *Oncorhynchus mykiss, Salvelinus namaycush* 3 Non-salmonids: *Pimephales promelas, Acipensor baerii, Cyprinus carpio*	Yes
	Invertebrates	2 Planktonic crustaceans: *Ceriodaphnia dubia, Daphnia magna* 5 Aquatic invertebrates: *Hyallela azteca* , *Chironomus dilutus, Potamopyrgus antipodarum, Musculium transversum, Alasmidonta raveneliana*	Yes
	Aquatic Plants and Algae	3 Algae: *Pseudokirchneriella subcapita* , *Synechococcus leopoliensis* , *Chlorella vulgaris* 1 Vascular Plant: *Lemna minor*	Yes
Exposure Periods	Fish	Eggs and Larvae: ≥ 7 days Juvenile and Adult stages: ≥ 21 days	Yes [2]
	Invertebrates	Short-lived species: ≥ 96 hours Long-lived species (chronic endpoint): ≥ 7 days Long-lived species (lethal endpoint): ≥ 21 days	Yes
	Aquatic Plants and Algae	Plants: 7 days Algae: ≥ 24 hours	Yes
Accepted Effects	Growth, reproduction, embryo development, and survival		Yes
Preferred Toxicity Endpoints [3]	IC_{10}, IC_{11}, EC_{13}, IC_{20}, IC_{25}, MATC, LC_{10}, LC_{20}		Yes
Data Requirements	Primary Data	Substance of interest was measured at the beginning and end of the exposure.	Refer to Table 3
		Substance of interest was below the water solubility limit of the substance.	
		Key supporting water quality data are reported, including: temperature, pH, water hardness, salinity, dissolved organic matter, and other potential exposure and toxicity modifying factors.	
		Static tests are not considered primary unless the substance concentrations did not change during the test.	
		Appropriate replication and dilutions steps were performed.	
		Positive (i.e., reference toxicant) and negative controls were performed.	
		A clear dose-response relationship was observed.	
		Statistical procedures must be reported and be appropriate.	
	Secondary Data [4]	Static tests are acceptable, or concentrations of substance of interest can be calcu	
		Pseudo-replication is acceptable.	
		Multiple stresses are acceptable (e.g., high salinity, lack of food).	
		Pathological and behavioral (if ecological relevance can be demonstrated), as well as physiological endpoints are acceptable.	

[1] For a list of minimum guideline requirements, refer to Table 1.

[2] Although *O. mykiss and C. carpio* had exposure periods of 20 days, they were considered acceptable (refer to Results).

[3] The MATC (maximum acceptable toxicant concentration) is the geometric mean of the no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) derived using statistical hypothesis testing.

[4] Exceptions to primary data; otherwise, all requirements listed under primary data apply to secondary data

Of the 18 toxicological tests used to develop the chronic fluoride benchmark, six were classified as primary, three were classified as secondary, and nine were classified as unacceptable (Table 3). For the nine unacceptable tests, all were classified as such because fluoride concentrations used in the tests exceeded the estimated solubility of fluoride (primarily determined by the mineral calcium fluoride) in the test treatments (Attachment Table A.2), and results for reference toxicants were not reported. In addition, Hekman et al. (1984) did not report appropriate statistical procedures for comparing the control and exposed treatments for *S. leopoliensis*. Otherwise, all other minimum data requirements were met for primary or secondary data sources.

Pearcy et al. (2015) did not report results for a reference toxicant for *Salvelinus namaycush*, which is a requirement for primary or secondary data. However, reference toxicants are rarely reported unless the organism of interest is routinely tested within a particular research or commercial laboratory (e.g., by commercial laboratories conducting tests with model species). This allows the laboratory to identify significant deviations of test results from a long-term dataset of reference toxicant test results, and thereby determine whether the test is trustworthy. Given the laboratory (Nautilus Environmental) which undertook the testing of *S. namaycush* does not regularly assess toxicity in this organism, there would be little utility in including a reference toxicant. Thus, use of professional best judgement would suggest that this test can at least be considered secondary data.

Although test fluoride concentrations were predicted to be in excess of the solubility of fluoride in a number of the tests, fluoride was likely in a metastable soluble state in some of these tests (e.g., Giguère and Campbell 2004). For example, the calculated test endpoint concentrations in six of the seven tests performed by Pearcy et al. (2015) exceeded the estimated solubility of fluoride (Attachment Table A.2), but Pearcy et al. (2015) reported no substantial changes in fluoride concentrations during the duration of all toxicity tests. Fluoride concentrations in this study were determined by ALS Environmental, which pre-filters water samples prior to analysis (following EPA method 300.1; US EPA 1997), and so these concentrations represent dissolved concentrations. Fluoride was added to all test treatments as sodium fluoride, which is more soluble than calcium fluoride, and so fluoride was likely in solution in a metastable state which prevented it from precipitating to a significant degree during the toxicity testing. Thus, the toxicity testing reported by Pearcy et al. (2015) can confidently be considered to satisfy the fluoride solubility data requirement since measured dissolved concentrations did not change over the course of the tests. However, it remains uncertain whether fluoride was soluble in the remaining toxicological bioassays used by McPherson et al. (2014) to derive their chronic fluoride benchmark. Although the endpoint concentrations derived from toxicity testing may be below the solubility of fluoride (Attachment Table A.2), they were derived from fluoride concentrations that

Table 3: Assessment of McPherson et al. (2014) Chronic Fluoride Benchmark Input Data

Test Organism			Test Type	Exposure Period	Effect	Toxicity Endpoints [1]	Endpoint Concentration	Data Requirements [2]												Data Type [3]	Source
								Primary Data								Secondary Data Exceptions					
Type	Species	Life Stage					mg/L	A	B	C	D	E	F	G	H	I	J	K	L		
Fish (non-salmonid)	*Cyprinus carpio*	Juvenille	Chronic	20 day	Survival	LC_{20}	25	✓	×	✓	✓	×	×	✓	✓	-	✓	-	-	U	Neuhold and Sigler (1960)
Fish (non-salmonid)	*Pimephales promelas*	<24 h Post-hatch	Chronic	7 days	Survival	IC_{10}	15	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	P	Pearcy et al. (2015)
Fish (non-salmonid)	*Acipenser baerii*	Juvenille	Chronic	90 day	Growth	IC_{10}	7.7	×	×	✓	✓	✓	×	✓	✓	✓	-	-	-	U	Shi et al. (2009)
Fish (non-salmonid)	*Pimephales promelas*	Larva	Chronic	7 days	Survival	IC_{25}	72	×	×	✓	×	✓	×	✓	✓	✓	-	-	-	U	Metcalfe-Smith et al. (2003)
Fish (salmonid)	*Oncorhynchus mykiss*	Juvenille	Chronic	20 day	Survival	LC_{20}	2.0	✓	×	✓	✓	×	×	✓	✓	-	✓	-	-	U	Neuhold and Sigler (1960)
Fish (salmonid)	*Oncorhynchus mykiss*	Yearlings	Chronic	21 days	Survival	LC_{10}	4.8	×	✓	✓	✓	✓	×	✓	✓	✓	-	-	-	S	Herbert and Shurben (1964)
Fish (salmonid)	*Salvelinus namaycush*	Eggs	Chronic	17 days	Embryo Development	IC_{10}	>134	✓	✓	✓	✓	✓	×	✓	✓	-	-	-	-	S	Pearcy et al. (2015)
Invertebrate	*Musculium transversum*	Juvenille	Chronic	8 weeks	Growth	MATC	2.3	×	✓	✓	✓	✓	×	✓	✓	✓	-	-	-	S	Sparks et al. (1983)
Invertebrate	*Hyallela azteca*	Adult	Chronic	14 days	Growth	IC_{10}	1.80	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	P	Pearcy et al. (2015)
Invertebrate	*Potamopyrgus antipodarum*	Adult	Chronic	28 day	Reproduction	MATC	6.6	✓	×	✓	✓	✓	×	✓	✓	-	-	-	-	U	Alonso and Camargo (2011)
Invertebrate	*Alasmidonta raveneliana*	Juvenille	Chronic	9 days	Growth	IC_{10}	91	×	×	✓	✓	✓	×	✓	✓	✓	-	-	-	U	Keller and Auspurger (2005)
Planktonic crustacean	*Ceriodaphnia dubia*	<24 h Neonate	Chronic	7 days	Reproduction	IC_{10}	11	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	P	Pearcy et al. (2015)
Planktonic crustacean	*Daphnia magna*	<24 h Neonate	Chronic	20 day	Reproduction	IC_{10}	28	✓	×	✓	✓	✓	×	✓	✓	-	-	-	-	U	Fieser et al. (1986)
Invertebrate	*Chironomus dilutus*	Third instar	Chronic	10 days	Survival	IC_{20}	8.2	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	P	Pearcy et al. (2015)
Vascular Plant	*Lemna minor*	7 to 10 d plant	Chronic	7 days	Growth	IC_{10}	125	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	P	Pearcy et al. (2015)
Algae	*Pseudokirchneriella subcapita*	Exponential Growth Phase	Chronic	72 hours	Growth	IC_{10}	195	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	P	Pearcy et al. (2015)
Algae	*Synechococcus leopoliensis*	Exponential Growth Phase	Chronic	150 hours	Growth	EC_{13}	50	×	×	✓	×	✓	×	✓	×	✓	-	-	-	U	Hekman et al. (1984)
Algae	*Chlorella vulgaris*	Exponential Growth Phase	Chronic	15 days	Growth	IC_{11}	95	×	×	✓	×	✓	×	✓	✓	✓	-	-	-	U	Rai et al. (1998)

Note: ✓ indicates the requirement was met; × indicates the requirement was not met; N/A indicates the literature was not accessible; N/D indicates that fluoride solubility could not be determined due to insufficient information.

[1] IC_{XX} and EC_{XX} refer to chronic inhibition and effect concentrations, respectively. The MATC (maximum acceptable toxicant concentration) is the geometric mean of the no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) derived using statistical hypothesis testing.

[2] Primary and Secondary data requirement categories (if primary data requirements were met, then secondary data requirement exceptions were not evaluated):

A - Fluoride was measured at the beginning and end of the exposure.
B - Fluoride was below the water solubility limit in the test conditions.
C - Key supporting water quality data are reported, including: temperature, pH, water hardness, salinity, dissolved organic matter, and other potential exposure and toxicity modifying factors.
D - Test renewal occurred; if tests were static, then fluoride concentrations were measured and did not change during exposure.
E - Appropriate replication and dilutions steps were performed.
F - Positive (i.e., reference toxicant) and negative controls were performed. Failure to include a positive control did not disqualify data (refer to report text).
G - A clear dose-response relationship was observed.
H - Appropriate statistical procedures were reported.
I - Static tests are acceptable, or concentrations of substance of interest can be calculated.
J - Pseudo-replication is acceptable.
K - Multiple stresses are acceptable (e.g., high salinity, lack of food).
L - Pathological and behavioral (if ecological relevance can be demonstrated), as well as physiological endpoints are acceptable.

[3] Data types are primary (P), secondary (S), or unacceptable (U) as defined by CCME (2007); N/D indicates that the data type could not be determined due to insufficient information.

were above saturation, and were thus considered unacceptable. As such, the chronic benchmark proposed by McPherson et al. (2014) may not satisfy the requirements of a Type A guideline. Despite this, the compilation of these studies strongly suggest that the current CCME guideline for fluoride (0.12 mg/L) is significantly overprotective compared to the concentrations known to cause chronic toxicity in all of the species assessed (≥1.8 mg/L).

The studies used by McPherson et al. (2014) to derive the chronic effects benchmark were further assessed to determine whether other endpoints (e.g., NOEC, LOEC) were determined for test conditions in which fluoride was predicted to be soluble. As discussed above, after applying professional best judgement, the presence of positive controls (i.e., reference toxicants) was not used to screen data.

The MATC derived for *Potamopyrgus antipodarum* newborn production (6.6 mg/L) included a LOEC (9.5 mg/L) that was above the estimated solubility of fluoride in the test solution (6.8 mg/L) (Attachment Table A.2), and thus was considered unacceptable (Table 3). However, the NOEC (4.6 mg/L) was below the solubility limit, and is considered acceptable for deriving a Type A guideline (Table 1). Thus, the NOEC of 4.6 mg/L for *P. antipodarum* was considered secondary data, and could be used in the derivation of a revised SSD-based guideline (Table 4).

The MATC derived for *Acipenser baerii* juvenile growth (4.9 mg/L) included a LOEC (7.8 mg/L) and NOEC (3.1 mg/L) that were both below the estimated solubility of fluoride in the test water (8.5 mg/L) (Attachment Table A.2). Thus, the MATC for *A. baerii* was considered secondary data, and could be used in the derivation of a revised SSD-based guideline (Table 4).

Assessment of Additional Literature

A brief literature search found a number of additional studies of fluoride toxicity in aquatic organisms that were either not included in the analysis performed by McPherson et al. (2014), or were published thereafter. Focus was placed on traditional toxicity endpoints for resident species in Canada, or for suitable surrogate species. As discussed above, after applying professional best judgement, the presence of positive controls was not used to screen unacceptable data.

Li et al. (2013) reported 72 hour chronic toxicity test results for growth of the green alga *Chlorella pyrenoidosa* (EC_{50} = 118 mg/L) However, the tests were performed in an undefined artificial soil extract medium, and so fluoride solubility could not be assessed. In addition, supporting water chemistry (e.g., hardness, pH) were not reported. Thus, the test result for these studies were considered unacceptable (Attachment Table A.3).

Chae et al. (2016) reported 72 hour chronic test results for growth of the green algae *Chlamydomonas reinhardtii* and *Pseudokirchneriella subcapitata*. Static tests were performed according to Organization for Economic Co-operation and Development (OECD) guidelines

(OECD 2006) at 24 °C, and at pH 7.0 and 8.1, respectively. For *C. reinhardtii*, the EC_{50}, EC_{10}, LOEC, and NOEC were reported as 288.8 mg/L, 120.2 mg/L, 150 mg/L, and <150 mg/L, respectively. For *P. subcapitata*, the EC_{50}, EC_{10}, LOEC, and NOEC were reported as 258.3 mg/L, 146.2 mg/L, 200 mg/L, and 100 mg/L, respectively. Although a negative control treatment was included, a positive control treatment was not. Estimated fluoride solubility in the test conditions for *C. reinhardtii (*22 mg/L) and *P. subcapitata* (10 mg/L) were lower than the test endpoint concentrations (120 and 147 mg/L) (Attachment Table A.2). Without additional information indicating if fluoride remained in solution, these test results were classified as unsatisfactory.

Gonzolo et al. (2010) reported sub-chronic 10-day toxicity test results for survival of the European amphipod *Dikerogammarus villosus*. Static-renewal tests were performed at approximately 17 °C, pH of 8.0, dissolved oxygen concentration of 8.4 mg/L, and at a hardness of 106 mg/L (as $CaCO_3$). The authors reported a NOEC and LOEC of 0.95 and 1.9 mg/L, respectively, resulting in a MATC of 1.3 mg/L. Although a negative control treatment was included, a positive control treatment was not. Estimated fluoride solubility (3.8 mg/L) was higher than the MATC (Attachment Table A.2). Although the test results are sub-chronic (i.e., below the minimum 21 day exposure time for long-lived invertebrate species; Table 1), the MATC was the lowest endpoint concentration found for any aquatic organism (Table 4), and *D. villosus* was similarly sensitive to fluoride as another amphipod, *H. azteca* (IC_{10} = 1.8 mg/L). CCME guidance allows non-resident species to be included in the derivation of Type A guidelines as long as they are suitable surrogates for Canadian species. Given the sensitivity of *D. villosus* to fluoride, a conservative approach would include the MATC in a SSD-derived guideline. Thus, the MATC of 1.3 mg/L was considered secondary data, and its inclusion in the derivation of a Type A guideline provides a measure of conservatism using the revised data set (Table 4; Attachment Table A.3).

Chen et al. (2013) reported 90-day chronic toxicity test results for growth of juvenile common carp (*Cyprinus carpio*; a non-salmonid). Static-renewal tests were performed at approximately 23 °C, pH of 7.0, dissolved oxygen concentration of 6.0 mg/L, and at a hardness of 20 mg/L (as $CaCO_3$). Growth rates were significantly lower than the control at the lowest treatment after 90 days exposure, resulting in a LOEC of 35.1 mg/L. Although a negative control treatment was included, a positive control treatment was not. Estimated fluoride solubility (8.8 mg/L) was lower than the test endpoint concentration (Attachment Table A.2). However, no large decreases in fluoride concentrations were reported between each 7-day renewal (Chen et al. 2013). Thus, the LOEC was considered secondary data (Attachment Table A.3).

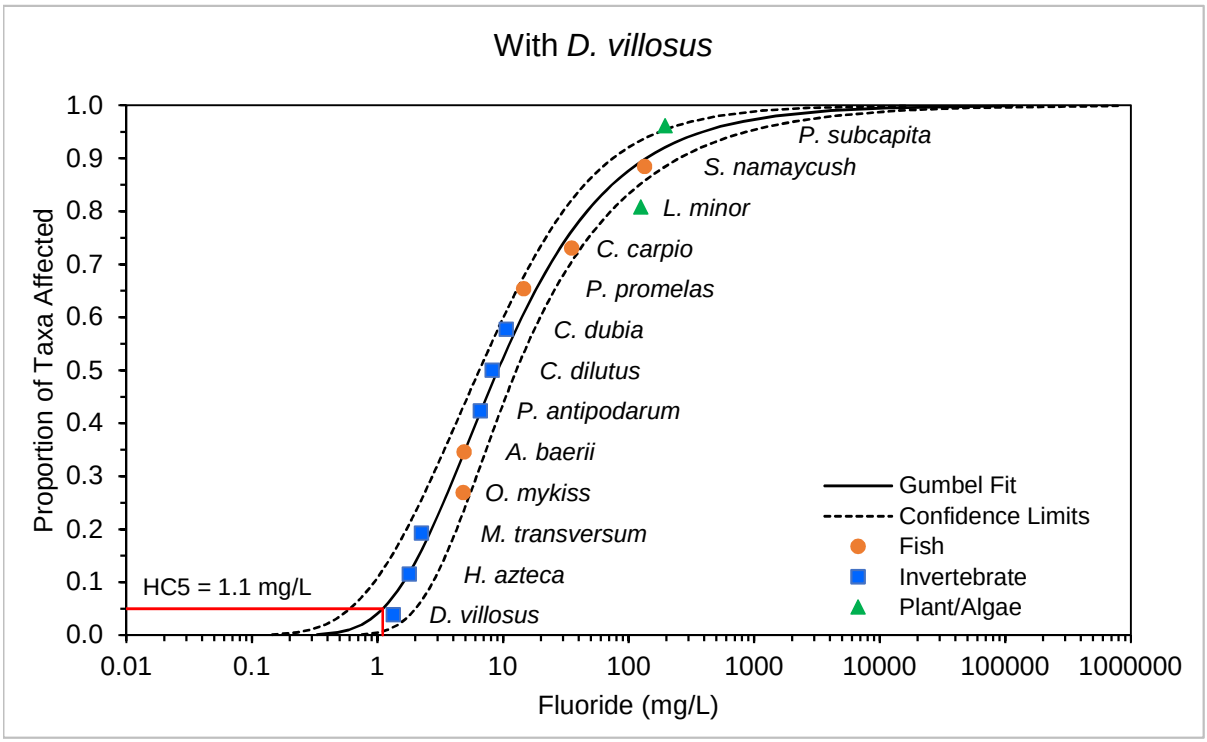
Li et al. (2016) reported 60-day chronic toxicity test results for growth of male and female adult zebrafish (*Danio rerio*; a non-salmonid). Although zebrafish are not native to Canadian aquatic ecosystems, toxicity test results for zebrafish were included in the development of the most recent

SSD-based Federal Environmental Quality Guideline for cobalt (EC 2017), and so they were assessed here. Static-renewal tests were performed at approximately 28 °C, pH of 6.8, dissolved oxygen concentration of 5.5 mg/L, and at a hardness of 20 mg/L (as $CaCO_3$). Body weight was significantly lower in the lowest exposure treatment compared to the control after 60 days exposure, resulting in a LOEC of 18.6 mg/L. Although a negative control treatment was included, a positive control treatment was not. Estimated fluoride solubility (9.4 mg/L) was lower than the LOEC (Attachment Table A.2). Without additional information indicating fluoride remained in solution during the test, these results were classified as unsatisfactory.

Revised Type A Guideline Assessment

An assessment of available fluoride toxicity data which satisfy the minimum CCME data requirements identified suitable endpoint results for 13 organisms, of which 5 were fish (2 salmonids and 3 non-salmonids), 6 were invertebrates (of which 1 as a planktonic crustacean), and 2 were plants and/or algae (Table 4). The most sensitive species were the two amphipods, *D. villosus* and *H. azteca*, with MATC and IC_{10} of 1.3 mg/L and 1.8 mg/L, respectively. This collection of data satisfies the minimum requirements for deriving a Type A guideline (Table 1), and has a sample size within the recommended minimum range for fitting the SSD curve (n = 10 to 15; CCME 2007). Since it remains uncertain whether the endpoint for *D. villossus* would be included in a CCME Type A guideline (i.e., it is a non-resident species, but it is the most sensitive endpoint observed in the literature), two SSD models were fit to the available acceptable toxicity endpoint concentrations – one which included all available data, and one which excluded the *D. villosus* (Figure 1; Table 4; Attachment Table A.3). The resulting HC_5 values were compared for each model in order to determine how much conservatism would be incorporated into the guideline if it included *D. villosus*.

The Gumbel model had the smallest Anderson-Darling statistic and lowest tail MSE for both datasets (Attachment Table A.4), indicating it is the most appropriate model to describe the SSDs (Zajdlik 2006, CCME 2007). The resulting HC_5 values were 1.1 (95% confidence interval: 0.60 to 2.0) and 1.5 (95% confidence interval: 0.76 to 2.8) mg/L for the SSD with and without *D. villosus*, respectively (Attachment Table A.4). Although the HC_5 determined for the SSD without *D. villosus* is within the 95% confidence interval of the more conservative model, the resulting HC_5 was approximately one third lower. The HC_5 values determined with the revised data set are similar to the range of HC_5 values derived from the dataset proposed by McPherson et al. (2014) (1.03 to 1.94 mg/L; guideline value depends on model fit and data treatment; refer to Sinclair and MacDonald 2015; Chapman et al. 2015). However, greater confidence can be placed in the revised HC_5 since all of the underlying data satisfy the minimum CCME data requirements for a Type A guideline.



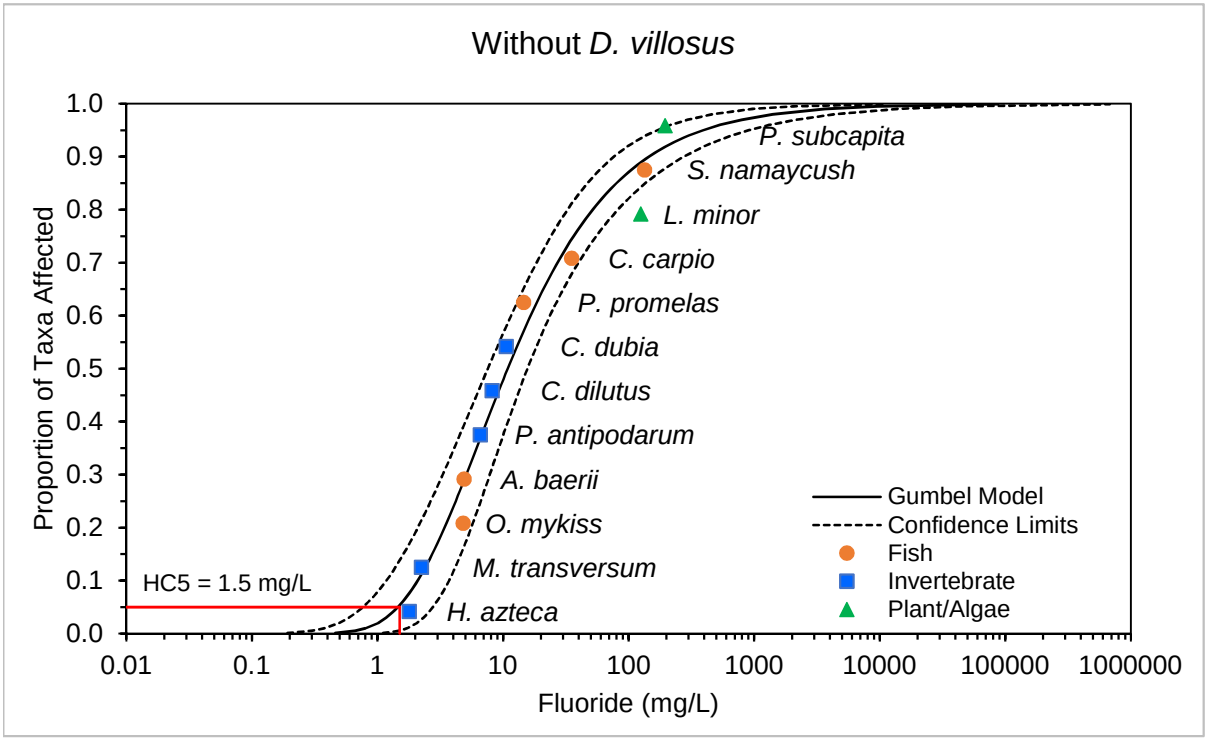


Figure 1: Gumbel Model Species Sensitivity Distribution Fits for Chronic Fluoride Endpoints, with and without *D. villosus*

Table 4: Toxicity Test Input Data for a Revised Type A Chronic Fluoride Guideline

Test Organism		Effect	Toxicity Endpoints [1]	Endpoint Concentration (mg/L)	Hazen Plotting Position [2]		Source
Type	Species				With *D. villosus*	Without *D. villosus*	
Invertebrate	*Dikerogammarus villosus*	Survival	MATC	1.3	0.038	-	Gonzolo et al. (2010)
Invertebrate	*Hyallela azteca*	Growth	IC_{10}	1.8	0.12	0.042	Pearcy et al. (2015)
Invertebrate	*Musculium transversum*	Survival	MATC	2.3	0.19	0.13	Sparks et al. (1983)
Fish (salmonid)	*Oncorhynchus mykiss*	Survival	LC_{10}	4.8	0.27	0.21	Herbert and Shurben (1964)
Fish (non-salmonid)	*Acipenser baerii*	Growth	MATC	4.9	0.35	0.29	Shi et al. (2009)
Invertebrate	*Potamopyrgus antipodarum*	Reproduction	NOEC	6.6	0.42	0.38	Alonso and Camargo (2011)
Invertebrate	*Chironomus dilutus*	Survival	IC_{20}	8.2	0.50	0.46	Pearcy et al. (2015)
Planktonic crustacean	*Ceriodaphnia dubia*	Reproduction	IC_{10}	11	0.58	0.54	Pearcy et al. (2015)
Fish (non-salmonid)	*Pimephales promelas*	Survival	IC_{10}	15	0.65	0.63	Pearcy et al. (2015)
Fish (non-salmonid)	*Cyprinus carpio*	Growth	LOEC	35	0.73	0.71	Chen et al. (2013)
Vascular Plant	*Lemna minor*	Growth	IC_{10}	125	0.81	0.79	Pearcy et al. (2015)
Fish (salmonid)	*Salvelinus namaycush*	Embryo Development	IC_{10}	>134	0.88	0.88	Pearcy et al. (2015)
Algae	*Pseudokirchneriella subcapita*	Growth	IC_{10}	195	0.96	0.96	Pearcy et al. (2015)

Note: for right censored data (i.e., > value), the > value was substituted with the value in the SSD model fits.

[1] IC_{XX} refers to chronic inhibition concentrations. The MATC (maximum acceptable toxicant concentration) is the geometric mean of the no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) derived using statistical hypothesis testing.

[2] Hazen plotting position = (Rank - 0.5) / sample size, where the most sensitive species is given a rank of 1.

Potential Exposure and Toxicity Modifying Factors (ETMFs)

Temperature, as well as chloride and hardness have been identified as potential ETMFs, whereby decreasing temperature of increasing chloride and hardness have been observed to decrease fluoride toxicity in some cases (e.g., BCMOE 2001; Pearcy et al. 2015). However, the relationships between these potential ETMFs and fluoride toxicity are not well established for all aquatic organisms, and may be due to changes in underlying chemistry instead of direct effects to aquatic life (e.g., reduced CaF_2 solubility may be responsible for observed protective effects of increased hardness; Giguère and Campbell 2004). Thus, the application of these potential ETMFs to modify finalized guidelines has not been recommended (BCMOE 2001; Pearcy et al. 2015), and so ETMFs were not incorporated into the revised Type A guideline.

Recommendation for Adopting a Fluoride SSWQO

Through careful examination of the original toxicity test conditions used by McPherson et al (2014), as well as additional toxicity test results, CCME (2003) guidance was followed to develop a technically defensible chronic fluoride guideline that satisfies all CCME data requirements for a Type A guideline. In order to be conservative, we recommend adopting 1.1 mg/L as the SSWQO for fluoride at Kudz Ze Kayah. This guideline includes the most sensitive chronic and sub-chronic endpoints, and ensures that the guideline will likely be protective of most aquatic life at site. Unlike the chronic effect benchmark proposed by McPherson et al. (2014), greater confidence can be placed in the data underlining the derivation of the proposed SSWQO.

Conclusion

A recent evaluation of chronic fluoride toxicity data by McPherson et al. (2014) demonstrated that the current CCME fluoride guideline (0.12 mg/L) is overly conservative, and produced an alternative chronic benchmark following CCME guidance for developing a Type A guideline. Herein, an assessment of the primary literature used to develop the McPherson et al. (2014) benchmark determined that fluoride may not have been soluble in all of the toxicological assays. Thus, the benchmark derived by McPherson et al. (2014) may not be considered equivalent to a Type A guideline, and so it may not be readily accepted by stakeholders as an alternative to the generic SSWQO. Instead, through careful examination of available toxicity studies, a revised and conservative Type-A guideline was developed herein using data which satisfy the minimum data requirements for acceptable toxicity tests. The recommended SSWQO, 1.1 mg/L, does not include potential ETMFs for fluoride toxicity as no clear quantitative relationships have been developed for most aquatic life.

This letter satisfies the first component of Stage 2a (i.e., SSWQO implementation) of the proposed SSWQO development for BMC Kudz Ze Kayah. We trust that this brief letter report meets your requirements and expectations. If you have any questions or would like to discuss any aspect of this report, please do not hesitate to let us know.

Sincerely,

Minnow Environmental Inc.

[Signature Redacted]

[Name Redacted]

Aquatic Scientist/Project Manager

[Signature Redacted]

[Name Redacted]

Senior Aquatic Scientist/Project Advisor

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ATTACHMENT A
FLUORIDE SOLUBILITY ASSESSMENT, ADDITIONAL LITERATURE REVIEW, AND REVISED SSD MODEL RESULTS

Table A.1: Chronic Toxicological Bioassay Major Ion Water Chemistry Parameters for Fluoride Solubility Simulations using PHREEQC

Data Source	Species	Model Input Parameters									
		Chloride (mg/L)	Sulphate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Phosphate (mg/L)	Alkalinity (mg/L $CaCO_3$)	pH (pH units)	Temperature (°C)
Neuhold and Sigler (1960) [1]	*Oncorhynchus mykiss*	8.5	7.0	2.5	0.2	5.1	100	NR	326	7.9	13
	Cyprinus carpio	8.5	7.0	2.5	0.2	5.1	100	NR	326	7.9	21
Herbert and Shurben (1964) [2]	*Oncorhynchus mykiss*	NR	NR	3.2	0.97	NR	NR	NR	NR [3]	7.0 [4]	15
Sparks and Sandusky (1983) [2]	*Musculium transversum*	NR	NR	62	19	NR	NR	NR	NR [3]	7.8	21
Hekman and Budd (1984)	*Synechococcus leopoliensis*	17	29	9.8	7.4	13	143	16	19	7.0 [4]	23
Fieser et al. (1986) [5]	*Daphnia magna*	3.8	171	31	24	4.2	53	NR	140	8.2	20
Rai et al. (1998)	*Chlorella vulgaris*	26	9.7	14	2.5	20	7.5	5.5	NR [3]	6.8	26
Metcalfe-Smith et al. (2003) [2]	*Pimephales promelas*	NR	NR	43	13	NR	NR	NR	NR [3]	7.8	25
Keller and Auspurger (2005) [6]	*Alasmidonta raveneliana*	0.67	28.8	4.9	4.2	0.74	9.3	NR	23	7.6	25
Shi et al. (2009)	*Acipenser baerii*	<5.2	NR	5.9	1.8	NR	NR	NR	NR [3]	7.6	23
Gonzolo et al. (2010)	*Dikerogammarus villosus*	NR	NR	28	8.6	NR	NR	NR	NR [3]	8.0	17
Alonso and Camargo (2011) [7]	*Potamopyrgus antipodarum*	1.9	131	18	25	2.1	26	NR	129	8.1	12
Chen et al. (2013) [2]	*Cyprinus carpio*	NR	NR	5.3	1.6	NR	NR	NR	NR [3]	7.0	23
Pearcy et al. (2015)	*Hyalella azteca* and others (mean) [8]	2.1	83	14	12	2.2	28	NR	59	7.0	24
	Salvelinus namaycush	3.2	1.0	4.0	0.19	<2	<2	NR	8.0	7.0	7.0
	Lemna minor	73	55	12	28	9.8	110	NR	90	7.0	25
	Pseudokirchneriella subcapitata	3.7	3.6	0.82	1.7	<2	7.2	NR	7.0	7.0	24
Chae et al. (2016)	*Chlamydomonas reinhardtii* [9]	38	7.8	2.7	2.0	427	NR	644	NR [3]	7.0	24
	Pseudokirchneriella subcapitata [10]	23	5.9	4.9	2.9	0.36	14	0.87	60	8.1	24
Li et al. (2016)	*Danio rerio*	NR	NR	5.3	1.6	NR	NR	NR	NR [3]	6.8	28

Notes: NR indicates that it was not reported in the literature. If model input parameters were reported as below the laboratory reporting limit (LRL), then 1×LRL was substituted for the LRL in the simulations.

[1] A range of water quality parameters were reported, and so the middle of the range were used as input parameters.

[2] Calcium and magnesium concentrations were estimated by assuming total hardness (as $CaCO_3$) was made up of a 2:1 ratio of calcium:magnesium. Total hardness for Herbert and Shurben (1964), Sparks and Sandusky (1983), Metcalfe-Smith et al. (2003), Shi et al. (2009), Gonzolo et al. (2010), and Chen et al. (2013) were 12, 232, 160, 22, 106, and 20 mg/L, respectively.

[3] Carbonate concentration was modelled assuming carbonate species were in equilibrium with atmospheric carbon dioxide.

[4] A pH of 7.0 was assumed.

[5] Hardness decreased and alkalinity increased as fluoride increased. Thus, input parameters used were those reported for the 25 mg/L fluoride treatemnt because it is closest to the endpoint used by McPherson et al. (2014).

[6] US EPA (1994) moderately hard reconstituted water (85 mg/L hardness as $CaCO_3$) was diluted with distilled water to a hardness of approximately 30 mg/L. The model input parameters were calculated assuming they underwent the same dilution.

[7] Initial conditions were US EPA moderarely hard reconsituted water enriched with calcium carbonate.

[8] Mean measured concentrations for similar test conditons.

[9] Water chemistry reported by Sueoka (1960), as modified by Gorman and Levine (1965).

[10] OECD medium with carbonate concentrations at pH 8.1 (OECD 2006).

Table A.2: Estimated Fluoride Solubility Derived using PHREEQC in Select Chronic Toxicological Bioassays

Data Source	Species	Fluoride Solubility [1]		Test Fluoride		
				Range [2]	Endpoint [3]	Alternative [4]
		(mol/kg)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Neuhold and Sigler (1960)	*Oncorhynchus mykiss*	0.00085	16	2 to 25	2.0	N/R
	Cyprinus carpio	0.00090	17	2 to 25	25	N/R
Herbert and Shurben (1964)	*Oncorhynchus mykiss*	0.00065	12	4 to 22	4.8	N/R
Sparks et al. (1983)	*Musculium transversum*	0.00016	3.0	0.54 to 4.6	2.3	1.8
Hekman et al. (1984)	*Synechococcus leopoliensis*	0.00048	9.0	9.5 to 150	50	25
Fieser et al. (1986)	*Daphnia magna*	0.00030	5.7	25 to 158	28	N/R
Rai et al. (1998)	*Chlorella vulgaris*	0.00036	6.8	95 to 380	95	N/R
Metcalfe-Smith et al. (2003)	*Pimephales promelas*	0.00019	3.7	7.8 to 250	72	63
Keller and Auspurger (2005)	*Alasmidonta raveneliana*	0.00061	12	31 to 500	91	N/R
Shi et al. (2009)	*Acipenser baerii*	0.00045	8.5	3.1 to 52	7.7	4.9
Gonzolo et al. (2010)	*Dikerogammarus villosus*	0.00020	3.8	0.95 to 1.9	-	1.3
Alonso and Camargo (2011)	*Potamopyrgus antipodarum*	0.00036	6.8	4.6 to 16	6.6	4.6
Chen et al. (2013)	*Cyprinus carpio*	0.00046	8.8	35 to 124	-	35
Pearcy et al. (2015)	*Hyalella azteca*	0.00041 [5]	7.8 [5]	N/R	1.8	N/R
	Chironomus dilutus			N/R	8.2	N/R
	Ceriodaphnia dubia			N/R	11	N/R
	Pimephales promelas			N/R	15	N/R
	Salvelinus namaycush	0.00056	11	N/R	>134	N/R
	Lemna minor	0.00049	9.4	N/R	125	N/R
	Pseudokirchneriella subcapitata	0.0014	27	N/R	195	N/R
Chae et al. (2016)	*Chlamydomonas reinhardtii*	0.0011	22	150 to 750	-	120
	Pseudokirchneriella subcapitata	0.00053	10	100 to 500	-	147
Li et al. (2016)	*Danio rerio*	0.00050	9.4	19 to 37	-	19

Shading indicates the test fluoride concentrations exceeded the estimated solubility of fluoride in the toxicological assays.

Note: N/A indicates that the literature was not accessible; N/D indicates that the solubility could not be determined due to insufficient information about the test water chemistry; N/R indicates values were not reported.

[1] Fluoride solubility estimated using bioassay water chemistry input parameters (Attachment Table A.1) in PHREEQC simulations.

[2] Range of fluoride treatment concentrations (i.e., not control concentrations) used in the data source.

[3] Endpoint concentration used by McPherson et al. (2014) to derive their chronic fluoride benchmark. A dash indicates that the endpoint was not used by McPherson et al. (2014).

[4] For studies used by McPherson et al. (2014), no observed effect concentration (NOEC) or lowest observed effect concentration (LOEC), whichever was lower and/or reported. For studies not used by McPherson et al. (2014), the endpoint is the preferred endpoint reported in the text.

[5] Fluoride solubility determined for mean input parameters for similar test conditions (refer to Attachment Table A.1)

Table A.3: Data Requirement Assessment of Additional Fluoride Toxicological Studies

Test Organism			Test Type	Exposure Period	Effect	Toxicity Endpoints [1]	Endpoint Concentration	Data Requirements [2]												Data Type [3]	Source
								Primary Data								Secondary Data Exceptions					
Type	Species	Life Stage					mg/L	A	B	C	D	E	F	G	H	I	J	K	L		
Algae	*Chlorella pyrenoidosa*	Exponential Growth Phase	Chronic	8 days	Growth	EC_{50}	118	×	N/D	×	×	✓	×	✓	✓	✓	-	-	-	U	Li et al. (2013)
Algae	*Chlamydomonas reinhardtii*	Exponential Growth Phase	Chronic	72 hours	Growth	EC_{10}	120	×	×	✓	×	✓	×	✓	✓	✓	-	-	-	U	Chae et al. (2016)
Algae	*Pseudokirchneriella subcapitata*	Exponential Growth Phase	Chronic	72 hours	Growth	EC_{10}	146	×	×	✓	×	✓	×	✓	✓	✓	-	-	-	U	Chae et al. (2016)
Fish (non-salmonid)	*Cyprinus carpio*	Juvenille	Chronic	90 days	Growth	LOEC	35.1	✓	×	✓	✓	✓	×	✓	✓	-	-	-	-	S [4]	Chen et al. (2013)
Fish (non-salmonid)	*Danio rerio*	Adult	Chronic	60 days	Growth	LOEC	18.6	×	×	✓	✓	✓	×	✓	✓	✓	-	-	-	U	Li et al. (2016)
Invertebrate	*Dikerogammarus villosus*	Adult	Sub-chronic	10 days	Survival	MATC	1.34	×	✓	✓	✓	✓	×	✓	✓	✓	-	-	-	S	Gonzolo et al. (2010)

Note: ✓ indicates the requirement was met; × indicates the requirement was not met; N/D indicates that fluoride solubility could not be determined due to insufficient information.

[1] IC_{XX} and EC_{XX} refer to chronic inhibition and effect concentrations, respectively. The MATC (maximum acceptable toxicant concentration) is the geometric mean of the no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) derived using statistical hypothesis testing.

[2] Primary and Secondary data requirement categories (if primary data requirements were met, then secondary data requirement exceptions were not evaluated):

A - Fluoride was measured at the beginning and end of the exposure.
B - Fluoride was below the water solubility limit in the test conditions.
C - Key supporting water quality data are reported, including: temperature, pH, water hardness, salinity, dissolved organic matter, and other potential exposure and toxicity modifying factors.
D - Test renewal occurred; if tests were static, then fluoride concentrations were measured and did not change during exposure.
E - Appropriate replication and dilutions steps were performed.
F - Positive (i.e., reference toxicant) and negative controls were performed. Failure to include a positive control did not disqualify data (refer to report text).
G - A clear dose-response relationship was observed.
H - Appropriate statistical procedures were reported.
I - Static tests are acceptable, or concentrations of substance of interest can be calculated.
J - Pseudo-replication is acceptable.
K - Multiple stresses are acceptable (e.g., high salinity, lack of food).
L - Pathological and behavioral (if ecological relevance can be demonstrated), as well as physiological endpoints are acceptable.

[3] Data types are primary (P), secondary (S), or unacceptable (U) as defined by CCME (2007); N/D indicates that the data type could not be determined due to insufficient information.

[4] Although fluoride was predicted to be insoluble, Chen et al. (1013) reported no changes in fluoride concentrations between test renewals, and so fluoride was likely in a metastable state. Thus, this endpoint was considered secondary data.

Table A.4: Species Sensitivity Distribution (SSD) Model Results Using Revised Toxicity Endpoints, with and without *D. villosus*

Model	With *D. Villosus*			Without *D. Villosus*		
	HC_5 (95% confidence interval) (mg/L)	MSE Lower Tail	Anderson-Darling Statistic	HC_5 (95% confidence interval) (mg/L)	MSE Lower Tail	Anderson-Darling Statistic
Normal	0.59 (0.34 to 1.0)	0.0198	0.4211	0.75 (0.42 to 1.3)	0.0242	0.4371
Logistic	0.50 (0.20 to 1.2)	0.0185	0.4043	0.63 (0.23 to 1.7)	0.0230	0.4314
Extreme value	0.17 (0.027 to 1.1)	0.0422	0.8212	0.19 (0.021 to 1.7)	0.0495	0.6776
Gumbel	1.1 (0.60 to 2.0)	0.0095	0.2315	1.5 (0.76 to 2.8)	0.0106	0.2592

Shading indicates the HC5 associated with the lowest Anderson-Darling statistic and lower tail MSE for each model.

Note: SSD models were fit using Hazen percentiles based on ranks and log-transformed endpoints (Table 4).

APPENDIX E.

Preliminary Water Quality Objective for Arsenic for the Kudz Ze Kayah Project

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August 27, 2018

Ms. Kelli Bergh
Environmental Manager
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Dear Ms. Bergh,

Re: Re-Evaluation of the Preliminary Arsenic SSWQO for the Kudz Ze Kayah Project – Interim Report

Minnow Environmental Inc. (Minnow) is pleased to provide an interim summary report of Stage 2a of the re-evaluation and development of a preliminary site-specific water quality objective (SSWQO) for arsenic at the BMC Minerals (No. 1) Ltd. (BMC) Kudz Ze Kayah Project. The feasibility of developing a chronic SSWQO for arsenic that uses the same derivation procedure as the Canadian Council of Ministers of the Environment (CCME) Type A guideline (i.e., CCME 2007) was assessed, and recommendations for SSWQO adoption are provided. The recommended SSWQO is an interim value, and will be updated pending additional arsenic toxicity testing results in the fall of 2018. An updated report and final SSWQO recommendation will be provided thereafter.

Project Background

The Kudz Ze Kayah Project (KZK) is currently undergoing Assessment under the Yukon Environmental and Socio-economic Assessment Act (YESAA) and is at the "Seeking Public Comment Complete/Considering Comments" stage. During a previous stage ("Adequacy Review"), BMC completed updates to the original project plan, including water management and associated predictions of receiving environment water quality (Alexco 2017). Based on a combination of existing conditions and water quality predictions, a total of eight Contaminants of Potential Concern (COPCs) have been identified (arsenic, cadmium, copper, fluoride, iron, lead, selenium, and zinc), and preliminary SSWQOs were proposed (Alexco 2017). During a previous re-evaluation of the proposed SSWQO for arsenic, it was determined that the guideline used for the SSWQO had not been updated using more recent toxicological data, utilized older guideline derivation protocols, and was likely overly protective (Minnow 2018). Instead, a feasibility analysis

for developing a chronic arsenic SSWQO following the guidance for a Type A guideline (i.e., CCME 2007) using available toxicological studies in published scientific literature was proposed (Minnow 2018). At the request of BMC, the technical feasibility of developing a chronic arsenic SSWQO was assessed following CCME guidance (CCME 2007), a guideline was developed, and the merit of adopting this SSWQO or others was discussed.

Technical Background

Arsenic in the Aquatic Environment and Effects to Aquatic Life

Arsenic is a redox-sensitive element, and its main oxidation states in aqueous solutions are (III) (arsenite), and (V) (arsenate). Organic forms of arsenic also exist, but are not typically dominant in most systems unless impacted severely by industrial pollution (Smedley and Kinniburgh 2002) or in eutrophic freshwater systems (McIntyre and Linton 2012). Both redox states of arsenic exist as pH-dependent oxyanions. At typical pH levels (e.g., 6 to 8), arsenate is primarily $H_2AsO_4^-$ or $HAsO_4^2$, while arsenite is present as H_3AsO (Smedley and Kinniburgh 2002). However, arsenic can undergo both chemical and biologically mediated reduction/oxidation reactions which can result in concentrations of arsenic(V) and arsenic(III) that are not predicted at equilibrium (Smedley and Kinniburgh 2002). The majority of arsenic in rivers tends to be soluble, while about a third is associated with suspended matter (CCME 2001). Arsenic can sorb to colloidal material, humic acids, iron and clay minerals, as well as biota (Smedley and Kinniburgh 2002).

Arsenic can enter aquatic organisms by adsorption to membrane surfaces (e.g., gills, transport proteins) and by ingestion and adsorption of arsenic in food (McIntyre and Linton 2012). Upon entry to living cells, arsenic can disrupt basic metabolic processes such as energy production, resulting in negative impacts to growth, reproduction, survival, and behavior (McIntyre and Linton 2012). There is no evidence that arsenic biomagnifies in freshwater food chains (McIntyre and Linton 2012).

Type A Guideline Derivation

In 2007, CCME revised the protocol for developing water quality guidelines for the protection of aquatic life in order to incorporate recent advances in aquatic toxicology (CCME 2007). A significant change to the previous protocol was the division of guidelines into three groups in descending preference based on the quality of available data: Type A, Type B1, and Type B2 (CCME 2007). The Type A chronic guideline is developed using a minimum number of published data of the highest available quality (Table 1) for the lowest observed toxic effects for the most sensitive species/life stage. Using a statistical method, the Species Sensitivity Distribution (SSD) (a non-linear regression approach), a concentration is determined that would prevent 95% of

Table 1: CCME Type A Water Quality Guideline Requirements [1]

Category	Minimum Requirements	
Test Organisms [2]	Fish	Three species (minimum one salmonid and one non-salmonid).
	Invertebrates	Three aquatic or semi-aquatic species (minimum one planktonic crustacean). Life stages of semi-aquatic species must be aquatic.
	Aquatic Plants and Algae	Minimum one vascular plant or algal species. If a plant/algal species is among the most sensitive species, then three species are required.
Exposure Periods	Fish and Amphibians	Eggs and Larvae: ≥ 7 days Juvenile and Adult stages: ≥ 21 days
	Invertebrates	Short-lived species: ≥ 96 hours Long-lived species (chronic endpoint): ≥ 21 days Long-lived species (lethal endpoint): ≥ 7 days
	Aquatic Plants and Algae	Plants: assessed case-by-case Algae: ≥ 24 hours
Accepted Effects	Traditional endpoints (e.g., embryonic development, hatching, germination, growth, reproduction, and survival) are preferred. Non-traditional endpoints (e.g., behavior and physiology) can be used if their ecological relevance can be shown. When more than one record exists for an endpoint, then the geometric mean is used in the guideline derivation.	
Preferred Toxicity Endpoints [3]	Non-lethal no effects endpoints (i.e., EC_{10}/IC_{10}) determined using regression models are preferred. If the minimum data requirements cannot be met, then non-lethal and lethal low-effects endpoints (i.e., $EC_{11\text{-}25}/IC_{11\text{-}25}$ and $LC_{11\text{-}25}$, respectively) can be used. If neither are available for a particular species, then MATC, NOEC, and LOEC (in descending preference) can be used. Least preferred endpoints are non-lethal $EC_{26\text{-}49}/IC_{26\text{-}49}$ followed by EC_{50}/IC_{50}.	
Data Requirements [4]	Primary Data	Substance of interest was measured at the beginning and end of the exposure.
		Substance of interest was below the water solubility limit of the substance.
		Key supporting water quality data are reported, including: temperature, pH, water hardness, salinity, dissolved organic matter, and other potential exposure and toxicity modifying factors.
		Static tests are not considered primary unless the substance concentrations did not change during the test.
		Appropriate replication and dilutions steps were performed.
		Positive (i.e., reference toxicant) and negative controls were performed.
		A clear dose-response relationship was observed.
		Statistical procedures must be reported and be appropriate.
	Secondary Data [5]	Static tests are acceptable, or concentrations of substance of interest can be calculated.
		Pseudo-replication is acceptable.
		Multiple stresses are acceptable (e.g., high salinity, lack of food).
		Pathological and behavioral (if ecological relevance can be demonstrated), as well as physiological endpoints are acceptable.

[1] CCME (2007).

[2] Although a minimum of 7 species are required, it is anticipated that a larger number of species will be included in order to improve the model fit (CCME 2007).

[3] Maximum acceptable toxicant concentration (MATC), no observed effect concentration (NOEC), and lowest observed effect concentration (LOEC) are derived using statistical hypothesis testing, but not using regression analysis. The MATC is the geometric mean of the NOEC and LOEC. The NOEC is the highest concentration tested for which no effect was observed, while the LOEC is the lowest concentration tested for which an effect was observed.

[4] Primary and secondary data for no-effects and low-effects endpoints can be used, but preference should be placed on primary data when available.

[5] Exceptions to primary data; otherwise, all requirements listed under primary data apply to secondary data

aquatic life from documented low-level chronic effects (i.e., although preference is given to no effect thresholds, other effect concentrations can be used in order to meet the minimum data requirements; refer to "Preferred Toxicity Endpoints" in Table 1). Type B guidelines are developed when the minimum requirements for Type A guidelines cannot be met, and a safety factor is applied to the lowest observed low-effect concentration.

A number of requirements must be met in order to develop a Type A guideline (Table 1), including a minimum number of toxicological studies of a wide array of species, statistical requirements, and data requirements of the toxicity studies used to derive the guideline. For example, a minimum toxicological data set must be available, including three fish species (including at least one salmonid and one non-salmonid), three aquatic or semi-aquatic invertebrates (including at least one planktonic crustacean), and at least one aquatic plant or algae species (if a plant of algae is the most sensitive species, then three studies on plants/algae are required) (Table 1). A full description of the remaining requirements, and exceptions to the requirements made herein based on professional judgement, can be found in Attachment A.

Current CCME Arsenic Guideline

The current interim CCME guideline for total arsenic (CCME 2001) was derived using older guideline development protocols (CCME 1991). The current CCME guideline (0.005 mg/L) was derived by multiplying the lowest observed effect level (LOEL) for chronic toxicity of growth in the alga *Scenedesmus obliquus* (14-day EC_{50} value of 0.05 mg/L; Vocke et al. 1980) by a safety factor of 0.1.

Approach

In consideration of the most likely chemical form(s) of arsenic predicted to occur in creeks downstream of the KZK Project, the relative concentration of each form of arsenic in baseline data, and the relative toxicity of each form of arsenic to aquatic life, the potential for developing a chronic arsenic benchmark that can be applied to the site was assessed. A literature review was conducted using studies reported by the CCME for the development of the current arsenic guideline (CCME 2001), reports for arsenic in the US Environmental Protection Agency's ECOTOX database, as well as by performing a review of more recent scientific literature. The bioavailability of arsenic, its mode of toxicity, and the potential for exposure and toxicity modifying factors (ETMFs) for the most likely form(s) of arsenic to cause toxicity at site was summarized. Studies that report toxicological data which satisfy the minimum requirements for a Type A guideline (Table 1) was compiled, data gaps for producing a Type A guideline were identified and discussed, and advice on SSWQO adoption was provided.

Methods

Arsenic Species of Interest Assessment

Multiple arsenic species can exist in the environment, and they have unique exposure routes and processes controlling their distribution in aquatic environments and potential to cause toxicity in aquatic organisms (McIntyre and Linton 2012). In order to focus the guideline development feasibility assessment, the chemical species of arsenic at KZK that are most likely to cause the greatest effect to the aquatic organisms at site was assessed. Arsenic species that can be routinely monitored by certified commercial analytical laboratories (e.g., Brooks Applied Labs; Bothell, WA, USA) include inorganic arsenic(III) and arsenic(V), as well as the organic species monomethylarsonic acid (MMA; 5+ oxidation state), and dimethylarsenic acid (DMA; 5+ oxidation state), and so these species were the focus of the assessment. The toxicity of these four arsenic species was reviewed for aquatic organisms that are either common toxicity test organisms, or for which toxicity data were available for at least two of the arsenic species. Only individual studies assessing multiple species were assessed in order to avoid introducing inter-laboratory variability. The relative toxicity of the four arsenic species among the organisms surveyed were then qualitatively compared to the concentrations measured at site, and those likely to arise from Project activities. Baseline data reported for March 2018 at stations KZ-37 and KZ-15 were provided to Minnow by Alexco.

Type A Guideline Data Availability and Assessment

A minimum of seven toxicity test results are required for the development of a Type A guideline (Table 1). In order to meet these requirements, test results reported by the CCME in their guideline derivation (CCME 2001), and those reported in the US EPA ECOTOX database were used to begin the assessment. Additional toxicity results were also included from a review of published scientific literature. Refer to Attachment A for more detail.

Type A Guideline Statistical Derivation

If the minimum number of toxicity test results of suitable data quality for deriving a Type A guideline were identified during the literature assessment, then a guideline was derived using the software SSD Master Ver 3.0 (CCME 2012). This software is currently used by the CCME and Environment Canada to derive water quality guidelines, and so it is appropriate to use here. A full account of the statistical methods, including data treatment and model output, is provided in Attachment B.

Results

Arsenic Species of Interest Identification

A literature review of studies assessing the toxicity of arsenic species to aquatic life identified inorganic arsenic(III) as being more toxic than either inorganic arsenic(V), or organic forms of arsenic (MMA and DMA) (Table 2). Of the 12 tests, 10 were more susceptible to arsenic(III) than arsenic(V) or organic forms of arsenic. The relative difference between species was largest for the invertebrate *Potamopyrgus antipodarum* and the aquatic plant *Lemna minor* which had EC_{50} values of 19 and 0.63-2.0 mg/L for arsenic (III), respectively, and 111 and 3-82 mg/L for arsenic(V), respectively (Table 2). Only the planktonic crustacean *Daphnia pulex* and the alga *Chlorella sp.* were more sensitive to arsenic(V) than arsenic(III); the endpoints (LC_{10} and EC_{50}, respectively) were 2.0 and 27 mg/L for arsenic(III), respectively, and 1.1 and 1.2 mg/L for arsenic(V), respectively (Table 2). Thus, overall, aquatic organisms appear to be more sensitive to arsenic(III) than arsenic(V). There were too few data comparing inorganic and organic forms of arsenic to make any definitive conclusions for most aquatic life. Given the dominance of inorganic arsenic in most aquatic ecosystems (McIntyre and Linton 2012), no further consideration was given to organic arsenic.

It is technically difficult to predict the chemical forms of mine-related arsenic in Geona and Finlayson creeks due to the complex biogeochemistry of arsenic in natural waters (Smedley and Kinniburgh 2002). Baseline dissolved arsenic species measurements made at Stations KZ-37 and KZ-15 in March, 2018, indicated that only arsenic(V) was detectable (0.00023 to 0.00025 mg/L), while arsenic(III), MMA, and DMA were below detection (<0.00020, <0.00045, and <0.00025 mg/L, respectively). This is consistent with the oxidizing conditions expected in well mixed creek water. Arsenic in ore deposits can be found in sulfide containing minerals as arsenic(III), but once dissolved can be oxidized by manganese and iron oxide minerals, and microbial processes (Smedley and Kinniburgh 2002). Thus, the dissolved forms of arsenic in Geona and Finlayson creeks due to mine activities could be arsenic(III), arsenic(V), or a mixture thereof. Without knowing the rates of transformation in the creeks in question, it is not possible to determine which form of arsenic is most likely to be present due to mine activities. However, based on the limited baseline data and the expected conditions in well oxygenated creek water, arsenic(V) would be expected to be the dominant oxidation state. Thus, the feasibility of developing Type A Guidelines for both arsenic(III) and arsenic(V) was evaluated. In addition, the prospect of developing a conservative guideline using data for both arsenic(V) and arsenic(III) toxicity data was assessed.

Table 2: Comparison of Arsenic Toxicity Endpoints of Routinely Monitored Arsenic Species in some Aquatic Organisms

Test Organism		Effect	Toxicity Endpoint	Effect Concentration (mg/L)				Citation
				Inorganic		Organic		
Species	Type			Arsenic(III)	Arsenic(V)	MMA(V)	DMA(V)	
Salmo gairdneri	Fish (salmonid)	Survival	LC_{50}	18 to 21	58 to 114	-	-	McGeachy and Dixon (1989) [a]
Danio rerio	Fish (non-salmonid)	Survival	LOEC	37	>75	-	-	Olivares et al. (2016)
Potamopyrgus antipodarum	Invertabrate	Mobility	EC_{50}	19	111	-	-	Golding et al. (1997) [b]
Baetis tricaudatus	Invertabrate	Growth	MATC	0.30	0.33	-	-	Irving et al. (2008) [c]
		Survival	LC_{50}	0.55	0.98 to 5.2	-	-	
Cyclops vernalis, C. bicuspidatus thomasi	Planktonic crustacean	Growth	IC_{20}	1.6 to 4.0	1.4 to 3.8	-	-	Borgmann et al. (1989)
Daphnia pulex	Planktonic crustacean	Mortality	LC_{10}	2.0	1.1	2.9	6.4	Shaw et al. (2007) [d]
Daphnia magna	Planktonic crustacean	Mortality	LC_{50}	5.5	9.5	-	-	Wang et al. (2016) [e]
Ceriodaphnia dubia	Planktonic crustacean	Growth	EC_{50}	1.6	1.7	-	5.9	Rahman et al. (2014)
Unpolluted Lake Community	Algae	Physiology	EC_{50}	3.7	0.022	0.42	>14	Knauer et al (1999) [f]
Chlorella sp. Strain CE-35	Algae	Growth	EC_{50}	27	1.2	-	19	Rahman et al. (2014)
Scenedesmus obliquus	Algae	Growth	EC_{50}	0.079	0.16	0.012	0.036	Fuhua et al. (1994)
Lemna disperma	Aquatic Plant	Growth	EC_{50}	0.57	2.3	-	56	Rahman et al. (2014)
Lemna minor	Aquatic Plant	Growth	EC_{50}	0.63	22	-	-	Jenner et al. (1993) [g]
Lemna minor	Aquatic Plant	Growth	EC_{10}	0.63	3.0	-	-	Nauman et al. (2007) [h]
Lemna minor	Aquatic Plant	Growth	EC_{50}	2.0	82	-	-	Duester et al. (2011)

Shading indicates the lowest effect concentration for a given endpoint.

Notes: Only studies assessing the toxicity of multiple compounds within the same study were included. The MATC (maximum acceptable toxicant concentration) is the geometric mean of the no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) derived using statistical hypothesis testing.

[a] Range of concentrations determined for a temperature range of 5 to 15 °C.

[b] Endpoints reported for snails collected from the baseline site.

[c] Endpoints reported for high oxygen saturation treatments.

[d] Dominant species in a copepod community were used to derive concurrent IC_{20} values for multiple sampling dates.

[e] Endpoints reported for pH 8 treatments.

[f] Conversion of inorganic carbon into biomass was measured, a proxy for growth rates.

[g] Endpoints reported for surface coverage.

[h] Lowest reported endpoints for growth rates determined using chlorophyl (arsenic[III]) and carotenoids (arsenic[V]).

Table 3: Acceptable Toxicity Test Data for a Type A Chronic Arsenic Guideline

Test Organism		Effect	Toxicity Endpoints [1]	Oxidation State	Effect Concentration (mg/L)	Source
Type	Species					
Plant/Algae	*Chlamydomonas reinhardti*	Growth	EC_{50}	V	0.014	Wang et al. (2013)
Plant/Algae	*Scenedesmus obliquus* [3]	Biomass	EC_{50}	V	0.048	Vocke et al. (1980)
Plant/Algae	*Melosira granulata*	Growth	LOEC	V	0.075	Planas and Healey (1978)
Plant/Algae	*Ochromonas vallesiaca*	Growth	LOEC	V	0.075	Planas and Healey (1978)
Plant/Algae	*Scenedesmus obliquus*	Growth	EC_{50}	III	0.079	Fuhua et al. (1994)
Plant/Algae	*Scenedesmus obliquus*	Growth	EC_{50}	V	0.16	Fuhua et al. (1994)
Plant/Algae	*Lemna gibba*	Growth	MATC	V	0.22	Mkandawire et al. (2006)
Plant/Algae	*Ankistrodesmus falcatus*	Biomass	EC_{50}	V	0.26	Vocke et al. (1980)
Invertebrate	*Baetis tricaudatus*	Growth	MATC	III	0.32	Irving et al. (2008)
Invertebrate	*Cyclops sps.* [4]	Growth	EC_{20}	III	0.32	Borgmann et al. (1980)
Invertebrate	*Baetis tricaudatus*	Growth	MATC	V	0.32	Irving et al. (2008)
Invertebrate	*Daphnia magna*	Reproduction	EC_{16}	V	0.52	Biesinger and Christensen (1972)
Fish (salmonid)	*Oncorhynchus mykiss*	Growth	LC_{50}	V	0.54	Birge et al. (1978)
Plant/Algae	*Lemna disperma*	Growth	EC_{50}	III	0.6	Rahman et al. (2014)
Invertebrate	*Chironomus riparius*	Reproduction	MATC	V	0.62	Mogren et al. (2012)
Plant/Algae	*Lemna minor*	Growth	EC_{10}	III	0.63	Naumann et al. (2007)
Fish (salmonid)	*Oncorhynchus mykiss*	Survival	NOEC	III	>0.96	Spehar et al. (1980)
Invertebrate	*Pteronarcys dorsata*	Survival	NOEC	III	>0.96	Spehar et al. (1980)
Invertebrate	*Helisoma campanulata*	Survival	NOEC	III	>0.96	Spehar et al. (1980)
Invertebrate	*Stagnicola emarginata*	Survival	NOEC	III	>0.96	Spehar et al. (1980)
Invertebrate	*Gammarus pseudolimnaeus*	Survival	LOEC	III	1.0	Spehar et al. (1980)
Plant/Algae	*Scenedesmus quadricus*	UN	VSUE	UN	0.96	Fargasova (1993)
Fish (salmonid)	*Oncorhynchus mykiss*	Survival	NOEC	V	>0.97	Spehar et al. (1980)
Invertebrate	*Pteronarcys dorsata*	Survival	NOEC	V	>0.97	Spehar et al. (1980)
Invertebrate	*Helisoma campanulata*	Survival	NOEC	V	>0.97	Spehar et al. (1980)
Invertebrate	*Stagnicola emarginata*	Survival	NOEC	V	>0.97	Spehar et al. (1980)
Fish (non-salmonid)	*Anabas testudineus*	UN	LOEC	UN	0.97	Jana and Sahana (1989)
Fish (non-salmonid)	*Clarias batrachus*	UN	LOEC	UN	0.97	Jana and Sahana (1989)
Plant/Algae	*Chlamydomonas reinhardti*	Growth	EC_{50}	III	1.0	Wang et al. (2014)
Amphibian	*Rana pipiens*	Growth	NOEC	V	>1	Chen et al. (2009)
Invertebrate	*Ceriodaphnia dubia*	Survival	MATC	V	1.1	Spehar and Fiandt (1986)
Plant/Algae	*Wolffia arrhiza*	Growth	EC_{50}	III	1.1	Duester et al. (2011)
Plant/Algae	*Chlorella sp. CE-35*	Growth	EC_{50}	V	1.2	Rahman et al. (2014)
Invertebrate	*Daphnia magna*	Reproduction	IC_{10}	III	1.3	Tišler and Zagorc-Končan (2002)
Invertebrate	*Cyclops sps.* [4]	Growth	EC_{20}	V	1.4	Borgmann et al. (1980)
Plant/Algae	*Azolla caroliniana*	Growth	LOEC	V	1.5	Rofkar et al. (2014)
Plant/Algae	*Lemna minor*	Growth	NOEC	V	>1.5	Rofkar et al. (2014)
Plant/Algae	*Lemna minor*	Growth	EC_{50}	III	2.0	Duester et al. (2011)
Invertebrate	*Daphnia magna*	Reproduction	EC_{10}	V	2.2	Enserink et al. (1991)
Plant/Algae	*Lemna disperma*	Growth	EC_{50}	V	2.3	Rahman et al. (2014)
Fish (non-salmonid)	*Jordanella floridae*	Growth	MATC	III	2.9	Lima et al. (1984)
Plant/Algae	*Lemna minor*	Growth	EC_{10}	V	3.0	Naumann et al. (2007)
Fish (non-salmonid)	*Pimephales promelas*	Growth	MATC	III	3.0	Lima et al. (1984)
Invertebrate	*Hyalella azteca*	Growth	IC_{25}	V	3.9	Norwood et al. (2007)
Fish (salmonid)	*Oncorhynchus mykiss*	Growth	MATC	III	4.9	Rankin and Dixon (1994)
Fish (salmonid)	*Oncorhynchus mykiss*	Growth	EC_{20}	V	8.0	Erickson et al. (2011)
Plant/Algae	*Scenedesmus subspicatus*	Growth	EC_{10}	III	9.4	Tišler and Zagorc-Končan (2002)
Plant/Algae	*Wolffia arrhiza*	Growth	EC_{50}	V	17	Duester et al. (2011)
Plant/Algae	*Chlorella sp. CE-35*	Growth	EC_{50}	III	27	Rahman et al. (2014)
Plant/Algae	*Selenastrum capricornutum*	Biomass	EC_{50}	V	31	Vocke et al. (1980)
Plant/Algae	*Scenedesmus obliquus*	Growth	EC_{50}	V	65	Wang et al. (2013)
Plant/Algae	*Lemna minor*	Growth	EC_{50}	V	82	Duester et al. (2011)

[1] IC_{XX} and EC_{XX} refer to chronic inhibition and effect concentrations, respectively. The MATC (maximum acceptable toxicant concentration) is the geometric mean of the no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) derived using statistical hypothesis testing.

[2] UN indicates unknown oxidation state; data was not accessible.

[3] Lowest observed effect concentration was used in SSD model fits.

[4] Two species of copepods were included, *Cyclops vernails* and *C. bicuspidatus thomasi.*

Arsenic(V) – Data Availability and Quality Assessment

Arsenic(V) toxicity data were considered acceptable for the results of two fish, one amphibian, ten invertebrates, and 16 plants or algae (Table 3; Attachment Table B.2; a detailed assessment of data quality can be found in Attachment A). All acceptable data were considered secondary data since none included positive controls or an assessment of arsenic solubility (Table 1); however, these factors were not used to screen out secondary data (refer to section A1 in Attachment A). Most often, toxicity endpoint results were considered unacceptable due to poor replication (i.e., n=1 for each treatment), subchronic exposure periods (i.e., lethal endpoints reported for invertebrates exposed to arsenic for less than 21 days), insufficient methods description, or missing statistical analysis (Attachment A).

The lowest observed effect concentration (0.014 mg/L) was the EC_{50} reported for growth of the alga *Chlamydomonas reinhardti* (Table 3). The lowest effect concentrations were observed for plants and algae, and the lowest seven effect concentrations were 0.014 to 0.26 mg/L (Table 3). However, plants and algae were also the most variable, and had the four highest effect concentrations (17 to 82 mg/L) (Table 3). Invertebrates were moderately sensitive and as variable as algae, with effect concentrations varying between 0.32 mg/L and 3.9 mg/L (Table 3). Although acceptable data were only available for two vertebrate species, effect concentrations were generally higher than the most sensitive invertebrates and plants/algae (0.54 to 8 mg/L) (Table 3).

Arsenic(III) – Data Availability and Quality Assessment

Arsenic(III) toxicity data were considered acceptable for the results of four fish (two of which were salmonids), seven invertebrates, and eight plants or algae (Table 3; Attachment Table B.3; a detailed assessment of data quality can be found in Attachment A). As for the arsenic(V) data, all of the toxicity tests were considered secondary (refer to section A1 in Attachment A). Most often, toxicity endpoint results were considered unacceptable due to poor replication (i.e., n=1 for each treatment), insufficient methods description, or missing statistical analysis (Attachment A).

The lowest observed effect concentration (0.079 mg/L) was the EC_{50} reported for the alga *Scenedesmus obliquus* (Table 3). Plants and algae had the lowest effect concentrations, but they were also the most variable (0.079 to 27 mg/L). Invertebrates were moderately sensitive, with effect concentrations varying between 0.32 and 1.3 mg/L (Table 3). Fish were generally the least sensitive, with effect concentrations varying between >0.96 and 4.9 mg/L (Table 3). The unbounded NOEC of >0.96 mg/L for *O. mykiss* survival was substantially lower than the moderate effects endpoint for growth (MATC = 4.9 mg/L). Given that the latter is a preferred endpoint (Table 1), fish are likely less sensitive to arsenic(III) exposure than invertebrates, plants, or algae.

Type A Guideline Derivation

For arsenic(V), 24 species were available for deriving a Type A guideline (Table 3; Attachment Table B.2). The minimum data requirements for organisms represented in the guideline were met for invertebrates (minimum of three, one of which is a planktonic crustacean), plants/algae (minimum of three if the most sensitive species is a plant or algae), but not fish (minimum of three, of which one is a salmonid and one is a non-salmonid) (Table 3). Thus, a Type A guideline for arsenic(V) that satisfies all of the data requirements (Table 1) would not be possible without additional toxicity test results for at least two more fish species. Using the available data, preliminary HC_5 values were determined for a number of scenarios (refer to Attachment B for data treatment and statistical model fits), and the most conservative HC_5 was 0.042 (95% confidence interval: 0.026 to 0.067) mg/L (Attachment Table B.5). Although the input data do not strictly meet the minimum requirements of a CCME Type A guideline, it demonstrates that the current guideline (0.005 mg/L) is likely overly protective by at least 8-times.

For arsenic(III), 17 species were available for deriving a Type A guideline, and all met the minimum guideline requirements (Table 3; Attachment Table B.3). The HC_5 was determined as 0.21 (95% confidence interval: 0.12 to 0.36) mg/L (Attachment Table B.5; refer to Attachment B for data treatment and statistical model fits). As observed for arsenic(V), this demonstrates that the current guideline (0.005 mg/L) is likely overly protective by at least 10-times. In contrast to the above assessment of studies, in the toxicity of arsenic(V) and arsenic(III) were compared, the higher HC_5 for arsenic(III) than arsenic(V) would suggest that arsenic(III) is less toxic. However, this difference was likely due to the limited availability of data screened as acceptable for each oxidation state, and the statistical method for deriving the HC_5.

The current CCME guideline combines toxicity data for both arsenic(V) and arsenic(III). Thus, a similar approach was taken using acceptable data for both arsenic(V) and arsenic(III) to derive a HC_5 that combines the most conservative available endpoints for both forms of arsenic. A new dataset including only the most sensitive endpoints for either form of arsenic was created which met the minimum requirements for organisms represented by a Type A guideline (Attachment Table B.5), and included 30 species (Table 3; Attachment Table B.4). Given the available data, a HC_5 of 0.12 (95% confidence interval: 0.086 to 0.17) mg/L was derived (refer to Attachment B for data treatment and statistical model fits). This HC_5 is more conservative than that derived for arsenic(III) alone, but less conservative than the preliminary HC_5 derived for the arsenic(V) dataset.

Potential Exposure and Toxicity Modifying Factors

Phosphorus as phosphate can modify the toxicity of arsenic to algae due to the chemical similarity of the dominant forms of each element in water (i.e., both are present as oxyanions). Algae grown in low phosphate concentrations are significantly more susceptible to chronic arsenic(V) and arsenic(III) toxicity than algae grown in high phosphate concentrations (Wang et al. 2013; 2014). Phosphate can also influence arsenic uptake by zebra fish embryos (Beene et al. 2011), but its effect on traditional toxicity endpoints (e.g., growth, reproduction, mortality, etc.) has not been established. In contrast, phosphate had no ameliorating effect on arsenic(V) toxicity in the invertebrate *Chironomus riparius* (Mogren et al. 2012), indicating that phosphate may not ameliorate arsenic toxicity in all aquatic life.

Rainbow trout are more susceptible to acute arsenic(V) – but not arsenic(III) – toxicity at higher temperatures (McGeachy and Dixon 1989). In contrast, rainbow trout appear to be more susceptible to chronic arsenic(V) toxicity at lower temperatures (McGeachy and Dixon 1990).

Although phosphate and temperature appear to mediate arsenic toxicity in some aquatic organisms, no quantitative relationships exist to justify the application of an ETMF to all toxicity data.

Recommendations and Conclusion

The current CCME guideline for arsenic has not been updated using more recent toxicological data, utilized older guideline derivation protocols, and is likely overly protective (CCME 2001). After carefully assessing available arsenic toxicity data, the most recent CCME guidance for developing chronic guidelines was followed to derive a SSD-based SSWQO for arsenic(V), arsenic(III), and combined arsenic(V) and arsenic(III) datasets. The resulting HC_5 values were at least eight times higher than the current CCME interim arsenic guideline of 0.005 mg/L, and thus suggest that the CCME guideline is overly protective. Although the HC_5 derived for arsenic(V) (0.042 mg/L) does not satisfy all requirements for a Type A guideline (i.e., it is missing toxicity test results for two fish species), it was more conservative than the HC_5 derived using only arsenic(III) (0.21 mg/L), or a combination of arsenic(III) and arsenic(V) data (0.12 mg/L). Arsenic(V) is also likely the dominant form in receiving waters based on baseline speciation data, and fish appear to be less sensitive to arsenic toxicity then either invertebrates or plants and algae. Thus, the HC_5 for arsenic(V) of 0.042 mg/L is recommended as an interim SSWQO (Figure 1). This SSWQO does not include potential ETMFs for arsenic toxicity as no clear quantitative relationships have been developed for most aquatic life.

In the fall of 2018, additional low-level effects arsenic(V) chronic toxicity testing of two fish will be undertaken at the request of BMC in order to meet all organismal requirements of a Type A

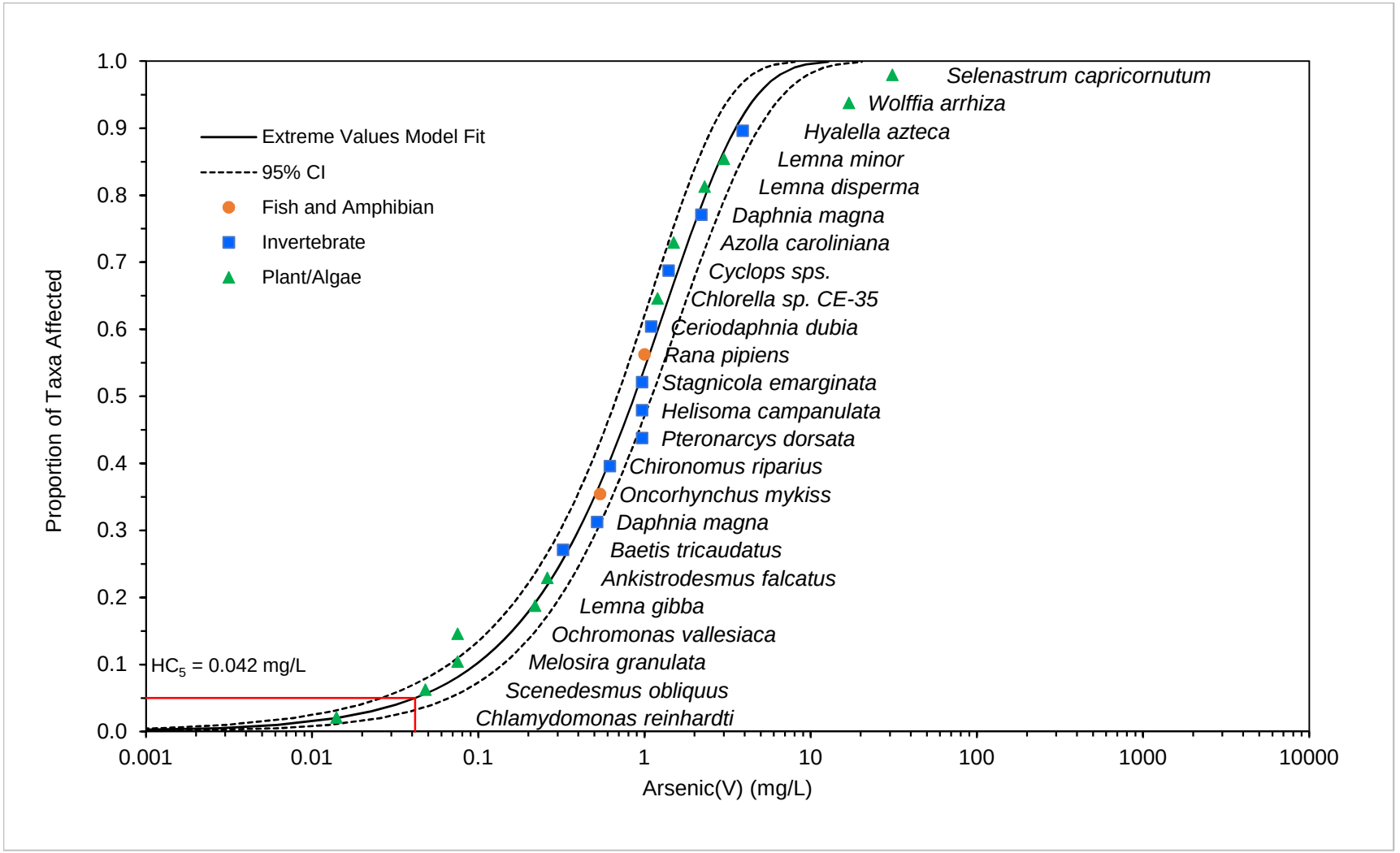

Figure 1: Extreme Values Model Species Sensitivity Distribution Fits for Selected Chronic Arsenic(V) Endpoints

guideline. Subsequently, a revised HC_5 for arsenic(V) will be derived, and a final recommendation for the SSWQO will be provided in a final letter report that will satisfy the second component of Stage 2a (i.e., SSWQO implementation) of the proposed SSWQO development at Kudz Ze Kayah. We trust that this brief letter report meets your requirements and expectations. If you have any questions or would like to discuss any aspect of this report, please do not hesitate to let us know.

Sincerely,

Minnow Environmental Inc.

[Signature Redacted]

[Signature Redacted]

[Name Redacted]

Aquatic Scientist/Project Manager

[Name Redacted]

Senior Aquatic Scientist/Project Advisor

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ATTACHMENT A
ARSENIC GUIDELINE TOXICITY TEST DATA QUALITY ASSESSMENT

ATTACHMENT A ARSENIC GUIDELINE TOXICITY TEST DATA QUALITY ASSESSMENT

A1 TYPE A GUIDELINE REQUIREMENTS

A1.1 Minimum Guideline Requirements

Two minimum requirements must be met for the development of a Type A guideline, and can be separated into data and statistical requirements:

1. Data requirements: a minimum toxicological data set must be available, including three fish species (at least one salmonid and one non-salmonid), three aquatic or semi-aquatic invertebrates (at least one planktonic crustacean), and at least one aquatic plant or algae species (if a plant or algae is the most sensitive species, then three studies on plants/algae are required) (Attachment Table A.1); and
2. Statistical requirements: the non-linear curve fitting of the SSD approach sufficiently and adequately describes the relationship between analyte concentration and the cumulative number of species, including the appropriate statistical goodness-of-fit tests and rationale for the chosen model fit (CCME 2007).

Resident species in Canada are preferred when developing guidelines, but non-resident species can be used if they can be considered acceptable surrogate species for Canadian residents (e.g., from the same taxonomic group), and the studies were performed under conditions representative of Canadian aquatic ecosystems (CCME 2007). No guidance is provided as to which taxonomic level should be considered when evaluating whether a species is an acceptable surrogate (e.g., sharing an order, family, or genus). The compiled toxicological data set must include studies with an appropriate exposure period for a given test organism (refer to Attachment Table A.1). Although there is no minimum number of observations required for a Type A guideline once the minimum data set is fulfilled, CCME (2007) advises that at least 10 to 15 observations are included in the SSD in order to increase statistical power and satisfy the requirements for a statistically significant non-linear regression model fit.

A1.2 Acceptable Data Types

Toxicity data can be separated into three types: primary, secondary, and unacceptable. When available, the toxicological data set should be comprised of primary data (preferred), while secondary data can be included if the minimum data requirements cannot be met with primary data. Primary data sources must meet a number of requirements, including those concerning test conditions (e.g., substance of interest is below the water solubility limit; key water quality data are reported), test design (e.g., positive and negative controls are present; appropriate replication was performed), and test execution (e.g., substance of interest was measured at

the beginning and end of the exposure; non-static, regular renewal of test water) (Attachment Table A.1). Secondary data must meet most of the requirements of primary data, but can accommodate a few exceptions, such as the inclusion of static tests (but test concentrations must be below the water solubility of the analyte), pseudo-replication, multiple test stresses, and alternative toxicity endpoints (Attachment Table A.1). Toxicological data not meeting either primary or secondary requirements are considered unacceptable, and should not be used in the development of either Type A or B guidelines. However, if additional information can be obtained from the study authors, unacceptable data can upgraded to primary or secondary (CCME 2007).

During the literature review, a few of exceptions to CCME data requirements were made while screening data. This was done to both increase the number of potential species included in a SSD-based SSWQO, and thus increase its applicability to a broader array of aquatic organisms, and to increase the sample size for fitting the statistical models.

Both arsenic(V) and arsenic(III) are present in oxygenated water at circumneutral pH as highly soluble oxyanions (Smedley and Kinniburgh 2001). The solubility of arsenic is difficult to predict due to a complex array of precipitation, co-precipitation, and adsorption reactions. Thus, a complex thermodynamic assessment of the solubility of arsenic was not performed for the toxicity studies screened herein, and arsenic was assumed to be soluble.

In peer-reviewed published manuscripts, it if often the case that supporting water quality data (e.g., dissolved oxygen, pH, temperature, hardness, etc.) are not reported in the published paper. However, the authors may indicate that steps were taken to maintain constant parameters (e.g., using temperature controlled incubators; using constant aeration). Furthermore, if tests were of short enough duration, or underwent regular renewal, the initial water quality conditions for parameters such as hardness or pH would likely remain relatively unchanged. In order to increase the sample size of test results available for developing a Type A guideline while minimizing potential impacts to data quality underlying the guideline, professional best judgement was used assess such test results on a case-by-case basis.

It should be noted that the inclusion of a positive control (i.e., test results using a reference toxicant) is often not done for most peer-reviewed toxicity tests conducted outside commercial laboratories. The purpose of including a positive control in a toxicity test is to assess whether the tested organism responds to a standard toxicant as would be expected based on a number of previous assessments. Often, commercial laboratories conduct positive control toxicity tests as part of their routine operation, and not as part of any given toxicity test. Thus, while CCME guidance documentation states that controls are required for both primary and secondary data types, only negative controls were included in the assessment of secondary data.

A1.3 Accepted Effects and Preferred Toxicity Endpoints

For Type A guidelines, accepted chronic effects include traditional effects, such as embryonic development, hatching, germination, survival, growth, and reproduction (Attachment Table A.1). Non-traditional effects (e.g., behavioral and physiological) can be used only if their ecological relevance can be clearly demonstrated. If more than one record exists for a given species endpoint, then the geometric mean of the results is calculated and used in the SSD model fit. Non-lethal no effect endpoints (e.g., effect/inhibition concentrations resulting in a 10% observed effect; EC_{10}/IC_{10}) determined using regression models are preferred. If the minimum data requirements cannot be met using non-lethal no effect endpoints, then non-lethal and lethal low-effect endpoints (EC_{11-25}/IC_{11-25} and LC_{11-25}, respectively) can be used. If these are not available for a given species, then the maximum acceptable toxicant concentration (MATC), no observed effect concentration (NOEC), and lowest observed effect concentration (LOEC) can be used in descending preference[1]. Lastly, if the latter endpoints are not available, then non-lethal EC_{26-49}/IC_{26-49} can be used, followed by nonlethal EC_{50}/IC_{50}. For Type B guidelines, lethal LC_{50} values can also be used as the least preferred endpoint.

[1] The NOEC is the highest concentration tested for which no effect was observed, while the LOEC is the lowest concentration tested for which an effect was observed using hypothesis based statistical testing. The MATC is the geometric mean of the NOEC and LOEC reported within the same study.

A2 DATA ACQUISITION

A quick database query for toxicity data was performed in April, 2018 for both plants and animals using the US EPA ECOTOX database. Arsenic was entered as the chemical entry, and all database entries reported for accepted endpoints (i.e., Attachment Table A.1), traditional effects (i.e., growth, mortality, and reproduction), and laboratory test conditions (static, static-renewal, flow-through) performed in freshwater for waterborne exposure were assessed. This resulted in 199 entries for all forms of arsenic. In order to screen out most acute toxicity tests, the resulting list was further screened for the minimum test durations accepted for Type A guideline derivation for each organism type (i.e., 24 h for algae; 96 h for short-lived invertebrates, and 7 days for long-lived invertebrates and fish) (Attachment Table A.1). These entries were further screened to exclude species that are not found in Canada, or do not likely have a surrogate resident species; fungi and cyanobacteria were also screened out, as they are not currently listed as organisms which can be included in Type A guideline development. A number of entries in the ECOTOX database were from an older EPA database of toxicity data (US EPA Pesticide Ecotoxicity Database) or were published in archived EPA literature. Details of these studies undertaken could not be acquired, and so the quality of these data could not be assessed. These data included rather low values for a NOEC (0.005 mg/L) and EC50 (0.0038 mg/L) for the alga *Pseudokirchneriella subcapitata* cell abundance after exposure to arsenic(V). However, other EC_{50} values for this species for growth rates were much higher (0.69 to 31 mg/L), suggesting the low values were anomalous. Given that the inaccessible data were not used in the development of the current CCME arsenic guideline (CCME 2001), they were also not considered in the assessment herein. In addition, the entries for a master thesis reported unbounded NOEC values for *Scenedesmus acutus* because the study used a single arsenic concentration (1.56 mg/L), and so the data were not further assessed. A total of 69 US EPA database entries were then assessed, including no entries for fish, 26 entries for invertebrates, and 43 entries for plants and algae. Additional toxicity results were also included from a review of published scientific literature. Acceptable data were summarized in Tables A.2 and A.3 for arsenic(V) and arsenic(III), respectively.

A3 CCME Arsenic Guideline Data

The current CCME arsenic guideline identified chronic studies for three fish, four invertebrates, and four plant species for arsenic (Attachment Table A.4) (CCME 2001). Given the incorporation of these data in the current guideline, screening and data evaluation of these toxicity studies were assumed to be sufficient, and the data were used in the further refinement of a SSD-based SSWQO herein. However, there are a number of differences between the data evaluation outlined in the most recent guideline documentation (CCME 2007) and the data used to develop the current arsenic guideline that are worth noting. First, endpoints not considered as chronic endpoints were included in the CCME arsenic guideline (e.g., LC_{50} and LC_{80}; Attachment Table A.4). It should be noted, however, that the LC_{80} endpoint was actually a LOEC (for other errors, please refer to footnotes of Attachment Table A.4). Second, studies which did not include sufficient replication were also included in the guideline. For example, Birge et al. (1978) (incorrectly referred to as Birge et al. [1979] in the CCME guideline document), Borgmann et al. (1980), and Planas and Healey (1978) monitored effects in fish, copepods, and algae, respectively, in single replicates per exposure treatment. This fails to meet either the needs of either primary or secondary data requirements for appropriate replication or pseudo-replication, respectively (Attachment Table A.1). EC_{50} values were also reported for two algal species (*Melosira granulate* and *Ochromonas vallesiaca*), however EC_{50} values were not reported in the source publication (Planas and Healey 1978), and so the statistical evaluation of these median effect concentrations could not be evaluated. Instead, the CCME guideline likely refers to the lowest concentration where a non-statistically decrease in growth was observed compared to the control (due to single replicates, a statistical difference could not be evaluated). Lastly, the minimum exposure time for survival endpoints in long-lived invertebrates (>21 days) was not met for *Gammarus pseudolimnaeus* (14 day exposure). Although not a data evaluation requirement, the CCME guideline did not distinguish between studies evaluating arsenic(V) and arsenic(III) toxicity, and incorporated results for both in the derivation of the guideline. Lastly, two studies (Jana and Sahan 1989; Fargasova 1993) could not be accessed, and so the oxidation state of arsenic used could not be determined.

A4 ARSENIC(V) TOXICITY TESTS

A4.1 Fish and Amphibians

A4.1.1 Acceptable Data

Spehar et al. (1980) observed the impact of arsenic(V) on long-term juvenile rainbow trout (*Oncorhynchus mykiss*) survival. Ten fish were added to duplicate flow-through test vessels and incubated for 28 days at two arsenic concentrations and in a negative control. Hardness, alkalinity, pH, temperature, and dissolved oxygen were monitored in test renewal water. Little variability was observed in arsenic concentrations measured at the beginning and end of the tests. An unbounded NOEC of >0.97 mg/L was observed, and this was considered secondary data.

Chen et al. (2009) observed sublethal effects of arsenic(V) on northern leopard frog (*Rana pipiens*). Eggs were exposed to multiple arsenic treatments and a negative control under static-renewal in numerous replicates, and allowed to develop through metamorphosis. Survival, development, and growth from post-hatch through metamorphosis were monitored for 113 days. Test water hardness and pH were reported, and tests were performed under constant aeration and temperature. Arsenic concentrations were measured after 48 hours, and were similar to the nominal concentrations. An unbounded NOEC of >1 mg/L was observed for all endpoints, including embryo survival, growth, and metamorphosis, and the NOEC was considered secondary data.

Erickson et al. (2011) reported sublethal effects of arsenic(V) on growth of juvenile *O. mykiss*. Two replicates of eight juveniles were exposed for 28 days to multiple arsenic concentrations and a negative control in a flow-through test. Hardness, alkalinity, pH, conductivity, temperature, dissolved oxygen, and total arsenic concentrations of the test water were monitored during exposure. Non-linear regression was used to assess the relationship between growth and arsenic concentration, and the resulting EC_{20} of 8 mg/L was considered secondary data.

A4.1.2 Unacceptable Data

Birge et al. (1978) reported lethal LC_{50} concentrations of arsenic(V) for rainbow trout (*Oncorhynchus mykiss*), largemouth bass (*Micropterus salmides*), and marbled salamander (*Ambystoma opacum*) embryo development. For fish, 100 larvae in single 500 mL exposure vessels were exposed to arsenic in static renewal tests at multiple concentrations for either 28 days (rainbow trout) or 8 days (largemouth bass). For salamanders, 35 larvae in single 500 mL exposure vessels were exposed in static renewal tests for 8 days. Hardness, alkalinity,

pH, and dissolved oxygen of the test water were reported. Arsenic concentrations in the exposed treatments were calculated, but not measured. Although the result for O. mykiss was included in the SSD-based guideline development due to its acceptable by the current CCME arsenic guideline (CCME 2001), the widemouth bass and salamander median effect concentrations (4.5 and 42 mg/L, respectively) were considered unacceptable due to insufficient replication of test treatments (n=1).

A4.2 Aquatic and Semi-Aquatic Invertebrates

A4.2.1 Acceptable Data

Biesinger and Christensen (1972) reported sublethal effects of arsenic(V) resulting in a 16% decrease in reproduction (EC_{16} = 0.52 mg/L) for adults of the planktonic crustacean *Daphnia magna*. Five daphnids were placed in four replicate 200 mL test solutions at multiple concentrations and a negative control for 21 days with weekly test water renewal. Hardness, alkalinity, pH, and a number of other water chemistry parameters were reported for the test water, and dissolved oxygen and pH were monitored during the tests. Arsenic concentrations in the exposed treatments were calculated, but not measured. The EC_{16} of 0.52 mg/L was considered secondary data.

Spehar et al. (1980) observed the impact of arsenic(V) on the survival of stoneflies (*Pteronarcys dorsata*), two snails (*Helisoma campanulata* and *Stagnicola emarginata*), and an amphipod (*Gammarus pseudolimnaeus*). Ten organisms were added to two replicate flow-through test vessels and incubated in two arsenic concentrations and in a negative control. Exposure occurred for 28 days for all organisms except *G. pseudolimnaeus*, which underwent a 14 day exposure. Hardness, alkalinity, pH, temperature, and dissolved oxygen were monitored in test renewal water. Arsenic concentrations were measured at the beginning and end of the tests and did not change. The unbounded NOECs for all organisms except *G. pseudolimnaeus* were >0.97 mg/L, and these were considered secondary data. Although the survival test duration (14 days) was below the minimum duration for long-lived invertebrates (Attachment Table A.1) for *G. pseudolimnaeus*, and the NOEC of >0.97 mg/L was considered acceptable due to the inclusion of its arsenic(III) LOEC in the current CCME guideline (CCME 2001).

Borgmann et al. (1980) reported sublethal effects of arsenic(V) resulting in 20% decrease in growth over 14 day exposure (EC_{20}) for a natural population of copepods (primarily made up of *Cyclops vernalis* and *C. bicuspidatus thomasi*) sampled on a number of dates throughout 1977 and 1978. Approximately 100 to 150 larva were incubated in single 2 L jars at multiple arsenic concentrations and a negative control without test water renewal. Hardness, alkalinity,

and pH of the test water were reported. Arsenic was measured at the beginning and end of the test, and shown to not change substantially. The minimum EC_{20} reported for arsenic(V) was 1.4 mg/L. Although insufficient replication of test treatments (n=1) was performed, this result was considered acceptable due to the inclusion of the minimum arsenic(III) effect concentration in the current CCME guideline (CCME 2001).

Enserink et al. (1991) reported sublethal effects of arsenic(V) resulting in a 50% and 10% decrease in the carrying capacity of a *Daphnia magna* population as 3.2 and 2.2 mg/L, respectively. Twenty daphnids (of various age cohorts) in four replicate test vessels per treatment were incubated in an aerated flow-through system under multiple arsenic concentrations and a negative control for 21 days. Hardness and pH of the test water were reported, and mean arsenic concentrations were reported during renewals. The EC_{10} of 2.2 mg/L was considered secondary data, and was the preferred endpoint for guideline derivation.

Norwood et al. (2007) reported sublethal growth effects (IC_{25}) and lethal effects (LC_{25}) of arsenic(V) exposure to *Hyalella azteca*. Test methods were provided in Norwood et al. (2006). Twenty individual organisms were added to test solutions at multiple arsenic treatments and a negative control, and each treatment was replicated twice; in addition, each experiment was replicated twice. Organisms were incubated for 28 days under static renewal. Ammonia, pH, conductivity, dissolved oxygen, and arsenic concentrations were monitored during test renewal. During the chronic growth experiment, a biphasic response was observed, whereby growth was stimulated at low arsenic additions. However, the response data were fit with an allometric growth model, and an IC_{25} of 3.9 mg/L was derived. This chronic effect concentration was preferred over the LC_{25} of 4.3 mg/L (Table 1), and was considered secondary data.

Irving et al. (2008) observed sublethal effects of arsenic(V) on growth of *Baetis tricaudatus* nymphs. Eight nymphs per replicate test vessel were exposed to multiple arsenic concentrations and a negative control for 12 days, and test water was renewed every 2 days. The number or replicates per treatment was not reported. Hardness and pH of the test water were reported, and dissolved oxygen, temperature, and arsenic concentrations were monitored regularly during exposure. A NOEC and LOEC of 0.1 and 1 mg/L, respectively, were observed for both changes in body mass and thorax length. The resulting MATC of 0.32 mg/L was considered secondary data.

Mogren et al. (2012) observed sublethal effects of arsenic(V) on reproductive potential in *Chironomus riparius*. First instar larvae were incubated until they hatched into adults (over approximately 14 days) in multiple arsenic concentrations and a negative control using static renewal. The major ions in the test water were reported, test waters were bubbled continuously

with air, and temperature and pH were monitored during exposure. Arsenic concentrations in the exposed treatments were measured during test initiation and renewal. The NOEC and LOEC for egg production were 0.40 and 0.97 mg/L, respectively, and the resulting in a MATC of 0.62 mg/L was considered secondary data.

A4.2.2 Unacceptable Data

Spehar et al. (1980) observed the impact of arsenic(V) on *Daphnia magna* survival. Ten organisms were incubated in four replicate test vessels at two concentrations and a negative control with weekly renewal of test water, and survival was assessed after 14 days. Hardness, alkalinity, pH, temperature, and dissolved oxygen were monitored in test renewal water. Little variability was observed in arsenic concentrations measured at the beginning and end of the tests. Due to the short duration of the test compared to the minimum exposure period for lethal endpoints (i.e., >21 days), the unbounded NOEC of >0.93 mg/L was considered unacceptable.

Vellinger et al. (2012) observed effects of arsenic(V) on the survival of the amphipod *Gammarus pulex*. Ten adult males were exposed for 10 days to multiple arsenic concentrations plus a negative control in five replicates per treatment under static-renewal. The test solutions consisted of commercial mineral water, but its composition was not reported. Incubation temperature was maintained constant, and pH was monitored daily. Arsenic concentrations were measured at multiple points during exposure and were reported. The LC_{10} for survival after 10 days was 0.38 mg/L. Due to the short duration of the test compared to the minimum exposure period for lethal endpoints (i.e., >21 days), this data was considered unacceptable.

A4.3 Plants and Algae

A4.3.1 Acceptable Data

Vocke et al. (1980) determined sublethal median effective concentrations (EC_{50}) of arsenic(V) on the final biomass of *Scenedesmus obliquus*, as well as *Ankistrodesmus falcatus* and *Selenastrum capricornutum* observed after 14 days exposure without test renewal. 10 to 14 day old cultures were inoculated into multiple replicates of numerous arsenic concentrations, and biomass (as chlorophyll a) was measured 14 days later. The major ions in the experimental media were reported, while temperature and pH were controlled. Arsenic concentrations in the exposed treatments were calculated, but not measured. The EC_{50} values of these three algae (0.048, 0.26, and 31 mg/L, respectively) were considered secondary data.

Planas and Healey (1978) reported the impact of arsenic(V) on the growth of *Melosira granulate* and *Ochromonas vallesiaca*. as 0.075 mg/L. Although single replicates were

performed at each arsenic treatment, and these results were considered acceptable due to their inclusion in the current CCME arsenic guideline (CCME 2001).

Fuhua et al. (1994) observed sublethal effects of arsenic(V) on *S. obliquus* growth rates. Cells in log-growth phase were incubated in duplicate test vessels in multiple arsenic treatments plus a negative control for 96 hours exposure with test renewal. The major ions in the experimental media were reported, and temperature and pH were controlled. Arsenic concentrations in the exposed treatments were calculated, but not measured. The EC_{50} value for growth rate was 0.16 mg/L, and it was considered secondary data.

Mkandawire et al. (2006) observed sublethal effects of arsenic(V) on *Lemna gibba* frond specific growth rates. The NOEC and LOEC were 0.1 and 0.5 mg/L, respectively, resulting in a MATC of 0.22 mg/L. Fronds were incubated in four replicate test vessels with multiple arsenic concentrations and a negative control for 21 days without test renewal. Arsenic concentrations in the exposed treatments were calculated, but not measured. The major ions in the experimental media were reported, while temperature and pH were controlled. The MATC of 0.22 mg/L was considered secondary data.

Naumann et al. (2007) observed sublethal effects of arsenic(V) on *Lemna minor* growth rates measured using a number of plant parameters, including frond number, frond weight, dry weight, and pigment content. Plants (ten fronds) were incubated in four arsenic concentrations and a negative control for 7 days exposure without test renewal. Treatments were applied in duplicate. The major ions in the experimental media were reported, and temperature was controlled. Arsenic concentrations in the exposed treatments were calculated, but not measured. The EC_{10} values ranged between 3.0 and 12 mg/L, depending on which plant parameter was used to calculate growth rates. The minimum EC_{10} of 3.0 mg/L was considered secondary data.

Duester et al. (2011) observed sublethal effects of arsenic(V) on *Wolffia arrhiza* and *L. minor* growth. Plants were incubated in three replicates of a series of arsenic concentrations and a negative control for 4 to 7 days exposure without test renewal. The major ions in the experimental media were reported, temperature was controlled, and arsenic was measured at test initiation and termination. The minimum EC_{50} values reported were 17 and 82 mg/L for *W. arrhizal* and *L. minor*, respectively, and was considered secondary data. However, since the EC_{10} reported by Naumann et al. (2007) for *L. minor* (3.0 mg/L) is a more preferred endpoint (CCME 2007), the EC_{50} would not be included in a guideline derivation.

Wang et al. (2013) observed sublethal effects (EC_{50}) of arsenic(V) on *S. obliquus* and *Chlamydomonas reinhardti* growth rates. Cells in mid-exponential growth phase were

incubated in duplicate test vessels in multiple arsenic treatments and a negative control for 48 hours exposure without test renewal. Both phosphorus-replete and limited cells were used in the toxicity tests. The major ions in the experimental media were reported, temperature and pH were controlled, and dissolved arsenic was measured at test initiation and termination. The EC_{50} values were lower for phosphorus-limited cells (65 and 0.014 mg/L for *S. obliquus* and *C. reinhardti*, respectively) compared to phosphorus-replete cells (>500 and 34 mg/L for *S. obliquus* and *C. reinhardti*). The EC_{50} values for phosphorus-limited cells were the lowest effects concentrations and were considered secondary data (i.e., multiple stresses are permitted).

Rahman et al. (2014) observed sublethal effects of arsenic(V) on *L. disperma* and *Chlorella sp*. CE-35 growth. For *L. disperma*, a single healthy colony was incubated in four replicate test vessels in a series of arsenic concentrations and a negative control, and growth (as healthy frond surface area) under static conditions. For *Chlorella sp*. CE-35, cells in exponential growth phase were incubated in replicate test vessels in multiple arsenic concentrations plus a negative control, and growth as monitored for 72 hours under static conditions. The major ions in the experimental media were reported, while temperature and pH were controlled. Arsenic concentrations in the exposed treatments were calculated, but not measured. The EC_{50} values reported for *L. disperma* and *Chlorella sp.* of 2.3 and 1.2 mg/L, respectively, were considered secondary data.

Rofkar et al. (2014) observed sublethal effects of arsenic(V) on *Azolla caroliniana* and *L. minor* growth rates. A LOEC of 1.5 mg/L and an unbounded NOEC of >1.5 mg/L were reported as for *A. caroliniana* and *L. minor*, respectively. Plants were incubated in triplicate test vessels and a negative control treatment, and growth was monitored after 14 days exposure under static-renewal. In addition, 0.13 mg/L copper was added to both treatments (i.e., multiple stresses are allowed). The major ions in the experimental media were reported, while temperature and pH were controlled. Arsenic concentrations in the exposed treatments were calculated, but not measured. The endpoint results for these two species were considered secondary data. However, since the EC_{10} reported by Naumann et al. (2007) for *L. minor* (3.0 mg/L) is a more preferred endpoint (CCME 2007), the EC_{50} would not be included in a guideline derivation.

A4.3.2 Unacceptable Data

Den Dooren de Jong (1965) reported a sublethal lowest inhibitory concentration of arsenic(V) on growth of *Chlorella vulgaris* as 0.06 mg/L. Cells were incubated in various arsenic concentrations and a negative control for 3 to 4 months without test renewal. Arsenic concentrations in the exposed treatments were calculated, but not measured. Inadequate

replication was reported, supporting data were not reported (e.g., pH may have varied significantly), and no statistical methods were reported for deriving the lowest inhibitory concentration. Thus, the data were considered unsatisfactory.

Jenner and Jansse-Mommen (1993) observed sublethal effects of arsenic(V) on *L. minor* leaf area, and reported an EC_{50} and NOEC of 22.2 and <4 mg/L, respectively. However, the test exposure concentrations were not provided, and the statistical analysis was not described, and so the results were considered unacceptable.

Fargašová (1994) observed sublethal effects of arsenic(V) on *Scenedesmus quadracada* growth. Cells were incubated control under static conditions in duplicate test solutions at multiple arsenic concentrations, and each experiment was carried out three times. However, it was not made clear whether a negative control was included in the study design, and so the results were considered unacceptable.

Pawlik-Skowronska et al. (2004) reported sublethal effects of arsenic(V) on growth of *Stichococcus bacillaris* under various pHs. A LOEC of 7.5 mg/L was observed for biomass accumulated after 96 hours at pH 6.8. However, the replication of test conditions and the statistical analysis used were not described, and so the data are considered unacceptable.

A5 ARSENIC(III) TOXICITY TESTS

A5.1 Fish

A5.1.1 Acceptable Data

Spehar et al. (1980) observed the impact of arsenic(III) on long-term *O. mykiss* survival. Ten fish were added to duplicate flow-through test vessels and incubated for 28 days at two arsenic concentrations and in a negative control. Test conditions were evaluated (see Section A4.1.1), and the unbounded NOEC of >0.96 mg/L was considered secondary data.

Lima et al. (1984) observed sublethal effects of arsenic(III) on the growth of fathead minnows (*Pimephales promelas*) and flagfish (*Jordanella floridae*). Fifty fish embryos (<24 h) were incubated in duplicate incubation cups within a flow-through test vessel, and duplicate test vessels were used for multiple arsenic concentrations and a negative control treatment. Growth of fry that hatched from the embryos were assessed after approximately 30 days. Hardness, alkalinity, dissolved oxygen, and pH were monitored regularly during exposure, and a constant temperature was maintained. Mean arsenic concentrations in the tanks during exposure were reported. For fathead minnow, a NOEC and LOEC of 2.1 and 4.3 mg/L were observed, resulting in a MATC of 3.0 mg/L. For flagfish, a NOEC and LOEC of 2.1 and 4.1 mg/L were observed, resulting in a MATC of 2.9 mg/L. Both MATCs were considered secondary data.

Rankin and Dixon (1994) observed sublethal effects of arsenic(III) to juvenile *O. mykiss* growth. Sixty fish were incubated in triplicate for two arsenic treatments and a negative control for 121 days in flow-through test vessels. Hardness, alkalinity, dissolved oxygen, temperature, pH, and total arsenic concentrations were monitored every 3 days. A NOEC and LOEC of 2.48 and 9.64 mg/L, respectively, were observed for wet weight at test termination, and so the resulting MATC of 4.9 mg/L was considered secondary data.

A5.2 Aquatic and Semi-Aquatic Invertebrates

A5.2.1 Acceptable Data

Spehar et al. (1980) observed the impact of arsenic(III) on stoneflies (*P. dorsata*), two snails (*H. campanulata* and *S. emarginata*), and an amphipod (*G. pseudolimnaeus*). Test conditions were evaluated (see Section A4.2.1), and the unbounded NOECs for all organisms except *G. pseudolimnaeus* was >0.96 mg/L, and were considered secondary data. For *G. pseudolimnaeus*, the NOEC and LOEC of 0.088 and 0.96 mg/L, respectively, were considered unacceptable.

Borgmann et al. (1980) reported sublethal effects of arsenic(III) resulting in 20% decrease in growth over 14 day exposure (EC_{20}) for a natural population of copepods (primarily made up of *Cyclops vernalis* and *C. bicuspidatus thomasi*) sampled on a number of dates throughout 1977 and 1978. Test conditions were evaluated (see Section A4.2.1), and the minimum EC_{20} for arsenic(III) was 0.32 mg/L. Although insufficient replication of test treatments (n=1) was performed, this result was considered acceptable due to the inclusion of the minimum arsenic(III) effect concentration in the current CCME guideline (CCME 2001).

Tišler and Zagorc-Končan (2002) observed sublethal effects of arsenic(III) to *Daphnia magna* reproduction. Ten replicates of individual daphnids were exposed to multiple arsenic concentrations plus a negative control in duplicate flasks for 21 days under static-renewal conditions, and each toxicity test was undertaken at least twice. The reference for the major ion composition of the test water was reported. During test renewal, pH, temperature, and dissolved oxygen were measured. Total arsenic was monitored and shown not to decrease below 90% of the nominal concentration. The reported IC_{10} of 1.3 mg/L was considered secondary data.

Irving et al. (2008) observed sublethal effects of arsenic(III) on growth of *B. tricaudatus* nymphs. Test conditions were evaluated (see Section A4.2.1), and the NOEC (0.1 mg/L), LOEC (1 mg/L), and resulting MATC (0.32 mg/L) were considered secondary data.

A5.2.2 Unacceptable Data

Spehar et al. (1980) observed the impact of arsenic(III) on *D. magna* survival under static conditions. Test conditions were evaluated (see Section A4.2.2), and the unbounded NOEC of >0.96 mg/L was considered unacceptable.

Factor and de Chavez (2012) observed sublethal effects of arsenic(III) to embryos of the aquatic snail *Radix quadrasi*. Although the testing was performed with organisms isolated in the Philippines, it was included in the assessment herein as a representative of the Lymnaeidae family of air-breathing aquatic snails. Embryos were exposed for 14 days to multiple concentrations of arsenic and a negative control under static-renewal (five replicates), and the percent of embryos with stunted growth were observed. Initial water quality was measured, but not on subsequent renewals. The range of exposure concentrations was small (0.0147 to 0.0167 mg/L), and was likely why no dose-dependent response was observed. The LC_{50} determined during acute toxicity tests (1.0 mg/L) had a large 95% confidence interval (0.12 to 12 mg/L), suggesting a great deal of variability was observed. Given the absent dose-dependent response in the chronic test, the high variability in the acute test, and missing water quality data, the LOEC of 0.0147 mg/L was considered unacceptable.

A5.3 Plants and Algae

A5.3.1 Acceptable Data

Fuhua et al. (1994) observed sublethal effects of arsenic(III) on *S. obliquus* growth rates. Test conditions were evaluated (see Section A4.3.1), and the EC_{50} value for growth rate of 0.079 mg/L was considered secondary data.

Tišler and Zagorc-Končan (2002) observed sublethal effects of arsenic(III) to *Scenedesmus subspicatus* growth. Algae were exposed to multiple arsenic concentrations plus a negative control in duplicate flasks for 72 hours under static conditions, and each toxicity test was undertaken at least twice. The reference for the major ion composition of the test water was reported, and temperate and light were maintained. Total arsenic was monitored and shown not to decrease below 90% of the nominal concentration. The reported EC_{10} of 9.4 mg/L was considered secondary data.

Naumann et al. (2007) observed sublethal effects of arsenic(III) on *L. minor* growth rates. Test conditions were evaluated (see Section A4.3.1), and the minimum observed EC_{10} of 0.63 mg/L was considered secondary data.

Duester et al (2011) observed sublethal effects of arsenic(III) on *W. arrhiza* and *L. minor*. Test conditions were evaluated (see Section A4.3.1), and the minimum observed EC_{50} values for *W. arrhiza* and *L. minor* of 1.1 and 2.0 mg/L, respectively, were considered secondary data.

Rahman et al. (2014) observed sublethal effects of arsenic(III) on *L. disperma* and *Chlorella sp*. CE-35 growth. Test conditions were evaluated (see Section A4.3.1), and the EC_{50} values for *L. disperma* and *Chlorella sp.* of 0.57 and 27 mg/L, respectively, were considered secondary data.

Wang et al. (2014) observed sublethal effects (EC_{50}) of arsenic(III) on *C. reinhardti* growth rates. Cells were incubated in duplicate test vessels in multiple arsenic treatments plus a negative control for 48 hours exposure without test renewal. Cells used in the toxicity tests were acclimated to either a control treatment, nitrogen limitation, or phosphorus limitation. The major ions in the experimental media were reported, temperature and pH were controlled, and dissolved arsenic was measured at test initiation and termination. The EC_{50} value was lowest for phosphorus-limited cells (0.98 mg/L) compared to nitrogen-limited (90 mg/L) or replete cells (132 mg/L). The EC_{50} value for phosphorus-limited cells was the lowest observed effect concentration, and was considered secondary data (i.e., multiple stresses are permitted).

A5.3.2 Unacceptable Data

Jenner and Jansse-Mommen (1993) observed sublethal effects of arsenic(III) on *L. minor* leaf area, and reported an EC_{50} and NOEC of 0.63 and <75 mg/L, respectively. However, the test exposure treatments were not provided, and the statistical analysis was not described, and so the results were considered unacceptable.

Pawlik-Skowronska et al. (2004) reported sublethal effects of arsenic(III) on growth of *Stichococcus bacillaris* under various pHs. A LOEC of 7.5 mg/L was observed for biomass accumulated after 96 hours at pH 6.8. However, the replication of test conditions and the statistical analysis used were not described, and so the data are considered unacceptable.

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Table A.1: CCME Type A Water Quality Guideline Requirements [1]

Category	Minimum Requirements	
Test Organisms [2]	Fish	Three species (minimum one salmonid and one non-salmonid).
	Invertebrates	Three aquatic or semi-aquatic species (minimum one planktonic crustacean). Life stages of semi-aquatic species must be aquatic.
	Aquatic Plants and Algae	Minimum one vascular plant or algal species. If a plant/algal species is among the most sensitive species, then three species are required.
Exposure Periods	Fish and Amphibians	Eggs and Larvae: ≥ 7 days Juvenile and Adult stages: ≥ 21 days
	Invertebrates	Short-lived species: ≥ 96 hours Long-lived species (chronic endpoint): ≥ 7 days Long-lived species (lethal endpoint): ≥ 21 days
	Aquatic Plants and Algae	Plants: assessed case-by-case Algae: ≥ 24 hours
Accepted Effects	Traditional endpoints (e.g., embryonic development, hatching, germination, growth, reproduction, and survival) are preferred. Non-traditional endpoints (e.g., behavior and physiology) can be used if their ecological relevance can be shown. When more than one record exists for an endpoint, then the geometric mean is used in the guideline derivation.	
Preferred Toxicity Endpoints [3]	Non-lethal no effects endpoints (i.e., EC_{10}/IC_{10}) determined using regression models are preferred. If the minimum data requirements cannot be met, then non-lethal and lethal low-effects endpoints (i.e., $EC_{11\text{-}25}/IC_{11\text{-}25}$ and $LC_{11\text{-}25}$, respectively) can be used. If neither are available for a particular species, then MATC, NOEC, and LOEC (in descending preference) can be used. Least preferred endpoints are non-lethal $EC_{26\text{-}49}/IC_{26\text{-}49}$ followed by EC_{50}/IC_{50}.	
Data Requirements [4]	Primary Data	Substance of interest was measured at the beginning and end of the exposure.
		Substance of interest was below the water solubility limit of the substance.
		Key supporting water quality data are reported, including: temperature, pH, water hardness, salinity, dissolved organic matter, and other potential exposure and toxicity modifying factors.
		Static tests are not considered primary unless the substance concentrations did not change during the test.
		Appropriate replication and dilutions steps were performed.
		Positive (i.e., reference toxicant) and negative controls were performed.
		A clear dose-response relationship was observed.
		Statistical procedures must be reported and be appropriate.
	Secondary Data [5]	Static tests are acceptable, or concentrations of substance of interest can be calculated.
		Pseudo-replication is acceptable.
		Multiple stresses are acceptable (e.g., high salinity, lack of food).
		Pathological and behavioral (if ecological relevance can be demonstrated), as well as physiological endpoints are acceptable.

[1] CCME (2007).

[2] Although a minimum of 7 species are required, it is anticipated that a larger number of species will be included in order to improve the model fit (CCME 2007).

[3] Maximum acceptable toxicant concentration (MATC), no observed effect concentration (NOEC), and lowest observed effect concentration (LOEC) are derived using statistical hypothesis testing, but not using regression analysis. The MATC is the geometric mean of the NOEC and LOEC. The NOEC is the highest concentration tested for which no effect was observed, while the LOEC is the lowest concentration tested for which an effect was observed.

[4] Primary and secondary data for no-effects and low-effects endpoints can be used, but preference should be placed on primary data when available.

[5] Exceptions to primary data; otherwise, all requirements listed under primary data apply to secondary data

Table A.2: Type A Guideline Assessment for Acceptable Arsenic(V) Chronic Toxicological Studies [1]

Test Organism			Exposure Period	Effect	Toxicity Endpoints [2]	Effect Concentration	Data Requirements [3]												Data Type [4]	Source
							Primary Data								Secondary Data Exceptions					
Type	Species	Life Stage				mg/L	A	B	C	D	E	F	G	H	I	J	K	L		
Fish (salmonid)	*Oncorhynchus mykiss*	Juvenile	28 d	Growth	EC_{20}	8.0	✓	NA	✓	✓	✓	✓	✓	✓	-	-	-	-	S	Erickson et al. (2011)
Fish (salmonid)	*Oncorhynchus mykiss*	Juvenile	28 d	Survival	NOEC	>0.97	✓	NA	✓	✓	✓	✓	✓	✓	-	-	-	-	S	Spehar et al. (1980)
Amphibian	*Rana pipiens*	Egg to Juvenille	113 d	Growth	NOEC	>1	×	NA	✓	✓	✓	✓	✓	✓	✓	-	-	-	S	Chen et al. (2009)
Invertebrate	*Hyalella azteca*	Adult	28 d	Growth	IC_{25}	3.9	×	NA	✓	✓	✓	✓	✓	✓	✓	-	-	-	S	Norwood et al. (2007)
Invertebrate	*Baetis tricaudatus*	Nymph	12 d	Growth	MATC	0.32	✓	NA	✓	✓	✓	✓	✓	✓	-	-	-	-	S	Irving et al. (2008)
Invertebrate	*Daphnia magna*	Adult	21 d	Reproduction	EC_{16}	0.52	×	NA	✓	✓	✓	✓	✓	✓	✓	-	-	-	S	Biesinger and Christensen (1972)
Invertebrate	*Daphnia magna*	Mixed Population	21 d	Carrying Capacity	EC_{10}	2.2	×	NA	✓	✓	✓	✓	✓	✓	✓	-	-	-	S	Enserink et al. (1991)
Invertebrate	*Chironomus riparius*	Larvae	14 d	Reproduction	MATC	0.62	×	NA	✓	✓	✓	✓	✓	✓	✓	-	-	-	S	Mogren et al. (2012)
Invertebrate	*Pteronarcys dorsata*	Adult	28 d	Survival	NOEC	>0.97	✓	NA	✓	✓	✓	✓	✓	✓	-	-	-	-	S	Spehar et al. (1980)
Invertebrate	*Helisoma campanulata*	Adult	28 d	Survival	NOEC	>0.97	✓	NA	✓	✓	✓	✓	✓	✓	-	-	-	-	S	Spehar et al. (1980)
Invertebrate	*Stagnicola emarginata*	Adult	28 d	Survival	NOEC	>0.97	✓	NA	✓	✓	✓	✓	✓	✓	-	-	-	-	S	Spehar et al. (1980)
Plant/Algae	*Chlamydomonas reinhardti*	Mid-exponential Growth	2 d	Growth	EC_{50}	0.014	✓	NA	✓	×	✓	✓	✓	✓	✓	-	✓	-	S	Wang et al. (2013)
Plant/Algae	*Scenedesmus obliquus*	Mid-exponential Growth	4 d	Growth	EC_{50}	0.16	×	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Fuhua et al. (1994)
Plant/Algae	*Scenedesmus obliquus*	10 to 14 d	14 d	Biomass	EC_{50}	0.048	×	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Vocke et al. (1980)
Plant/Algae	*Scenedesmus obliquus*	Mid-exponential Growth	2 d	Growth	EC_{50}	65	✓	NA	✓	×	✓	✓	✓	✓	✓	-	✓	-	S	Wang et al. (2013)
Plant/Algae	*Lemna gibba*	Adult	21 d	Growth	MATC	0.22	×	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Mkandawire et al. (2006)
Plant/Algae	*Ankistrodesmus falcatus*	10 to 14 d	14 d	Biomass	EC_{50}	0.26	×	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Vocke et al. (1980)
Plant/Algae	*Chlorella sp.* CE-35	Mid-exponential Growth	3 d	Growth	EC_{50}	1.2	×	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Rahman et al. (2014)
Plant/Algae	*Azolla caroliniana*	Adult	14 d	Growth	LOEC	1.5	×	NA	✓	✓	✓	✓	✓	✓	✓	-	✓	-	S	Rofkar et al. (2014)
Plant/Algae	*Lemna minor*	Adult	14 d	Growth	NOEC	>1.5	×	NA	✓	✓	✓	✓	✓	✓	✓	-	✓	-	S	Rofkar et al. (2014)
Plant/Algae	*Lemna disperma*	Adult	7 d	Growth	EC_{50}	2.3	×	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Rahman et al. (2014)
Plant/Algae	*Lemna minor*	Adult	7 d	Growth	EC_{10}	3.0	×	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Naumann et al. (2007)
Plant/Algae	*Wolffia arrhiza*	Adult	4 to 7 d	Growth	EC_{50}	17	✓	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Duester et al. (2011)
Plant/Algae	*Lemna minor*	Adult	4 to 7 d	Growth	EC_{50}	82	✓	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Duester et al. (2011)
Plant/Algae	*Selenastrum capricornutum*	10 to 14 d	14 d	Biomass	EC_{50}	31	×	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Vocke et al. (1980)

Note: ✓ indicates the requirement was met; × indicates the requirement was not met; NA indicates the requirement was not assessed.

[1] Excluding those already accepted in the current CCME arsenic guideline (CCME 2001).

[2] IC_{XX} and EC_{XX} refer to chronic inhibition and effect concentrations, respectively. The MATC (maximum acceptable toxicant concentration) is the geometric mean of the no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) derived using statistical hypothesis testing.

[3] Primary and Secondary data requirement categories (if primary data requirements were met, then secondary data requirement exceptions were not evaluated):

A - Arsenic was measured at the beginning and end of the exposure.

B - Arsenic was below the water solubility limit in the test conditions.

C - Key supporting water quality data are reported, including: temperature, pH, water hardness, salinity, dissolved organic matter, and other potential exposure and toxicity modifying factors.

D - Test renewal occurred; if tests were static, then arsenic concentrations were measured and did not change during exposure.

E - Appropriate replication and dilutions steps were performed.

F - Positive (i.e., reference toxicant) and negative controls were performed. Only negative controls were used as a screening tool (refer to Attachment A).

G - A clear dose-response relationship was observed.

H - Appropriate statistical procedures were reported.

I - Static tests are acceptable, or concentrations of substance of interest can be calculated.

J - Pseudo-replication is acceptable.

K - Multiple stresses are acceptable (e.g., high salinity, lack of food).

L - Pathological and behavioral (if ecological relevance can be demonstrated), as well as physiological endpoints are acceptable.

[4] Data types are primary (P), secondary (S), or unacceptable (U) as defined by CCME (2007). Since requirements B and F were not fully evalauted, all acceptable data were considered secondary.

Table A.3: Type A Guideline Assessment for Acceptable Arsenic(III) Chronic Toxicological Studies [1]

Test Organism			Exposure Period	Effect	Toxicity Endpoints [2]	Effect Concentration	Data Requirements [3]												Data Type [4]	Source
							Primary Data								Secondary Data Exceptions					
Type	Species	Life Stage				mg/L	A	B	C	D	E	F	G	H	I	J	K	L		
Fish (salmonid)	*Oncorhynchus mykiss*	Juvenille	121 d	Growth	MATC	4.9	×	NA	✓	✓	✓	✓	✓	✓	✓	-	-	-	S	Rankin and Dixon (1994)
Fish (salmonid)	*Oncorhynchus mykiss*	Juvenille	28 d	Growth	NOEC	>0.96	✓	NA	✓	✓	✓	✓	✓	✓	-	-	-	-	S	Spehar et al. (1980)
Fish (non-salmonid)	*Jordanella floridae*	Embryo	30 d	Growth	MATC	2.9	×	NA	✓	✓	✓	✓	✓	✓	✓	-	-	-	S	Lima et al. (1984)
Fish (non-salmonid)	*Pimephales promelas*	Embryo	30 d	Growth	MATC	3.0	×	NA	✓	✓	✓	✓	✓	✓	✓	-	-	-	S	Lima et al. (1984)
Invertebrate	*Baetis tricaudatus*	Nymph	12 d	Growth	MATC	0.32	✓	NA	✓	✓	✓	✓	✓	✓	-	-	-	-	S	Irving et al. (2008)
Invertebrate	*Pteronarcys dorsata*	Adult	28 d	Survival	NOEC	>0.96	✓	NA	✓	✓	✓	✓	✓	✓	-	-	-	-	S	Spehar et al. (1980)
Invertebrate	*Helisoma campanulata*	Adult	28 d	Survival	NOEC	>0.96	✓	NA	✓	✓	✓	✓	✓	✓	-	-	-	-	S	Spehar et al. (1980)
Invertebrate	*Stagnicola emarginata*	Adult	28 d	Survival	NOEC	>0.96	✓	NA	✓	✓	✓	✓	✓	✓	-	-	-	-	S	Spehar et al. (1980)
Invertebrate	*Daphnia magna*	<24 h neonate	21 d	Reproduction	IC_{10}	1.3	✓	NA	✓	✓	✓	✓	✓	✓	-	-	-	-	S	Tišler and Zagorc-Končan (2002)
Plant/Algae	*Scenedesmus obliquus*	Mid-exponential Growth	4 d	Growth	EC_{50}	0.079	×	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Fuhua et al. (1994)
Plant/Algae	*Lemna disperma*	Adult	7 d	Growth	EC_{50}	0.57	×	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Rahman et al. (2014)
Plant/Algae	*Lemna minor*	Adult	7 d	Growth	EC_{10}	0.63	×	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Naumann et al. (2007)
Plant/Algae	*Lemna minor*	Adult	4 to 7 d	Growth	EC_{50}	2.0	✓	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Duester et al. (2011)
Plant/Algae	*Chlamydomonas reinhardti*	Not stated	2 d	Growth	EC_{50}	1.0	✓	NA	✓	×	✓	✓	✓	✓	✓	-	✓	-	S	Wang et al. (2014)
Plant/Algae	*Wolffia arrhiza*	Adult	4 to 7 d	Growth	EC_{50}	1.1	✓	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Duester et al. (2011)
Plant/Algae	*Scenedesmus subspicatus*	Not stated	3 d	Growth	EC_{10}	9.4	✓	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Tišler and Zagorc-Končan (2002)
Plant/Algae	*Chlorella sp. CE-35*	Mid-exponential Growth	3 d	Growth	EC_{50}	27	×	NA	✓	×	✓	✓	✓	✓	✓	-	-	-	S	Rahman et al. (2014)

Note: ✓ indicates the requirement was met; × indicates the requirement was not met; NA indicates the requirement was not assessed.

[1] Excluding those already accepted in the current CCME arsenic guideline (CCME 2001).

[2] IC_{XX} and EC_{XX} refer to chronic inhibition and effect concentrations, respectively. The MATC (maximum acceptable toxicant concentration) is the geometric mean of the no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) derived using statistical hypothesis testing.

[3] Primary and Secondary data requirement categories (if primary data requirements were met, then secondary data requirement exceptions were not evaluated)

A - Arsenic was measured at the beginning and end of the exposure.

B - Arsenic was below the water solubility limit in the test conditions.

C - Key supporting water quality data are reported, including: temperature, pH, water hardness, salinity, dissolved organic matter, and other potential exposure and toxicity modifying factors.

D - Test renewal occurred; if tests were static, then arsenic concentrations were measured and did not change during exposure.

E - Appropriate replication and dilutions steps were performed.

F - Positive (i.e., reference toxicant) and negative controls were performed. Only negative controls were used as a screening tool (refer to Attachment A).

G - A clear dose-response relationship was observed.

H - Appropriate statistical procedures were reported.

I - Static tests are acceptable, or concentrations of substance of interest can be calculated.

J - Pseudo-replication is acceptable.

K - Multiple stresses are acceptable (e.g., high salinity, lack of food).

L - Pathological and behavioral (if ecological relevance can be demonstrated), as well as physiological endpoints are acceptable.

[4] Data types are primary (P), secondary (S), or unacceptable (U) as defined by CCME (2007). Since requirements B and F were not fully evalauted, all acceptable data were considered secondary

Table A.4: Toxicity Data Used in the Current CCME Chronic Arsenic Guideline [1]

Test Organism			Exposure Period	Effect	Toxicity Endpoints [2]	Effect Concentration mg/L	Arsenic Form	Source
Type	Species	Life Stage						
Fish (salmonid)	*Oncorhynchus mykiss*	Embryo-Larva	28 days	Survival	LC_{50}	0.54 [3]	V	Birge et al. (1978) [4]
Fish (non-salmonid)	*Anabas testudineus*	UN	7 days	Survival	LOEC	0.97	UN	Jana and Sahana (1989)
Fish (non-salmonid)	*Clarias batrachus*	UN	7 days	Survival	LOEC	0.97	UN	Jana and Sahana (1989)
Invertebrate	*Cyclops sps.* [5]	Larva	14 days	Growth	EC_{20}	0.32	III	Borgmann et al. (1980)
Invertebrate	*Daphnia magna*	Adult	21 days	Growth	EC_{16}	0.52	V	Biesenger and Christensen (1972)
Invertebrate	*Gammarus pseudolimnaeus*	Not stated	14 days [6]	Survival	LOEC [6]	0.96	III	Spehar et al. (1980)
Invertebrate	*Ceriodaphnia dubia*	<24 h	7 days	Survival	MATC [7]	1.1 [7]	V	Spehar and Fiandt (1986)
Plant/Algae	*Scenedesmus obliquus*	10 to 14 day	14 days	Growth	EC_{50}	0.048	V	Vocke et al. (1980)
Plant/Algae	*Melosira granulata*	Not stated	8 to 24 days [8]	Growth	LOEC [8]	0.075	V	Planas and Healey (1978)
Plant/Algae	*Ochromonas vallesiaca*	Not stated	8 to 24 days [8]	Growth	LOEC [8]	0.075	V	Planas and Healey (1978)
Plant/Algae	*Scenedesmus quadricus*	UN	20 d	Growth	VSUE	0.96	UN	Fargasova (1993)

Note: UN indicates the information remains unknown due to inaccessible literature.

[1] CCME (2001) chronic guideline is 0.005 mg/L, and was determined by multiplying the most sensitive effect concentration (0.048 mg/L) by a safety factor of 0.1.

[2] LC_{XX} and EC_{XX} refer to lethal and effect concentrations, respectively. The MATC (maximum acceptable toxicant concentration) is the geometric mean of the no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) derived using statistical hypothesis testing. VSUE refers to very severe unfavorable effects.

[3] Incorrectly cited as Birge et al. (1979) in CCME (2001).

[4] Incorrectly reported as 0.55 mg/L in CCME (2001).

[5] Although *C. vernalis* is listed in CCME (2001), a population of copepods was tested that consisted primarily of *C. vernalis* and *C. bicuspidatus thomasi.*

[6] Incorrectly stated as 7 day exposure and LC_{80} endpoint in CCME (2001).

[7] Incorrectly listed a LOEC of 1.0 mg/L, while the citation reports a MATC of 1.1 mg/L.

[8] Exposure times not stated for each organism. Although the CCME guudeline document lists EC_{50} endpoints, no EC_{50} values were reported in the source literature. Instead, the smallest concentration at which growth was apparently lower than the control was 0.075 mg/L. However, a true LOEC could not be determined due to insufficient treatment replication (n=1).

ATTACHMENT B
SPECIES SENSITIVITY DISTRIBUTION
STATISTICAL ANALYSIS

ATTACHMENT B SPECIES SENSITIVITY DISTRIBUTION STATISTICAL ANALYSIS

B1 DATA PROCESSING AND MODEL SELECTION

B1.1 Data Processing and Model Selection Criteria

Using the available toxicity data for arsenic(V) and arsenic(III), SSWQOs were derived for each (and in combination) using the software SSD Master Ver 3.0 (CCME 2012). This software is currently used by the CCME and Environment Canada to derive water quality guidelines, and so it is appropriate to use here.

Only one endpoint per species was included in the SSD, and preference was given to endpoints as described by CCME guidance (i.e., low-effect endpoints were preferred over LOEC or NOEC endpoints; Attachment Table B.1). There was one exception made to this guidance. If a low or moderate effect endpoint was higher than another (e.g., EC_{20} compared to EC_{10}), but occurred at a lower concentration (e.g., 1 compared to 2 mg/L, respectively), then the endpoint with the lowest effect concentration was chosen in order to produce a conservative HC_5 (in this case, the EC_{20} of 1 mg/L would be preferred over the EC_{10} of 2 mg/L). If multiple entries for the same endpoint (e.g., EC_{50}) were reported, then the geometric mean of the endpoints was used (CCME 2007).

Including unbounded NOECs[1] (i.e., >value) in a SSD can introduce uncertainty in the resulting guideline, particularly if the true NOECs are much higher than the reported unbounded value. There is no guidance in the SSD Master user manual (CCME 2013) or in CCME (2007) on how to incorporate unbounded NOECs into SSD models, and the software currently can only accommodate unbounded results substituted with the value (i.e., >Y would be substituted with Y). Thus, professional judgement was used to select endpoints that would result in a conservative guideline, and the influence of including or excluding certain unbounded data was assessed.

Once the final set of endpoints for the SSD model resulting endpoints were ranked from lowest to highest (with the most sensitive species given a rank of 1), and their relative rank was calculated as a Hazen percentile:

$$Percentile = (Rank - 0.5)/N$$

Where N is the total number of species. Tied data are assigned consecutive ranks, and the inclusion of tied data can influence the guideline, particularly if the tied data have low ranks.

[1] The NOEC is the highest concentration tested for which no effect was observed using hypothesis based statistical testing. If the highest concentration in a study did not cause a significant effect to the organism, then the true NOEC must be higher than that reported in a given study.

Thus, the influence of including tied data on the resulting guideline was assessed where appropriate. Following log-transformation of the endpoint concentrations, four models were fit to the resulting ranks in order to create the resulting SSD, including the normal, logistic, extreme value, and Gumbel models. The Anderson-Darling (A-D) goodness-of-fit test was used to identify models that did not adequately describe the SSD, and the model with the smallest A-D that passed the goodness-of-fit test was identified as the model that most appropriately described the SSD (Zajdlik 2006). Visual assessment of the model fits were also carried out, and the lower tail mean squared error (MSE) of the models were compared in order to identify which models provided predictions in the lower tails with the least variability. Following CCME guidance (CCME 2007), extrapolation of the best model to the 5th percentile was used to derive a hazardous concentration to 5% of species (HC_5).

B1.2 Arsenic(V) Data Selection

Four species had multiple acceptable endpoint results, *Oncorhynchus mykiss*, *Daphnia magna*, *Lemna minor*, and *Scenedesmus obliquus* (Attachment Table B.2). For *O. mykiss*, the EC_{20} for growth (8.0 mg/L) is a preferred endpoint to the unbounded NOEC or LC50 for survival (>0.97 and 0.54 mg/L, respectively). However, including the LC_{50} would be more likely to produce a conservative guideline, so it was included in the SSD model dataset. For *D. magna*, the EC_{10} of 2.2 mg/L would be the preferred endpoint over the EC_{16} of 0.52 mg/L; however, including the lower endpoint concentration of 0.52 mg/L would result in a more conservative guideline, and so it was included in the SSD model dataset. For *L. minor*, the EC_{10} of 3.0 mg/L was the preferred endpoint, and was included in the SSD model dataset. For *S. obliquus*, a large range of EC_{50} values were observed (0.048 to 65 mg/L). Two of the endpoint values (0.16 mg/L and 65 mg/L) were derived from changes to growth rates (i.e., changes in biomass over time), while the lowest endpoint value was based on a single observation of biomass after 14 days (0.048 mg/L). Despite the methodological limitations of the latter study, it was included in the SSD model dataset because it is the basis of the current CCME arsenic chronic guideline (CCME 2001). Unbounded NOECs were reported for the amphibian *Rana pipiens*, as well as for three invertebrate species (*Pteronarcys dorsata*, *Helisoma campanulata*, and *Stagnicola emarginata*). The unbounded NOEC for *R. pipiens* was substituted with the NOEC value in order to better represent vertebrates in the SSD model dataset. For the three invertebrate species, the unbounded NOECs were tied (>0.97 mg/L). However, the unbounded NOECs are within the range of endpoints values observed for invertebrate species (0.32 to 2.2 mg/L), and so they were included in the SSD dataset as representative of invertebrates by substituting the value of the NOEC. The resulting dataset had 24 entries, including two vertebrates (one fish and one amphibian), ten invertebrates, and 12 plants and algae (Attachment Table B.2).

B1.3 Arsenic(III) Data Selection

Two species had multiple acceptable endpoint results, including *O. mykiss* and *L. minor* (Attachment Table B.3). For *O. mykiss*, the MATC for growth (4.9 mg/L) is a preferred endpoint to NOEC for survival (>0.96 mg/L), and so it was included in the SSD model dataset. For *L. minor*, the EC_{10} of 0.63 mg/L was the preferred endpoint, and was included in the SSD model dataset. As for arsenic(V) (refer to Section B1.2), an unbounded NOEC of >0.96 mg/L was reported for three invertebrate species (*Pteronarcys dorsata*, *Helisoma campanulata*, and *Stagnicola emarginata*). Since the unbounded NOEC value is within the range of observed effect concentrations for invertebrates (0.32 to 2.5 mg/L), they were included in the SSD dataset as representative of invertebrates by substituting the value of the NOEC. Although *Jordanella floridae* is not native to Canadian waters, it was included in the SSD model dataset in order to better represent vertebrates, and to meet the minimum data requirements for a Type A guideline. Given that the endpoint concentration for *J. floridae* (2.9 mg/L) is similar to the endpoints concentrations for either arsenic(V) or arsenic(III) for the other fish species (>0.96 mg/L to 8.0 mg/L), this suggests that its inclusion in the SSD model dataset as a representative vertebrate is justified. The resulting dataset had 17 entries, including three fish (one salmonid and two non-salmonids), six invertebrates, and seven plants and algae (Attachment Table B.3). The presence of multiple invertebrate species at the unbounded NOEC of >0.96 mg/L may have skewed the model fit.

B1.4 Combined Arsenic(V) and Arsenic(III) Data Selection

A guideline was also derived by including the lowest observed endpoints for a given species, regardless of whether the test was performed with arsenic(V) or arsenic(III). The SSD model datasets for arsenic(V) and arsenic(III) were combined, and appropriate effect concentrations for individual species were chosen and ranked following the methods outlined above (Attachment Table B.4). As for the arsenic(V) SSD models (refer to B1.2), a second dataset was produced which included the geometric mean of the three lowest effect values for *S. obliquus*. The resulting dataset had 30 entries, including five fish (one salmonid and four non-salmonids), one amphibian, 10 invertebrates, and 14 plants and algae (Attachment Table B.3). The presence of multiple invertebrate species at the unbounded NOEC of >0.96 mg/L may have skewed the model fit.

B2 SSD MODEL OUTPUT

B2.1 Arsenic(V) Model Output

All models except the Gumbel model passed the Anderson-Darling goodness-of-fit test, and the Logistic model had the smallest Anderson-Darling statistic. The Extreme Value model had the lowest tail MSE and lowest MSE (Attachment Table B.5). The Extreme Value model produced a more conservative HC_5 (0.042 mg/L) compared to the Logistic model (0.071 mg/L). The Extreme Value model was therefore selected to be most conservative and had a 95% confidence interval for HC_5 of 0.026 - 0.067 mg/L (Attachment Figure B.1; Attachment Table B.5).

B2.2 Arsenic(III) Model Output

The Extreme value model did not pass the Anderson-Darling goodness-of-fit test, and the Logistic model had the smallest Anderson-Darling statistic and lowest tail MSE (Attachment Table B.5). This indicates the Logistic model is the most appropriate model to describe the SSDs (Zajdlik 2006, CCME 2007). The resulting HC_5 value was 0.21 mg/L (95% confidence interval: 0.12 to 0.36 mg/L) (Attachment Figure B.2; Attachment Table B.5).

B2.3 Combined Arsenic(V) and Arsenic(III) Model Output

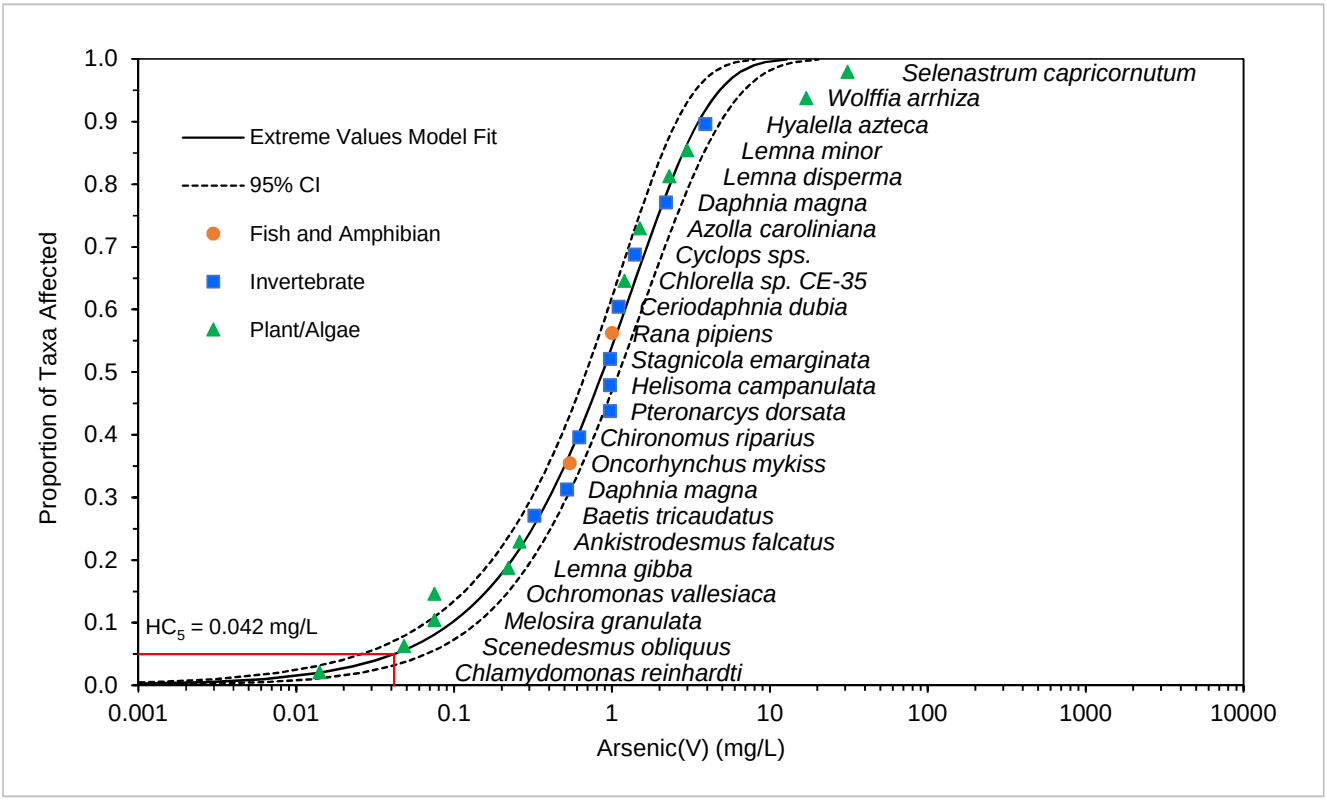
Only the Normal and Logistic models passed the Anderson-Darling goodness-of-fit test, and the Logistic model had the smallest Anderson-Darling statistic and lowest tail MSE (Attachment Table B.5). This indicates that the Logistic model is the most appropriate model to describe the SSDs (Zajdlik 2006, CCME 2007). The resulting HC_5 value was 0.12 mg/L (95% confidence interval: 0.086 to 0.17 mg/L) (Attachment Figure B.3; Attachment Table B.5).

B3 REFERENCES

CCME (Canadian Council of Ministers of the Environment). 2007. A Protocol for the Derivation of Water Quality Guidelines for the Protection of Aquatic Life. Canadian Council of Ministers of the Environment. Draft for Public Review. April 27, 2007.

CCME. 2012. Determination of Hazardous Concentration with Species Sensitivity Distributions Ver 3.0. Winnipeg, MB, Canada.

Zajdlik (Zajdlik & Associates). 2006. Potential Statistical Models for Describing Species Sensitivity Distributions. Report for CCME Project Number 382-2006.



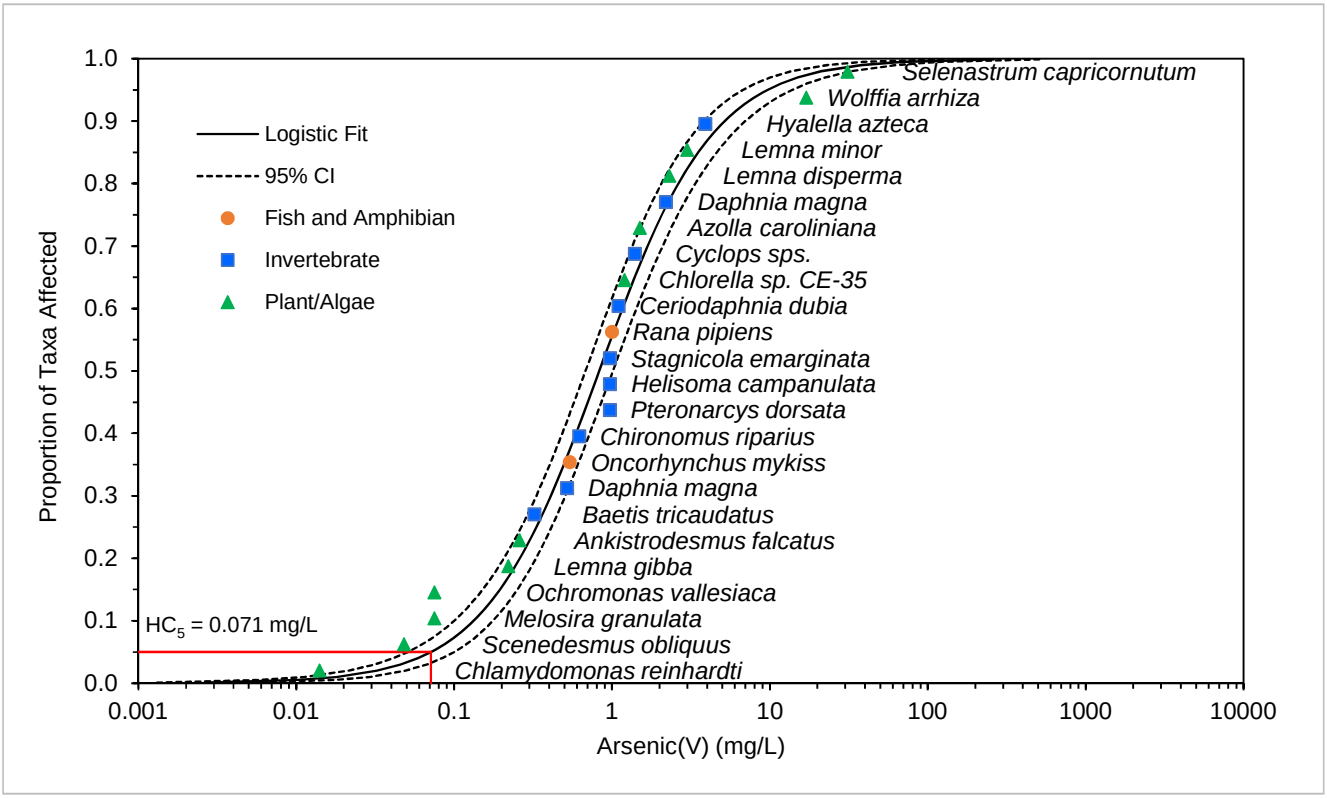


Figure B.1: Extreme Value Model (Top) and Logistic Model (Bottom) Species Sensitivity Distribution Fits for Selected Chronic Arsenic(V) Endpoints

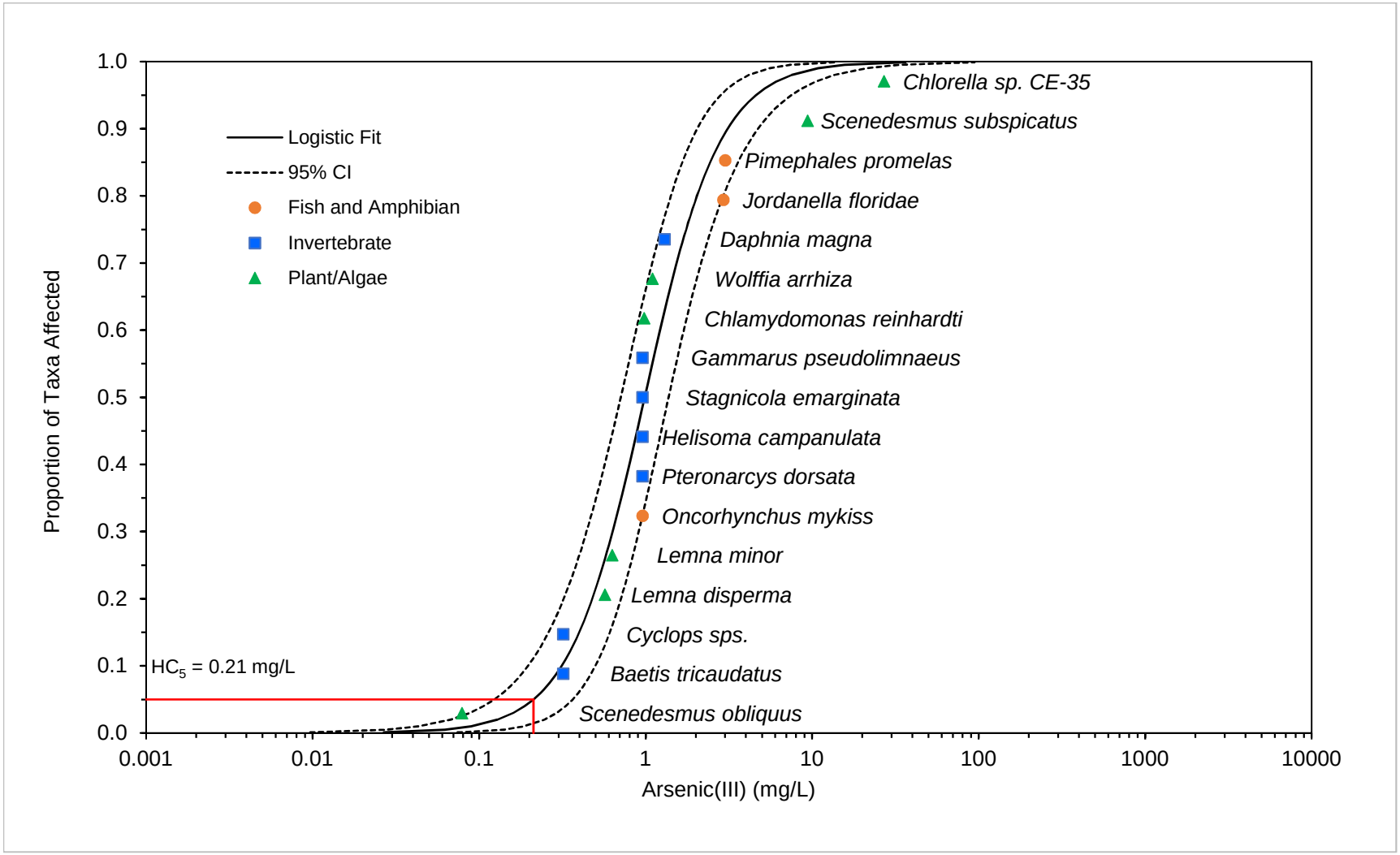


Figure B.2: Logistic Model Species Sensitivity Distribution Fit for Select Chronic Arsenic(III) Endpoints

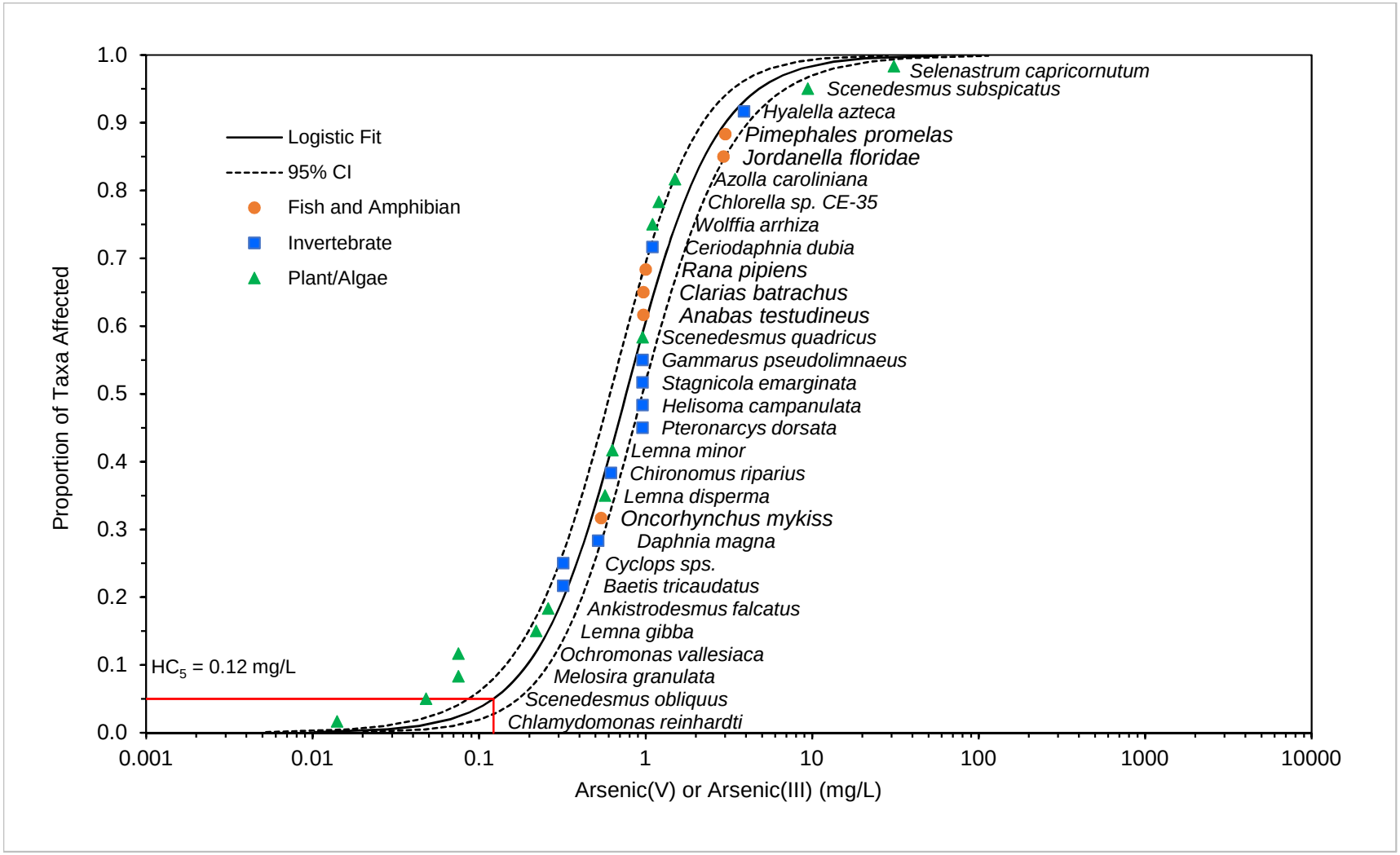


Figure B.3: Logistic Model Species Sensitivity Distribution Fits for Select Chronic Arsenic(V) and Arsenic(III) Endpoints

Table B.1: CCME Type A Water Quality Guideline Requirements [1]

Category	Minimum Requirements	
Test Organisms [2]	Fish	Three species (minimum one salmonid and one non-salmonid).
	Invertebrates	Three aquatic or semi-aquatic species (minimum one planktonic crustacean). Life stages of semi-aquatic species must be aquatic.
	Aquatic Plants and Algae	Minimum one vascular plant or algal species. If a plant/algal species is among the most sensitive species, then three species are required.
Exposure Periods	Fish and Amphibians	Eggs and Larvae: ≥ 7 days Juvenile and Adult stages: ≥ 21 days
	Invertebrates	Short-lived species: ≥ 96 hours Long-lived species (chronic endpoint): ≥ 7 days Long-lived species (lethal endpoint): ≥ 21 days
	Aquatic Plants and Algae	Plants: assessed case-by-case Algae: ≥ 24 hours
Accepted Effects	Traditional endpoints (e.g., embryonic development, hatching, germination, growth, reproduction, and survival) are preferred. Non-traditional endpoints (e.g., behavior and physiology) can be used if their ecological relevance can be shown. When more than one record exists for an endpoint, then the geometric mean is used in the guideline derivation.	
Preferred Toxicity Endpoints [3]	Non-lethal no effects endpoints (i.e., EC_{10}/IC_{10}) determined using regression models are preferred. If the minimum data requirements cannot be met, then non-lethal and lethal low-effects endpoints (i.e., EC_{11-25}/IC_{11-25} and LC_{11-25}, respectively) can be used. If neither are available for a particular species, then MATC, NOEC, and LOEC (in descending preference) can be used. Least preferred endpoints are non-lethal EC_{26-49}/IC_{26-49} followed by EC_{50}/IC_{50}.	
Data Requirements [4]	Primary Data	Substance of interest was measured at the beginning and end of the exposure.
		Substance of interest was below the water solubility limit of the substance.
		Key supporting water quality data are reported, including: temperature, pH, water hardness, salinity, dissolved organic matter, and other potential exposure and toxicity modifying factors.
		Static tests are not considered primary unless the substance concentrations did not change during the test.
		Appropriate replication and dilutions steps were performed.
		Positive (i.e., reference toxicant) and negative controls were performed.
		A clear dose-response relationship was observed.
		Statistical procedures must be reported and be appropriate.
	Secondary Data [5]	Static tests are acceptable, or concentrations of substance of interest can be calculated.
		Pseudo-replication is acceptable.
		Multiple stresses are acceptable (e.g., high salinity, lack of food).
		Pathological and behavioral (if ecological relevance can be demonstrated), as well as physiological endpoints are acceptable.

[1] CCME (2007).

[2] Although a minimum of 7 species are required, it is anticipated that a larger number of species will be included in order to improve the model fit (CCME 2007).

[3] Maximum acceptable toxicant concentration (MATC), no observed effect concentration (NOEC), and lowest observed effect concentration (LOEC) are derived using statistical hypothesis testing, but not using regression analysis. The MATC is the geometric mean of the NOEC and LOEC. The NOEC is the highest concentration tested for which no effect was observed, while the LOEC is the lowest concentration tested for which an effect was observed.

[4] Primary and secondary data for no-effects and low-effects endpoints can be used, but preference should be placed on primary data when available.

[5] Exceptions to primary data; otherwise, all requirements listed under primary data apply to secondary data

Table B.2: Acceptable Toxicity Test Data for a Type A Chronic Arsenic(V) Guideline

Test Organism		Effect	Toxicity Endpoints [1]	Effect Concentration (mg/L)	Hazen Plotting Position [2]	Source
Type	Species					
Plant/Algae	*Chlamydomonas reinhardti*	Growth	EC_{50}	0.014	0.021	Wang et al. (2013)
Plant/Algae	*Scenedesmus obliquus* [3]	Biomass	EC_{50}	0.048	0.063	Vocke et al. (1980)
Plant/Algae	*Melosira granulata*	Growth	LOEC	0.075	0.10	Planas and Healey (1978)
Plant/Algae	*Ochromonas vallesiaca*	Growth	LOEC	0.075	0.15	Planas and Healey (1978)
Plant/Algae	*Scenedesmus obliquus*	Growth	EC_{50}	0.16	-	Fuhua et al. (1994)
Plant/Algae	*Lemna gibba*	Growth	MATC	0.22	0.19	Mkandawire et al. (2006)
Plant/Algae	*Ankistrodesmus falcatus*	Biomass	EC_{50}	0.26	0.23	Vocke et al. (1980)
Invertebrate	*Baetis tricaudatus*	Growth	MATC	0.32	0.27	Irving et al. (2008)
Invertebrate	*Daphnia magna*	Reproduction	EC_{16}	0.52	0.31	Biesinger and Christensen (1972)
Fish (salmonid)	*Oncorhynchus mykiss*	Growth	LC_{50}	0.54	0.35	Birge et al. (1978)
Invertebrate	*Chironomus riparius*	Reproduction	MATC	0.62	0.40	Mogren et al. (2012)
Fish (salmonid)	*Oncorhynchus mykiss*	Survival	NOEC	>0.97	-	Spehar et al. (1980)
Invertebrate	*Pteronarcys dorsata*	Survival	NOEC	>0.97	0.44	Spehar et al. (1980)
Invertebrate	*Helisoma campanulata*	Survival	NOEC	>0.97	0.48	Spehar et al. (1980)
Invertebrate	*Stagnicola emarginata*	Survival	NOEC	>0.97	0.52	Spehar et al. (1980)
Amphibian	*Rana pipiens*	Growth	NOEC	>1	0.56	Chen et al. (2009)
Invertebrate	*Ceriodaphnia dubia*	Survival	MATC	1.10	0.60	Spehar and Fiandt (1986)
Plant/Algae	*Chlorella sp.* CE-35	Growth	EC_{50}	1.2	0.65	Rahman et al. (2014)
Invertebrate	*Cyclops sps.* [4]	Growth	EC_{20}	1.4	0.69	Borgmann et al. (1980)
Plant/Algae	*Azolla caroliniana*	Growth	LOEC	1.5	0.73	Rofkar et al. (2014)
Plant/Algae	*Lemna minor*	Growth	NOEC	>1.5	-	Rofkar et al. (2014)
Invertebrate	*Daphnia magna*	Reproduction	EC_{10}	2.2	0.77	Enserink et al. (1991)
Plant/Algae	*Lemna disperma*	Growth	EC_{50}	2.3	0.81	Rahman et al. (2014)
Plant/Algae	*Lemna minor*	Growth	EC_{10}	3.0	0.85	Naumann et al. (2007)
Invertebrate	*Hyalella azteca*	Growth	IC_{25}	3.9	0.90	Norwood et al. (2007)
Fish (salmonid)	*Oncorhynchus mykiss*	Growth	EC_{20}	8.0	-	Erickson et al. (2011)
Plant/Algae	*Wolffia arrhiza*	Growth	EC_{50}	17	0.94	Duester et al. (2011)
Plant/Algae	*Selenastrum capricornutum*	Biomass	EC_{50}	31	0.98	Vocke et al. (1980)
Plant/Algae	*Scenedesmus obliquus*	Growth	EC_{50}	65	-	Wang et al. (2013)
Plant/Algae	*Lemna minor*	Growth	EC_{50}	82	-	Duester et al. (2011)

Note: For right censored data (i.e., > value), the > value was substituted with the value in the SSD model fits.

[1] IC_{XX} refers to chronic inhibition concentrations. The MATC (maximum acceptable toxicant concentration) is the geometric mean of the no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) derived using statistical hypothesis testing.

[2] Hazen plotting position = (Rank - 0.5) / sample size, where the most sensitive species is given a rank of 1.

[3] For *S. obliquu* s, a second SSD model was fit using the geometric mean (0.088 mg/L) of the two lowest reported EC_{50} values (0.048 and 0.16 mg/L).

[4] Two species of copepods were included, *Cyclops vernails* and *C. bicuspidatus thomasi.*

Table B.3: Acceptable Toxicity Test Data for a Type A Chronic Arsenic(III) Guideline

Test Organism		Effect	Toxicity Endpoints [1]	Effect Concentration (mg/L)	Hazen Plotting Position [2]	Source
Type	Species					
Plant/Algae	*Scenedesmus obliquus*	Growth	EC_{50}	0.079	0.029	Fuhua et al. (1994)
Invertebrate	*Baetis tricaudatus*	Growth	MATC	0.32	0.088	Irving et al. (2008)
Invertebrate	*Cyclops sps.* [3]	Growth	EC_{20}	0.32	0.15	Borgmann et al. (1980)
Plant/Algae	*Lemna disperma*	Growth	EC_{50}	0.57	0.21	Rahman et al. (2014)
Plant/Algae	*Lemna minor*	Growth	EC_{10}	0.63	0.26	Naumann et al. (2007)
Fish (salmonid)	*Oncorhynchus mykiss*	Survival	NOEC	>0.96	0.32	Spehar et al. (1980)
Invertebrate	*Pteronarcys dorsata*	Survival	NOEC	>0.96	0.38	Spehar et al. (1980)
Invertebrate	*Helisoma campanulata*	Survival	NOEC	>0.96	0.44	Spehar et al. (1980)
Invertebrate	*Stagnicola emarginata*	Survival	NOEC	>0.96	0.50	Spehar et al. (1980)
Invertebrate	*Gammarus pseudolimnaeus*	Survival	LOEC	0.96	0.56	Spehar et al. (1980)
Plant/Algae	*Chlamydomonas reinhardti*	Growth	EC_{50}	1.0	0.62	Wang et al. (2014)
Plant/Algae	*Wolffia arrhiza*	Growth	EC_{50}	1.1	0.68	Duester et al. (2011)
Invertebrate	*Daphnia magna*	Reproduction	IC_{10}	1.3	0.74	Tišler and Zagorc-Končan (2002)
Plant/Algae	*Lemna minor*	Growth	EC_{50}	2.00	-	Duester et al. (2011)
Fish (non-salmonid)	*Jordanella floridae*	Growth	MATC	2.9	0.79	Lima et al. (1984)
Fish (non-salmonid)	*Pimephales promelas*	Growth	MATC	3.0	0.85	Lima et al. (1984)
Fish (salmonid)	*Oncorhynchus mykiss*	Growth	MATC	4.9	-	Rankin and Dixon (1994)
Plant/Algae	*Scenedesmus subspicatus*	Growth	EC_{10}	9.4	0.91	Tišler and Zagorc-Končan (2002)
Plant/Algae	*Chlorella sp.* CE-35	Growth	EC_{50}	27	0.97	Rahman et al. (2014)

Note: For right censored data (i.e., > value), the > value was substituted with the value in the SSD model fits.

[1] IC_{XX} refers to chronic inhibition concentrations. The MATC (maximum acceptable toxicant concentration) is the geometric mean of the no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) derived using statistical hypothesis testing.

[2] Hazen plotting position = (Rank - 0.5) / sample size, where the most sensitive species is given a rank of 1.

[3] Two species of copepods were included, *Cyclops vernails* and *C. bicuspidatus thomasi.*

Table B.4: Acceptable Toxicity Test Data for a Type A Chronic Arsenic Guideline Using Arsenic(III) and Arsenic(V) Toxicity Endpoints

Test Organism		Effect	Toxicity Endpoints [1]	Oxidation State	Effect Concentration (mg/L)	Hazen Plotting Position [2]	Source
Type	Species						
Plant/Algae	*Chlamydomonas reinhardti*	Growth	EC_{50}	V	0.014	0.017	Wang et al. (2013)
Plant/Algae	*Scenedesmus obliquus* [3]	Biomass	EC_{50}	V	0.048	0.050	Vocke et al. (1980)
Plant/Algae	*Melosira granulata*	Growth	LOEC	V	0.075	0.083	Planas and Healey (1978)
Plant/Algae	*Ochromonas vallesiaca*	Growth	LOEC	V	0.075	0.12	Planas and Healey (1978)
Plant/Algae	*Scenedesmus obliquus*	Growth	EC_{50}	III	0.079	-	Fuhua et al. (1994)
Plant/Algae	*Scenedesmus obliquus*	Growth	EC_{50}	V	0.16	-	Fuhua et al. (1994)
Plant/Algae	*Lemna gibba*	Growth	MATC	V	0.22	0.15	Mkandawire et al. (2006)
Plant/Algae	*Ankistrodesmus falcatus*	Biomass	EC_{50}	V	0.26	0.18	Vocke et al. (1980)
Invertebrate	*Baetis tricaudatus*	Growth	MATC	III	0.32	0.22	Irving et al. (2008)
Invertebrate	*Cyclops sps.* [4]	Growth	EC_{20}	III	0.32	0.25	Borgmann et al. (1980)
Invertebrate	*Baetis tricaudatus*	Growth	MATC	V	0.32	-	Irving et al. (2008)
Invertebrate	*Daphnia magna*	Reproduction	EC_{16}	V	0.52	0.28	Biesinger and Christensen (1972)
Fish (salmonid)	*Oncorhynchus mykiss*	Growth	LC_{50}	V	0.54	0.32	Birge et al. (1978)
Plant/Algae	*Lemna disperma*	Growth	EC_{50}	III	0.57	0.35	Rahman et al. (2014)
Invertebrate	*Chironomus riparius*	Reproduction	MATC	V	0.62	0.38	Mogren et al. (2012)
Plant/Algae	*Lemna minor*	Growth	EC_{10}	III	0.63	0.42	Naumann et al. (2007)
Fish (salmonid)	*Oncorhynchus mykiss*	Survival	NOEC	III	>0.96	-	Spehar et al. (1980)
Invertebrate	*Pteronarcys dorsata*	Survival	NOEC	III	>0.96	0.45	Spehar et al. (1980)
Invertebrate	*Helisoma campanulata*	Survival	NOEC	III	>0.96	0.48	Spehar et al. (1980)
Invertebrate	*Stagnicola emarginata*	Survival	NOEC	III	>0.96	0.52	Spehar et al. (1980)
Invertebrate	*Gammarus pseudolimnaeus*	Survival	LOEC	III	1.0	0.55	Spehar et al. (1980)
Plant/Algae	*Scenedesmus quadricus*	UN	VSUE	UN	0.96	0.58	Fargasova (1993)
Fish (salmonid)	*Oncorhynchus mykiss*	Survival	NOEC	V	>0.97	-	Spehar et al. (1980)
Invertebrate	*Pteronarcys dorsata*	Survival	NOEC	V	>0.97	-	Spehar et al. (1980)
Invertebrate	*Helisoma campanulata*	Survival	NOEC	V	>0.97	-	Spehar et al. (1980)
Invertebrate	*Stagnicola emarginata*	Survival	NOEC	V	>0.97	-	Spehar et al. (1980)
Fish (non-salmonid)	*Anabas testudineus*	UN	LOEC	UN	0.97	0.62	Jana and Sahana (1989)
Fish (non-salmonid)	*Clarias batrachus*	UN	LOEC	UN	0.97	0.65	Jana and Sahana (1989)
Plant/Algae	*Chlamydomonas reinhardti*	Growth	EC_{50}	III	1.0	-	Wang et al. (2014)
Amphibian	*Rana pipiens*	Growth	NOEC	V	>1	0.68	Chen et al. (2009)
Invertebrate	*Ceriodaphnia dubia*	Survival	MATC	V	1.1	0.72	Spehar and Fiandt (1986)
Plant/Algae	*Wolffia arrhiza*	Growth	EC_{50}	III	1.1	0.75	Duester et al. (2011)
Plant/Algae	*Chlorella sp. CE-35*	Growth	EC_{50}	V	1.2	0.78	Rahman et al. (2014)
Invertebrate	*Daphnia magna*	Reproduction	IC_{10}	III	1.3	-	Tišler and Zagorc-Končan (2002)
Invertebrate	*Cyclops sps.* [4]	Growth	EC_{20}	V	1.4	-	Borgmann et al. (1980)
Plant/Algae	*Azolla caroliniana*	Growth	LOEC	V	1.5	0.82	Rofkar et al. (2014)
Plant/Algae	*Lemna minor*	Growth	NOEC	V	>1.5	-	Rofkar et al. (2014)
Plant/Algae	*Lemna minor*	Growth	EC_{50}	III	2.0	-	Duester et al. (2011)
Invertebrate	*Daphnia magna*	Reproduction	EC_{10}	V	2.2	-	Enserink et al. (1991)
Plant/Algae	*Lemna disperma*	Growth	EC_{50}	V	2.3	-	Rahman et al. (2014)
Fish (non-salmonid)	*Jordanella floridae*	Growth	MATC	III	2.9	0.85	Lima et al. (1984)
Plant/Algae	*Lemna minor*	Growth	EC_{10}	V	3.0	-	Naumann et al. (2007)
Fish (non-salmonid)	*Pimephales promelas*	Growth	MATC	III	3.0	0.88	Lima et al. (1984)
Invertebrate	*Hyalella azteca*	Growth	IC_{25}	V	3.9	0.92	Norwood et al. (2007)
Fish (salmonid)	*Oncorhynchus mykiss*	Growth	MATC	III	4.9	-	Rankin and Dixon (1994)
Fish (salmonid)	*Oncorhynchus mykiss*	Growth	EC_{20}	V	8.0	-	Erickson et al. (2011)
Plant/Algae	*Scenedesmus subspicatus*	Growth	EC_{10}	III	9.4	0.95	Tišler and Zagorc-Končan (2002)
Plant/Algae	*Wolffia arrhiza*	Growth	EC_{50}	V	17	-	Duester et al. (2011)
Plant/Algae	*Chlorella sp. CE-35*	Growth	EC_{50}	III	27	-	Rahman et al. (2014)
Plant/Algae	*Selenastrum capricornutum*	Biomass	EC_{50}	V	31	0.98	Vocke et al. (1980)
Plant/Algae	*Scenedesmus obliquus*	Growth	EC_{50}	V	65	-	Wang et al. (2013)
Plant/Algae	*Lemna minor*	Growth	EC_{50}	V	82	-	Duester et al. (2011)

Notes: UN indicates the information remains unknown due to inaccesible literature. For right censored data (i.e., > value), the > value was substituted with the value in the SSD model fits.

[1] IC_{XX} and EC_{XX} refer to chronic inhibition and effects concentrations, respectively. The MATC (maximum acceptable toxicant concentration) is the geometric mean of the no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) derived using statistical hypothesis testing.

[2] Hazen plotting position = (Rank - 0.5) / sample size, where the most sensitive species is given a rank of 1.

[3] For *S. obliquu* s, a second SSD model was fit using the geometric mean (0.085 mg/L) of the three lowest reported EC_{50} values (0.048, 0.079, and 0.16 mg/L).

[4] Two species of copepods were included, *Cyclops vernails* and *C. bicuspidatus thomasi.*

Table B.5: Arsenic Species Sensitivity Distribution Model Output

Arsenic Form	Output	Normal	Logistic	Extreme Value	Gumbel
Arsenic(V)	Anderson Darling Statistic	0.6704	0.4303	1.2543	2.3768
	MSE Lower Tail	0.0402	0.0350	0.0197	0.0693
	HC_5 (mg/L)	0.084	0.071	0.042	0.14
	95% Confidence Limits	0.068 - 0.10	0.051 - 0.10	0.026 - 0.067	0.088 - 0.21
Arsenic(III)	Anderson Darling Statistic	1.2533	0.8793	2.7187	1.3198
	MSE Lower Tail	0.0529	0.0516	0.0528	0.0622
	HC_5 (mg/L)	0.23	0.21	0.13	0.30
	95% Confidence Limits	0.20 - 0.28	0.12 - 0.36	0.057 - 0.30	0.20 - 0.45
Combined Arsenic(V) and Arsenic(III)	Anderson Darling Statistic	1.5616	0.9769	2.0321	5.2613
	MSE Lower Tail	0.0694	0.0643	0.0487	0.0956
	HC_5 (mg/L)	0.14	0.12	0.081	0.19
	95% Confidence Limits	0.12 - 0.15	0.086 - 0.17	0.052 - 0.13	0.13 - 0.28

Shading indicates HC_5 assocated with the best fitting model for a given scenario.

Shading indicates failure of the model to describe the given distribution.

APPENDIX F.

Receiving Environment Water Quality Model Results

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Receiving Environment Water Quality Model - KZ-37 - Mean Model													
Baseline	-3	2018-03-01	220	29	0.2	0.001	0.028	0.0082	0.11	0.43	0.00063	0.00044	0.0063
Baseline	-3	2018-04-01	200	32	0.19	0.0027	0.03	0.019	0.096	0.85	0.00059	0.00052	0.01
Baseline	-3	2018-05-01	77	7.9	0.04	0.0055	0.031	0.031	0.04	0.99	0.0013	0.0012	0.3
Baseline	-3	2018-06-01	90	21	0.045	0.001	0.019	0.0086	0.049	0.6	0.00073	0.0006	0.11
Baseline	-3	2018-07-01	130	26	0.037	0.001	0.015	0.0067	0.054	0.25	0.00067	0.0012	0.057
Baseline	-3	2018-08-01	160	31	0.078	0.001	0.011	0.0058	0.059	0.25	0.00068	0.00025	0.031
Baseline	-3	2018-09-01	170	33	0.11	0.001	0.0025	0.0066	0.072	0.68	0.00025	0.00025	0.015
Baseline	-3	2018-10-01	180	31	0.12	0.001	0.028	0.0053	0.071	1.1	0.00025	0.00025	0.0085
Baseline	-3	2018-11-01	180	35	0.17	0.001	0.011	0.0094	0.076	0.73	0.00053	0.00025	0.0064
Baseline	-3	2018-12-01	220	33	0.17	0.001	0.0025	0.0094	0.081	0.62	0.00051	0.00025	0.0076
Baseline	-3	2019-01-01	210	33	0.2	0.001	0.017	0.015	0.094	0.25	0.00025	0.00025	0.0071
Baseline	-3	2019-02-01	220	31	0.21	0.001	0.037	0.013	0.1	0.25	0.00025	0.00025	0.0086
Construction	-2	2019-03-01	180	26	0.18	0.00095	0.019	0.017	0.072	0.36	0.00037	0.00029	0.0084
Construction	-2	2019-04-01	170	23	0.16	0.0017	0.012	0.011	0.07	0.7	0.00045	0.00027	0.013
Construction	-2	2019-05-01	74	10	0.032	0.0023	0.011	0.019	0.041	0.96	0.00077	0.00067	0.086
Construction	-2	2019-06-01	110	17	0.035	0.00092	0.01	0.013	0.045	0.51	0.00067	0.00056	0.025
Construction	-2	2019-07-01	120	22	0.011	0.00091	0.014	0.005	0.048	0.31	0.00038	0.00075	0.018
Construction	-2	2019-08-01	140	19	0.018	0.0014	0.009	0.0092	0.049	0.51	0.00047	0.00038	0.013
Construction	-2	2019-09-01	200	42	0.055	0.0014	0.026	0.0079	0.065	0.77	0.0004	0.00041	0.013
Construction	-2	2019-10-01	220	50	0.097	0.0013	0.036	0.0099	0.074	0.76	0.00021	0.00022	0.0094
Construction	-2	2019-11-01	270	68	0.12	0.0018	0.059	0.0096	0.082	0.71	0.00023	0.00024	0.0063
Construction	-2	2019-12-01	300	79	0.13	0.0018	0.072	0.0096	0.086	0.82	0.00014	0.00011	0.0084
Construction	-2	2020-01-01	310	86	0.13	0.0019	0.08	0.01	0.092	0.85	0.00012	0.00013	0.017
Construction	-2	2020-02-01	310	87	0.13	0.0019	0.082	0.012	0.095	0.88	0.00012	0.00013	0.0076
Construction	-1	2020-03-01	230	63	0.21	0.0038	0.07	0.011	0.073	0.59	0.00013	0.0001	0.0057
Construction	-1	2020-04-01	240	65	0.19	0.0038	0.07	0.008	0.074	0.71	0.00012	0.000084	0.0067
Construction	-1	2020-05-01	85	21	0.31	0.0084	0.058	0.013	0.036	0.62	0.00045	0.00039	0.06
Construction	-1	2020-06-01	100	20	0.23	0.0051	0.041	0.013	0.039	0.36	0.00036	0.0003	0.017
Construction	-1	2020-07-01	100	25	0.26	0.0063	0.047	0.005	0.042	0.22	0.00024	0.00054	0.014
Construction	-1	2020-08-01	120	27	0.31	0.0075	0.053	0.0088	0.048	0.34	0.00023	0.00015	0.011
Construction	-1	2020-09-01	140	33	0.37	0.0084	0.056	0.0097	0.057	0.49	0.00025	0.00026	0.012
Construction	-1	2020-10-01	160	41	0.42	0.0088	0.065	0.012	0.066	0.52	0.00014	0.00014	0.011

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Receiving Environment Water Quality Model - KZ-37 - Mean Model													**Receiving Environ**
Baseline	-3	2018-03-01	0.00003	0.00041	0.000064	71	0.00018	0.00017	0.39	0.000017	0.14	0.00056	0.0000025
Baseline	-3	2018-04-01	0.000048	0.00046	0.000064	62	0.00013	0.00031	0.39	0.000025	0.096	0.00054	0.0000025
Baseline	-3	2018-05-01	0.000057	0.00079	0.00021	25	0.00034	0.0027	1.1	0.001	0.071	0.0019	0.000008
Baseline	-3	2018-06-01	0.000068	0.00048	0.00009	29	0.00017	0.0021	0.41	0.00046	0.024	0.0011	0.000007
Baseline	-3	2018-07-01	0.00004	0.00029	0.00008	41	0.00008	0.0011	0.24	0.00037	0.015	0.00062	0.000005
Baseline	-3	2018-08-01	0.000062	0.00027	0.000078	50	0.000063	0.00061	0.2	0.00012	0.025	0.0004	0.0000025
Baseline	-3	2018-09-01	0.000043	0.00033	0.000083	54	0.000071	0.0004	0.29	0.000051	0.05	0.00042	0.0000025
Baseline	-3	2018-10-01	0.000039	0.00032	0.000077	57	0.000087	0.00041	0.32	0.000033	0.061	0.00046	0.0000025
Baseline	-3	2018-11-01	0.000036	0.00032	0.000079	57	0.000083	0.00027	0.32	0.000024	0.064	0.0004	0.0000025
Baseline	-3	2018-12-01	0.00004	0.00037	0.000072	70	0.000099	0.00026	0.32	0.000019	0.076	0.00048	0.0000025
Baseline	-3	2019-01-01	0.000034	0.00042	0.000066	64	0.00011	0.00021	0.6	0.000022	0.083	0.00048	0.0000025
Baseline	-3	2019-02-01	0.000028	0.0005	0.000077	70	0.00022	0.00021	0.49	0.000018	0.14	0.00065	0.0000025
Construction	-2	2019-03-01	0.000028	0.0004	0.000091	54	0.000047	0.0002	0.18	0.000073	0.036	0.00032	0.0000024
Construction	-2	2019-04-01	0.000045	0.00041	0.000052	55	0.000071	0.00033	0.22	0.00012	0.035	0.00042	0.0000039
Construction	-2	2019-05-01	0.000032	0.00033	0.000075	23	0.000065	0.0011	0.22	0.00022	0.019	0.00098	0.0000038
Construction	-2	2019-06-01	0.000036	0.00029	0.000041	34	0.000047	0.00056	0.12	0.00011	0.013	0.00051	0.0000027
Construction	-2	2019-07-01	0.00004	0.00022	0.000069	38	0.000027	0.00059	0.12	0.00006	0.013	0.00041	0.000006
Construction	-2	2019-08-01	0.000038	0.00026	0.000063	44	0.000073	0.00044	0.093	0.00011	0.011	0.00042	0.000003
Construction	-2	2019-09-01	0.000084	0.00092	0.00011	55	0.00011	0.00067	0.1	0.00011	0.06	0.00043	0.000003
Construction	-2	2019-10-01	0.00009	0.0012	0.00016	60	0.00011	0.00048	0.12	0.00011	0.077	0.00043	0.0000029
Construction	-2	2019-11-01	0.00014	0.0019	0.00018	71	0.00017	0.00044	0.14	0.00011	0.14	0.00052	0.0000033
Construction	-2	2019-12-01	0.00018	0.0024	0.00018	78	0.00022	0.00048	0.14	0.0001	0.16	0.00063	0.0000036
Construction	-2	2020-01-01	0.00022	0.0027	0.00021	81	0.00027	0.0006	0.27	0.0002	0.19	0.00083	0.000004
Construction	-2	2020-02-01	0.00023	0.0027	0.00021	81	0.00026	0.00055	0.14	0.00012	0.18	0.00086	0.0000038
Construction	-1	2020-03-01	0.00021	0.002	0.00015	59	0.00022	0.00037	0.087	0.000083	0.14	0.0009	0.0000028
Construction	-1	2020-04-01	0.00022	0.0021	0.00015	60	0.00024	0.00042	0.093	0.00011	0.14	0.001	0.0000034
Construction	-1	2020-05-01	0.00013	0.00075	0.00007	22	0.00011	0.00063	0.088	0.000089	0.05	0.001	0.0000028
Construction	-1	2020-06-01	0.00015	0.00064	0.000048	27	0.000087	0.00035	0.048	0.00005	0.037	0.00065	0.0000022
Construction	-1	2020-07-01	0.00019	0.00066	0.000058	28	0.000095	0.00032	0.038	0.000037	0.043	0.00074	0.0000028
Construction	-1	2020-08-01	0.00026	0.00091	0.000084	34	0.00015	0.00031	0.036	0.000084	0.06	0.001	0.0000023
Construction	-1	2020-09-01	0.00031	0.001	0.000091	38	0.00018	0.00038	0.043	0.000068	0.074	0.0012	0.0000025
Construction	-1	2020-10-01	0.00036	0.0014	0.00013	43	0.00023	0.00035	0.056	0.000078	0.099	0.0016	0.0000026

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Receiving Environment Water Quality Model - KZ-37 - Mean Model			nent Water Quality Model - KZ-37 - Mean Model									
Baseline	-3	2018-03-01	0.0012	0.000001	0.002	0.012	0.72	0.0021	0.00003	0.00034	0.000072	74
Baseline	-3	2018-04-01	0.0011	0.000001	0.002	0.011	1.9	0.0027	0.000026	0.0004	0.000063	64
Baseline	-3	2018-05-01	0.00053	0.0000066	0.00053	0.036	11	0.087	0.000042	0.00031	0.000082	24
Baseline	-3	2018-06-01	0.00057	0.000004	0.00052	0.019	3.6	0.01	0.000067	0.00026	0.000042	29
Baseline	-3	2018-07-01	0.00063	0.000001	0.0008	0.015	3.7	0.0098	0.000048	0.00022	0.00006	43
Baseline	-3	2018-08-01	0.0011	0.000001	0.0011	0.013	2.4	0.0066	0.000063	0.00021	0.000062	52
Baseline	-3	2018-09-01	0.0011	0.000001	0.0015	0.011	1.6	0.0033	0.00004	0.00026	0.00007	54
Baseline	-3	2018-10-01	0.0011	0.000001	0.0014	0.012	1.3	0.0026	0.000038	0.00025	0.000069	55
Baseline	-3	2018-11-01	0.0012	0.000001	0.0016	0.015	1.5	0.0019	0.000037	0.00027	0.000065	58
Baseline	-3	2018-12-01	0.0012	0.000001	0.0018	0.015	0.95	0.0023	0.000035	0.00033	0.000073	70
Baseline	-3	2019-01-01	0.0012	0.000001	0.0021	0.012	0.6	0.0021	0.000041	0.00031	0.000065	65
Baseline	-3	2019-02-01	0.0012	0.000001	0.002	0.013	1.2	0.0021	0.00003	0.00038	0.000079	67
Construction	-2	2019-03-01	0.0012	0.0000013	0.0017	0.02	0.37	0.0028	0.000034	0.00032	0.000052	61
Construction	-2	2019-04-01	0.00099	0.0000011	0.0017	0.014	1.9	0.0071	0.000036	0.00025	0.000044	55
Construction	-2	2019-05-01	0.00045	0.0000021	0.00055	0.013	8.3	0.053	0.000028	0.00022	0.00005	23
Construction	-2	2019-06-01	0.0005	0.0000011	0.00089	0.0065	2.4	0.0096	0.000035	0.00025	0.000035	34
Construction	-2	2019-07-01	0.00051	0.000002	0.00076	0.0099	2.6	0.008	0.000038	0.00018	0.000042	39
Construction	-2	2019-08-01	0.00045	0.0000015	0.00085	0.0074	2.4	0.0068	0.00004	0.00024	0.00003	43
Construction	-2	2019-09-01	0.00059	0.0000024	0.002	0.019	1.8	0.0045	0.000083	0.00091	0.000082	55
Construction	-2	2019-10-01	0.00083	0.0000022	0.0024	0.027	1.7	0.0036	0.000089	0.0011	0.00013	59
Construction	-2	2019-11-01	0.00079	0.0000052	0.0032	0.035	1.3	0.0037	0.00015	0.0019	0.00014	71
Construction	-2	2019-12-01	0.00073	0.000015	0.0038	0.039	1.6	0.0033	0.00018	0.0023	0.00016	78
Construction	-2	2020-01-01	0.00075	0.00004	0.0041	0.043	1.5	0.0041	0.00022	0.0026	0.00017	80
Construction	-2	2020-02-01	0.00078	0.000051	0.0042	0.041	1.2	0.0042	0.00023	0.0027	0.00018	81
Construction	-1	2020-03-01	0.00072	0.000089	0.0031	0.03	0.82	0.0038	0.00021	0.002	0.00014	60
Construction	-1	2020-04-01	0.00065	0.0001	0.0032	0.031	1.3	0.0052	0.00022	0.002	0.00015	61
Construction	-1	2020-05-01	0.00035	0.000048	0.0012	0.013	5.5	0.047	0.00013	0.00072	0.000062	22
Construction	-1	2020-06-01	0.00047	0.000052	0.0014	0.0084	1.5	0.0098	0.00015	0.00063	0.000046	27
Construction	-1	2020-07-01	0.00049	0.000077	0.0013	0.011	1.6	0.01	0.00019	0.00065	0.000051	28
Construction	-1	2020-08-01	0.00062	0.00013	0.0016	0.015	1.3	0.0091	0.00026	0.00091	0.000065	34
Construction	-1	2020-09-01	0.00085	0.00017	0.002	0.018	1.1	0.0085	0.00031	0.001	0.00008	39
Construction	-1	2020-10-01	0.0011	0.00024	0.0022	0.026	1.1	0.0078	0.00036	0.0013	0.00012	43

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Receiving Environment Water Quality Model - KZ-37 - Mean Model												
Baseline	-3	2018-03-01	0.00018	0.00016	0.23	0.000013	0.14	0.0006	0.0000025	0.0012	0.000001	0.002
Baseline	-3	2018-04-01	0.00012	0.00026	0.23	0.0000025	0.099	0.00055	0.0000025	0.0011	0.000001	0.002
Baseline	-3	2018-05-01	0.00009	0.0016	0.22	0.000098	0.03	0.0012	0.0000053	0.00047	0.0000028	0.00047
Baseline	-3	2018-06-01	0.000042	0.0013	0.13	0.000042	0.016	0.00058	0.0000025	0.00058	0.000002	0.0005
Baseline	-3	2018-07-01	0.000025	0.00079	0.072	0.000074	0.01	0.00046	0.0000025	0.00081	0.000002	0.00085
Baseline	-3	2018-08-01	0.000033	0.00045	0.1	0.000011	0.022	0.00038	0.0000025	0.001	0.000001	0.0012
Baseline	-3	2018-09-01	0.000057	0.00033	0.17	0.000006	0.049	0.00038	0.0000025	0.0011	0.000001	0.0016
Baseline	-3	2018-10-01	0.000068	0.00028	0.2	0.000006	0.056	0.00038	0.0000025	0.0011	0.000001	0.0015
Baseline	-3	2018-11-01	0.000079	0.00024	0.17	0.0000025	0.063	0.00039	0.0000025	0.0012	0.000001	0.0017
Baseline	-3	2018-12-01	0.000097	0.00025	0.16	0.000012	0.075	0.00045	0.0000025	0.0012	0.000001	0.0019
Baseline	-3	2019-01-01	0.000093	0.00034	0.15	0.00004	0.072	0.0004	0.0000025	0.0013	0.000001	0.002
Baseline	-3	2019-02-01	0.0002	0.00017	0.21	0.0000025	0.14	0.00066	0.0000025	0.0012	0.000001	0.0021
Construction	-2	2019-03-01	0.000045	0.00013	0.025	0.0000066	0.052	0.00038	0.0000024	0.001	0.0000017	0.0018
Construction	-2	2019-04-01	0.000055	0.00036	0.04	0.000051	0.025	0.00038	0.0000027	0.00093	0.0000011	0.0017
Construction	-2	2019-05-01	0.000045	0.00086	0.1	0.000027	0.013	0.00082	0.0000041	0.00041	0.0000019	0.00053
Construction	-2	2019-06-01	0.000021	0.00046	0.032	0.000011	0.0046	0.00049	0.0000031	0.0005	0.0000012	0.0009
Construction	-2	2019-07-01	0.0000099	0.00037	0.024	0.0000075	0.0028	0.00038	0.0000023	0.00053	0.0000013	0.00075
Construction	-2	2019-08-01	0.000069	0.00037	0.023	0.000028	0.0048	0.0004	0.000003	0.00045	0.0000012	0.00083
Construction	-2	2019-09-01	0.000097	0.00043	0.044	0.000048	0.056	0.0004	0.000003	0.00055	0.0000019	0.002
Construction	-2	2019-10-01	0.000095	0.00036	0.038	0.000042	0.069	0.00039	0.0000029	0.00079	0.0000023	0.0024
Construction	-2	2019-11-01	0.00017	0.0004	0.049	0.000063	0.13	0.00051	0.0000033	0.00076	0.0000054	0.0032
Construction	-2	2019-12-01	0.00021	0.00044	0.064	0.000076	0.16	0.00061	0.0000036	0.00074	0.000014	0.0038
Construction	-2	2020-01-01	0.00024	0.00049	0.06	0.00011	0.18	0.00077	0.0000037	0.00074	0.00004	0.0041
Construction	-2	2020-02-01	0.00025	0.00051	0.061	0.000091	0.18	0.00084	0.0000038	0.00078	0.000051	0.0042
Construction	-1	2020-03-01	0.00022	0.00036	0.048	0.000067	0.14	0.00091	0.0000028	0.00067	0.000089	0.0031
Construction	-1	2020-04-01	0.00024	0.00042	0.052	0.000094	0.14	0.001	0.000003	0.00061	0.0001	0.0032
Construction	-1	2020-05-01	0.0001	0.00055	0.051	0.000032	0.048	0.00092	0.000003	0.00034	0.000048	0.0012
Construction	-1	2020-06-01	0.000078	0.00029	0.02	0.000021	0.035	0.00065	0.000002	0.00047	0.000052	0.0014
Construction	-1	2020-07-01	0.00009	0.00027	0.014	0.000024	0.041	0.00073	0.0000019	0.0005	0.000077	0.0013
Construction	-1	2020-08-01	0.00015	0.00028	0.016	0.000044	0.059	0.001	0.0000023	0.00062	0.00013	0.0016
Construction	-1	2020-09-01	0.00017	0.00029	0.02	0.000042	0.073	0.0012	0.0000025	0.00083	0.00017	0.002
Construction	-1	2020-10-01	0.00022	0.00029	0.02	0.000048	0.095	0.0016	0.0000026	0.0011	0.00024	0.0022

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Receiving Environment Water Quality Model - KZ-37 - Mean Model			
Baseline	-3	2018-03-01	0.013
Baseline	-3	2018-04-01	0.012
Baseline	-3	2018-05-01	0.018
Baseline	-3	2018-06-01	0.011
Baseline	-3	2018-07-01	0.011
Baseline	-3	2018-08-01	0.011
Baseline	-3	2018-09-01	0.01
Baseline	-3	2018-10-01	0.011
Baseline	-3	2018-11-01	0.015
Baseline	-3	2018-12-01	0.016
Baseline	-3	2019-01-01	0.011
Baseline	-3	2019-02-01	0.013
Construction	-2	2019-03-01	0.029
Construction	-2	2019-04-01	0.012
Construction	-2	2019-05-01	0.009
Construction	-2	2019-06-01	0.0052
Construction	-2	2019-07-01	0.007
Construction	-2	2019-08-01	0.0038
Construction	-2	2019-09-01	0.016
Construction	-2	2019-10-01	0.023
Construction	-2	2019-11-01	0.032
Construction	-2	2019-12-01	0.036
Construction	-2	2020-01-01	0.038
Construction	-2	2020-02-01	0.039
Construction	-1	2020-03-01	0.032
Construction	-1	2020-04-01	0.03
Construction	-1	2020-05-01	0.011
Construction	-1	2020-06-01	0.008
Construction	-1	2020-07-01	0.0099
Construction	-1	2020-08-01	0.013
Construction	-1	2020-09-01	0.017
Construction	-1	2020-10-01	0.025

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-11-01	210	62	0.58	0.012	0.097	0.013	0.091	0.48	0.0002	0.00021	0.013
Construction	-1	2020-12-01	250	74	0.61	0.013	0.11	0.014	0.1	0.59	0.00015	0.00011	0.016
Construction	-1	2021-01-01	270	79	0.57	0.012	0.11	0.014	0.1	0.63	0.00012	0.00013	0.022
Construction	-1	2021-02-01	290	86	0.55	0.011	0.12	0.018	0.11	0.69	0.00012	0.00014	0.014
Production	1	2021-03-01	160	27	0.39	0.0066	0.046	0.018	0.067	0.27	0.00029	0.00023	0.011
Production	1	2021-04-01	160	26	0.34	0.0063	0.038	0.012	0.066	0.51	0.00032	0.00021	0.014
Production	1	2021-05-01	84	21	0.62	0.016	0.086	0.017	0.06	0.65	0.0006	0.00053	0.084
Production	1	2021-06-01	120	25	0.4	0.0089	0.054	0.016	0.064	0.37	0.00048	0.0004	0.029
Production	1	2021-07-01	120	31	0.4	0.0096	0.058	0.0068	0.069	0.2	0.00033	0.00066	0.025
Production	1	2021-08-01	140	31	0.41	0.0098	0.057	0.01	0.074	0.32	0.00033	0.00024	0.021
Production	1	2021-09-01	150	34	0.39	0.0091	0.049	0.01	0.078	0.45	0.00034	0.00034	0.021
Production	1	2021-10-01	140	34	0.36	0.0074	0.043	0.011	0.076	0.44	0.0002	0.0002	0.016
Production	1	2021-11-01	150	38	0.49	0.01	0.059	0.012	0.085	0.27	0.00027	0.00029	0.017
Production	1	2021-12-01	160	37	0.51	0.01	0.061	0.013	0.082	0.29	0.00021	0.00017	0.019
Production	1	2022-01-01	160	36	0.5	0.0098	0.062	0.014	0.079	0.27	0.00019	0.0002	0.029
Production	1	2022-02-01	160	36	0.49	0.0094	0.06	0.018	0.083	0.28	0.00019	0.00022	0.018
Production	2	2022-03-01	170	37	0.46	0.0085	0.056	0.017	0.083	0.26	0.00027	0.00022	0.015
Production	2	2022-04-01	180	36	0.42	0.0081	0.049	0.012	0.079	0.46	0.00029	0.00019	0.016
Production	2	2022-05-01	110	37	0.88	0.022	0.11	0.018	0.091	0.6	0.00057	0.0005	0.088
Production	2	2022-06-01	140	39	0.65	0.015	0.078	0.018	0.093	0.36	0.00047	0.00039	0.037
Production	2	2022-07-01	150	46	0.68	0.016	0.084	0.0086	0.1	0.19	0.00033	0.00066	0.034
Production	2	2022-08-01	170	46	0.7	0.016	0.082	0.012	0.11	0.31	0.00032	0.00024	0.03
Production	2	2022-09-01	170	49	0.67	0.015	0.073	0.012	0.11	0.44	0.00033	0.00033	0.029
Production	2	2022-10-01	170	48	0.58	0.012	0.06	0.013	0.11	0.43	0.00019	0.00019	0.022
Production	2	2022-11-01	180	55	0.76	0.016	0.084	0.014	0.12	0.26	0.00026	0.00027	0.025
Production	2	2022-12-01	190	54	0.78	0.016	0.087	0.015	0.12	0.28	0.0002	0.00015	0.028
Production	2	2023-01-01	190	51	0.75	0.015	0.088	0.017	0.11	0.26	0.00018	0.00019	0.037
Production	2	2023-02-01	190	51	0.73	0.015	0.086	0.021	0.11	0.26	0.00018	0.0002	0.025
Production	3	2023-03-01	220	59	0.59	0.012	0.071	0.019	0.1	0.22	0.00024	0.00019	0.019
Production	3	2023-04-01	260	72	0.53	0.011	0.063	0.014	0.11	0.42	0.00026	0.00017	0.02
Production	3	2023-05-01	190	71	1.1	0.027	0.14	0.02	0.13	0.58	0.00055	0.00048	0.094
Production	3	2023-06-01	160	47	0.82	0.019	0.098	0.02	0.1	0.34	0.00045	0.00037	0.043
Production	3	2023-07-01	180	63	0.88	0.021	0.11	0.011	0.12	0.18	0.00031	0.00064	0.041
Production	3	2023-08-01	220	69	0.88	0.021	0.1	0.015	0.14	0.3	0.00031	0.00022	0.036

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-11-01	0.00058	0.0021	0.0002	58	0.0004	0.00042	0.092	0.00011	0.18	0.0027	0.0000034
Construction	-1	2020-12-01	0.00065	0.0025	0.00022	68	0.00047	0.00049	0.11	0.00012	0.22	0.003	0.0000038
Construction	-1	2021-01-01	0.00063	0.0027	0.00025	72	0.00049	0.00059	0.23	0.00021	0.24	0.003	0.0000043
Construction	-1	2021-02-01	0.00062	0.0029	0.00026	76	0.0005	0.00058	0.12	0.00014	0.25	0.0031	0.0000042
Production	1	2021-03-01	0.00017	0.0006	0.000083	41	0.000046	0.0002	0.16	0.0006	0.034	0.00029	0.0000029
Production	1	2021-04-01	0.00018	0.00068	0.000065	41	0.000068	0.00031	0.2	0.00088	0.034	0.00036	0.0000043
Production	1	2021-05-01	0.00026	0.00091	0.000088	15	0.000069	0.00085	0.16	0.0008	0.039	0.001	0.000005
Production	1	2021-06-01	0.00026	0.00095	0.000068	26	0.000051	0.0005	0.1	0.00063	0.033	0.00057	0.0000041
Production	1	2021-07-01	0.00028	0.001	0.000083	26	0.00004	0.00049	0.099	0.0007	0.036	0.00054	0.0000053
Production	1	2021-08-01	0.00028	0.0011	0.000098	31	0.000058	0.00045	0.099	0.00089	0.042	0.00058	0.0000045
Production	1	2021-09-01	0.00027	0.0011	0.000092	31	0.000052	0.0005	0.1	0.00091	0.045	0.00052	0.0000043
Production	1	2021-10-01	0.00021	0.001	0.00011	31	0.00004	0.0004	0.11	0.0011	0.045	0.0005	0.0000039
Production	1	2021-11-01	0.00032	0.0011	0.00012	34	0.000054	0.00036	0.15	0.0016	0.066	0.00053	0.0000044
Production	1	2021-12-01	0.00035	0.001	0.00012	36	0.000061	0.00034	0.17	0.0018	0.068	0.00053	0.0000043
Production	1	2022-01-01	0.00035	0.00097	0.00013	37	0.00008	0.00042	0.33	0.0021	0.076	0.00054	0.0000046
Production	1	2022-02-01	0.00034	0.00094	0.00013	37	0.000061	0.00035	0.2	0.0021	0.063	0.0005	0.0000042
Production	2	2022-03-01	0.00033	0.00099	0.00012	38	0.000056	0.0003	0.19	0.0024	0.056	0.00044	0.0000043
Production	2	2022-04-01	0.00033	0.001	0.000098	38	0.000074	0.00037	0.22	0.0026	0.051	0.00046	0.0000053
Production	2	2022-05-01	0.00042	0.0013	0.00011	16	0.000084	0.00093	0.18	0.0011	0.078	0.0013	0.0000064
Production	2	2022-06-01	0.00043	0.0012	0.000081	27	0.000068	0.0006	0.12	0.0008	0.066	0.00081	0.0000054
Production	2	2022-07-01	0.00046	0.0012	0.000096	27	0.000058	0.0006	0.12	0.00087	0.074	0.00081	0.0000067
Production	2	2022-08-01	0.00046	0.0014	0.00011	31	0.000075	0.00056	0.12	0.0011	0.081	0.00086	0.000006
Production	2	2022-09-01	0.00044	0.0013	0.0001	32	0.000068	0.0006	0.12	0.0011	0.085	0.00081	0.0000057
Production	2	2022-10-01	0.00034	0.0013	0.00012	31	0.000053	0.0005	0.13	0.0013	0.083	0.00078	0.0000052
Production	2	2022-11-01	0.00051	0.0015	0.00014	34	0.000073	0.00048	0.17	0.0019	0.11	0.00086	0.000006
Production	2	2022-12-01	0.00057	0.0014	0.00013	36	0.000081	0.00046	0.19	0.0023	0.11	0.00083	0.000006
Production	2	2023-01-01	0.00058	0.0014	0.00015	37	0.0001	0.00053	0.34	0.0026	0.11	0.00078	0.0000061
Production	2	2023-02-01	0.00056	0.0013	0.00014	37	0.000079	0.00045	0.21	0.0027	0.094	0.00072	0.0000056
Production	3	2023-03-01	0.00047	0.0012	0.00011	35	0.000063	0.00034	0.2	0.0026	0.063	0.00047	0.0000054
Production	3	2023-04-01	0.00047	0.0014	0.0001	36	0.000081	0.00043	0.25	0.0029	0.06	0.00049	0.0000072
Production	3	2023-05-01	0.00062	0.0017	0.00013	17	0.0001	0.001	0.22	0.0011	0.11	0.0015	0.0000086
Production	3	2023-06-01	0.00059	0.0011	0.000073	27	0.00008	0.00059	0.1	0.00057	0.065	0.00076	0.0000059
Production	3	2023-07-01	0.00065	0.0014	0.0001	28	0.000074	0.00064	0.12	0.00073	0.084	0.00086	0.0000079
Production	3	2023-08-01	0.00064	0.0017	0.00012	33	0.000091	0.00062	0.13	0.00096	0.098	0.00097	0.0000075

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Construction	-1	2020-11-01	0.0015	0.00042	0.0033	0.044	0.87	0.01	0.00059	0.0021	0.00017	59
Construction	-1	2020-12-01	0.0016	0.00047	0.0038	0.052	1.2	0.011	0.00064	0.0025	0.00021	68
Construction	-1	2021-01-01	0.0016	0.00046	0.0041	0.055	1.2	0.011	0.00062	0.0027	0.00021	71
Construction	-1	2021-02-01	0.0016	0.00048	0.0043	0.056	0.94	0.01	0.00061	0.0028	0.00023	76
Production	1	2021-03-01	0.0013	0.000024	0.002	0.016	0.34	0.0069	0.00017	0.00055	0.000059	46
Production	1	2021-04-01	0.0012	0.000033	0.0019	0.014	1.4	0.0099	0.00017	0.00054	0.000059	42
Production	1	2021-05-01	0.00089	0.000068	0.0013	0.012	6.9	0.065	0.00026	0.00085	0.000076	15
Production	1	2021-06-01	0.00092	0.000054	0.0018	0.0083	1.9	0.019	0.00026	0.00093	0.000065	25
Production	1	2021-07-01	0.00096	0.000065	0.0016	0.01	2.1	0.019	0.00029	0.00098	0.000072	26
Production	1	2021-08-01	0.001	0.000082	0.0016	0.011	1.8	0.017	0.00028	0.0011	0.000073	30
Production	1	2021-09-01	0.0011	0.000088	0.0018	0.012	1.4	0.014	0.00027	0.0011	0.000076	32
Production	1	2021-10-01	0.0012	0.000091	0.0015	0.016	1.2	0.011	0.00021	0.00098	0.000089	31
Production	1	2021-11-01	0.0014	0.00011	0.002	0.021	0.84	0.013	0.00033	0.001	0.000088	34
Production	1	2021-12-01	0.0014	0.00011	0.0021	0.023	1.1	0.012	0.00034	0.00096	0.000089	36
Production	1	2022-01-01	0.0014	0.0001	0.0022	0.025	0.87	0.012	0.00034	0.00086	0.00008	36
Production	1	2022-02-01	0.0015	0.0001	0.0022	0.022	0.48	0.011	0.00034	0.00086	0.000088	37
Production	2	2022-03-01	0.0017	0.000091	0.0022	0.023	0.47	0.01	0.00033	0.00094	0.000095	42
Production	2	2022-04-01	0.0016	0.000086	0.0021	0.021	1.4	0.013	0.00032	0.00091	0.000091	38
Production	2	2022-05-01	0.0012	0.00015	0.0019	0.014	6.6	0.07	0.00042	0.0013	0.000096	15
Production	2	2022-06-01	0.0011	0.00012	0.0024	0.0099	1.9	0.027	0.00043	0.0012	0.000078	26
Production	2	2022-07-01	0.0012	0.00014	0.0023	0.012	2.1	0.028	0.00046	0.0012	0.000085	27
Production	2	2022-08-01	0.0012	0.00016	0.0024	0.012	1.8	0.026	0.00046	0.0014	0.000086	31
Production	2	2022-09-01	0.0013	0.00017	0.0025	0.013	1.4	0.023	0.00044	0.0013	0.000088	32
Production	2	2022-10-01	0.0014	0.00017	0.002	0.017	1.2	0.017	0.00034	0.0012	0.0001	31
Production	2	2022-11-01	0.0017	0.0002	0.0028	0.023	0.84	0.022	0.00052	0.0014	0.00011	35
Production	2	2022-12-01	0.0017	0.00019	0.003	0.025	1.1	0.021	0.00056	0.0014	0.00011	36
Production	2	2023-01-01	0.0018	0.00017	0.0031	0.028	0.9	0.021	0.00057	0.0013	0.0001	36
Production	2	2023-02-01	0.0019	0.00016	0.0031	0.025	0.5	0.02	0.00056	0.0013	0.00011	37
Production	3	2023-03-01	0.0018	0.000094	0.0028	0.025	0.5	0.016	0.00048	0.0011	0.000092	39
Production	3	2023-04-01	0.0019	0.000092	0.0027	0.026	1.4	0.017	0.00046	0.0013	0.000096	36
Production	3	2023-05-01	0.0015	0.00019	0.0028	0.018	6.6	0.077	0.00061	0.0017	0.00012	16
Production	3	2023-06-01	0.0011	0.000096	0.0032	0.0086	1.8	0.033	0.00059	0.0011	0.00007	27
Production	3	2023-07-01	0.0013	0.00014	0.0032	0.012	2.1	0.036	0.00065	0.0014	0.000092	28
Production	3	2023-08-01	0.0015	0.00018	0.0032	0.014	1.8	0.033	0.00064	0.0017	0.0001	32

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Construction	-1	2020-11-01	0.0004	0.0004	0.031	0.00008	0.18	0.0027	0.0000034	0.0015	0.00042	0.0033
Construction	-1	2020-12-01	0.00046	0.00045	0.044	0.000094	0.22	0.003	0.0000038	0.0016	0.00047	0.0038
Construction	-1	2021-01-01	0.00046	0.00049	0.042	0.00013	0.22	0.0029	0.000004	0.0016	0.00046	0.0041
Construction	-1	2021-02-01	0.0005	0.00053	0.048	0.00011	0.24	0.0031	0.0000042	0.0016	0.00048	0.0043
Production	1	2021-03-01	0.000044	0.00016	0.057	0.00056	0.045	0.00032	0.0000029	0.0012	0.000025	0.002
Production	1	2021-04-01	0.000057	0.00032	0.079	0.00084	0.028	0.00033	0.0000035	0.0012	0.000033	0.0019
Production	1	2021-05-01	0.000057	0.00074	0.097	0.00072	0.036	0.00094	0.0000053	0.00087	0.000068	0.0013
Production	1	2021-06-01	0.000038	0.00042	0.05	0.00058	0.029	0.00056	0.0000039	0.00092	0.000054	0.0018
Production	1	2021-07-01	0.000031	0.0004	0.046	0.00067	0.032	0.00052	0.0000039	0.00098	0.000065	0.0016
Production	1	2021-08-01	0.000054	0.0004	0.05	0.00083	0.039	0.00056	0.0000043	0.001	0.000082	0.0016
Production	1	2021-09-01	0.000043	0.00037	0.053	0.00088	0.043	0.0005	0.0000042	0.0011	0.000088	0.0018
Production	1	2021-10-01	0.000028	0.0003	0.05	0.001	0.04	0.00046	0.0000038	0.0012	0.000091	0.0015
Production	1	2021-11-01	0.000048	0.0003	0.062	0.0015	0.062	0.00052	0.0000043	0.0014	0.00011	0.002
Production	1	2021-12-01	0.000051	0.00027	0.074	0.0018	0.064	0.0005	0.0000043	0.0014	0.00011	0.0021
Production	1	2022-01-01	0.000047	0.00027	0.064	0.0019	0.059	0.00046	0.0000041	0.0014	0.000099	0.0021
Production	1	2022-02-01	0.000047	0.00027	0.07	0.002	0.057	0.00046	0.0000041	0.0015	0.0001	0.0022
Production	2	2022-03-01	0.000052	0.00026	0.092	0.0024	0.064	0.00046	0.0000042	0.0016	0.000092	0.0022
Production	2	2022-04-01	0.000063	0.00038	0.11	0.0026	0.045	0.00043	0.0000045	0.0016	0.000086	0.0021
Production	2	2022-05-01	0.000073	0.00082	0.11	0.001	0.076	0.0012	0.0000066	0.0012	0.00015	0.0019
Production	2	2022-06-01	0.000055	0.00052	0.067	0.00075	0.063	0.0008	0.0000052	0.0011	0.00012	0.0024
Production	2	2022-07-01	0.000049	0.00051	0.064	0.00084	0.07	0.00079	0.0000054	0.0012	0.00014	0.0023
Production	2	2022-08-01	0.000071	0.00051	0.069	0.001	0.078	0.00085	0.0000058	0.0012	0.00016	0.0023
Production	2	2022-09-01	0.00006	0.00048	0.072	0.001	0.082	0.00079	0.0000056	0.0013	0.00017	0.0025
Production	2	2022-10-01	0.000042	0.0004	0.074	0.0012	0.078	0.00075	0.0000052	0.0014	0.00017	0.002
Production	2	2022-11-01	0.000068	0.00043	0.089	0.0019	0.11	0.00085	0.000006	0.0017	0.0002	0.0028
Production	2	2022-12-01	0.000072	0.0004	0.1	0.0022	0.11	0.00081	0.000006	0.0018	0.00019	0.003
Production	2	2023-01-01	0.000068	0.00039	0.091	0.0025	0.093	0.00071	0.0000057	0.0018	0.00017	0.0031
Production	2	2023-02-01	0.000067	0.00039	0.098	0.0027	0.088	0.00069	0.0000056	0.0019	0.00016	0.0031
Production	3	2023-03-01	0.000062	0.00031	0.12	0.0025	0.07	0.00049	0.0000054	0.0017	0.000094	0.0028
Production	3	2023-04-01	0.000072	0.00044	0.16	0.0028	0.055	0.00047	0.0000065	0.0018	0.000092	0.0027
Production	3	2023-05-01	0.000091	0.00092	0.17	0.0011	0.1	0.0014	0.0000089	0.0015	0.00019	0.0028
Production	3	2023-06-01	0.000068	0.00052	0.066	0.00053	0.061	0.00076	0.0000057	0.0011	0.000096	0.0032
Production	3	2023-07-01	0.000066	0.00055	0.085	0.00071	0.08	0.00084	0.0000066	0.0013	0.00014	0.0032
Production	3	2023-08-01	0.000087	0.00057	0.1	0.00091	0.096	0.00096	0.0000073	0.0015	0.00018	0.0032

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Construction	-1	2020-11-01	0.043
Construction	-1	2020-12-01	0.05
Construction	-1	2021-01-01	0.05
Construction	-1	2021-02-01	0.054
Production	1	2021-03-01	0.022
Production	1	2021-04-01	0.013
Production	1	2021-05-01	0.01
Production	1	2021-06-01	0.0077
Production	1	2021-07-01	0.0091
Production	1	2021-08-01	0.0088
Production	1	2021-09-01	0.011
Production	1	2021-10-01	0.013
Production	1	2021-11-01	0.018
Production	1	2021-12-01	0.019
Production	1	2022-01-01	0.019
Production	1	2022-02-01	0.019
Production	2	2022-03-01	0.028
Production	2	2022-04-01	0.02
Production	2	2022-05-01	0.013
Production	2	2022-06-01	0.0093
Production	2	2022-07-01	0.011
Production	2	2022-08-01	0.01
Production	2	2022-09-01	0.012
Production	2	2022-10-01	0.015
Production	2	2022-11-01	0.02
Production	2	2022-12-01	0.022
Production	2	2023-01-01	0.021
Production	2	2023-02-01	0.022
Production	3	2023-03-01	0.029
Production	3	2023-04-01	0.025
Production	3	2023-05-01	0.016
Production	3	2023-06-01	0.0081
Production	3	2023-07-01	0.011
Production	3	2023-08-01	0.012

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-09-01	220	73	0.83	0.019	0.091	0.014	0.14	0.43	0.00031	0.00032	0.035
Production	3	2023-10-01	230	75	0.7	0.015	0.075	0.015	0.13	0.42	0.00018	0.00018	0.026
Production	3	2023-11-01	250	88	0.93	0.02	0.11	0.017	0.15	0.23	0.00023	0.00024	0.031
Production	3	2023-12-01	260	87	0.96	0.021	0.11	0.019	0.14	0.25	0.00018	0.00012	0.034
Production	3	2024-01-01	250	80	0.94	0.02	0.11	0.021	0.13	0.23	0.00015	0.00015	0.041
Production	3	2024-02-01	280	90	0.87	0.018	0.11	0.025	0.14	0.22	0.00015	0.00017	0.031
Production	4	2024-03-01	290	94	0.76	0.016	0.092	0.023	0.14	0.21	0.00023	0.00018	0.025
Production	4	2024-04-01	290	92	0.66	0.014	0.08	0.016	0.13	0.4	0.00023	0.00017	0.024
Production	4	2024-05-01	200	81	1.3	0.032	0.16	0.022	0.16	0.57	0.00055	0.00048	0.1
Production	4	2024-06-01	150	48	1	0.023	0.12	0.021	0.11	0.34	0.00045	0.00037	0.048
Production	4	2024-07-01	190	69	1.1	0.026	0.13	0.012	0.14	0.18	0.00032	0.00065	0.047
Production	4	2024-08-01	220	77	1.1	0.026	0.12	0.016	0.16	0.3	0.00031	0.00023	0.042
Production	4	2024-09-01	230	81	1.1	0.024	0.11	0.016	0.16	0.43	0.00032	0.00032	0.04
Production	4	2024-10-01	230	83	0.9	0.02	0.09	0.016	0.16	0.43	0.00018	0.00019	0.031
Production	4	2024-11-01	260	96	1.1	0.025	0.12	0.018	0.18	0.23	0.00023	0.00024	0.036
Production	4	2024-12-01	260	95	1.1	0.025	0.13	0.02	0.17	0.25	0.00018	0.00012	0.038
Production	4	2025-01-01	250	87	1.1	0.024	0.13	0.022	0.15	0.22	0.00014	0.00015	0.044
Production	4	2025-02-01	260	89	1.1	0.023	0.13	0.026	0.15	0.21	0.00015	0.00016	0.035
Production	5	2025-03-01	260	83	0.86	0.018	0.1	0.023	0.14	0.2	0.00023	0.00018	0.027
Production	5	2025-04-01	240	73	0.74	0.016	0.089	0.016	0.12	0.38	0.00023	0.00016	0.026
Production	5	2025-05-01	180	73	1.6	0.038	0.18	0.022	0.16	0.57	0.00055	0.00048	0.1
Production	5	2025-06-01	190	68	1.3	0.03	0.14	0.022	0.15	0.35	0.00046	0.00039	0.055
Production	5	2025-07-01	200	78	1.4	0.032	0.15	0.013	0.17	0.19	0.00033	0.00066	0.053
Production	5	2025-08-01	230	82	1.4	0.032	0.14	0.017	0.18	0.3	0.00032	0.00023	0.048
Production	5	2025-09-01	230	84	1.3	0.03	0.13	0.016	0.18	0.43	0.00033	0.00033	0.045
Production	5	2025-10-01	230	85	1.1	0.024	0.1	0.016	0.17	0.44	0.00019	0.00019	0.034
Production	5	2025-11-01	250	99	1.3	0.029	0.14	0.018	0.19	0.23	0.00023	0.00024	0.04
Production	5	2025-12-01	260	97	1.3	0.029	0.14	0.02	0.18	0.25	0.00018	0.00013	0.042
Production	5	2026-01-01	250	87	1.2	0.027	0.14	0.022	0.17	0.22	0.00014	0.00015	0.047
Production	5	2026-02-01	250	86	1.2	0.025	0.13	0.026	0.16	0.21	0.00015	0.00016	0.037
Production	6	2026-03-01	230	75	0.92	0.019	0.11	0.023	0.13	0.2	0.00022	0.00018	0.029
Production	6	2026-04-01	230	70	0.8	0.017	0.095	0.016	0.12	0.38	0.00022	0.00016	0.028
Production	6	2026-05-01	190	95	1.7	0.04	0.19	0.023	0.16	0.56	0.00055	0.00048	0.12
Production	6	2026-06-01	210	94	1.4	0.032	0.15	0.023	0.16	0.35	0.00046	0.00039	0.065

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Production	3	2023-09-01	0.0006	0.0016	0.00012	33	0.000082	0.00066	0.13	0.001	0.1	0.00093	0.0000073
Production	3	2023-10-01	0.00046	0.0017	0.00014	32	0.000063	0.00054	0.15	0.0013	0.099	0.00089	0.0000068
Production	3	2023-11-01	0.0007	0.0019	0.00016	33	0.000085	0.00053	0.19	0.0019	0.12	0.00092	0.000008
Production	3	2023-12-01	0.00077	0.0017	0.00016	34	0.000092	0.0005	0.2	0.0023	0.11	0.00083	0.0000078
Production	3	2024-01-01	0.00077	0.0015	0.00016	35	0.0001	0.00055	0.32	0.0026	0.11	0.00074	0.0000078
Production	3	2024-02-01	0.00072	0.0017	0.00018	35	0.000088	0.0005	0.23	0.0028	0.097	0.00072	0.0000078
Production	4	2024-03-01	0.00066	0.0017	0.00016	34	0.000077	0.00044	0.24	0.0032	0.085	0.00062	0.000008
Production	4	2024-04-01	0.00061	0.0016	0.00013	34	0.000092	0.00047	0.26	0.0034	0.072	0.00058	0.0000088
Production	4	2024-05-01	0.00074	0.0017	0.00013	17	0.00012	0.0011	0.21	0.0012	0.13	0.0017	0.0000098
Production	4	2024-06-01	0.0007	0.0011	0.000069	28	0.00009	0.00063	0.096	0.00058	0.076	0.00085	0.0000064
Production	4	2024-07-01	0.00076	0.0014	0.0001	29	0.000086	0.00071	0.12	0.00078	0.1	0.001	0.0000087
Production	4	2024-08-01	0.00075	0.0017	0.00013	33	0.0001	0.00071	0.13	0.001	0.13	0.0012	0.0000086
Production	4	2024-09-01	0.0007	0.0017	0.00012	34	0.000094	0.00075	0.13	0.0011	0.13	0.0012	0.0000084
Production	4	2024-10-01	0.00053	0.0017	0.00014	33	0.000073	0.00064	0.15	0.0014	0.13	0.0011	0.0000079
Production	4	2024-11-01	0.00079	0.002	0.00016	33	0.000097	0.00064	0.19	0.0021	0.15	0.0012	0.0000092
Production	4	2024-12-01	0.00086	0.0018	0.00016	34	0.0001	0.0006	0.2	0.0024	0.14	0.0011	0.0000091
Production	4	2025-01-01	0.00086	0.0016	0.00016	34	0.00011	0.00061	0.31	0.0028	0.13	0.00093	0.0000088
Production	4	2025-02-01	0.00084	0.0016	0.00017	34	0.000099	0.00053	0.22	0.0029	0.11	0.00087	0.0000084
Production	5	2025-03-01	0.0007	0.0015	0.00015	34	0.000082	0.00044	0.22	0.0032	0.092	0.00069	0.0000078
Production	5	2025-04-01	0.00064	0.0013	0.00011	34	0.000096	0.00045	0.22	0.0034	0.072	0.0006	0.000008
Production	5	2025-05-01	0.00081	0.0016	0.00012	18	0.00013	0.0011	0.18	0.0011	0.15	0.0019	0.0000099
Production	5	2025-06-01	0.00082	0.0014	0.000091	30	0.00011	0.00078	0.12	0.00081	0.12	0.0012	0.0000083
Production	5	2025-07-01	0.00087	0.0015	0.00011	30	0.0001	0.00082	0.13	0.0009	0.14	0.0013	0.0000099
Production	5	2025-08-01	0.00084	0.0017	0.00013	34	0.00012	0.00081	0.13	0.0011	0.15	0.0014	0.0000095
Production	5	2025-09-01	0.00078	0.0017	0.00012	34	0.00011	0.00084	0.13	0.0012	0.16	0.0014	0.0000091
Production	5	2025-10-01	0.00059	0.0017	0.00014	33	0.000083	0.00074	0.15	0.0015	0.15	0.0014	0.0000086
Production	5	2025-11-01	0.00085	0.0021	0.00016	33	0.00011	0.00078	0.18	0.0022	0.19	0.0015	0.00001
Production	5	2025-12-01	0.00092	0.002	0.00016	34	0.00011	0.00072	0.19	0.0026	0.17	0.0014	0.0000097
Production	5	2026-01-01	0.00091	0.0018	0.00016	34	0.00012	0.00069	0.3	0.0029	0.16	0.0012	0.0000093
Production	5	2026-02-01	0.00088	0.0017	0.00016	34	0.00011	0.00059	0.21	0.003	0.14	0.0011	0.0000087
Production	6	2026-03-01	0.00072	0.0014	0.00015	33	0.000087	0.0013	0.2	0.0032	0.098	0.00076	0.0000075
Production	6	2026-04-01	0.00067	0.0014	0.00014	33	0.0001	0.0018	0.22	0.0034	0.079	0.00066	0.000008
Production	6	2026-05-01	0.00086	0.0016	0.00013	18	0.00019	0.0024	0.19	0.0011	0.19	0.0023	0.000012
Production	6	2026-06-01	0.00087	0.0015	0.000098	30	0.00018	0.0017	0.13	0.00086	0.17	0.0018	0.00001

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Production	3	2023-09-01	0.0016	0.00019	0.0033	0.015	1.4	0.029	0.0006	0.0016	0.00011	33
Production	3	2023-10-01	0.0017	0.00019	0.0026	0.019	1.3	0.022	0.00045	0.0017	0.00012	31
Production	3	2023-11-01	0.0021	0.00021	0.0037	0.024	0.87	0.028	0.00071	0.0018	0.00013	33
Production	3	2023-12-01	0.0021	0.00018	0.0039	0.026	1.1	0.028	0.00076	0.0017	0.00014	34
Production	3	2024-01-01	0.0021	0.00015	0.004	0.028	0.93	0.027	0.00076	0.0015	0.00013	34
Production	3	2024-02-01	0.0024	0.00016	0.0039	0.028	0.62	0.025	0.00072	0.0016	0.00015	35
Production	4	2024-03-01	0.0025	0.00014	0.0035	0.03	0.64	0.021	0.00066	0.0016	0.00014	37
Production	4	2024-04-01	0.0024	0.00012	0.0033	0.029	1.4	0.021	0.0006	0.0015	0.00013	35
Production	4	2024-05-01	0.0017	0.00025	0.0034	0.018	6.6	0.083	0.00074	0.0017	0.00012	17
Production	4	2024-06-01	0.0011	0.00012	0.0037	0.0081	1.7	0.038	0.0007	0.0011	0.000066	28
Production	4	2024-07-01	0.0014	0.00018	0.0037	0.012	2.1	0.042	0.00077	0.0014	0.000091	29
Production	4	2024-08-01	0.0015	0.00024	0.0037	0.014	1.8	0.039	0.00075	0.0017	0.0001	33
Production	4	2024-09-01	0.0016	0.00025	0.0036	0.015	1.4	0.035	0.0007	0.0017	0.00011	34
Production	4	2024-10-01	0.0017	0.00026	0.0029	0.019	1.3	0.026	0.00053	0.0017	0.00012	32
Production	4	2024-11-01	0.0021	0.00028	0.004	0.024	0.84	0.033	0.0008	0.002	0.00014	33
Production	4	2024-12-01	0.0022	0.00025	0.0042	0.026	1	0.033	0.00085	0.0018	0.00014	33
Production	4	2025-01-01	0.0022	0.00021	0.0043	0.028	0.89	0.031	0.00085	0.0016	0.00013	33
Production	4	2025-02-01	0.0023	0.00019	0.0043	0.026	0.54	0.03	0.00084	0.0016	0.00014	34
Production	5	2025-03-01	0.0024	0.00016	0.0037	0.027	0.53	0.024	0.00071	0.0015	0.00013	36
Production	5	2025-04-01	0.0021	0.00013	0.0034	0.025	1.2	0.023	0.00063	0.0012	0.00011	34
Production	5	2025-05-01	0.0015	0.00029	0.0037	0.016	6.5	0.087	0.00081	0.0016	0.00011	18
Production	5	2025-06-01	0.0014	0.00022	0.0042	0.011	1.9	0.045	0.00082	0.0014	0.000088	29
Production	5	2025-07-01	0.0015	0.00025	0.0041	0.013	2.1	0.047	0.00087	0.0015	0.000098	30
Production	5	2025-08-01	0.0016	0.0003	0.004	0.014	1.8	0.044	0.00084	0.0017	0.0001	34
Production	5	2025-09-01	0.0016	0.00031	0.0039	0.015	1.4	0.039	0.00078	0.0016	0.00011	35
Production	5	2025-10-01	0.0017	0.00032	0.0031	0.019	1.3	0.03	0.00059	0.0016	0.00012	33
Production	5	2025-11-01	0.0021	0.00036	0.0042	0.024	0.81	0.037	0.00086	0.0021	0.00013	34
Production	5	2025-12-01	0.0022	0.00034	0.0044	0.025	1	0.036	0.00092	0.0019	0.00014	34
Production	5	2026-01-01	0.0022	0.00028	0.0045	0.027	0.85	0.034	0.0009	0.0017	0.00013	33
Production	5	2026-02-01	0.0022	0.00025	0.0044	0.026	0.5	0.032	0.00087	0.0016	0.00014	34
Production	6	2026-03-01	0.0022	0.00018	0.0037	0.025	0.47	0.026	0.00072	0.0014	0.00014	36
Production	6	2026-04-01	0.0021	0.00014	0.0034	0.025	1.2	0.025	0.00066	0.0013	0.00014	34
Production	6	2026-05-01	0.0015	0.00031	0.0039	0.016	6.4	0.1	0.00086	0.0016	0.00012	18
Production	6	2026-06-01	0.0015	0.00025	0.0044	0.011	1.9	0.055	0.00087	0.0015	0.000096	30

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Production	3	2023-09-01	0.000075	0.00054	0.1	0.00097	0.1	0.00091	0.0000072	0.0015	0.00019	0.0033
Production	3	2023-10-01	0.000053	0.00046	0.11	0.0012	0.095	0.00086	0.0000068	0.0017	0.00019	0.0026
Production	3	2023-11-01	0.000081	0.0005	0.13	0.0019	0.12	0.00091	0.000008	0.002	0.00021	0.0037
Production	3	2023-12-01	0.000084	0.00046	0.14	0.0022	0.11	0.00081	0.0000078	0.0021	0.00018	0.0039
Production	3	2024-01-01	0.00008	0.00043	0.12	0.0025	0.093	0.00068	0.0000074	0.0021	0.00015	0.004
Production	3	2024-02-01	0.000078	0.00045	0.15	0.0028	0.093	0.00068	0.0000078	0.0024	0.00016	0.0039
Production	4	2024-03-01	0.000075	0.00041	0.18	0.0032	0.09	0.00063	0.000008	0.0024	0.00014	0.0035
Production	4	2024-04-01	0.000085	0.00048	0.19	0.0034	0.068	0.00056	0.0000081	0.0023	0.00012	0.0032
Production	4	2024-05-01	0.00011	0.00099	0.16	0.0011	0.13	0.0016	0.00001	0.0016	0.00025	0.0033
Production	4	2024-06-01	0.000078	0.00056	0.059	0.00054	0.073	0.00085	0.0000063	0.0011	0.00012	0.0037
Production	4	2024-07-01	0.000078	0.00062	0.078	0.00075	0.1	0.001	0.0000075	0.0014	0.00018	0.0037
Production	4	2024-08-01	0.000099	0.00066	0.096	0.00098	0.12	0.0012	0.0000084	0.0015	0.00024	0.0037
Production	4	2024-09-01	0.000087	0.00063	0.1	0.001	0.13	0.0012	0.0000083	0.0016	0.00025	0.0036
Production	4	2024-10-01	0.000063	0.00055	0.11	0.0013	0.12	0.0011	0.0000079	0.0017	0.00026	0.0029
Production	4	2024-11-01	0.000093	0.00061	0.13	0.002	0.15	0.0012	0.0000092	0.0021	0.00028	0.004
Production	4	2024-12-01	0.000096	0.00056	0.14	0.0024	0.14	0.0011	0.000009	0.0022	0.00025	0.0043
Production	4	2025-01-01	0.000091	0.0005	0.12	0.0027	0.12	0.00088	0.0000084	0.0022	0.00021	0.0043
Production	4	2025-02-01	0.000089	0.00048	0.14	0.0029	0.11	0.00083	0.0000084	0.0023	0.00019	0.0043
Production	5	2025-03-01	0.00008	0.00042	0.15	0.0032	0.097	0.0007	0.0000078	0.0023	0.00016	0.0037
Production	5	2025-04-01	0.000088	0.00045	0.15	0.0034	0.068	0.00058	0.0000074	0.0021	0.00013	0.0033
Production	5	2025-05-01	0.00011	0.001	0.13	0.0011	0.15	0.0018	0.00001	0.0015	0.00029	0.0036
Production	5	2025-06-01	0.000094	0.0007	0.074	0.00077	0.12	0.0012	0.0000081	0.0014	0.00022	0.0042
Production	5	2025-07-01	0.000091	0.00073	0.073	0.00087	0.13	0.0013	0.0000086	0.0015	0.00025	0.0041
Production	5	2025-08-01	0.00011	0.00076	0.082	0.0011	0.15	0.0014	0.0000093	0.0016	0.0003	0.004
Production	5	2025-09-01	0.000097	0.00072	0.086	0.0011	0.16	0.0014	0.000009	0.0016	0.00031	0.0039
Production	5	2025-10-01	0.000073	0.00064	0.095	0.0014	0.15	0.0013	0.0000085	0.0017	0.00032	0.0031
Production	5	2025-11-01	0.0001	0.00074	0.12	0.0021	0.18	0.0015	0.0000099	0.0021	0.00036	0.0042
Production	5	2025-12-01	0.00011	0.00068	0.13	0.0025	0.17	0.0014	0.0000097	0.0022	0.00034	0.0044
Production	5	2026-01-01	0.000099	0.00058	0.12	0.0028	0.14	0.0011	0.0000089	0.0021	0.00028	0.0044
Production	5	2026-02-01	0.000096	0.00054	0.13	0.003	0.13	0.001	0.0000087	0.0022	0.00025	0.0044
Production	6	2026-03-01	0.000085	0.0013	0.14	0.0032	0.1	0.00077	0.0000075	0.0021	0.00018	0.0037
Production	6	2026-04-01	0.000093	0.0018	0.14	0.0034	0.075	0.00065	0.0000074	0.002	0.00014	0.0034
Production	6	2026-05-01	0.00018	0.0023	0.15	0.0011	0.19	0.0022	0.000012	0.0015	0.00031	0.0038
Production	6	2026-06-01	0.00017	0.0017	0.093	0.00081	0.16	0.0018	0.00001	0.0015	0.00025	0.0044

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Production	3	2023-09-01	0.014
Production	3	2023-10-01	0.017
Production	3	2023-11-01	0.023
Production	3	2023-12-01	0.024
Production	3	2024-01-01	0.023
Production	3	2024-02-01	0.026
Production	4	2024-03-01	0.033
Production	4	2024-04-01	0.028
Production	4	2024-05-01	0.017
Production	4	2024-06-01	0.0076
Production	4	2024-07-01	0.011
Production	4	2024-08-01	0.012
Production	4	2024-09-01	0.014
Production	4	2024-10-01	0.017
Production	4	2024-11-01	0.022
Production	4	2024-12-01	0.024
Production	4	2025-01-01	0.023
Production	4	2025-02-01	0.024
Production	5	2025-03-01	0.03
Production	5	2025-04-01	0.024
Production	5	2025-05-01	0.015
Production	5	2025-06-01	0.01
Production	5	2025-07-01	0.012
Production	5	2025-08-01	0.012
Production	5	2025-09-01	0.014
Production	5	2025-10-01	0.017
Production	5	2025-11-01	0.022
Production	5	2025-12-01	0.023
Production	5	2026-01-01	0.023
Production	5	2026-02-01	0.024
Production	6	2026-03-01	0.029
Production	6	2026-04-01	0.024
Production	6	2026-05-01	0.015
Production	6	2026-06-01	0.011

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Production	6	2026-07-01	230	110	1.5	0.035	0.16	0.014	0.17	0.19	0.00033	0.00066	0.065
Production	6	2026-08-01	270	140	1.4	0.034	0.15	0.017	0.18	0.3	0.00032	0.00023	0.061
Production	6	2026-09-01	280	140	1.3	0.031	0.13	0.017	0.18	0.43	0.00032	0.00033	0.059
Production	6	2026-10-01	290	140	1.1	0.025	0.1	0.017	0.17	0.43	0.00019	0.00019	0.05
Production	6	2026-11-01	320	180	1.3	0.03	0.14	0.018	0.19	0.23	0.00023	0.00024	0.063
Production	6	2026-12-01	310	180	1.3	0.029	0.14	0.02	0.18	0.24	0.00017	0.00012	0.069
Production	6	2027-01-01	290	160	1.2	0.027	0.14	0.021	0.16	0.21	0.00014	0.00015	0.074
Production	6	2027-02-01	290	150	1.2	0.025	0.13	0.025	0.15	0.2	0.00014	0.00016	0.067
Production	7	2027-03-01	260	120	0.91	0.019	0.11	0.022	0.13	0.19	0.00022	0.00017	0.053
Production	7	2027-04-01	250	99	0.79	0.017	0.093	0.016	0.12	0.37	0.00022	0.00016	0.048
Production	7	2027-05-01	280	130	1.7	0.04	0.19	0.023	0.16	0.56	0.00054	0.00048	0.12
Production	7	2027-06-01	290	120	1.4	0.033	0.15	0.023	0.16	0.35	0.00046	0.00039	0.067
Production	7	2027-07-01	310	130	1.5	0.035	0.16	0.014	0.17	0.19	0.00033	0.00066	0.066
Production	7	2027-08-01	360	140	1.5	0.034	0.15	0.018	0.17	0.3	0.00032	0.00023	0.062
Production	7	2027-09-01	370	140	1.4	0.031	0.13	0.017	0.17	0.43	0.00032	0.00033	0.059
Production	7	2027-10-01	380	140	1.1	0.025	0.1	0.017	0.16	0.42	0.00019	0.00019	0.05
Production	7	2027-11-01	410	170	1.3	0.029	0.13	0.018	0.18	0.22	0.00022	0.00023	0.062
Production	7	2027-12-01	400	180	1.3	0.028	0.14	0.02	0.17	0.24	0.00017	0.00012	0.068
Production	7	2028-01-01	360	170	1.2	0.026	0.13	0.021	0.15	0.21	0.00014	0.00014	0.073
Production	7	2028-02-01	340	180	1.1	0.023	0.12	0.024	0.15	0.2	0.00014	0.00016	0.064
Production	8	2028-03-01	290	130	0.88	0.018	0.1	0.022	0.12	0.19	0.00022	0.00017	0.057
Production	8	2028-04-01	270	110	0.76	0.016	0.089	0.016	0.11	0.37	0.00022	0.00016	0.054
Production	8	2028-05-01	350	130	1.6	0.039	0.19	0.023	0.15	0.55	0.00054	0.00047	0.12
Production	8	2028-06-01	350	120	1.4	0.032	0.14	0.023	0.15	0.35	0.00046	0.00039	0.067
Production	8	2028-07-01	370	130	1.5	0.034	0.15	0.014	0.16	0.18	0.00033	0.00066	0.066
Production	8	2028-08-01	420	140	1.4	0.033	0.14	0.018	0.16	0.29	0.00031	0.00023	0.062
Production	8	2028-09-01	430	140	1.3	0.03	0.13	0.017	0.16	0.42	0.00032	0.00032	0.059
Production	8	2028-10-01	440	140	1.1	0.023	0.099	0.016	0.15	0.41	0.00018	0.00018	0.05
Production	8	2028-11-01	470	170	1.2	0.028	0.13	0.018	0.17	0.22	0.00022	0.00023	0.062
Production	8	2028-12-01	450	180	1.2	0.026	0.13	0.019	0.16	0.23	0.00017	0.00012	0.067
Production	8	2029-01-01	390	170	1.1	0.024	0.13	0.021	0.14	0.21	0.00014	0.00014	0.072
Production	8	2029-02-01	380	180	1.1	0.023	0.12	0.025	0.14	0.2	0.00014	0.00015	0.065
Production	9	2029-03-01	310	140	0.83	0.017	0.097	0.022	0.12	0.19	0.00021	0.00017	0.058
Production	9	2029-04-01	280	110	0.72	0.015	0.085	0.016	0.11	0.36	0.00022	0.00015	0.057

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Production	6	2026-07-01	0.00092	0.0016	0.00011	31	0.0002	0.0019	0.13	0.00093	0.19	0.002	0.000013
Production	6	2026-08-01	0.00088	0.0018	0.00013	35	0.00028	0.002	0.13	0.0012	0.24	0.0025	0.000014
Production	6	2026-09-01	0.00081	0.0017	0.00012	35	0.00029	0.002	0.13	0.0012	0.26	0.0026	0.000014
Production	6	2026-10-01	0.00061	0.0017	0.00014	33	0.00032	0.002	0.15	0.0015	0.27	0.0029	0.000015
Production	6	2026-11-01	0.00087	0.0021	0.00016	33	0.00037	0.0023	0.18	0.0022	0.32	0.0032	0.000017
Production	6	2026-12-01	0.00094	0.0022	0.00016	34	0.00037	0.0025	0.19	0.0026	0.3	0.0031	0.000016
Production	6	2027-01-01	0.00092	0.0021	0.00016	34	0.00034	0.0026	0.3	0.0029	0.27	0.0026	0.000015
Production	6	2027-02-01	0.00088	0.0022	0.00016	34	0.00031	0.0026	0.21	0.003	0.24	0.0024	0.000014
Production	7	2027-03-01	0.00072	0.0019	0.00016	33	0.00022	0.0027	0.2	0.0032	0.16	0.0016	0.000011
Production	7	2027-04-01	0.00067	0.0018	0.00015	33	0.00019	0.003	0.22	0.0034	0.13	0.0013	0.00001
Production	7	2027-05-01	0.00088	0.0017	0.00013	19	0.00055	0.0026	0.19	0.0012	0.37	0.0047	0.000021
Production	7	2027-06-01	0.0009	0.0015	0.000099	31	0.00049	0.0018	0.13	0.00092	0.33	0.0038	0.000018
Production	7	2027-07-01	0.00094	0.0016	0.00011	31	0.00054	0.0019	0.13	0.00099	0.37	0.0042	0.000021
Production	7	2027-08-01	0.0009	0.0017	0.00013	35	0.00064	0.0021	0.13	0.0012	0.42	0.0049	0.000023
Production	7	2027-09-01	0.00083	0.0017	0.00012	35	0.00067	0.0021	0.13	0.0012	0.45	0.0052	0.000024
Production	7	2027-10-01	0.00063	0.0016	0.00014	33	0.0007	0.0021	0.15	0.0015	0.47	0.0055	0.000024
Production	7	2027-11-01	0.00088	0.002	0.00016	33	0.00079	0.0025	0.18	0.0022	0.54	0.006	0.000028
Production	7	2027-12-01	0.00094	0.0021	0.00016	34	0.00073	0.0027	0.19	0.0026	0.49	0.0054	0.000025
Production	7	2028-01-01	0.00091	0.0021	0.00017	34	0.00061	0.0028	0.3	0.0029	0.4	0.0044	0.000022
Production	7	2028-02-01	0.00083	0.0021	0.00017	34	0.00053	0.003	0.21	0.003	0.35	0.0039	0.000019
Production	8	2028-03-01	0.00071	0.002	0.00016	33	0.00036	0.0032	0.2	0.0031	0.23	0.0025	0.000014
Production	8	2028-04-01	0.00066	0.0019	0.00015	33	0.00029	0.0035	0.22	0.0034	0.17	0.0019	0.000013
Production	8	2028-05-01	0.00087	0.0018	0.00013	19	0.00086	0.0027	0.19	0.0012	0.53	0.0067	0.000029
Production	8	2028-06-01	0.0009	0.0016	0.0001	31	0.00073	0.0019	0.13	0.00095	0.45	0.0054	0.000025
Production	8	2028-07-01	0.00094	0.0016	0.00011	31	0.00077	0.002	0.13	0.001	0.49	0.0058	0.000028
Production	8	2028-08-01	0.0009	0.0018	0.00013	35	0.00091	0.0021	0.13	0.0013	0.56	0.0067	0.00003
Production	8	2028-09-01	0.00084	0.0017	0.00012	35	0.00094	0.0022	0.13	0.0013	0.58	0.0069	0.000031
Production	8	2028-10-01	0.00063	0.0016	0.00014	33	0.00094	0.0022	0.15	0.0016	0.59	0.0071	0.000031
Production	8	2028-11-01	0.00088	0.002	0.00016	33	0.001	0.0027	0.18	0.0022	0.65	0.0076	0.000034
Production	8	2028-12-01	0.00092	0.0021	0.00016	33	0.00094	0.003	0.19	0.0026	0.59	0.0068	0.000031
Production	8	2029-01-01	0.00089	0.0021	0.00017	33	0.00078	0.0032	0.3	0.0029	0.48	0.0055	0.000026
Production	8	2029-02-01	0.00086	0.0022	0.00017	34	0.00069	0.0035	0.21	0.003	0.43	0.0049	0.000023
Production	9	2029-03-01	0.0007	0.0021	0.00017	32	0.00046	0.0037	0.2	0.0031	0.28	0.0031	0.000017
Production	9	2029-04-01	0.00065	0.002	0.00016	32	0.00036	0.0042	0.22	0.0034	0.2	0.0023	0.000014

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Production	6	2026-07-01	0.0015	0.00028	0.0043	0.013	2.1	0.059	0.00092	0.0016	0.0001	31
Production	6	2026-08-01	0.0016	0.00033	0.0042	0.014	1.8	0.059	0.00088	0.0017	0.00011	34
Production	6	2026-09-01	0.0017	0.00034	0.0041	0.015	1.4	0.054	0.00081	0.0017	0.00011	35
Production	6	2026-10-01	0.0017	0.00036	0.0031	0.019	1.2	0.046	0.00061	0.0016	0.00012	33
Production	6	2026-11-01	0.0021	0.0004	0.0042	0.024	0.79	0.06	0.00088	0.002	0.00013	33
Production	6	2026-12-01	0.0021	0.00037	0.0045	0.025	0.99	0.064	0.00093	0.0021	0.00014	33
Production	6	2027-01-01	0.0021	0.0003	0.0045	0.027	0.84	0.062	0.00091	0.0021	0.00013	33
Production	6	2027-02-01	0.0022	0.00028	0.0044	0.026	0.49	0.061	0.00088	0.0022	0.00014	34
Production	7	2027-03-01	0.0022	0.0002	0.0037	0.026	0.45	0.049	0.00073	0.0019	0.00014	36
Production	7	2027-04-01	0.0021	0.00016	0.0034	0.026	1.1	0.045	0.00066	0.0016	0.00014	33
Production	7	2027-05-01	0.0015	0.00038	0.0039	0.016	6.3	0.11	0.00088	0.0017	0.00012	18
Production	7	2027-06-01	0.0015	0.00031	0.0045	0.012	1.9	0.057	0.00089	0.0015	0.000096	30
Production	7	2027-07-01	0.0015	0.00034	0.0044	0.013	2.1	0.06	0.00094	0.0016	0.0001	31
Production	7	2027-08-01	0.0016	0.00039	0.0042	0.014	1.7	0.059	0.0009	0.0017	0.00011	35
Production	7	2027-09-01	0.0017	0.00041	0.0041	0.015	1.3	0.054	0.00083	0.0017	0.00011	35
Production	7	2027-10-01	0.0017	0.00043	0.0032	0.019	1.2	0.046	0.00063	0.0016	0.00012	33
Production	7	2027-11-01	0.002	0.00048	0.0042	0.024	0.76	0.06	0.00089	0.002	0.00013	33
Production	7	2027-12-01	0.0021	0.00043	0.0044	0.026	0.95	0.063	0.00093	0.0021	0.00014	33
Production	7	2028-01-01	0.0021	0.00036	0.0044	0.028	0.8	0.06	0.0009	0.002	0.00013	33
Production	7	2028-02-01	0.0022	0.00032	0.0041	0.027	0.46	0.058	0.00083	0.0021	0.00014	34
Production	8	2028-03-01	0.0022	0.00022	0.0036	0.027	0.43	0.054	0.00071	0.0019	0.00015	36
Production	8	2028-04-01	0.002	0.00017	0.0033	0.026	1.1	0.051	0.00065	0.0018	0.00015	33
Production	8	2028-05-01	0.0015	0.00042	0.0039	0.016	6.3	0.11	0.00087	0.0017	0.00012	19
Production	8	2028-06-01	0.0015	0.00034	0.0045	0.012	1.9	0.058	0.0009	0.0015	0.000098	31
Production	8	2028-07-01	0.0015	0.00037	0.0044	0.014	2.1	0.061	0.00095	0.0016	0.0001	32
Production	8	2028-08-01	0.0016	0.00043	0.0042	0.015	1.7	0.059	0.0009	0.0017	0.00011	35
Production	8	2028-09-01	0.0017	0.00044	0.0041	0.015	1.3	0.054	0.00084	0.0017	0.00011	35
Production	8	2028-10-01	0.0017	0.00045	0.0031	0.019	1.2	0.046	0.00063	0.0016	0.00012	33
Production	8	2028-11-01	0.002	0.00049	0.0041	0.024	0.74	0.059	0.00088	0.002	0.00014	33
Production	8	2028-12-01	0.0021	0.00045	0.0043	0.026	0.93	0.062	0.00092	0.0021	0.00014	33
Production	8	2029-01-01	0.0021	0.00037	0.0043	0.028	0.79	0.06	0.00088	0.002	0.00014	33
Production	8	2029-02-01	0.0022	0.00033	0.0042	0.027	0.45	0.06	0.00085	0.0021	0.00015	34
Production	9	2029-03-01	0.0021	0.00023	0.0035	0.028	0.42	0.054	0.0007	0.002	0.00016	35
Production	9	2029-04-01	0.002	0.00018	0.0033	0.028	1.1	0.055	0.00064	0.0019	0.00016	33

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Production	6	2026-07-01	0.0002	0.0018	0.093	0.00091	0.19	0.002	0.000011	0.0015	0.00028	0.0043
Production	6	2026-08-01	0.00028	0.0019	0.1	0.0011	0.24	0.0025	0.000014	0.0016	0.00033	0.0042
Production	6	2026-09-01	0.00029	0.0019	0.1	0.0011	0.25	0.0026	0.000014	0.0016	0.00034	0.0041
Production	6	2026-10-01	0.00031	0.0019	0.1	0.0014	0.27	0.0029	0.000014	0.0017	0.00036	0.0031
Production	6	2026-11-01	0.00037	0.0023	0.12	0.0021	0.32	0.0032	0.000017	0.002	0.0004	0.0042
Production	6	2026-12-01	0.00037	0.0025	0.13	0.0025	0.3	0.003	0.000016	0.0021	0.00037	0.0045
Production	6	2027-01-01	0.00032	0.0024	0.12	0.0028	0.25	0.0026	0.000014	0.0021	0.0003	0.0045
Production	6	2027-02-01	0.0003	0.0026	0.13	0.003	0.23	0.0023	0.000014	0.0022	0.00028	0.0044
Production	7	2027-03-01	0.00022	0.0027	0.14	0.0032	0.17	0.0016	0.000011	0.0021	0.0002	0.0037
Production	7	2027-04-01	0.00019	0.003	0.15	0.0034	0.12	0.0013	0.0000098	0.002	0.00016	0.0034
Production	7	2027-05-01	0.00054	0.0025	0.15	0.0011	0.37	0.0046	0.000021	0.0015	0.00038	0.0039
Production	7	2027-06-01	0.00048	0.0018	0.093	0.00087	0.33	0.0038	0.000018	0.0015	0.00031	0.0045
Production	7	2027-07-01	0.00053	0.0019	0.093	0.00097	0.36	0.0042	0.00002	0.0015	0.00034	0.0044
Production	7	2027-08-01	0.00063	0.002	0.1	0.0012	0.42	0.0049	0.000023	0.0016	0.00039	0.0042
Production	7	2027-09-01	0.00067	0.002	0.1	0.0012	0.45	0.0052	0.000024	0.0016	0.00041	0.0041
Production	7	2027-10-01	0.00069	0.002	0.1	0.0015	0.47	0.0054	0.000024	0.0017	0.00043	0.0032
Production	7	2027-11-01	0.00079	0.0025	0.12	0.0022	0.53	0.006	0.000027	0.002	0.00048	0.0042
Production	7	2027-12-01	0.00072	0.0027	0.13	0.0026	0.48	0.0054	0.000025	0.0021	0.00043	0.0044
Production	7	2028-01-01	0.00059	0.0027	0.12	0.0028	0.39	0.0043	0.000021	0.0021	0.00035	0.0044
Production	7	2028-02-01	0.00052	0.003	0.13	0.003	0.35	0.0038	0.000019	0.0022	0.00032	0.0041
Production	8	2028-03-01	0.00036	0.0032	0.14	0.0031	0.24	0.0025	0.000014	0.0021	0.00022	0.0036
Production	8	2028-04-01	0.00028	0.0035	0.15	0.0033	0.17	0.0018	0.000012	0.002	0.00017	0.0033
Production	8	2028-05-01	0.00085	0.0026	0.15	0.0012	0.53	0.0066	0.000029	0.0015	0.00042	0.0039
Production	8	2028-06-01	0.00072	0.0018	0.094	0.00091	0.45	0.0054	0.000024	0.0015	0.00034	0.0045
Production	8	2028-07-01	0.00077	0.0019	0.094	0.001	0.48	0.0058	0.000026	0.0015	0.00037	0.0044
Production	8	2028-08-01	0.00091	0.0021	0.1	0.0012	0.56	0.0067	0.00003	0.0016	0.00043	0.0042
Production	8	2028-09-01	0.00093	0.0021	0.11	0.0013	0.58	0.0069	0.000031	0.0016	0.00044	0.0041
Production	8	2028-10-01	0.00093	0.0021	0.1	0.0015	0.59	0.007	0.000031	0.0017	0.00045	0.0031
Production	8	2028-11-01	0.001	0.0027	0.12	0.0022	0.65	0.0076	0.000034	0.002	0.00049	0.0041
Production	8	2028-12-01	0.00093	0.003	0.14	0.0026	0.59	0.0068	0.000031	0.0021	0.00045	0.0043
Production	8	2029-01-01	0.00076	0.0031	0.13	0.0028	0.47	0.0054	0.000026	0.0021	0.00037	0.0043
Production	8	2029-02-01	0.00068	0.0035	0.13	0.003	0.42	0.0049	0.000023	0.0022	0.00033	0.0042
Production	9	2029-03-01	0.00045	0.0037	0.14	0.0031	0.28	0.0032	0.000017	0.0021	0.00023	0.0036
Production	9	2029-04-01	0.00035	0.0042	0.15	0.0034	0.2	0.0023	0.000014	0.002	0.00018	0.0033

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

			Zinc (Zn), dissolved
Phase	Year	Date	mg/L
Production	6	2026-07-01	0.012
Production	6	2026-08-01	0.012
Production	6	2026-09-01	0.014
Production	6	2026-10-01	0.017
Production	6	2026-11-01	0.022
Production	6	2026-12-01	0.023
Production	6	2027-01-01	0.023
Production	6	2027-02-01	0.024
Production	7	2027-03-01	0.029
Production	7	2027-04-01	0.025
Production	7	2027-05-01	0.015
Production	7	2027-06-01	0.011
Production	7	2027-07-01	0.012
Production	7	2027-08-01	0.012
Production	7	2027-09-01	0.014
Production	7	2027-10-01	0.017
Production	7	2027-11-01	0.022
Production	7	2027-12-01	0.023
Production	7	2028-01-01	0.024
Production	7	2028-02-01	0.024
Production	8	2028-03-01	0.03
Production	8	2028-04-01	0.026
Production	8	2028-05-01	0.015
Production	8	2028-06-01	0.011
Production	8	2028-07-01	0.013
Production	8	2028-08-01	0.013
Production	8	2028-09-01	0.014
Production	8	2028-10-01	0.017
Production	8	2028-11-01	0.022
Production	8	2028-12-01	0.024
Production	8	2029-01-01	0.024
Production	8	2029-02-01	0.025
Production	9	2029-03-01	0.031
Production	9	2029-04-01	0.027

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Production	9	2029-05-01	390	130	1.6	0.037	0.18	0.023	0.14	0.55	0.00053	0.00047	0.12
Production	9	2029-06-01	380	120	1.3	0.03	0.14	0.023	0.15	0.35	0.00046	0.00038	0.067
Production	9	2029-07-01	400	130	1.4	0.032	0.15	0.014	0.15	0.18	0.00033	0.00066	0.066
Production	9	2029-08-01	450	140	1.3	0.031	0.14	0.018	0.16	0.29	0.00031	0.00022	0.061
Production	9	2029-09-01	460	140	1.2	0.028	0.12	0.017	0.16	0.42	0.00032	0.00032	0.059
Production	9	2029-10-01	460	150	0.99	0.022	0.093	0.016	0.14	0.41	0.00018	0.00018	0.049
Production	9	2029-11-01	490	170	1.2	0.026	0.12	0.018	0.16	0.21	0.00021	0.00022	0.061
Production	9	2029-12-01	470	180	1.1	0.025	0.12	0.019	0.15	0.23	0.00016	0.00012	0.066
Production	9	2030-01-01	410	170	1.1	0.023	0.12	0.02	0.14	0.2	0.00013	0.00014	0.071
Production	9	2030-02-01	390	180	1	0.021	0.12	0.024	0.14	0.19	0.00014	0.00015	0.065
Production	10	2030-03-01	320	130	0.79	0.017	0.093	0.022	0.11	0.19	0.00021	0.00017	0.045
Production	10	2030-04-01	280	110	0.69	0.015	0.081	0.016	0.1	0.36	0.00021	0.00015	0.047
Production	10	2030-05-01	400	130	1.5	0.035	0.17	0.022	0.12	0.54	0.00053	0.00046	0.1
Production	10	2030-06-01	400	120	1.3	0.029	0.13	0.023	0.13	0.35	0.00046	0.00038	0.048
Production	10	2030-07-01	420	130	1.3	0.03	0.14	0.014	0.13	0.18	0.00032	0.00066	0.046
Production	10	2030-08-01	480	140	1.2	0.029	0.13	0.017	0.14	0.29	0.00031	0.00022	0.043
Production	10	2030-09-01	500	140	1.1	0.026	0.11	0.017	0.14	0.41	0.00031	0.00031	0.043
Active Closure	10	2030-10-01	180	69	1.4	0.032	0.28	0.017	0.097	0.5	0.0002	0.00021	0.024
Active Closure	10	2030-11-01	220	100	1.9	0.042	0.37	0.019	0.11	0.25	0.00025	0.00026	0.028
Active Closure	10	2030-12-01	270	110	2	0.044	0.4	0.021	0.12	0.26	0.00018	0.00013	0.032
Active Closure	10	2031-01-01	310	100	1.9	0.042	0.38	0.022	0.12	0.24	0.00017	0.00017	0.042
Active Closure	10	2031-02-01	340	100	1.8	0.039	0.36	0.026	0.12	0.26	0.00018	0.0002	0.03
Active Closure	11	2031-03-01	370	94	1.5	0.033	0.32	0.023	0.11	0.23	0.00025	0.0002	0.026
Active Closure	11	2031-04-01	400	87	1.4	0.03	0.29	0.017	0.11	0.45	0.00028	0.00019	0.027
Active Closure	11	2031-05-01	170	100	2.2	0.051	0.42	0.025	0.11	0.7	0.0006	0.00052	0.098
Active Closure	11	2031-06-01	210	51	1.4	0.031	0.25	0.024	0.096	0.45	0.00058	0.00049	0.036
Active Closure	11	2031-07-01	240	64	1.5	0.035	0.28	0.015	0.1	0.24	0.00035	0.00075	0.032
Active Closure	11	2031-08-01	320	72	1.6	0.038	0.32	0.019	0.11	0.39	0.00037	0.00027	0.028
Active Closure	11	2031-09-01	350	74	1.5	0.036	0.31	0.018	0.11	0.54	0.00038	0.00039	0.028
Active Closure	11	2031-10-01	420	82	1.5	0.034	0.33	0.018	0.11	0.5	0.0002	0.00021	0.025
Active Closure	11	2031-11-01	590	110	2.1	0.047	0.46	0.021	0.14	0.24	0.00024	0.00026	0.029
Active Closure	11	2031-12-01	710	110	2.3	0.051	0.51	0.024	0.15	0.26	0.00018	0.00013	0.034
Active Closure	11	2032-01-01	780	110	2.2	0.049	0.5	0.026	0.15	0.23	0.00016	0.00016	0.043
Active Closure	11	2032-02-01	840	110	2.1	0.046	0.48	0.03	0.15	0.23	0.00016	0.00018	0.033

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Production	9	2029-05-01	0.00086	0.0018	0.00013	19	0.001	0.0028	0.19	0.0012	0.61	0.0078	0.000033
Production	9	2029-06-01	0.00089	0.0016	0.0001	31	0.00084	0.002	0.13	0.00097	0.5	0.0061	0.000027
Production	9	2029-07-01	0.00094	0.0016	0.00012	31	0.0009	0.0021	0.13	0.0011	0.55	0.0066	0.000031
Production	9	2029-08-01	0.0009	0.0018	0.00013	35	0.001	0.0022	0.13	0.0013	0.63	0.0076	0.000034
Production	9	2029-09-01	0.00084	0.0017	0.00012	35	0.0011	0.0023	0.14	0.0013	0.64	0.0077	0.000034
Production	9	2029-10-01	0.00063	0.0017	0.00014	33	0.001	0.0023	0.15	0.0016	0.64	0.0077	0.000033
Production	9	2029-11-01	0.00088	0.002	0.00016	32	0.0011	0.0029	0.18	0.0023	0.7	0.0083	0.000037
Production	9	2029-12-01	0.00093	0.0021	0.00016	33	0.001	0.0033	0.19	0.0026	0.64	0.0075	0.000034
Production	9	2030-01-01	0.00089	0.0021	0.00017	33	0.00086	0.0036	0.3	0.0029	0.52	0.006	0.000028
Production	9	2030-02-01	0.00085	0.0022	0.00018	33	0.00077	0.0039	0.21	0.003	0.46	0.0054	0.000025
Production	10	2030-03-01	0.00061	0.0025	0.00017	31	0.00047	0.0042	0.21	0.0031	0.29	0.0034	0.000018
Production	10	2030-04-01	0.00058	0.0024	0.00017	31	0.00036	0.0047	0.23	0.0034	0.21	0.0024	0.000015
Production	10	2030-05-01	0.00073	0.0024	0.00013	16	0.0011	0.0029	0.19	0.0012	0.63	0.0082	0.000035
Production	10	2030-06-01	0.00077	0.0022	0.0001	27	0.00089	0.002	0.14	0.00099	0.53	0.0067	0.00003
Production	10	2030-07-01	0.00082	0.0023	0.00011	26	0.00096	0.0021	0.13	0.0011	0.58	0.0072	0.000033
Production	10	2030-08-01	0.0008	0.0024	0.00013	30	0.0011	0.0023	0.14	0.0013	0.67	0.0083	0.000037
Production	10	2030-09-01	0.00075	0.0022	0.00012	30	0.0012	0.0023	0.14	0.0014	0.7	0.0086	0.000038
Active Closure	10	2030-10-01	0.00043	0.0013	0.00012	38	0.000084	0.0015	0.12	0.00022	0.065	0.0008	0.0000056
Active Closure	10	2030-11-01	0.00064	0.0018	0.00013	36	0.00019	0.0021	0.16	0.00025	0.16	0.0018	0.0000084
Active Closure	10	2030-12-01	0.0007	0.0019	0.00013	37	0.0003	0.0026	0.17	0.00023	0.25	0.0029	0.000011
Active Closure	10	2031-01-01	0.00067	0.002	0.00015	37	0.00042	0.003	0.34	0.00034	0.35	0.004	0.000013
Active Closure	10	2031-02-01	0.00064	0.0019	0.00015	38	0.0005	0.0033	0.19	0.00023	0.41	0.0049	0.000014
Active Closure	11	2031-03-01	0.00053	0.0017	0.00014	39	0.00058	0.0036	0.18	0.00021	0.47	0.0058	0.000015
Active Closure	11	2031-04-01	0.0005	0.0016	0.00012	40	0.00069	0.0042	0.2	0.00027	0.54	0.0067	0.000017
Active Closure	11	2031-05-01	0.00068	0.002	0.00012	20	0.00021	0.0024	0.21	0.00033	0.15	0.0024	0.00001
Active Closure	11	2031-06-01	0.00068	0.0015	0.000062	35	0.00021	0.0012	0.11	0.00019	0.15	0.0021	0.0000088
Active Closure	11	2031-07-01	0.00074	0.0016	0.000083	37	0.00027	0.0013	0.1	0.00019	0.22	0.0028	0.000012
Active Closure	11	2031-08-01	0.00071	0.0016	0.000094	41	0.00043	0.0014	0.099	0.0003	0.33	0.0042	0.000013
Active Closure	11	2031-09-01	0.00065	0.0015	0.000093	41	0.0005	0.0015	0.11	0.00031	0.4	0.0051	0.000014
Active Closure	11	2031-10-01	0.0005	0.0013	0.00013	40	0.00067	0.0016	0.12	0.00035	0.55	0.007	0.000017
Active Closure	11	2031-11-01	0.00075	0.0019	0.00014	38	0.0011	0.0024	0.16	0.00044	0.92	0.011	0.000027
Active Closure	11	2031-12-01	0.00084	0.0021	0.00014	39	0.0014	0.003	0.17	0.00046	1.2	0.014	0.000032
Active Closure	11	2032-01-01	0.00084	0.0021	0.00016	39	0.0016	0.0037	0.32	0.00058	1.3	0.016	0.000036
Active Closure	11	2032-02-01	0.00078	0.0021	0.00016	40	0.0017	0.0042	0.19	0.00048	1.4	0.018	0.000038

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	9	2029-05-01	0.0015	0.00043	0.0038	0.016	6.2	0.11	0.00086	0.0018	0.00012	18
Production	9	2029-06-01	0.0015	0.00035	0.0044	0.012	1.9	0.058	0.00089	0.0016	0.000099	30
Production	9	2029-07-01	0.0015	0.00038	0.0044	0.014	2.1	0.061	0.00094	0.0016	0.0001	32
Production	9	2029-08-01	0.0016	0.00044	0.0042	0.015	1.7	0.059	0.0009	0.0018	0.00011	34
Production	9	2029-09-01	0.0017	0.00045	0.0041	0.016	1.3	0.054	0.00084	0.0017	0.00011	35
Production	9	2029-10-01	0.0017	0.00045	0.0031	0.019	1.2	0.046	0.00063	0.0016	0.00012	32
Production	9	2029-11-01	0.002	0.0005	0.0041	0.024	0.72	0.059	0.00089	0.002	0.00014	32
Production	9	2029-12-01	0.0021	0.00045	0.0042	0.026	0.91	0.061	0.00092	0.0021	0.00015	32
Production	9	2030-01-01	0.0021	0.00037	0.0042	0.029	0.77	0.059	0.00088	0.002	0.00014	32
Production	9	2030-02-01	0.0022	0.00034	0.0042	0.028	0.44	0.06	0.00085	0.0021	0.00016	33
Production	10	2030-03-01	0.002	0.00024	0.0022	0.029	0.42	0.041	0.00061	0.0025	0.00016	33
Production	10	2030-04-01	0.0019	0.00019	0.0021	0.029	1.1	0.044	0.00057	0.0023	0.00017	31
Production	10	2030-05-01	0.0014	0.00043	0.0019	0.016	6.2	0.089	0.00073	0.0024	0.00012	17
Production	10	2030-06-01	0.0013	0.00036	0.0025	0.012	1.9	0.039	0.00077	0.0022	0.000098	29
Production	10	2030-07-01	0.0013	0.00039	0.0024	0.014	2.1	0.041	0.00082	0.0023	0.0001	30
Production	10	2030-08-01	0.0014	0.00044	0.0024	0.015	1.7	0.04	0.0008	0.0024	0.00011	33
Production	10	2030-09-01	0.0015	0.00046	0.0025	0.016	1.3	0.038	0.00075	0.0022	0.00011	33
Active Closure	10	2030-10-01	0.0013	0.000016	0.002	0.018	1.2	0.019	0.00043	0.0013	0.000099	37
Active Closure	10	2030-11-01	0.0014	0.00003	0.0024	0.02	0.58	0.025	0.00065	0.0018	0.000095	36
Active Closure	10	2030-12-01	0.0014	0.000044	0.0025	0.022	0.83	0.026	0.00069	0.0019	0.00011	37
Active Closure	10	2031-01-01	0.0014	0.000054	0.0025	0.025	0.65	0.026	0.00066	0.0018	0.0001	36
Active Closure	10	2031-02-01	0.0015	0.000062	0.0026	0.022	0.26	0.024	0.00064	0.0018	0.00011	38
Active Closure	11	2031-03-01	0.0015	0.000069	0.0024	0.022	0.22	0.022	0.00053	0.0016	0.00012	42
Active Closure	11	2031-04-01	0.0013	0.000077	0.0024	0.02	1.1	0.024	0.00049	0.0015	0.00012	40
Active Closure	11	2031-05-01	0.0011	0.000032	0.0019	0.016	6.8	0.076	0.00068	0.0019	0.0001	20
Active Closure	11	2031-06-01	0.00091	0.000031	0.0024	0.008	2.1	0.023	0.00068	0.0015	0.000058	35
Active Closure	11	2031-07-01	0.00095	0.000041	0.0023	0.01	2.3	0.025	0.00074	0.0015	0.000066	37
Active Closure	11	2031-08-01	0.00098	0.000055	0.0023	0.01	1.9	0.024	0.00071	0.0016	0.000066	40
Active Closure	11	2031-09-01	0.0011	0.000064	0.0025	0.012	1.4	0.021	0.00065	0.0015	0.000072	42
Active Closure	11	2031-10-01	0.0013	0.00008	0.0021	0.018	1.2	0.02	0.00049	0.0013	0.0001	39
Active Closure	11	2031-11-01	0.0015	0.00013	0.0026	0.021	0.56	0.026	0.00076	0.0019	0.0001	38
Active Closure	11	2031-12-01	0.0015	0.00016	0.0028	0.022	0.81	0.028	0.00083	0.002	0.00011	39
Active Closure	11	2032-01-01	0.0015	0.00018	0.0029	0.025	0.63	0.028	0.00082	0.0021	0.00012	38
Active Closure	11	2032-02-01	0.0015	0.00019	0.0029	0.023	0.23	0.027	0.00078	0.002	0.00013	40

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Production	9	2029-05-01	0.001	0.0027	0.15	0.0012	0.61	0.0077	0.000033	0.0015	0.00043	0.0038
Production	9	2029-06-01	0.00083	0.0019	0.096	0.00093	0.5	0.0061	0.000027	0.0015	0.00035	0.0044
Production	9	2029-07-01	0.00089	0.002	0.096	0.001	0.54	0.0066	0.000029	0.0015	0.00038	0.0043
Production	9	2029-08-01	0.001	0.0022	0.11	0.0012	0.62	0.0076	0.000033	0.0016	0.00044	0.0042
Production	9	2029-09-01	0.0011	0.0022	0.11	0.0013	0.64	0.0077	0.000034	0.0016	0.00045	0.0041
Production	9	2029-10-01	0.001	0.0022	0.11	0.0016	0.64	0.0077	0.000033	0.0016	0.00045	0.0031
Production	9	2029-11-01	0.0011	0.0029	0.13	0.0023	0.7	0.0083	0.000037	0.002	0.0005	0.0041
Production	9	2029-12-01	0.001	0.0033	0.14	0.0026	0.64	0.0075	0.000034	0.0021	0.00045	0.0043
Production	9	2030-01-01	0.00084	0.0035	0.13	0.0028	0.51	0.006	0.000028	0.0021	0.00037	0.0042
Production	9	2030-02-01	0.00076	0.0039	0.14	0.003	0.46	0.0053	0.000025	0.0022	0.00034	0.0042
Production	10	2030-03-01	0.00047	0.0041	0.15	0.0031	0.29	0.0034	0.000018	0.0019	0.00024	0.0022
Production	10	2030-04-01	0.00036	0.0047	0.16	0.0034	0.2	0.0024	0.000014	0.0019	0.00019	0.0021
Production	10	2030-05-01	0.0011	0.0028	0.15	0.0012	0.63	0.0081	0.000035	0.0014	0.00043	0.0019
Production	10	2030-06-01	0.00088	0.0019	0.098	0.00094	0.53	0.0067	0.00003	0.0013	0.00036	0.0025
Production	10	2030-07-01	0.00095	0.002	0.097	0.0011	0.58	0.0072	0.000032	0.0014	0.00039	0.0024
Production	10	2030-08-01	0.0011	0.0022	0.11	0.0013	0.66	0.0083	0.000036	0.0014	0.00044	0.0024
Production	10	2030-09-01	0.0012	0.0022	0.11	0.0013	0.7	0.0086	0.000038	0.0015	0.00046	0.0025
Active Closure	10	2030-10-01	0.000069	0.0014	0.058	0.00017	0.058	0.00076	0.0000056	0.0012	0.000016	0.002
Active Closure	10	2030-11-01	0.00018	0.0021	0.075	0.00021	0.16	0.0018	0.0000084	0.0014	0.000031	0.0024
Active Closure	10	2030-12-01	0.00029	0.0025	0.089	0.0002	0.25	0.0029	0.000011	0.0014	0.000043	0.0025
Active Closure	10	2031-01-01	0.00039	0.0029	0.082	0.00023	0.33	0.0039	0.000012	0.0014	0.000053	0.0025
Active Closure	10	2031-02-01	0.00049	0.0032	0.083	0.00018	0.4	0.0049	0.000014	0.0015	0.000062	0.0026
Active Closure	11	2031-03-01	0.00058	0.0036	0.091	0.00018	0.48	0.0058	0.000015	0.0013	0.00007	0.0024
Active Closure	11	2031-04-01	0.00068	0.0042	0.099	0.00023	0.53	0.0067	0.000017	0.0012	0.000077	0.0023
Active Closure	11	2031-05-01	0.00019	0.0023	0.14	0.00022	0.15	0.0023	0.00001	0.0011	0.000031	0.0018
Active Closure	11	2031-06-01	0.00019	0.0011	0.048	0.00012	0.15	0.0021	0.0000089	0.00091	0.000031	0.0024
Active Closure	11	2031-07-01	0.00025	0.0012	0.045	0.00016	0.21	0.0028	0.00001	0.00098	0.000041	0.0023
Active Closure	11	2031-08-01	0.00042	0.0014	0.055	0.00024	0.32	0.0042	0.000013	0.00097	0.000055	0.0023
Active Closure	11	2031-09-01	0.00049	0.0014	0.061	0.00025	0.4	0.005	0.000014	0.0011	0.000063	0.0025
Active Closure	11	2031-10-01	0.00065	0.0015	0.06	0.00029	0.55	0.0069	0.000017	0.0012	0.00008	0.0021
Active Closure	11	2031-11-01	0.0011	0.0024	0.08	0.0004	0.92	0.011	0.000027	0.0014	0.00013	0.0026
Active Closure	11	2031-12-01	0.0014	0.003	0.097	0.00043	1.2	0.014	0.000032	0.0015	0.00016	0.0028
Active Closure	11	2032-01-01	0.0016	0.0036	0.093	0.00048	1.3	0.016	0.000036	0.0015	0.00018	0.0029
Active Closure	11	2032-02-01	0.0017	0.0041	0.098	0.00044	1.4	0.018	0.000038	0.0015	0.00019	0.003

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Production	9	2029-05-01	0.015
Production	9	2029-06-01	0.011
Production	9	2029-07-01	0.013
Production	9	2029-08-01	0.013
Production	9	2029-09-01	0.014
Production	9	2029-10-01	0.017
Production	9	2029-11-01	0.022
Production	9	2029-12-01	0.024
Production	9	2030-01-01	0.025
Production	9	2030-02-01	0.026
Production	10	2030-03-01	0.032
Production	10	2030-04-01	0.028
Production	10	2030-05-01	0.015
Production	10	2030-06-01	0.012
Production	10	2030-07-01	0.013
Production	10	2030-08-01	0.013
Production	10	2030-09-01	0.015
Active Closure	10	2030-10-01	0.014
Active Closure	10	2030-11-01	0.018
Active Closure	10	2030-12-01	0.019
Active Closure	10	2031-01-01	0.018
Active Closure	10	2031-02-01	0.019
Active Closure	11	2031-03-01	0.026
Active Closure	11	2031-04-01	0.019
Active Closure	11	2031-05-01	0.013
Active Closure	11	2031-06-01	0.0071
Active Closure	11	2031-07-01	0.0087
Active Closure	11	2031-08-01	0.0076
Active Closure	11	2031-09-01	0.01
Active Closure	11	2031-10-01	0.014
Active Closure	11	2031-11-01	0.018
Active Closure	11	2031-12-01	0.019
Active Closure	11	2032-01-01	0.019
Active Closure	11	2032-02-01	0.02

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Active Closure	12	2032-03-01	890	110	1.9	0.041	0.45	0.029	0.15	0.22	0.00025	0.0002	0.03
Active Closure	12	2032-04-01	940	100	1.7	0.039	0.43	0.022	0.15	0.42	0.00025	0.00018	0.031
Active Closure	12	2032-05-01	270	100	2.3	0.055	0.48	0.026	0.12	0.7	0.0006	0.00053	0.099
Active Closure	12	2032-06-01	290	51	1.4	0.033	0.27	0.025	0.1	0.45	0.00058	0.00049	0.036
Active Closure	12	2032-07-01	350	64	1.6	0.036	0.31	0.016	0.11	0.24	0.00035	0.00075	0.032
Active Closure	12	2032-08-01	470	73	1.7	0.041	0.37	0.02	0.12	0.39	0.00037	0.00027	0.028
Active Closure	12	2032-09-01	520	75	1.7	0.038	0.35	0.019	0.12	0.54	0.00038	0.00039	0.028
Active Closure	12	2032-10-01	640	83	1.7	0.038	0.39	0.02	0.13	0.5	0.0002	0.0002	0.025
Active Closure	12	2032-11-01	920	110	2.4	0.053	0.56	0.023	0.16	0.24	0.00024	0.00026	0.03
Active Closure	12	2032-12-01	1100	120	2.6	0.058	0.62	0.026	0.17	0.26	0.00018	0.00012	0.035
Active Closure	12	2033-01-01	1200	120	2.5	0.056	0.62	0.028	0.17	0.23	0.00015	0.00015	0.044
Active Closure	12	2033-02-01	1300	120	2.4	0.054	0.6	0.034	0.18	0.21	0.00015	0.00017	0.036
Active Closure	13	2033-03-01	1300	110	2.2	0.049	0.57	0.032	0.17	0.21	0.00024	0.00019	0.032
Active Closure	13	2033-04-01	1400	110	2	0.044	0.53	0.025	0.17	0.41	0.00024	0.00018	0.033
Active Closure	13	2033-05-01	340	110	2.6	0.061	0.56	0.027	0.13	0.7	0.0006	0.00053	0.099
Active Closure	13	2033-06-01	340	51	1.5	0.034	0.3	0.025	0.11	0.45	0.00058	0.00049	0.036
Active Closure	13	2033-07-01	420	65	1.7	0.039	0.35	0.016	0.12	0.24	0.00036	0.00075	0.032
Active Closure	13	2033-08-01	560	73	2	0.046	0.44	0.021	0.13	0.38	0.00037	0.00027	0.028
Active Closure	13	2033-09-01	590	75	1.9	0.044	0.43	0.02	0.13	0.54	0.00038	0.00039	0.028
Transitional Closure	13	2033-10-01	320	38	0.87	0.019	0.16	0.016	0.079	0.48	0.00019	0.00019	0.015
Transitional Closure	13	2033-11-01	490	52	1.4	0.031	0.28	0.02	0.099	0.24	0.00024	0.00025	0.018
Transitional Closure	13	2033-12-01	680	65	1.8	0.041	0.39	0.024	0.12	0.27	0.00019	0.00013	0.025
Transitional Closure	13	2034-01-01	830	76	2.1	0.047	0.48	0.028	0.13	0.24	0.00015	0.00016	0.036
Transitional Closure	13	2034-02-01	980	86	2.3	0.052	0.55	0.035	0.15	0.21	0.00016	0.00017	0.03
Transitional Closure	14	2034-03-01	1100	92	2.4	0.054	0.6	0.033	0.15	0.21	0.00025	0.0002	0.028
Transitional Closure	14	2034-04-01	1200	97	2.5	0.056	0.65	0.025	0.16	0.42	0.00024	0.00018	0.031
Transitional Closure	14	2034-05-01	170	20	1	0.025	0.17	0.021	0.061	0.64	0.00055	0.00048	0.075
Transitional Closure	14	2034-06-01	180	26	0.84	0.019	0.13	0.022	0.074	0.42	0.00055	0.00046	0.029
Transitional Closure	14	2034-07-01	190	31	0.91	0.021	0.15	0.013	0.077	0.22	0.00034	0.00072	0.024
Transitional Closure	14	2034-08-01	220	28	0.91	0.021	0.15	0.017	0.076	0.37	0.00036	0.00026	0.018
Transitional Closure	14	2034-09-01	210	30	0.84	0.019	0.13	0.015	0.075	0.52	0.00036	0.00037	0.018
Transitional Closure	14	2034-10-01	260	34	0.9	0.02	0.16	0.018	0.08	0.55	0.00022	0.00022	0.015
Transitional Closure	14	2034-11-01	360	42	1.5	0.033	0.28	0.022	0.096	0.28	0.00028	0.0003	0.017
Transitional Closure	14	2034-12-01	480	49	1.9	0.042	0.38	0.027	0.11	0.32	0.00022	0.00015	0.023

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	12	2032-03-01	0.00071	0.002	0.00016	40	0.0019	0.0048	0.18	0.00048	1.5	0.019	0.000041
Active Closure	12	2032-04-01	0.00069	0.0019	0.00015	41	0.002	0.0058	0.2	0.00056	1.7	0.021	0.000044
Active Closure	12	2032-05-01	0.00074	0.002	0.00012	21	0.00042	0.0026	0.21	0.00038	0.33	0.0046	0.000015
Active Closure	12	2032-06-01	0.00071	0.0015	0.000063	36	0.0004	0.0013	0.11	0.00023	0.31	0.0041	0.000013
Active Closure	12	2032-07-01	0.00078	0.0016	0.000084	37	0.00053	0.0014	0.1	0.00025	0.44	0.0056	0.000018
Active Closure	12	2032-08-01	0.00076	0.0017	0.000096	41	0.0008	0.0015	0.099	0.00038	0.64	0.0082	0.000021
Active Closure	12	2032-09-01	0.0007	0.0015	0.000094	42	0.00091	0.0016	0.11	0.00039	0.75	0.0094	0.000023
Active Closure	12	2032-10-01	0.00055	0.0014	0.00013	41	0.0012	0.0018	0.12	0.00045	0.99	0.013	0.000028
Active Closure	12	2032-11-01	0.00084	0.0019	0.00014	39	0.0019	0.0027	0.16	0.00061	1.6	0.02	0.000043
Active Closure	12	2032-12-01	0.00096	0.0022	0.00014	40	0.0023	0.0035	0.17	0.00066	1.9	0.024	0.000051
Active Closure	12	2033-01-01	0.00096	0.0023	0.00016	40	0.0026	0.0043	0.3	0.00079	2.2	0.027	0.000057
Active Closure	12	2033-02-01	0.00095	0.0023	0.00017	41	0.0028	0.005	0.19	0.0007	2.3	0.029	0.000059
Active Closure	13	2033-03-01	0.00084	0.0021	0.00017	41	0.003	0.0059	0.18	0.0007	2.4	0.031	0.000062
Active Closure	13	2033-04-01	0.00079	0.002	0.00017	43	0.0031	0.0069	0.2	0.00077	2.5	0.031	0.000065
Active Closure	13	2033-05-01	0.00079	0.002	0.00012	21	0.00057	0.0027	0.21	0.00041	0.46	0.0062	0.000018
Active Closure	13	2033-06-01	0.00073	0.0015	0.000064	36	0.00053	0.0013	0.11	0.00026	0.42	0.0055	0.000016
Active Closure	13	2033-07-01	0.0008	0.0016	0.000085	38	0.0007	0.0015	0.1	0.00028	0.57	0.0074	0.000021
Active Closure	13	2033-08-01	0.0008	0.0017	0.000097	42	0.001	0.0016	0.1	0.00042	0.81	0.01	0.000025
Active Closure	13	2033-09-01	0.00073	0.0015	0.000095	43	0.0011	0.0017	0.11	0.00043	0.89	0.011	0.000026
Transitional Closure	13	2033-10-01	0.00039	0.00087	0.000095	37	0.0005	0.0013	0.087	0.00016	0.4	0.0051	0.000012
Transitional Closure	13	2033-11-01	0.00066	0.0014	0.0001	36	0.00094	0.0022	0.11	0.00024	0.78	0.0096	0.000022
Transitional Closure	13	2033-12-01	0.00082	0.0017	0.00011	39	0.0014	0.0033	0.13	0.00032	1.1	0.014	0.000031
Transitional Closure	13	2034-01-01	0.00088	0.0019	0.00015	40	0.0018	0.0045	0.27	0.00051	1.5	0.018	0.000039
Transitional Closure	13	2034-02-01	0.0009	0.002	0.00016	41	0.0021	0.0056	0.18	0.00048	1.7	0.022	0.000046
Transitional Closure	14	2034-03-01	0.00082	0.002	0.00017	41	0.0025	0.0068	0.18	0.00054	2	0.025	0.000053
Transitional Closure	14	2034-04-01	0.00079	0.002	0.00018	42	0.0028	0.008	0.2	0.00067	2.3	0.028	0.000059
Transitional Closure	14	2034-05-01	0.00052	0.001	0.000065	19	0.00032	0.0016	0.14	0.00018	0.24	0.0035	0.0000098
Transitional Closure	14	2034-06-01	0.00059	0.0012	0.000047	33	0.00021	0.001	0.09	0.00012	0.15	0.0021	0.0000078
Transitional Closure	14	2034-07-01	0.00065	0.0012	0.000062	35	0.00021	0.0011	0.076	0.000089	0.16	0.0022	0.0000099
Transitional Closure	14	2034-08-01	0.0006	0.0012	0.000068	39	0.00026	0.0011	0.065	0.00014	0.18	0.0025	0.0000085
Transitional Closure	14	2034-09-01	0.00053	0.001	0.000065	39	0.00024	0.0012	0.071	0.00012	0.17	0.0022	0.0000077
Transitional Closure	14	2034-10-01	0.00041	0.00089	0.0001	42	0.00032	0.0015	0.094	0.00013	0.25	0.0032	0.000009
Transitional Closure	14	2034-11-01	0.0007	0.0014	0.00011	41	0.0006	0.0026	0.12	0.00018	0.49	0.006	0.000015
Transitional Closure	14	2034-12-01	0.00086	0.0017	0.00012	44	0.00087	0.0039	0.14	0.00022	0.7	0.0087	0.000021

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	12	2032-03-01	0.0016	0.00021	0.0029	0.023	0.2	0.026	0.00072	0.0019	0.00014	43
Active Closure	12	2032-04-01	0.0014	0.00022	0.0029	0.023	0.97	0.028	0.00068	0.0018	0.00015	41
Active Closure	12	2032-05-01	0.0011	0.000055	0.002	0.016	6.8	0.077	0.00074	0.0019	0.00011	20
Active Closure	12	2032-06-01	0.00092	0.000052	0.0025	0.0081	2.1	0.023	0.00071	0.0015	0.000059	36
Active Closure	12	2032-07-01	0.00096	0.000069	0.0024	0.011	2.3	0.025	0.00078	0.0016	0.000067	38
Active Closure	12	2032-08-01	0.00099	0.000095	0.0024	0.01	1.9	0.025	0.00076	0.0017	0.000068	41
Active Closure	12	2032-09-01	0.0011	0.00011	0.0026	0.013	1.4	0.021	0.0007	0.0015	0.000074	42
Active Closure	12	2032-10-01	0.0013	0.00013	0.0023	0.018	1.2	0.02	0.00055	0.0013	0.0001	40
Active Closure	12	2032-11-01	0.0015	0.00021	0.0029	0.021	0.55	0.027	0.00085	0.0019	0.00011	39
Active Closure	12	2032-12-01	0.0015	0.00026	0.0031	0.022	0.78	0.03	0.00095	0.0021	0.00012	40
Active Closure	12	2033-01-01	0.0015	0.00028	0.0032	0.025	0.61	0.03	0.00095	0.0022	0.00013	39
Active Closure	12	2033-02-01	0.0016	0.0003	0.0033	0.023	0.21	0.03	0.00095	0.0022	0.00014	41
Active Closure	13	2033-03-01	0.0016	0.00032	0.0032	0.024	0.18	0.028	0.00084	0.0021	0.00016	44
Active Closure	13	2033-04-01	0.0014	0.00032	0.0031	0.025	0.92	0.03	0.00078	0.0019	0.00016	43
Active Closure	13	2033-05-01	0.0011	0.00007	0.002	0.016	6.8	0.078	0.00078	0.002	0.00011	21
Active Closure	13	2033-06-01	0.00093	0.000065	0.0026	0.0082	2.1	0.024	0.00073	0.0015	0.00006	36
Active Closure	13	2033-07-01	0.00096	0.000085	0.0025	0.011	2.3	0.025	0.0008	0.0016	0.000068	38
Active Closure	13	2033-08-01	0.001	0.00011	0.0025	0.011	1.9	0.025	0.0008	0.0017	0.000069	42
Active Closure	13	2033-09-01	0.0011	0.00012	0.0027	0.013	1.4	0.021	0.00073	0.0015	0.000075	43
Transitional Closure	13	2033-10-01	0.00097	0.000056	0.0019	0.014	1.2	0.01	0.00039	0.00083	0.000072	36
Transitional Closure	13	2033-11-01	0.0011	0.00011	0.0026	0.017	0.53	0.015	0.00067	0.0013	0.000073	37
Transitional Closure	13	2033-12-01	0.0012	0.00015	0.0029	0.019	0.8	0.019	0.00081	0.0017	0.000096	39
Transitional Closure	13	2034-01-01	0.0013	0.00019	0.0032	0.023	0.64	0.022	0.00086	0.0018	0.00011	39
Transitional Closure	13	2034-02-01	0.0015	0.00022	0.0034	0.023	0.21	0.024	0.0009	0.002	0.00014	41
Transitional Closure	14	2034-03-01	0.0015	0.00026	0.0032	0.025	0.18	0.024	0.00082	0.0019	0.00016	44
Transitional Closure	14	2034-04-01	0.0014	0.00029	0.0032	0.027	0.91	0.028	0.00078	0.0018	0.00017	43
Transitional Closure	14	2034-05-01	0.00056	0.000038	0.0016	0.0094	6.2	0.055	0.00052	0.00099	0.000051	18
Transitional Closure	14	2034-06-01	0.00073	0.000028	0.0023	0.0063	2	0.018	0.00059	0.0012	0.000043	33
Transitional Closure	14	2034-07-01	0.00072	0.000031	0.0022	0.0082	2.2	0.017	0.00065	0.0012	0.000046	35
Transitional Closure	14	2034-08-01	0.0007	0.000032	0.0022	0.0074	1.8	0.015	0.0006	0.0012	0.000041	38
Transitional Closure	14	2034-09-01	0.0008	0.00003	0.0022	0.0093	1.3	0.012	0.00053	0.00099	0.000046	39
Transitional Closure	14	2034-10-01	0.001	0.000036	0.0021	0.016	1.3	0.0098	0.00041	0.00084	0.000079	41
Transitional Closure	14	2034-11-01	0.0012	0.000068	0.0028	0.019	0.63	0.014	0.00072	0.0014	0.000077	42
Transitional Closure	14	2034-12-01	0.0013	0.000097	0.0032	0.022	0.94	0.016	0.00085	0.0017	0.0001	44

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Active Closure	12	2032-03-01	0.0019	0.0048	0.11	0.00045	1.5	0.019	0.000041	0.0015	0.00021	0.0029
Active Closure	12	2032-04-01	0.002	0.0058	0.12	0.00052	1.7	0.021	0.000044	0.0013	0.00022	0.0028
Active Closure	12	2032-05-01	0.00041	0.0024	0.14	0.00027	0.33	0.0045	0.000015	0.0011	0.000055	0.0019
Active Closure	12	2032-06-01	0.00038	0.0012	0.049	0.00017	0.31	0.0041	0.000013	0.00092	0.000052	0.0025
Active Closure	12	2032-07-01	0.00052	0.0013	0.046	0.00021	0.43	0.0056	0.000016	0.00098	0.000069	0.0024
Active Closure	12	2032-08-01	0.0008	0.0015	0.056	0.00032	0.64	0.0082	0.000021	0.00099	0.000095	0.0024
Active Closure	12	2032-09-01	0.0009	0.0015	0.061	0.00034	0.74	0.0094	0.000023	0.0011	0.00011	0.0026
Active Closure	12	2032-10-01	0.0012	0.0017	0.061	0.0004	0.99	0.012	0.000028	0.0012	0.00013	0.0023
Active Closure	12	2032-11-01	0.0019	0.0026	0.083	0.00057	1.6	0.02	0.000043	0.0014	0.00021	0.0028
Active Closure	12	2032-12-01	0.0023	0.0034	0.1	0.00064	1.9	0.024	0.000051	0.0015	0.00026	0.0031
Active Closure	12	2033-01-01	0.0026	0.0042	0.1	0.0007	2.1	0.027	0.000056	0.0015	0.00028	0.0032
Active Closure	12	2033-02-01	0.0028	0.0049	0.11	0.00066	2.3	0.029	0.000059	0.0016	0.0003	0.0034
Active Closure	13	2033-03-01	0.003	0.0058	0.12	0.00068	2.4	0.031	0.000062	0.0015	0.00032	0.0032
Active Closure	13	2033-04-01	0.0031	0.0069	0.13	0.00073	2.5	0.031	0.000064	0.0013	0.00032	0.0031
Active Closure	13	2033-05-01	0.00056	0.0025	0.14	0.0003	0.45	0.0061	0.000019	0.0011	0.00007	0.002
Active Closure	13	2033-06-01	0.00051	0.0012	0.049	0.00019	0.42	0.0055	0.000016	0.00092	0.000065	0.0026
Active Closure	13	2033-07-01	0.00069	0.0013	0.047	0.00025	0.57	0.0073	0.000019	0.00099	0.000085	0.0025
Active Closure	13	2033-08-01	0.001	0.0016	0.057	0.00036	0.81	0.01	0.000025	0.00099	0.00011	0.0025
Active Closure	13	2033-09-01	0.0011	0.0015	0.062	0.00038	0.88	0.011	0.000026	0.0011	0.00012	0.0026
Transitional Closure	13	2033-10-01	0.00049	0.0012	0.028	0.00011	0.4	0.0051	0.000012	0.00093	0.000056	0.0019
Transitional Closure	13	2033-11-01	0.00094	0.0022	0.042	0.0002	0.77	0.0096	0.000022	0.0011	0.00011	0.0025
Transitional Closure	13	2033-12-01	0.0014	0.0033	0.065	0.00029	1.1	0.014	0.000031	0.0012	0.00015	0.0029
Transitional Closure	13	2034-01-01	0.0018	0.0044	0.074	0.00042	1.4	0.018	0.000039	0.0013	0.00019	0.0032
Transitional Closure	13	2034-02-01	0.0021	0.0055	0.092	0.00044	1.7	0.022	0.000046	0.0015	0.00022	0.0034
Transitional Closure	14	2034-03-01	0.0025	0.0067	0.12	0.00051	2	0.025	0.000053	0.0014	0.00026	0.0032
Transitional Closure	14	2034-04-01	0.0028	0.008	0.13	0.00063	2.3	0.028	0.000059	0.0013	0.00029	0.0032
Transitional Closure	14	2034-05-01	0.00031	0.0014	0.072	0.000083	0.23	0.0034	0.00001	0.00054	0.000037	0.0016
Transitional Closure	14	2034-06-01	0.00019	0.00094	0.03	0.000056	0.15	0.0021	0.0000078	0.00073	0.000028	0.0023
Transitional Closure	14	2034-07-01	0.0002	0.00095	0.022	0.000058	0.15	0.0022	0.0000077	0.00075	0.000031	0.0022
Transitional Closure	14	2034-08-01	0.00026	0.0011	0.024	0.00008	0.18	0.0024	0.0000085	0.00069	0.000032	0.0021
Transitional Closure	14	2034-09-01	0.00023	0.001	0.028	0.000068	0.17	0.0022	0.0000077	0.00077	0.000029	0.0022
Transitional Closure	14	2034-10-01	0.0003	0.0014	0.026	0.000075	0.24	0.0032	0.000009	0.001	0.000036	0.0021
Transitional Closure	14	2034-11-01	0.0006	0.0026	0.037	0.00013	0.48	0.0059	0.000015	0.0012	0.000068	0.0028
Transitional Closure	14	2034-12-01	0.00087	0.0039	0.059	0.00019	0.7	0.0086	0.000021	0.0013	0.000096	0.0032

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Active Closure	12	2032-03-01	0.027
Active Closure	12	2032-04-01	0.022
Active Closure	12	2032-05-01	0.014
Active Closure	12	2032-06-01	0.0072
Active Closure	12	2032-07-01	0.0088
Active Closure	12	2032-08-01	0.0078
Active Closure	12	2032-09-01	0.011
Active Closure	12	2032-10-01	0.014
Active Closure	12	2032-11-01	0.019
Active Closure	12	2032-12-01	0.02
Active Closure	12	2033-01-01	0.02
Active Closure	12	2033-02-01	0.021
Active Closure	13	2033-03-01	0.027
Active Closure	13	2033-04-01	0.024
Active Closure	13	2033-05-01	0.014
Active Closure	13	2033-06-01	0.0074
Active Closure	13	2033-07-01	0.0089
Active Closure	13	2033-08-01	0.008
Active Closure	13	2033-09-01	0.011
Transitional Closure	13	2033-10-01	0.011
Transitional Closure	13	2033-11-01	0.015
Transitional Closure	13	2033-12-01	0.017
Transitional Closure	13	2034-01-01	0.019
Transitional Closure	13	2034-02-01	0.021
Transitional Closure	14	2034-03-01	0.028
Transitional Closure	14	2034-04-01	0.026
Transitional Closure	14	2034-05-01	0.0076
Transitional Closure	14	2034-06-01	0.0055
Transitional Closure	14	2034-07-01	0.0065
Transitional Closure	14	2034-08-01	0.0049
Transitional Closure	14	2034-09-01	0.0075
Transitional Closure	14	2034-10-01	0.012
Transitional Closure	14	2034-11-01	0.016
Transitional Closure	14	2034-12-01	0.019

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Transitional Closure	14	2035-01-01	570	54	2.2	0.048	0.45	0.03	0.12	0.28	0.00018	0.00018	0.034
Transitional Closure	14	2035-02-01	650	59	2.4	0.052	0.51	0.037	0.13	0.25	0.00018	0.0002	0.026
Transitional Closure	15	2035-03-01	730	61	2.5	0.054	0.56	0.035	0.13	0.25	0.0003	0.00024	0.023
Transitional Closure	15	2035-04-01	800	62	2.6	0.057	0.6	0.026	0.13	0.49	0.00028	0.00021	0.025
Transitional Closure	15	2035-05-01	120	17	0.98	0.024	0.15	0.021	0.057	0.65	0.00056	0.00049	0.075
Transitional Closure	15	2035-06-01	150	24	0.79	0.018	0.12	0.022	0.071	0.43	0.00055	0.00046	0.029
Transitional Closure	15	2035-07-01	160	29	0.86	0.02	0.14	0.013	0.075	0.23	0.00034	0.00072	0.024
Transitional Closure	15	2035-08-01	180	26	0.86	0.02	0.14	0.017	0.073	0.38	0.00036	0.00026	0.018
Transitional Closure	15	2035-09-01	170	27	0.79	0.018	0.12	0.015	0.072	0.52	0.00036	0.00037	0.017
Transitional Closure	15	2035-10-01	200	30	0.85	0.018	0.14	0.018	0.076	0.55	0.00022	0.00023	0.014
Transitional Closure	15	2035-11-01	250	35	1.4	0.031	0.25	0.022	0.089	0.28	0.00028	0.0003	0.016
Transitional Closure	15	2035-12-01	310	39	1.8	0.04	0.34	0.026	0.096	0.33	0.00023	0.00015	0.022
Transitional Closure	15	2036-01-01	360	41	2.1	0.045	0.4	0.029	0.1	0.29	0.00019	0.00019	0.032
Transitional Closure	15	2036-02-01	400	43	2.2	0.048	0.45	0.036	0.11	0.27	0.00019	0.00021	0.023
Transitional Closure	16	2036-03-01	440	43	2.3	0.051	0.5	0.035	0.11	0.26	0.00031	0.00025	0.02
Transitional Closure	16	2036-04-01	480	42	2.5	0.055	0.55	0.025	0.11	0.51	0.0003	0.00022	0.022
Transitional Closure	16	2036-05-01	90	15	0.92	0.023	0.14	0.021	0.055	0.65	0.00056	0.00049	0.075
Transitional Closure	16	2036-06-01	130	23	0.75	0.017	0.11	0.022	0.07	0.43	0.00055	0.00046	0.029
Transitional Closure	16	2036-07-01	140	28	0.81	0.019	0.13	0.013	0.073	0.23	0.00034	0.00072	0.024
Transitional Closure	16	2036-08-01	160	24	0.81	0.019	0.13	0.017	0.071	0.38	0.00036	0.00026	0.018
Transitional Closure	16	2036-09-01	150	26	0.75	0.017	0.11	0.015	0.071	0.52	0.00037	0.00037	0.017
Transitional Closure	16	2036-10-01	170	28	0.8	0.017	0.13	0.018	0.074	0.56	0.00022	0.00023	0.014
Transitional Closure	16	2036-11-01	190	31	1.3	0.029	0.23	0.021	0.085	0.29	0.00029	0.00031	0.015
Transitional Closure	16	2036-12-01	230	34	1.7	0.037	0.31	0.026	0.091	0.33	0.00023	0.00016	0.021
Transitional Closure	16	2037-01-01	250	35	1.9	0.042	0.37	0.029	0.095	0.29	0.00019	0.0002	0.032
Transitional Closure	16	2037-02-01	270	37	2.1	0.046	0.42	0.037	0.1	0.27	0.0002	0.00022	0.022
Transitional Closure	17	2037-03-01	290	35	2.2	0.048	0.46	0.034	0.099	0.27	0.00032	0.00025	0.018
Transitional Closure	17	2037-04-01	310	33	2.3	0.052	0.5	0.025	0.099	0.52	0.0003	0.00023	0.02
Transitional Closure	17	2037-05-01	77	14	0.87	0.022	0.13	0.021	0.054	0.65	0.00056	0.00049	0.075
Transitional Closure	17	2037-06-01	130	23	0.71	0.016	0.11	0.022	0.07	0.43	0.00055	0.00046	0.029
Transitional Closure	17	2037-07-01	130	27	0.77	0.018	0.12	0.013	0.073	0.23	0.00034	0.00072	0.023
Transitional Closure	17	2037-08-01	150	24	0.77	0.018	0.12	0.017	0.071	0.38	0.00036	0.00026	0.017
Transitional Closure	17	2037-09-01	140	26	0.71	0.016	0.1	0.015	0.07	0.52	0.00037	0.00037	0.017
Transitional Closure	17	2037-10-01	160	28	0.76	0.016	0.12	0.017	0.073	0.56	0.00022	0.00023	0.014

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Transitional Closure	14	2035-01-01	0.00089	0.0018	0.00016	45	0.0011	0.0054	0.3	0.0004	0.89	0.011	0.000026
Transitional Closure	14	2035-02-01	0.0009	0.0019	0.00017	46	0.0013	0.0066	0.18	0.00032	1	0.013	0.000029
Transitional Closure	15	2035-03-01	0.00077	0.0018	0.00018	45	0.0015	0.0079	0.18	0.00034	1.2	0.015	0.000033
Transitional Closure	15	2035-04-01	0.00074	0.0018	0.00019	46	0.0017	0.0095	0.2	0.00047	1.3	0.017	0.000037
Transitional Closure	15	2035-05-01	0.00051	0.001	0.000064	19	0.0002	0.0016	0.13	0.00016	0.13	0.0022	0.0000073
Transitional Closure	15	2035-06-01	0.00059	0.0012	0.000046	33	0.00014	0.001	0.089	0.0001	0.087	0.0013	0.0000062
Transitional Closure	15	2035-07-01	0.00064	0.0012	0.000061	35	0.00013	0.0011	0.075	0.000072	0.091	0.0013	0.0000082
Transitional Closure	15	2035-08-01	0.00059	0.0012	0.000067	39	0.00016	0.0011	0.064	0.00012	0.1	0.0014	0.0000065
Transitional Closure	15	2035-09-01	0.00052	0.00098	0.000064	39	0.00014	0.0012	0.07	0.000097	0.095	0.0013	0.0000058
Transitional Closure	15	2035-10-01	0.0004	0.00085	0.0001	42	0.00018	0.0015	0.093	0.0001	0.13	0.0017	0.0000062
Transitional Closure	15	2035-11-01	0.00068	0.0013	0.00011	42	0.00033	0.0026	0.12	0.00013	0.26	0.0031	0.0000097
Transitional Closure	15	2035-12-01	0.00083	0.0016	0.00012	44	0.00048	0.0039	0.13	0.00014	0.37	0.0045	0.000013
Transitional Closure	15	2036-01-01	0.00085	0.0017	0.00016	45	0.00061	0.0053	0.3	0.0003	0.47	0.0056	0.000016
Transitional Closure	15	2036-02-01	0.0008	0.0017	0.00017	45	0.0007	0.0065	0.18	0.00019	0.53	0.0066	0.000017
Transitional Closure	16	2036-03-01	0.00071	0.0016	0.00017	45	0.0008	0.008	0.17	0.0002	0.61	0.0076	0.000018
Transitional Closure	16	2036-04-01	0.00068	0.0016	0.00018	46	0.00095	0.0097	0.19	0.00031	0.69	0.0087	0.000021
Transitional Closure	16	2036-05-01	0.00051	0.001	0.000063	18	0.00013	0.0016	0.13	0.00015	0.073	0.0015	0.0000059
Transitional Closure	16	2036-06-01	0.00059	0.0012	0.000046	33	0.000094	0.001	0.088	0.000095	0.053	0.0009	0.0000054
Transitional Closure	16	2036-07-01	0.00064	0.0012	0.000061	35	0.00008	0.0011	0.075	0.000063	0.054	0.00085	0.0000073
Transitional Closure	16	2036-08-01	0.00059	0.0011	0.000067	39	0.00011	0.0011	0.063	0.00011	0.057	0.00089	0.0000054
Transitional Closure	16	2036-09-01	0.00052	0.00096	0.000064	39	0.000096	0.0012	0.069	0.000087	0.055	0.00077	0.0000048
Transitional Closure	16	2036-10-01	0.00039	0.00084	0.0001	42	0.00011	0.0015	0.092	0.00009	0.072	0.00098	0.0000047
Transitional Closure	16	2036-11-01	0.00067	0.0013	0.00011	42	0.00019	0.0026	0.12	0.000096	0.14	0.0016	0.0000068
Transitional Closure	16	2036-12-01	0.00082	0.0016	0.00012	44	0.00026	0.0039	0.13	0.000098	0.19	0.0022	0.0000085
Transitional Closure	16	2037-01-01	0.00083	0.0017	0.00015	45	0.00034	0.0053	0.3	0.00025	0.24	0.0028	0.00001
Transitional Closure	16	2037-02-01	0.00082	0.0017	0.00017	46	0.00038	0.0065	0.17	0.00013	0.27	0.0032	0.00001
Transitional Closure	17	2037-03-01	0.00067	0.0016	0.00017	45	0.00042	0.0079	0.17	0.00012	0.3	0.0037	0.000011
Transitional Closure	17	2037-04-01	0.00064	0.0015	0.00018	46	0.00052	0.0097	0.19	0.00023	0.33	0.0042	0.000013
Transitional Closure	17	2037-05-01	0.0005	0.00099	0.000062	18	0.000093	0.0016	0.13	0.00014	0.045	0.0011	0.0000052
Transitional Closure	17	2037-06-01	0.00058	0.0012	0.000046	33	0.000073	0.001	0.088	0.000091	0.036	0.00069	0.000005
Transitional Closure	17	2037-07-01	0.00063	0.0011	0.000061	35	0.000059	0.0011	0.075	0.000059	0.036	0.00062	0.0000069
Transitional Closure	17	2037-08-01	0.00059	0.0011	0.000066	39	0.000087	0.0011	0.063	0.00011	0.036	0.00063	0.0000049
Transitional Closure	17	2037-09-01	0.00052	0.00096	0.000063	39	0.000073	0.0012	0.069	0.000083	0.036	0.00053	0.0000044
Transitional Closure	17	2037-10-01	0.00038	0.00083	0.0001	42	0.000073	0.0014	0.092	0.000083	0.044	0.00061	0.000004

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	14	2035-01-01	0.0013	0.00012	0.0034	0.026	0.75	0.018	0.00088	0.0018	0.00012	43
Transitional Closure	14	2035-02-01	0.0015	0.00014	0.0036	0.026	0.25	0.019	0.00089	0.0019	0.00014	46
Transitional Closure	15	2035-03-01	0.0015	0.00015	0.0033	0.027	0.21	0.018	0.00077	0.0017	0.00017	48
Transitional Closure	15	2035-04-01	0.0013	0.00017	0.0033	0.029	1.1	0.022	0.00072	0.0016	0.00018	46
Transitional Closure	15	2035-05-01	0.00054	0.000024	0.0016	0.0094	6.3	0.055	0.00051	0.00096	0.00005	18
Transitional Closure	15	2035-06-01	0.00072	0.00002	0.0022	0.0063	2	0.017	0.00059	0.0011	0.000042	33
Transitional Closure	15	2035-07-01	0.00071	0.000022	0.0022	0.0081	2.2	0.017	0.00064	0.0011	0.000045	35
Transitional Closure	15	2035-08-01	0.00068	0.000022	0.0021	0.0074	1.8	0.014	0.0006	0.0011	0.000039	38
Transitional Closure	15	2035-09-01	0.00079	0.00002	0.0022	0.0092	1.3	0.011	0.00052	0.00097	0.000045	39
Transitional Closure	15	2035-10-01	0.001	0.000022	0.0021	0.016	1.3	0.009	0.00039	0.00081	0.000078	41
Transitional Closure	15	2035-11-01	0.0012	0.00004	0.0028	0.019	0.64	0.013	0.0007	0.0013	0.000074	42
Transitional Closure	15	2035-12-01	0.0012	0.000056	0.0032	0.022	0.97	0.014	0.00082	0.0016	0.000096	44
Transitional Closure	15	2036-01-01	0.0013	0.000066	0.0034	0.026	0.78	0.015	0.00084	0.0016	0.00011	44
Transitional Closure	15	2036-02-01	0.0014	0.000074	0.0034	0.025	0.27	0.015	0.0008	0.0017	0.00013	45
Transitional Closure	16	2036-03-01	0.0014	0.000082	0.0033	0.027	0.23	0.015	0.00071	0.0016	0.00016	49
Transitional Closure	16	2036-04-01	0.0012	0.00009	0.0033	0.029	1.1	0.018	0.00066	0.0014	0.00018	46
Transitional Closure	16	2036-05-01	0.00053	0.000017	0.0016	0.0093	6.3	0.055	0.00051	0.00094	0.000049	18
Transitional Closure	16	2036-06-01	0.00072	0.000016	0.0022	0.0062	2	0.017	0.00058	0.0011	0.000042	33
Transitional Closure	16	2036-07-01	0.00071	0.000018	0.0021	0.0081	2.2	0.017	0.00064	0.0011	0.000045	35
Transitional Closure	16	2036-08-01	0.00068	0.000017	0.0021	0.0073	1.9	0.014	0.00059	0.0011	0.000039	38
Transitional Closure	16	2036-09-01	0.00078	0.000016	0.0022	0.0092	1.3	0.011	0.00052	0.00096	0.000044	39
Transitional Closure	16	2036-10-01	0.001	0.000015	0.0021	0.016	1.4	0.0087	0.00039	0.00079	0.000077	41
Transitional Closure	16	2036-11-01	0.0012	0.000026	0.0028	0.019	0.65	0.012	0.00068	0.0013	0.000072	42
Transitional Closure	16	2036-12-01	0.0012	0.000035	0.0032	0.022	0.98	0.013	0.0008	0.0015	0.000094	44
Transitional Closure	16	2037-01-01	0.0013	0.00004	0.0034	0.026	0.79	0.014	0.00081	0.0016	0.00011	44
Transitional Closure	16	2037-02-01	0.0014	0.000043	0.0035	0.025	0.27	0.014	0.00082	0.0017	0.00013	46
Transitional Closure	17	2037-03-01	0.0014	0.000045	0.0032	0.027	0.23	0.013	0.00067	0.0015	0.00016	49
Transitional Closure	17	2037-04-01	0.0012	0.000048	0.0032	0.029	1.1	0.017	0.00062	0.0013	0.00017	46
Transitional Closure	17	2037-05-01	0.00053	0.000014	0.0015	0.0093	6.4	0.055	0.0005	0.00094	0.000048	18
Transitional Closure	17	2037-06-01	0.00071	0.000014	0.0022	0.0062	2	0.017	0.00058	0.0011	0.000042	33
Transitional Closure	17	2037-07-01	0.0007	0.000016	0.0021	0.008	2.2	0.017	0.00063	0.0011	0.000044	35
Transitional Closure	17	2037-08-01	0.00067	0.000015	0.0021	0.0073	1.9	0.014	0.00059	0.0011	0.000038	38
Transitional Closure	17	2037-09-01	0.00078	0.000013	0.0022	0.0091	1.3	0.011	0.00052	0.00095	0.000044	39
Transitional Closure	17	2037-10-01	0.001	0.000011	0.0021	0.016	1.4	0.0085	0.00038	0.00078	0.000077	41

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Transitional Closure	14	2035-01-01	0.0011	0.0052	0.064	0.00029	0.87	0.011	0.000025	0.0013	0.00012	0.0034
Transitional Closure	14	2035-02-01	0.0013	0.0065	0.081	0.00027	1	0.013	0.000029	0.0015	0.00014	0.0036
Transitional Closure	15	2035-03-01	0.0015	0.0079	0.1	0.00031	1.2	0.015	0.000033	0.0014	0.00015	0.0034
Transitional Closure	15	2035-04-01	0.0017	0.0095	0.12	0.00042	1.3	0.017	0.000037	0.0012	0.00017	0.0033
Transitional Closure	15	2035-05-01	0.00018	0.0015	0.07	0.000057	0.13	0.0021	0.0000075	0.00052	0.000024	0.0015
Transitional Closure	15	2035-06-01	0.00012	0.00095	0.029	0.000041	0.082	0.0013	0.0000063	0.00072	0.00002	0.0023
Transitional Closure	15	2035-07-01	0.00011	0.00095	0.021	0.000041	0.085	0.0013	0.000006	0.00074	0.000022	0.0021
Transitional Closure	15	2035-08-01	0.00016	0.0011	0.022	0.000061	0.097	0.0014	0.0000065	0.00068	0.000022	0.0021
Transitional Closure	15	2035-09-01	0.00013	0.001	0.027	0.000049	0.092	0.0013	0.0000058	0.00076	0.00002	0.0022
Transitional Closure	15	2035-10-01	0.00017	0.0014	0.024	0.000046	0.13	0.0017	0.0000062	0.00099	0.000022	0.0021
Transitional Closure	15	2035-11-01	0.00033	0.0026	0.033	0.00008	0.26	0.0031	0.0000097	0.0011	0.000041	0.0028
Transitional Closure	15	2035-12-01	0.00047	0.0039	0.052	0.00011	0.37	0.0044	0.000013	0.0012	0.000055	0.0032
Transitional Closure	15	2036-01-01	0.00058	0.0052	0.055	0.00019	0.45	0.0055	0.000015	0.0013	0.000066	0.0034
Transitional Closure	15	2036-02-01	0.00068	0.0065	0.07	0.00015	0.52	0.0065	0.000017	0.0014	0.000074	0.0034
Transitional Closure	16	2036-03-01	0.0008	0.0079	0.093	0.00017	0.62	0.0076	0.000018	0.0013	0.000082	0.0033
Transitional Closure	16	2036-04-01	0.00094	0.0097	0.11	0.00026	0.68	0.0087	0.000021	0.0011	0.00009	0.0032
Transitional Closure	16	2036-05-01	0.00011	0.0015	0.069	0.000043	0.07	0.0014	0.0000061	0.00051	0.000017	0.0015
Transitional Closure	16	2036-06-01	0.000075	0.00094	0.028	0.000032	0.047	0.00089	0.0000054	0.00071	0.000016	0.0022
Transitional Closure	16	2036-07-01	0.000069	0.00094	0.02	0.000032	0.048	0.00083	0.0000051	0.00073	0.000018	0.0021
Transitional Closure	16	2036-08-01	0.00011	0.0011	0.021	0.00005	0.053	0.00088	0.0000054	0.00067	0.000017	0.0021
Transitional Closure	16	2036-09-01	0.000085	0.001	0.026	0.00004	0.052	0.00074	0.0000048	0.00075	0.000015	0.0022
Transitional Closure	16	2036-10-01	0.000092	0.0013	0.023	0.000031	0.065	0.00093	0.0000047	0.00098	0.000015	0.0021
Transitional Closure	16	2036-11-01	0.00018	0.0025	0.03	0.00005	0.14	0.0016	0.0000068	0.0011	0.000026	0.0028
Transitional Closure	16	2036-12-01	0.00025	0.0038	0.049	0.000064	0.19	0.0022	0.0000085	0.0012	0.000035	0.0032
Transitional Closure	16	2037-01-01	0.00031	0.0051	0.051	0.00014	0.23	0.0027	0.0000095	0.0012	0.000039	0.0033
Transitional Closure	16	2037-02-01	0.00036	0.0064	0.065	0.000085	0.26	0.0032	0.00001	0.0014	0.000043	0.0035
Transitional Closure	17	2037-03-01	0.00042	0.0078	0.087	0.000092	0.3	0.0037	0.000011	0.0013	0.000045	0.0032
Transitional Closure	17	2037-04-01	0.00051	0.0097	0.1	0.00018	0.33	0.0042	0.000012	0.0011	0.000048	0.0032
Transitional Closure	17	2037-05-01	0.000081	0.0014	0.068	0.000036	0.042	0.001	0.0000055	0.00051	0.000014	0.0015
Transitional Closure	17	2037-06-01	0.000055	0.00093	0.028	0.000028	0.03	0.00068	0.000005	0.00071	0.000014	0.0022
Transitional Closure	17	2037-07-01	0.000048	0.00094	0.02	0.000027	0.03	0.0006	0.0000047	0.00073	0.000015	0.0021
Transitional Closure	17	2037-08-01	0.000084	0.001	0.021	0.000045	0.033	0.00062	0.0000049	0.00067	0.000015	0.0021
Transitional Closure	17	2037-09-01	0.000062	0.001	0.026	0.000035	0.033	0.0005	0.0000044	0.00075	0.000013	0.0022
Transitional Closure	17	2037-10-01	0.000057	0.0013	0.022	0.000024	0.037	0.00057	0.000004	0.00098	0.000011	0.0021

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Transitional Closure	14	2035-01-01	0.021
Transitional Closure	14	2035-02-01	0.023
Transitional Closure	15	2035-03-01	0.031
Transitional Closure	15	2035-04-01	0.028
Transitional Closure	15	2035-05-01	0.0075
Transitional Closure	15	2035-06-01	0.0055
Transitional Closure	15	2035-07-01	0.0064
Transitional Closure	15	2035-08-01	0.0048
Transitional Closure	15	2035-09-01	0.0074
Transitional Closure	15	2035-10-01	0.012
Transitional Closure	15	2035-11-01	0.016
Transitional Closure	15	2035-12-01	0.019
Transitional Closure	15	2036-01-01	0.02
Transitional Closure	15	2036-02-01	0.023
Transitional Closure	16	2036-03-01	0.031
Transitional Closure	16	2036-04-01	0.028
Transitional Closure	16	2036-05-01	0.0074
Transitional Closure	16	2036-06-01	0.0054
Transitional Closure	16	2036-07-01	0.0064
Transitional Closure	16	2036-08-01	0.0047
Transitional Closure	16	2036-09-01	0.0073
Transitional Closure	16	2036-10-01	0.012
Transitional Closure	16	2036-11-01	0.016
Transitional Closure	16	2036-12-01	0.018
Transitional Closure	16	2037-01-01	0.02
Transitional Closure	16	2037-02-01	0.022
Transitional Closure	17	2037-03-01	0.031
Transitional Closure	17	2037-04-01	0.028
Transitional Closure	17	2037-05-01	0.0074
Transitional Closure	17	2037-06-01	0.0054
Transitional Closure	17	2037-07-01	0.0063
Transitional Closure	17	2037-08-01	0.0047
Transitional Closure	17	2037-09-01	0.0073
Transitional Closure	17	2037-10-01	0.012

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	17	2037-11-01	170	30	1.3	0.027	0.21	0.021	0.084	0.29	0.00029	0.00031	0.015
Transitional Closure	17	2037-12-01	190	32	1.6	0.035	0.29	0.026	0.089	0.33	0.00023	0.00016	0.02
Transitional Closure	17	2038-01-01	200	33	1.8	0.04	0.35	0.029	0.092	0.3	0.00019	0.0002	0.031
Transitional Closure	17	2038-02-01	210	34	2	0.044	0.39	0.036	0.1	0.28	0.0002	0.00022	0.021
Transitional Closure	18	2038-03-01	220	31	2.1	0.045	0.42	0.034	0.095	0.27	0.00032	0.00026	0.017
Transitional Closure	18	2038-04-01	230	29	2.2	0.049	0.47	0.025	0.094	0.53	0.00031	0.00023	0.019
Transitional Closure	18	2038-05-01	70	14	0.83	0.02	0.13	0.021	0.053	0.65	0.00056	0.00049	0.075
Transitional Closure	18	2038-06-01	120	23	0.67	0.015	0.1	0.022	0.069	0.43	0.00055	0.00046	0.029
Transitional Closure	18	2038-07-01	130	27	0.73	0.017	0.11	0.013	0.073	0.23	0.00034	0.00072	0.023
Transitional Closure	18	2038-08-01	140	24	0.73	0.017	0.11	0.017	0.07	0.38	0.00036	0.00026	0.017
Transitional Closure	18	2038-09-01	140	25	0.67	0.016	0.099	0.015	0.07	0.52	0.00037	0.00037	0.017
Transitional Closure	18	2038-10-01	150	27	0.73	0.016	0.11	0.017	0.073	0.56	0.00022	0.00023	0.014
Transitional Closure	18	2038-11-01	160	30	1.2	0.026	0.2	0.021	0.083	0.29	0.00029	0.00031	0.015
Transitional Closure	18	2038-12-01	170	31	1.5	0.034	0.27	0.026	0.087	0.33	0.00023	0.00016	0.02
Transitional Closure	18	2039-01-01	180	31	1.7	0.038	0.32	0.029	0.091	0.3	0.00019	0.0002	0.031
Transitional Closure	18	2039-02-01	190	33	1.9	0.041	0.36	0.036	0.098	0.28	0.0002	0.00022	0.021
Transitional Closure	19	2039-03-01	190	30	2	0.042	0.4	0.033	0.093	0.28	0.00032	0.00026	0.017
Transitional Closure	19	2039-04-01	190	27	2.1	0.046	0.44	0.024	0.091	0.53	0.00031	0.00023	0.019
Transitional Closure	19	2039-05-01	67	14	0.79	0.02	0.12	0.021	0.053	0.65	0.00056	0.00049	0.075
Transitional Closure	19	2039-06-01	120	22	0.64	0.015	0.095	0.022	0.069	0.43	0.00055	0.00046	0.029
Transitional Closure	19	2039-07-01	120	27	0.69	0.016	0.11	0.013	0.072	0.23	0.00034	0.00072	0.023
Transitional Closure	19	2039-08-01	140	23	0.69	0.016	0.11	0.017	0.07	0.38	0.00036	0.00026	0.017
Transitional Closure	19	2039-09-01	140	25	0.64	0.015	0.094	0.015	0.07	0.52	0.00037	0.00037	0.017
Transitional Closure	19	2039-10-01	150	27	0.69	0.015	0.11	0.017	0.072	0.56	0.00022	0.00023	0.014
Transitional Closure	19	2039-11-01	150	29	1.1	0.025	0.19	0.021	0.082	0.29	0.00029	0.00031	0.015
Transitional Closure	19	2039-12-01	160	31	1.5	0.032	0.26	0.026	0.087	0.33	0.00023	0.00016	0.02
Transitional Closure	19	2040-01-01	170	31	1.7	0.036	0.31	0.029	0.09	0.3	0.00019	0.0002	0.031
Transitional Closure	19	2040-02-01	170	31	1.8	0.038	0.34	0.035	0.095	0.28	0.0002	0.00022	0.02
Transitional Closure	20	2040-03-01	170	29	1.9	0.04	0.37	0.033	0.092	0.28	0.00032	0.00026	0.017
Transitional Closure	20	2040-04-01	180	26	2	0.044	0.42	0.024	0.091	0.53	0.00031	0.00023	0.019
Transitional Closure	20	2040-05-01	66	14	0.75	0.019	0.11	0.021	0.053	0.65	0.00056	0.00049	0.075
Transitional Closure	20	2040-06-01	120	22	0.61	0.014	0.091	0.022	0.069	0.43	0.00055	0.00046	0.029
Transitional Closure	20	2040-07-01	120	27	0.65	0.016	0.1	0.013	0.072	0.23	0.00034	0.00072	0.023
Transitional Closure	20	2040-08-01	140	23	0.65	0.016	0.1	0.017	0.07	0.38	0.00036	0.00026	0.017

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	17	2037-11-01	0.00066	0.0013	0.00011	42	0.00012	0.0025	0.12	0.000083	0.086	0.00089	0.0000054
Transitional Closure	17	2037-12-01	0.00081	0.0016	0.00012	44	0.00016	0.0039	0.13	0.000078	0.11	0.0012	0.0000064
Transitional Closure	17	2038-01-01	0.00082	0.0017	0.00015	45	0.00021	0.0053	0.3	0.00023	0.14	0.0015	0.0000075
Transitional Closure	17	2038-02-01	0.0008	0.0017	0.00016	46	0.00023	0.0064	0.17	0.0001	0.14	0.0016	0.0000073
Transitional Closure	18	2038-03-01	0.00065	0.0015	0.00017	45	0.00025	0.0078	0.17	0.000087	0.15	0.0018	0.0000072
Transitional Closure	18	2038-04-01	0.00062	0.0015	0.00018	46	0.00032	0.0098	0.19	0.00019	0.17	0.0021	0.0000089
Transitional Closure	18	2038-05-01	0.0005	0.00099	0.000062	18	0.000078	0.0016	0.13	0.00014	0.032	0.00096	0.0000049
Transitional Closure	18	2038-06-01	0.00058	0.0012	0.000045	33	0.000064	0.001	0.088	0.000089	0.028	0.0006	0.0000048
Transitional Closure	18	2038-07-01	0.00063	0.0011	0.000061	35	0.000049	0.0011	0.074	0.000057	0.028	0.00052	0.0000067
Transitional Closure	18	2038-08-01	0.00059	0.0011	0.000066	39	0.000076	0.0011	0.062	0.0001	0.027	0.00052	0.0000047
Transitional Closure	18	2038-09-01	0.00051	0.00096	0.000063	39	0.000063	0.0012	0.069	0.000081	0.027	0.00042	0.0000042
Transitional Closure	18	2038-10-01	0.00038	0.00083	0.0001	42	0.000057	0.0014	0.091	0.00008	0.031	0.00045	0.0000037
Transitional Closure	18	2038-11-01	0.00066	0.0013	0.00011	42	0.000088	0.0025	0.12	0.000077	0.06	0.00057	0.0000048
Transitional Closure	18	2038-12-01	0.0008	0.0015	0.00012	44	0.00012	0.0039	0.13	0.000069	0.072	0.00072	0.0000055
Transitional Closure	18	2039-01-01	0.00081	0.0017	0.00015	45	0.00016	0.0052	0.3	0.00022	0.092	0.00087	0.0000064
Transitional Closure	18	2039-02-01	0.00079	0.0017	0.00016	46	0.00016	0.0064	0.17	0.000087	0.087	0.00095	0.000006
Transitional Closure	19	2039-03-01	0.00064	0.0015	0.00017	45	0.00017	0.0077	0.17	0.000072	0.089	0.001	0.0000056
Transitional Closure	19	2039-04-01	0.00061	0.0015	0.00017	46	0.00023	0.0097	0.19	0.00017	0.094	0.0012	0.000007
Transitional Closure	19	2039-05-01	0.0005	0.00099	0.000062	18	0.000071	0.0016	0.13	0.00014	0.026	0.00089	0.0000047
Transitional Closure	19	2039-06-01	0.00058	0.0012	0.000045	33	0.00006	0.001	0.088	0.000088	0.025	0.00055	0.0000047
Transitional Closure	19	2039-07-01	0.00063	0.0011	0.000061	35	0.000044	0.0011	0.074	0.000056	0.025	0.00048	0.0000066
Transitional Closure	19	2039-08-01	0.00058	0.0011	0.000066	39	0.000071	0.0011	0.062	0.0001	0.023	0.00047	0.0000046
Transitional Closure	19	2039-09-01	0.00051	0.00096	0.000063	39	0.000058	0.0012	0.069	0.00008	0.023	0.00037	0.0000041
Transitional Closure	19	2039-10-01	0.00038	0.00082	0.0001	42	0.00005	0.0014	0.091	0.000079	0.025	0.00038	0.0000036
Transitional Closure	19	2039-11-01	0.00066	0.0013	0.00011	42	0.000075	0.0025	0.12	0.000074	0.049	0.00043	0.0000045
Transitional Closure	19	2039-12-01	0.0008	0.0015	0.00012	44	0.000098	0.0038	0.13	0.000065	0.056	0.00052	0.0000051
Transitional Closure	19	2040-01-01	0.0008	0.0016	0.00015	45	0.00013	0.0052	0.31	0.00021	0.072	0.00061	0.0000058
Transitional Closure	19	2040-02-01	0.00074	0.0016	0.00016	46	0.00013	0.0064	0.17	0.00008	0.062	0.00064	0.0000052
Transitional Closure	20	2040-03-01	0.00064	0.0015	0.00017	45	0.00014	0.0077	0.17	0.000065	0.061	0.00067	0.0000049
Transitional Closure	20	2040-04-01	0.0006	0.0015	0.00017	46	0.00019	0.0097	0.19	0.00016	0.061	0.00079	0.0000062
Transitional Closure	20	2040-05-01	0.0005	0.00099	0.000062	18	0.000068	0.0016	0.13	0.00014	0.024	0.00086	0.0000047
Transitional Closure	20	2040-06-01	0.00058	0.0012	0.000045	33	0.000058	0.001	0.088	0.000088	0.023	0.00053	0.0000047
Transitional Closure	20	2040-07-01	0.00063	0.0011	0.000061	35	0.000043	0.0011	0.074	0.000056	0.023	0.00046	0.0000066
Transitional Closure	20	2040-08-01	0.00058	0.0011	0.000066	39	0.000069	0.0011	0.062	0.0001	0.021	0.00044	0.0000046

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Transitional Closure	17	2037-11-01	0.0012	0.00002	0.0028	0.019	0.65	0.012	0.00068	0.0013	0.000071	42
Transitional Closure	17	2037-12-01	0.0012	0.000025	0.0032	0.022	0.99	0.013	0.00079	0.0015	0.000093	44
Transitional Closure	17	2038-01-01	0.0013	0.000027	0.0033	0.026	0.8	0.014	0.0008	0.0016	0.00011	44
Transitional Closure	17	2038-02-01	0.0014	0.000029	0.0035	0.025	0.28	0.014	0.0008	0.0016	0.00013	46
Transitional Closure	18	2038-03-01	0.0014	0.000028	0.0032	0.027	0.24	0.012	0.00066	0.0015	0.00015	49
Transitional Closure	18	2038-04-01	0.0012	0.000029	0.0032	0.029	1.2	0.016	0.0006	0.0013	0.00017	46
Transitional Closure	18	2038-05-01	0.00052	0.000013	0.0015	0.0093	6.4	0.055	0.0005	0.00093	0.000048	18
Transitional Closure	18	2038-06-01	0.00071	0.000013	0.0022	0.0062	2	0.017	0.00058	0.0011	0.000042	33
Transitional Closure	18	2038-07-01	0.0007	0.000015	0.0021	0.008	2.2	0.017	0.00063	0.0011	0.000044	35
Transitional Closure	18	2038-08-01	0.00067	0.000014	0.0021	0.0073	1.9	0.014	0.00059	0.0011	0.000038	38
Transitional Closure	18	2038-09-01	0.00078	0.000012	0.0022	0.0091	1.3	0.011	0.00051	0.00095	0.000044	39
Transitional Closure	18	2038-10-01	0.001	0.0000099	0.0021	0.016	1.4	0.0084	0.00038	0.00078	0.000076	41
Transitional Closure	18	2038-11-01	0.0012	0.000017	0.0028	0.019	0.65	0.012	0.00067	0.0013	0.000071	42
Transitional Closure	18	2038-12-01	0.0012	0.000021	0.0031	0.022	0.99	0.013	0.00079	0.0015	0.000092	44
Transitional Closure	18	2039-01-01	0.0013	0.000022	0.0033	0.026	0.8	0.013	0.00079	0.0016	0.00011	44
Transitional Closure	18	2039-02-01	0.0014	0.000022	0.0034	0.025	0.28	0.013	0.00079	0.0016	0.00013	46
Transitional Closure	19	2039-03-01	0.0014	0.00002	0.0032	0.027	0.24	0.012	0.00064	0.0014	0.00015	49
Transitional Closure	19	2039-04-01	0.0012	0.00002	0.0031	0.029	1.2	0.015	0.00059	0.0013	0.00017	46
Transitional Closure	19	2039-05-01	0.00052	0.000012	0.0015	0.0093	6.4	0.054	0.0005	0.00093	0.000048	18
Transitional Closure	19	2039-06-01	0.00071	0.000013	0.0022	0.0062	2	0.017	0.00058	0.0011	0.000041	33
Transitional Closure	19	2039-07-01	0.0007	0.000014	0.0021	0.008	2.2	0.017	0.00063	0.0011	0.000044	35
Transitional Closure	19	2039-08-01	0.00067	0.000013	0.0021	0.0072	1.9	0.014	0.00059	0.0011	0.000038	38
Transitional Closure	19	2039-09-01	0.00078	0.000012	0.0022	0.0091	1.3	0.011	0.00051	0.00095	0.000044	39
Transitional Closure	19	2039-10-01	0.001	0.0000092	0.0021	0.016	1.4	0.0084	0.00038	0.00078	0.000076	41
Transitional Closure	19	2039-11-01	0.0012	0.000015	0.0028	0.019	0.65	0.012	0.00067	0.0013	0.000071	42
Transitional Closure	19	2039-12-01	0.0012	0.000019	0.0031	0.022	1	0.013	0.00078	0.0015	0.000092	44
Transitional Closure	19	2040-01-01	0.0013	0.00002	0.0033	0.026	0.8	0.013	0.00079	0.0015	0.00011	44
Transitional Closure	19	2040-02-01	0.0013	0.000019	0.0033	0.025	0.28	0.013	0.00073	0.0015	0.00013	46
Transitional Closure	20	2040-03-01	0.0014	0.000017	0.0032	0.027	0.24	0.012	0.00064	0.0014	0.00015	49
Transitional Closure	20	2040-04-01	0.0012	0.000017	0.0031	0.029	1.2	0.015	0.00059	0.0013	0.00017	46
Transitional Closure	20	2040-05-01	0.00052	0.000012	0.0015	0.0093	6.4	0.054	0.0005	0.00093	0.000048	18
Transitional Closure	20	2040-06-01	0.00071	0.000013	0.0022	0.0062	2	0.017	0.00058	0.0011	0.000041	33
Transitional Closure	20	2040-07-01	0.0007	0.000014	0.0021	0.008	2.2	0.017	0.00063	0.0011	0.000044	35
Transitional Closure	20	2040-08-01	0.00067	0.000013	0.0021	0.0072	1.9	0.014	0.00059	0.0011	0.000038	38

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Transitional Closure	17	2037-11-01	0.00011	0.0025	0.029	0.000036	0.082	0.00088	0.0000054	0.0011	0.00002	0.0028
Transitional Closure	17	2037-12-01	0.00015	0.0038	0.047	0.000044	0.11	0.0012	0.0000064	0.0012	0.000025	0.0032
Transitional Closure	17	2038-01-01	0.00018	0.0051	0.049	0.00011	0.12	0.0014	0.0000069	0.0012	0.000027	0.0033
Transitional Closure	17	2038-02-01	0.00021	0.0064	0.063	0.000054	0.14	0.0016	0.0000073	0.0014	0.000029	0.0035
Transitional Closure	18	2038-03-01	0.00025	0.0078	0.084	0.000056	0.16	0.0018	0.0000072	0.0013	0.000028	0.0032
Transitional Closure	18	2038-04-01	0.00031	0.0098	0.1	0.00014	0.16	0.0021	0.000008	0.0011	0.000029	0.0031
Transitional Closure	18	2038-05-01	0.000065	0.0014	0.068	0.000033	0.029	0.00085	0.0000051	0.00051	0.000013	0.0015
Transitional Closure	18	2038-06-01	0.000046	0.00093	0.028	0.000026	0.022	0.00059	0.0000048	0.00071	0.000013	0.0022
Transitional Closure	18	2038-07-01	0.000038	0.00093	0.02	0.000025	0.022	0.0005	0.0000045	0.00073	0.000014	0.0021
Transitional Closure	18	2038-08-01	0.000073	0.001	0.021	0.000043	0.023	0.0005	0.0000047	0.00067	0.000013	0.0021
Transitional Closure	18	2038-09-01	0.000052	0.001	0.026	0.000033	0.024	0.00039	0.0000042	0.00075	0.000012	0.0022
Transitional Closure	18	2038-10-01	0.000041	0.0013	0.022	0.000021	0.024	0.00041	0.0000037	0.00098	0.00001	0.0021
Transitional Closure	18	2038-11-01	0.000083	0.0025	0.029	0.00003	0.057	0.00056	0.0000048	0.0011	0.000017	0.0028
Transitional Closure	18	2038-12-01	0.00011	0.0038	0.047	0.000035	0.069	0.0007	0.0000055	0.0012	0.000021	0.0032
Transitional Closure	18	2039-01-01	0.00012	0.0051	0.048	0.000099	0.075	0.0008	0.0000058	0.0012	0.000022	0.0033
Transitional Closure	18	2039-02-01	0.00014	0.0063	0.061	0.000041	0.081	0.0009	0.000006	0.0014	0.000022	0.0035
Transitional Closure	19	2039-03-01	0.00017	0.0077	0.083	0.00004	0.096	0.001	0.0000056	0.0013	0.000021	0.0032
Transitional Closure	19	2039-04-01	0.00022	0.0097	0.099	0.00012	0.089	0.0012	0.0000061	0.0011	0.00002	0.0031
Transitional Closure	19	2039-05-01	0.000058	0.0014	0.068	0.000032	0.023	0.00078	0.000005	0.0005	0.000012	0.0015
Transitional Closure	19	2039-06-01	0.000042	0.00093	0.028	0.000025	0.019	0.00054	0.0000047	0.00071	0.000013	0.0022
Transitional Closure	19	2039-07-01	0.000033	0.00093	0.02	0.000024	0.019	0.00046	0.0000044	0.00073	0.000014	0.0021
Transitional Closure	19	2039-08-01	0.000068	0.001	0.021	0.000042	0.019	0.00045	0.0000046	0.00067	0.000013	0.0021
Transitional Closure	19	2039-09-01	0.000047	0.00099	0.025	0.000032	0.02	0.00035	0.0000041	0.00075	0.000012	0.0022
Transitional Closure	19	2039-10-01	0.000035	0.0013	0.022	0.00002	0.018	0.00033	0.0000036	0.00098	0.0000093	0.0021
Transitional Closure	19	2039-11-01	0.00007	0.0025	0.029	0.000027	0.046	0.00042	0.0000045	0.0011	0.000016	0.0028
Transitional Closure	19	2039-12-01	0.000088	0.0038	0.047	0.000031	0.053	0.00049	0.0000051	0.0012	0.000019	0.0031
Transitional Closure	19	2040-01-01	0.0001	0.0051	0.047	0.000094	0.055	0.00054	0.0000052	0.0012	0.000019	0.0033
Transitional Closure	19	2040-02-01	0.00011	0.0063	0.061	0.000033	0.056	0.00059	0.0000052	0.0013	0.000019	0.0033
Transitional Closure	20	2040-03-01	0.00013	0.0077	0.082	0.000033	0.069	0.00068	0.0000049	0.0013	0.000017	0.0032
Transitional Closure	20	2040-04-01	0.00018	0.0097	0.099	0.00011	0.057	0.00077	0.0000053	0.0011	0.000017	0.0031
Transitional Closure	20	2040-05-01	0.000055	0.0014	0.068	0.000031	0.021	0.00075	0.0000049	0.0005	0.000012	0.0015
Transitional Closure	20	2040-06-01	0.00004	0.00093	0.028	0.000025	0.018	0.00053	0.0000047	0.00071	0.000013	0.0022
Transitional Closure	20	2040-07-01	0.000032	0.00093	0.02	0.000024	0.017	0.00044	0.0000044	0.00073	0.000014	0.0021
Transitional Closure	20	2040-08-01	0.000066	0.001	0.02	0.000041	0.017	0.00043	0.0000046	0.00067	0.000013	0.0021

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Transitional Closure	17	2037-11-01	0.016
Transitional Closure	17	2037-12-01	0.018
Transitional Closure	17	2038-01-01	0.02
Transitional Closure	17	2038-02-01	0.022
Transitional Closure	18	2038-03-01	0.031
Transitional Closure	18	2038-04-01	0.028
Transitional Closure	18	2038-05-01	0.0074
Transitional Closure	18	2038-06-01	0.0054
Transitional Closure	18	2038-07-01	0.0063
Transitional Closure	18	2038-08-01	0.0047
Transitional Closure	18	2038-09-01	0.0073
Transitional Closure	18	2038-10-01	0.012
Transitional Closure	18	2038-11-01	0.016
Transitional Closure	18	2038-12-01	0.018
Transitional Closure	18	2039-01-01	0.02
Transitional Closure	18	2039-02-01	0.022
Transitional Closure	19	2039-03-01	0.031
Transitional Closure	19	2039-04-01	0.028
Transitional Closure	19	2039-05-01	0.0074
Transitional Closure	19	2039-06-01	0.0054
Transitional Closure	19	2039-07-01	0.0063
Transitional Closure	19	2039-08-01	0.0047
Transitional Closure	19	2039-09-01	0.0073
Transitional Closure	19	2039-10-01	0.012
Transitional Closure	19	2039-11-01	0.016
Transitional Closure	19	2039-12-01	0.018
Transitional Closure	19	2040-01-01	0.02
Transitional Closure	19	2040-02-01	0.022
Transitional Closure	20	2040-03-01	0.031
Transitional Closure	20	2040-04-01	0.028
Transitional Closure	20	2040-05-01	0.0074
Transitional Closure	20	2040-06-01	0.0054
Transitional Closure	20	2040-07-01	0.0063
Transitional Closure	20	2040-08-01	0.0047

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Transitional Closure	20	2040-09-01	140	25	0.61	0.014	0.089	0.015	0.07	0.52	0.00037	0.00037	0.017
Transitional Closure	20	2040-10-01	150	27	0.66	0.014	0.1	0.017	0.072	0.56	0.00022	0.00023	0.014
Transitional Closure	20	2040-11-01	150	29	1.1	0.023	0.18	0.021	0.082	0.29	0.00029	0.00031	0.015
Transitional Closure	20	2040-12-01	160	31	1.4	0.03	0.24	0.026	0.087	0.33	0.00023	0.00016	0.02
Transitional Closure	20	2041-01-01	160	31	1.6	0.034	0.29	0.029	0.09	0.3	0.00019	0.0002	0.031
Transitional Closure	20	2041-02-01	170	32	1.7	0.037	0.33	0.036	0.097	0.28	0.0002	0.00022	0.021
Transitional Closure	21	2041-03-01	170	29	1.8	0.038	0.35	0.033	0.092	0.28	0.00032	0.00026	0.016
Transitional Closure	21	2041-04-01	170	26	1.9	0.041	0.39	0.024	0.09	0.54	0.00032	0.00023	0.019
Transitional Closure	21	2041-05-01	66	14	0.71	0.018	0.11	0.021	0.053	0.65	0.00056	0.00049	0.075
Transitional Closure	21	2041-06-01	120	22	0.58	0.013	0.086	0.022	0.069	0.43	0.00055	0.00046	0.029
Transitional Closure	21	2041-07-01	120	27	0.62	0.015	0.097	0.013	0.072	0.23	0.00034	0.00072	0.023
Transitional Closure	21	2041-08-01	140	23	0.62	0.015	0.097	0.017	0.07	0.38	0.00036	0.00026	0.017
Transitional Closure	21	2041-09-01	140	25	0.58	0.013	0.085	0.015	0.07	0.52	0.00037	0.00037	0.017
Transitional Closure	21	2041-10-01	150	27	0.63	0.013	0.098	0.017	0.072	0.56	0.00022	0.00023	0.014
Transitional Closure	21	2041-11-01	150	29	1	0.022	0.17	0.021	0.082	0.29	0.00029	0.00031	0.015
Transitional Closure	21	2041-12-01	160	31	1.3	0.029	0.23	0.026	0.087	0.33	0.00023	0.00016	0.02
Transitional Closure	21	2042-01-01	160	31	1.5	0.032	0.28	0.028	0.09	0.3	0.00019	0.0002	0.031
Transitional Closure	21	2042-02-01	170	32	1.6	0.035	0.31	0.035	0.097	0.29	0.00021	0.00023	0.021
Transitional Closure	22	2042-03-01	170	29	1.7	0.036	0.33	0.032	0.091	0.28	0.00032	0.00026	0.016
Transitional Closure	22	2042-04-01	170	26	1.8	0.039	0.37	0.023	0.089	0.54	0.00032	0.00023	0.018
Transitional Closure	22	2042-05-01	66	14	0.67	0.017	0.1	0.021	0.053	0.65	0.00056	0.00049	0.075
Transitional Closure	22	2042-06-01	120	22	0.55	0.013	0.083	0.022	0.069	0.43	0.00055	0.00046	0.029
Transitional Closure	22	2042-07-01	120	27	0.59	0.014	0.093	0.013	0.072	0.23	0.00034	0.00072	0.023
Transitional Closure	22	2042-08-01	140	23	0.59	0.014	0.092	0.017	0.07	0.38	0.00036	0.00026	0.017
Transitional Closure	22	2042-09-01	140	25	0.55	0.013	0.081	0.015	0.07	0.52	0.00037	0.00037	0.017
Transitional Closure	22	2042-10-01	150	27	0.61	0.013	0.094	0.017	0.072	0.56	0.00022	0.00023	0.014
Transitional Closure	22	2042-11-01	150	29	1	0.021	0.17	0.021	0.082	0.29	0.00029	0.00031	0.015
Transitional Closure	22	2042-12-01	160	30	1.3	0.028	0.23	0.025	0.086	0.33	0.00023	0.00016	0.02
Transitional Closure	22	2043-01-01	160	31	1.5	0.031	0.27	0.028	0.09	0.3	0.00019	0.0002	0.031
Transitional Closure	22	2043-02-01	170	32	1.6	0.034	0.3	0.035	0.097	0.29	0.00021	0.00023	0.021
Transitional Closure	23	2043-03-01	170	29	1.6	0.034	0.32	0.032	0.091	0.28	0.00032	0.00026	0.016
Transitional Closure	23	2043-04-01	160	26	1.7	0.037	0.35	0.023	0.088	0.54	0.00032	0.00023	0.018
Transitional Closure	23	2043-05-01	66	14	0.64	0.016	0.1	0.021	0.053	0.65	0.00056	0.00049	0.075
Transitional Closure	23	2043-06-01	120	22	0.53	0.012	0.079	0.022	0.069	0.43	0.00055	0.00046	0.029

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	20	2040-09-01	0.00051	0.00096	0.000063	39	0.000056	0.0012	0.069	0.000079	0.022	0.00035	0.000004
Transitional Closure	20	2040-10-01	0.00038	0.00082	0.0001	42	0.000047	0.0014	0.091	0.000078	0.023	0.00035	0.0000035
Transitional Closure	20	2040-11-01	0.00066	0.0013	0.00011	42	0.000069	0.0025	0.12	0.000073	0.045	0.00037	0.0000044
Transitional Closure	20	2040-12-01	0.0008	0.0015	0.00012	44	0.00009	0.0038	0.13	0.000063	0.049	0.00043	0.0000049
Transitional Closure	20	2041-01-01	0.0008	0.0016	0.00015	45	0.00012	0.0052	0.31	0.00021	0.063	0.0005	0.0000056
Transitional Closure	20	2041-02-01	0.00078	0.0017	0.00016	46	0.00012	0.0063	0.17	0.000079	0.053	0.00052	0.0000051
Transitional Closure	21	2041-03-01	0.00062	0.0015	0.00017	46	0.00012	0.0076	0.17	0.000063	0.049	0.00051	0.0000046
Transitional Closure	21	2041-04-01	0.00059	0.0014	0.00017	46	0.00017	0.0095	0.19	0.00015	0.047	0.00061	0.0000058
Transitional Closure	21	2041-05-01	0.0005	0.00099	0.000062	18	0.000067	0.0016	0.13	0.00014	0.023	0.00084	0.0000046
Transitional Closure	21	2041-06-01	0.00058	0.0012	0.000045	33	0.000057	0.001	0.088	0.000088	0.023	0.00053	0.0000046
Transitional Closure	21	2041-07-01	0.00063	0.0011	0.000061	35	0.000042	0.0011	0.075	0.000056	0.022	0.00045	0.0000065
Transitional Closure	21	2041-08-01	0.00058	0.0011	0.000066	39	0.000068	0.0011	0.063	0.0001	0.02	0.00043	0.0000045
Transitional Closure	21	2041-09-01	0.00051	0.00095	0.000063	39	0.000055	0.0012	0.069	0.000079	0.021	0.00034	0.000004
Transitional Closure	21	2041-10-01	0.00038	0.00082	0.0001	42	0.000046	0.0014	0.092	0.000078	0.022	0.00033	0.0000035
Transitional Closure	21	2041-11-01	0.00065	0.0013	0.00011	42	0.000066	0.0025	0.12	0.000073	0.043	0.00035	0.0000044
Transitional Closure	21	2041-12-01	0.00079	0.0015	0.00012	44	0.000086	0.0038	0.13	0.000062	0.046	0.00039	0.0000049
Transitional Closure	21	2042-01-01	0.0008	0.0016	0.00015	45	0.00012	0.0052	0.31	0.00021	0.059	0.00045	0.0000055
Transitional Closure	21	2042-02-01	0.00077	0.0017	0.00016	46	0.00011	0.0063	0.18	0.000078	0.048	0.00046	0.000005
Transitional Closure	22	2042-03-01	0.00061	0.0014	0.00017	46	0.00011	0.0075	0.17	0.000062	0.044	0.00045	0.0000044
Transitional Closure	22	2042-04-01	0.00058	0.0014	0.00017	46	0.00016	0.0093	0.19	0.00015	0.042	0.00054	0.0000057
Transitional Closure	22	2042-05-01	0.0005	0.00099	0.000062	18	0.000066	0.0016	0.13	0.00014	0.022	0.00084	0.0000046
Transitional Closure	22	2042-06-01	0.00058	0.0012	0.000045	33	0.000057	0.001	0.088	0.000088	0.022	0.00052	0.0000046
Transitional Closure	22	2042-07-01	0.00063	0.0011	0.000061	35	0.000041	0.0011	0.075	0.000056	0.022	0.00044	0.0000065
Transitional Closure	22	2042-08-01	0.00058	0.0011	0.000066	39	0.000068	0.0011	0.063	0.0001	0.02	0.00043	0.0000045
Transitional Closure	22	2042-09-01	0.00051	0.00095	0.000063	39	0.000055	0.0012	0.069	0.000079	0.021	0.00034	0.000004
Transitional Closure	22	2042-10-01	0.00038	0.00082	0.0001	42	0.000046	0.0014	0.092	0.000078	0.021	0.00033	0.0000035
Transitional Closure	22	2042-11-01	0.00065	0.0013	0.00011	42	0.000065	0.0025	0.12	0.000073	0.042	0.00033	0.0000043
Transitional Closure	22	2042-12-01	0.00079	0.0015	0.00012	44	0.000084	0.0038	0.13	0.000062	0.045	0.00037	0.0000048
Transitional Closure	22	2043-01-01	0.00079	0.0016	0.00015	45	0.00012	0.0052	0.31	0.00021	0.058	0.00043	0.0000055
Transitional Closure	22	2043-02-01	0.00077	0.0016	0.00016	46	0.00011	0.0062	0.18	0.000078	0.047	0.00044	0.0000049
Transitional Closure	23	2043-03-01	0.00061	0.0014	0.00017	46	0.00011	0.0074	0.17	0.000062	0.042	0.00042	0.0000043
Transitional Closure	23	2043-04-01	0.00057	0.0014	0.00017	46	0.00016	0.0091	0.19	0.00015	0.039	0.00051	0.0000056
Transitional Closure	23	2043-05-01	0.0005	0.00098	0.000062	18	0.000066	0.0016	0.13	0.00014	0.022	0.00083	0.0000046
Transitional Closure	23	2043-06-01	0.00058	0.0012	0.000045	33	0.000057	0.001	0.088	0.000088	0.022	0.00052	0.0000046

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Transitional Closure	20	2040-09-01	0.00078	0.000012	0.0022	0.0091	1.3	0.011	0.00051	0.00095	0.000044	39
Transitional Closure	20	2040-10-01	0.001	0.0000089	0.0021	0.016	1.4	0.0084	0.00038	0.00078	0.000076	41
Transitional Closure	20	2040-11-01	0.0012	0.000015	0.0028	0.019	0.65	0.011	0.00067	0.0013	0.000071	42
Transitional Closure	20	2040-12-01	0.0012	0.000018	0.0031	0.022	1	0.013	0.00078	0.0015	0.000092	44
Transitional Closure	20	2041-01-01	0.0013	0.000019	0.0033	0.026	0.8	0.013	0.00078	0.0015	0.00011	44
Transitional Closure	20	2041-02-01	0.0014	0.000018	0.0034	0.025	0.28	0.013	0.00078	0.0016	0.00013	46
Transitional Closure	21	2041-03-01	0.0014	0.000016	0.0031	0.027	0.24	0.011	0.00063	0.0014	0.00015	49
Transitional Closure	21	2041-04-01	0.0012	0.000015	0.0031	0.029	1.2	0.015	0.00057	0.0012	0.00017	46
Transitional Closure	21	2041-05-01	0.00052	0.000012	0.0015	0.0093	6.4	0.054	0.0005	0.00093	0.000048	18
Transitional Closure	21	2041-06-01	0.00071	0.000013	0.0022	0.0062	2	0.017	0.00058	0.0011	0.000041	33
Transitional Closure	21	2041-07-01	0.0007	0.000014	0.0021	0.008	2.2	0.017	0.00063	0.0011	0.000044	35
Transitional Closure	21	2041-08-01	0.00067	0.000013	0.0021	0.0072	1.9	0.014	0.00059	0.0011	0.000038	38
Transitional Closure	21	2041-09-01	0.00078	0.000012	0.0022	0.0091	1.3	0.011	0.00051	0.00095	0.000044	39
Transitional Closure	21	2041-10-01	0.001	0.0000088	0.0021	0.016	1.4	0.0084	0.00038	0.00077	0.000076	41
Transitional Closure	21	2041-11-01	0.0012	0.000015	0.0028	0.019	0.66	0.011	0.00067	0.0012	0.000071	42
Transitional Closure	21	2041-12-01	0.0012	0.000018	0.0031	0.022	1	0.012	0.00078	0.0015	0.000092	44
Transitional Closure	21	2042-01-01	0.0013	0.000018	0.0033	0.026	0.81	0.013	0.00078	0.0015	0.0001	44
Transitional Closure	21	2042-02-01	0.0013	0.000018	0.0034	0.025	0.29	0.013	0.00077	0.0016	0.00013	46
Transitional Closure	22	2042-03-01	0.0014	0.000015	0.0031	0.027	0.25	0.011	0.00062	0.0014	0.00015	50
Transitional Closure	22	2042-04-01	0.0012	0.000014	0.0031	0.028	1.2	0.015	0.00056	0.0012	0.00017	47
Transitional Closure	22	2042-05-01	0.00052	0.000011	0.0015	0.0093	6.4	0.054	0.0005	0.00093	0.000048	18
Transitional Closure	22	2042-06-01	0.00071	0.000012	0.0022	0.0062	2	0.017	0.00058	0.0011	0.000041	33
Transitional Closure	22	2042-07-01	0.0007	0.000014	0.0021	0.0081	2.2	0.017	0.00063	0.0011	0.000044	35
Transitional Closure	22	2042-08-01	0.00067	0.000013	0.0021	0.0073	1.9	0.014	0.00058	0.0011	0.000038	38
Transitional Closure	22	2042-09-01	0.00078	0.000012	0.0022	0.0092	1.3	0.011	0.00051	0.00095	0.000044	39
Transitional Closure	22	2042-10-01	0.001	0.0000087	0.0021	0.016	1.4	0.0084	0.00038	0.00077	0.000077	41
Transitional Closure	22	2042-11-01	0.0012	0.000014	0.0028	0.019	0.66	0.011	0.00067	0.0012	0.000071	42
Transitional Closure	22	2042-12-01	0.0012	0.000018	0.0031	0.022	1	0.012	0.00078	0.0015	0.000092	44
Transitional Closure	22	2043-01-01	0.0012	0.000018	0.0033	0.026	0.81	0.013	0.00078	0.0015	0.0001	44
Transitional Closure	22	2043-02-01	0.0013	0.000017	0.0034	0.025	0.29	0.013	0.00076	0.0016	0.00013	46
Transitional Closure	23	2043-03-01	0.0014	0.000014	0.0031	0.027	0.25	0.011	0.00061	0.0014	0.00015	50
Transitional Closure	23	2043-04-01	0.0012	0.000013	0.003	0.028	1.2	0.015	0.00055	0.0012	0.00016	47
Transitional Closure	23	2043-05-01	0.00052	0.000011	0.0015	0.0093	6.4	0.054	0.00049	0.00093	0.000048	18
Transitional Closure	23	2043-06-01	0.00071	0.000012	0.0022	0.0062	2	0.017	0.00058	0.0011	0.000041	33

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Transitional Closure	20	2040-09-01	0.000045	0.00099	0.025	0.000031	0.019	0.00033	0.000004	0.00075	0.000011	0.0022
Transitional Closure	20	2040-10-01	0.000032	0.0013	0.022	0.000019	0.015	0.0003	0.0000035	0.00098	0.000009	0.0021
Transitional Closure	20	2040-11-01	0.000064	0.0025	0.028	0.000026	0.041	0.00036	0.0000044	0.0011	0.000015	0.0028
Transitional Closure	20	2040-12-01	0.00008	0.0038	0.046	0.000029	0.046	0.0004	0.0000049	0.0012	0.000018	0.0031
Transitional Closure	20	2041-01-01	0.000089	0.0051	0.047	0.000092	0.046	0.00042	0.000005	0.0012	0.000018	0.0033
Transitional Closure	20	2041-02-01	0.0001	0.0063	0.06	0.000032	0.047	0.00046	0.0000051	0.0014	0.000018	0.0034
Transitional Closure	21	2041-03-01	0.00012	0.0076	0.081	0.00003	0.057	0.00052	0.0000046	0.0013	0.000016	0.0031
Transitional Closure	21	2041-04-01	0.00016	0.0095	0.098	0.00011	0.043	0.00059	0.0000049	0.001	0.000015	0.0031
Transitional Closure	21	2041-05-01	0.000054	0.0014	0.068	0.000031	0.019	0.00074	0.0000049	0.0005	0.000011	0.0015
Transitional Closure	21	2041-06-01	0.000039	0.00093	0.028	0.000025	0.017	0.00052	0.0000047	0.00071	0.000013	0.0022
Transitional Closure	21	2041-07-01	0.000031	0.00093	0.02	0.000024	0.016	0.00043	0.0000044	0.00073	0.000014	0.0021
Transitional Closure	21	2041-08-01	0.000065	0.001	0.02	0.000041	0.017	0.00042	0.0000045	0.00067	0.000013	0.0021
Transitional Closure	21	2041-09-01	0.000044	0.00099	0.025	0.000031	0.018	0.00032	0.000004	0.00075	0.000011	0.0022
Transitional Closure	21	2041-10-01	0.00003	0.0013	0.022	0.000019	0.014	0.00029	0.0000035	0.00098	0.0000089	0.0021
Transitional Closure	21	2041-11-01	0.000061	0.0025	0.028	0.000025	0.039	0.00034	0.0000044	0.0011	0.000015	0.0028
Transitional Closure	21	2041-12-01	0.000076	0.0038	0.046	0.000028	0.043	0.00036	0.0000049	0.0012	0.000017	0.0031
Transitional Closure	21	2042-01-01	0.000084	0.005	0.047	0.000091	0.042	0.00038	0.0000049	0.0012	0.000018	0.0033
Transitional Closure	21	2042-02-01	0.000097	0.0062	0.06	0.000031	0.042	0.00041	0.000005	0.0013	0.000018	0.0034
Transitional Closure	22	2042-03-01	0.00011	0.0075	0.08	0.000028	0.052	0.00046	0.0000044	0.0012	0.000015	0.0031
Transitional Closure	22	2042-04-01	0.00015	0.0093	0.096	0.0001	0.037	0.00052	0.0000047	0.001	0.000014	0.003
Transitional Closure	22	2042-05-01	0.000053	0.0014	0.068	0.000031	0.019	0.00073	0.0000049	0.0005	0.000011	0.0015
Transitional Closure	22	2042-06-01	0.000039	0.00093	0.028	0.000025	0.017	0.00051	0.0000047	0.00071	0.000013	0.0022
Transitional Closure	22	2042-07-01	0.00003	0.00093	0.02	0.000024	0.016	0.00042	0.0000043	0.00073	0.000014	0.0021
Transitional Closure	22	2042-08-01	0.000065	0.001	0.021	0.000041	0.016	0.00042	0.0000045	0.00067	0.000013	0.0021
Transitional Closure	22	2042-09-01	0.000044	0.00099	0.025	0.000031	0.018	0.00031	0.000004	0.00075	0.000011	0.0022
Transitional Closure	22	2042-10-01	0.00003	0.0013	0.022	0.000019	0.014	0.00028	0.0000035	0.00098	0.0000088	0.0021
Transitional Closure	22	2042-11-01	0.00006	0.0025	0.028	0.000025	0.038	0.00032	0.0000043	0.0011	0.000015	0.0027
Transitional Closure	22	2042-12-01	0.000074	0.0038	0.046	0.000028	0.042	0.00035	0.0000048	0.0012	0.000017	0.0031
Transitional Closure	22	2043-01-01	0.000082	0.005	0.047	0.00009	0.041	0.00036	0.0000049	0.0012	0.000017	0.0033
Transitional Closure	22	2043-02-01	0.000094	0.0062	0.059	0.00003	0.04	0.00038	0.0000049	0.0013	0.000017	0.0034
Transitional Closure	23	2043-03-01	0.00011	0.0074	0.079	0.000028	0.05	0.00043	0.0000043	0.0012	0.000015	0.0031
Transitional Closure	23	2043-04-01	0.00015	0.0091	0.095	0.000099	0.034	0.00048	0.0000046	0.001	0.000013	0.003
Transitional Closure	23	2043-05-01	0.000053	0.0014	0.069	0.000031	0.019	0.00073	0.0000049	0.0005	0.000011	0.0015
Transitional Closure	23	2043-06-01	0.000039	0.00093	0.028	0.000025	0.017	0.00051	0.0000047	0.00071	0.000013	0.0022

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Transitional Closure	20	2040-09-01	0.0073
Transitional Closure	20	2040-10-01	0.012
Transitional Closure	20	2040-11-01	0.016
Transitional Closure	20	2040-12-01	0.018
Transitional Closure	20	2041-01-01	0.02
Transitional Closure	20	2041-02-01	0.022
Transitional Closure	21	2041-03-01	0.031
Transitional Closure	21	2041-04-01	0.027
Transitional Closure	21	2041-05-01	0.0074
Transitional Closure	21	2041-06-01	0.0054
Transitional Closure	21	2041-07-01	0.0063
Transitional Closure	21	2041-08-01	0.0047
Transitional Closure	21	2041-09-01	0.0073
Transitional Closure	21	2041-10-01	0.012
Transitional Closure	21	2041-11-01	0.016
Transitional Closure	21	2041-12-01	0.018
Transitional Closure	21	2042-01-01	0.02
Transitional Closure	21	2042-02-01	0.022
Transitional Closure	22	2042-03-01	0.031
Transitional Closure	22	2042-04-01	0.027
Transitional Closure	22	2042-05-01	0.0074
Transitional Closure	22	2042-06-01	0.0054
Transitional Closure	22	2042-07-01	0.0063
Transitional Closure	22	2042-08-01	0.0047
Transitional Closure	22	2042-09-01	0.0073
Transitional Closure	22	2042-10-01	0.012
Transitional Closure	22	2042-11-01	0.016
Transitional Closure	22	2042-12-01	0.018
Transitional Closure	22	2043-01-01	0.02
Transitional Closure	22	2043-02-01	0.022
Transitional Closure	23	2043-03-01	0.032
Transitional Closure	23	2043-04-01	0.027
Transitional Closure	23	2043-05-01	0.0074
Transitional Closure	23	2043-06-01	0.0054

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Transitional Closure	23	2043-07-01	120	27	0.56	0.013	0.09	0.013	0.072	0.23	0.00034	0.00072	0.023
Transitional Closure	23	2043-08-01	140	23	0.57	0.014	0.089	0.017	0.07	0.38	0.00036	0.00026	0.017
Transitional Closure	23	2043-09-01	140	25	0.53	0.012	0.079	0.015	0.07	0.52	0.00037	0.00037	0.017
Transitional Closure	23	2043-10-01	150	27	0.6	0.013	0.093	0.017	0.072	0.56	0.00022	0.00023	0.014
Transitional Closure	23	2043-11-01	150	29	0.98	0.021	0.17	0.021	0.082	0.29	0.00029	0.00031	0.015
Transitional Closure	23	2043-12-01	160	30	1.3	0.027	0.23	0.025	0.086	0.33	0.00023	0.00016	0.02
Transitional Closure	23	2044-01-01	160	31	1.5	0.031	0.27	0.028	0.089	0.3	0.00019	0.0002	0.031
Transitional Closure	23	2044-02-01	160	31	1.6	0.033	0.3	0.034	0.094	0.29	0.00021	0.00023	0.02
Transitional Closure	24	2044-03-01	170	29	1.6	0.035	0.33	0.032	0.091	0.28	0.00032	0.00026	0.016
Transitional Closure	24	2044-04-01	160	26	1.7	0.037	0.36	0.023	0.088	0.55	0.00033	0.00023	0.018
Transitional Closure	24	2044-05-01	66	14	0.62	0.016	0.098	0.021	0.053	0.65	0.00056	0.00049	0.075
Transitional Closure	24	2044-06-01	120	22	0.44	0.01	0.061	0.022	0.069	0.43	0.00056	0.00046	0.029
Transitional Closure	24	2044-07-01	120	27	0.47	0.011	0.07	0.013	0.072	0.23	0.00034	0.00072	0.023
Transitional Closure	24	2044-08-01	140	23	0.45	0.011	0.064	0.017	0.07	0.38	0.00036	0.00026	0.017
Transitional Closure	24	2044-09-01	140	25	0.42	0.0096	0.052	0.015	0.07	0.52	0.00037	0.00037	0.017
Transitional Closure	24	2044-10-01	150	27	0.42	0.0084	0.05	0.017	0.072	0.56	0.00023	0.00023	0.014
Transitional Closure	24	2044-11-01	150	29	0.62	0.013	0.078	0.021	0.082	0.29	0.00029	0.00031	0.015
Transitional Closure	24	2044-12-01	160	30	0.72	0.015	0.092	0.025	0.086	0.33	0.00023	0.00016	0.02
Transitional Closure	24	2045-01-01	160	31	0.74	0.015	0.097	0.028	0.089	0.3	0.0002	0.0002	0.031
Transitional Closure	24	2045-02-01	170	32	0.75	0.015	0.1	0.035	0.096	0.29	0.00021	0.00023	0.02
Transitional Closure	25	2045-03-01	160	29	0.66	0.012	0.09	0.031	0.09	0.28	0.00032	0.00026	0.016
Transitional Closure	25	2045-04-01	160	26	0.61	0.012	0.083	0.022	0.088	0.55	0.00033	0.00023	0.018
Transitional Closure	25	2045-05-01	66	14	0.49	0.013	0.068	0.021	0.053	0.65	0.00056	0.00049	0.075
Transitional Closure	25	2045-06-01	120	22	0.42	0.0096	0.058	0.022	0.069	0.43	0.00056	0.00046	0.029
Passive Closure	25	2045-07-01	200	68	0.078	0.0023	0.022	0.0079	0.09	0.37	0.00039	0.00071	0.035
Passive Closure	25	2045-08-01	250	89	0.2	0.0053	0.033	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	25	2045-09-01	240	82	0.21	0.005	0.028	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	25	2045-10-01	240	81	0.21	0.0037	0.025	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	25	2045-11-01	250	89	0.27	0.0048	0.033	0.017	0.12	0.42	0.00035	0.00037	0.035
Passive Closure	25	2045-12-01	270	99	0.27	0.0047	0.034	0.018	0.13	0.46	0.00029	0.00025	0.042
Passive Closure	25	2046-01-01	290	110	0.26	0.0042	0.034	0.02	0.14	0.44	0.00027	0.00029	0.055
Passive Closure	25	2046-02-01	290	110	0.24	0.0039	0.032	0.024	0.14	0.46	0.00028	0.0003	0.047
Passive Closure	26	2046-03-01	300	120	0.2	0.003	0.027	0.022	0.15	0.43	0.00033	0.0003	0.048
Passive Closure	26	2046-04-01	310	120	0.17	0.0029	0.023	0.017	0.15	0.59	0.00034	0.00028	0.052

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Transitional Closure	23	2043-07-01	0.00063	0.0011	0.000061	35	0.000041	0.0011	0.075	0.000056	0.022	0.00044	0.0000065
Transitional Closure	23	2043-08-01	0.00058	0.0011	0.000066	39	0.000068	0.0011	0.063	0.0001	0.02	0.00043	0.0000045
Transitional Closure	23	2043-09-01	0.00051	0.00095	0.000064	39	0.000055	0.0012	0.069	0.000079	0.02	0.00034	0.000004
Transitional Closure	23	2043-10-01	0.00038	0.00082	0.0001	42	0.000045	0.0014	0.092	0.000078	0.021	0.00033	0.0000035
Transitional Closure	23	2043-11-01	0.00065	0.0013	0.00011	42	0.000065	0.0025	0.12	0.000073	0.042	0.00033	0.0000043
Transitional Closure	23	2043-12-01	0.00078	0.0015	0.00012	45	0.000084	0.0038	0.13	0.000062	0.044	0.00037	0.0000048
Transitional Closure	23	2044-01-01	0.00079	0.0016	0.00015	45	0.00011	0.0051	0.31	0.00021	0.058	0.00043	0.0000054
Transitional Closure	23	2044-02-01	0.00071	0.0016	0.00016	46	0.00011	0.0062	0.18	0.000077	0.045	0.00042	0.0000047
Transitional Closure	24	2044-03-01	0.0006	0.0014	0.00017	46	0.00011	0.0074	0.17	0.000062	0.041	0.00041	0.0000043
Transitional Closure	24	2044-04-01	0.00056	0.0013	0.00016	47	0.00015	0.0089	0.2	0.00015	0.038	0.00049	0.0000055
Transitional Closure	24	2044-05-01	0.0005	0.00098	0.000063	18	0.000066	0.0016	0.14	0.00014	0.022	0.00083	0.0000046
Transitional Closure	24	2044-06-01	0.00058	0.0012	0.000045	33	0.000057	0.001	0.089	0.000088	0.022	0.00052	0.0000046
Transitional Closure	24	2044-07-01	0.00063	0.0011	0.000061	35	0.000041	0.0011	0.075	0.000056	0.022	0.00044	0.0000065
Transitional Closure	24	2044-08-01	0.00058	0.0011	0.000066	39	0.000068	0.0011	0.063	0.0001	0.02	0.00043	0.0000045
Transitional Closure	24	2044-09-01	0.00051	0.00095	0.000064	39	0.000055	0.0012	0.07	0.00008	0.02	0.00034	0.000004
Transitional Closure	24	2044-10-01	0.00038	0.00081	0.0001	42	0.000045	0.0014	0.093	0.000079	0.021	0.00033	0.0000034
Transitional Closure	24	2044-11-01	0.00065	0.0013	0.00011	42	0.000065	0.0025	0.12	0.000073	0.042	0.00033	0.0000043
Transitional Closure	24	2044-12-01	0.00078	0.0015	0.00012	45	0.000083	0.0038	0.13	0.000062	0.044	0.00036	0.0000048
Transitional Closure	24	2045-01-01	0.00078	0.0016	0.00015	45	0.00011	0.0051	0.32	0.00021	0.058	0.00042	0.0000054
Transitional Closure	24	2045-02-01	0.00075	0.0016	0.00016	46	0.00011	0.0061	0.18	0.000078	0.045	0.00042	0.0000048
Transitional Closure	25	2045-03-01	0.00059	0.0014	0.00016	46	0.00011	0.0073	0.17	0.000062	0.041	0.0004	0.0000042
Transitional Closure	25	2045-04-01	0.00055	0.0013	0.00016	47	0.00015	0.0088	0.2	0.00015	0.038	0.00048	0.0000054
Transitional Closure	25	2045-05-01	0.00049	0.00098	0.000063	18	0.000066	0.0015	0.14	0.00014	0.022	0.00083	0.0000046
Transitional Closure	25	2045-06-01	0.00058	0.0012	0.000045	33	0.000057	0.001	0.089	0.000088	0.022	0.00052	0.0000046
Passive Closure	25	2045-07-01	0.0022	0.013	0.00015	58	0.00063	0.0013	0.36	0.0036	0.16	0.0015	0.00001
Passive Closure	25	2045-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011
Passive Closure	25	2045-09-01	0.0029	0.017	0.00018	69	0.00079	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	25	2045-10-01	0.0028	0.016	0.0002	68	0.00076	0.0016	0.41	0.0041	0.2	0.0017	0.0000089
Passive Closure	25	2045-11-01	0.0032	0.019	0.00022	72	0.00088	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Passive Closure	25	2045-12-01	0.0037	0.022	0.00023	78	0.001	0.0031	0.55	0.0054	0.27	0.0021	0.000011
Passive Closure	25	2046-01-01	0.0041	0.024	0.00027	80	0.0012	0.0038	0.75	0.0061	0.31	0.0024	0.000012
Passive Closure	25	2046-02-01	0.0045	0.026	0.00028	82	0.0012	0.0042	0.65	0.0065	0.32	0.0026	0.000013
Passive Closure	26	2046-03-01	0.0047	0.028	0.00028	84	0.0013	0.0046	0.66	0.007	0.34	0.0027	0.000013
Passive Closure	26	2046-04-01	0.0051	0.03	0.00028	86	0.0014	0.0052	0.71	0.0075	0.35	0.0029	0.000015

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Transitional Closure	23	2043-07-01	0.0007	0.000014	0.0021	0.0081	2.2	0.017	0.00063	0.0011	0.000044	35
Transitional Closure	23	2043-08-01	0.00067	0.000013	0.0021	0.0073	1.9	0.014	0.00058	0.0011	0.000038	38
Transitional Closure	23	2043-09-01	0.00078	0.000012	0.0022	0.0092	1.3	0.011	0.00051	0.00095	0.000044	39
Transitional Closure	23	2043-10-01	0.001	0.0000087	0.0021	0.016	1.4	0.0084	0.00038	0.00077	0.000077	41
Transitional Closure	23	2043-11-01	0.0012	0.000014	0.0028	0.019	0.66	0.011	0.00066	0.0012	0.000071	42
Transitional Closure	23	2043-12-01	0.0012	0.000018	0.0031	0.022	1	0.012	0.00077	0.0015	0.000091	44
Transitional Closure	23	2044-01-01	0.0012	0.000018	0.0033	0.027	0.81	0.013	0.00077	0.0015	0.0001	44
Transitional Closure	23	2044-02-01	0.0013	0.000016	0.0032	0.025	0.29	0.012	0.00071	0.0015	0.00013	46
Transitional Closure	24	2044-03-01	0.0014	0.000014	0.0031	0.027	0.25	0.011	0.00061	0.0014	0.00015	50
Transitional Closure	24	2044-04-01	0.0012	0.000013	0.003	0.028	1.3	0.014	0.00054	0.0012	0.00016	47
Transitional Closure	24	2044-05-01	0.00052	0.000011	0.0015	0.0094	6.4	0.054	0.00049	0.00092	0.000048	18
Transitional Closure	24	2044-06-01	0.00071	0.000012	0.0022	0.0062	2	0.017	0.00058	0.0011	0.000041	33
Transitional Closure	24	2044-07-01	0.0007	0.000014	0.0021	0.0081	2.2	0.017	0.00063	0.0011	0.000044	35
Transitional Closure	24	2044-08-01	0.00067	0.000013	0.0021	0.0073	1.9	0.014	0.00058	0.0011	0.000038	38
Transitional Closure	24	2044-09-01	0.00078	0.000011	0.0022	0.0092	1.3	0.011	0.00051	0.00094	0.000044	39
Transitional Closure	24	2044-10-01	0.001	0.0000086	0.0021	0.016	1.4	0.0083	0.00038	0.00077	0.000077	41
Transitional Closure	24	2044-11-01	0.0012	0.000014	0.0028	0.019	0.66	0.011	0.00066	0.0012	0.000071	42
Transitional Closure	24	2044-12-01	0.0012	0.000017	0.0031	0.022	1	0.012	0.00077	0.0015	0.000091	44
Transitional Closure	24	2045-01-01	0.0012	0.000017	0.0033	0.027	0.81	0.013	0.00076	0.0015	0.0001	44
Transitional Closure	24	2045-02-01	0.0013	0.000017	0.0033	0.026	0.29	0.013	0.00075	0.0015	0.00013	47
Transitional Closure	25	2045-03-01	0.0014	0.000014	0.003	0.027	0.25	0.011	0.0006	0.0013	0.00015	50
Transitional Closure	25	2045-04-01	0.0012	0.000013	0.003	0.028	1.3	0.014	0.00053	0.0012	0.00016	47
Transitional Closure	25	2045-05-01	0.00052	0.000011	0.0015	0.0094	6.4	0.054	0.00049	0.00092	0.000048	18
Transitional Closure	25	2045-06-01	0.00071	0.000012	0.0022	0.0062	2	0.017	0.00058	0.0011	0.000041	33
Passive Closure	25	2045-07-01	0.00066	0.000045	0.0045	0.018	2.5	0.025	0.0022	0.013	0.00013	58
Passive Closure	25	2045-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.034	0.0034	0.02	0.00016	71
Passive Closure	25	2045-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	25	2045-10-01	0.001	0.000053	0.006	0.025	1.5	0.025	0.0028	0.016	0.00018	66
Passive Closure	25	2045-11-01	0.0011	0.000061	0.0068	0.03	1	0.029	0.0032	0.019	0.00018	72
Passive Closure	25	2045-12-01	0.0011	0.000071	0.0077	0.032	1.3	0.032	0.0037	0.022	0.00021	77
Passive Closure	25	2046-01-01	0.0011	0.000079	0.0085	0.036	1.1	0.036	0.0041	0.024	0.00022	79
Passive Closure	25	2046-02-01	0.0012	0.000085	0.009	0.034	0.75	0.038	0.0045	0.026	0.00025	82
Passive Closure	26	2046-03-01	0.0012	0.00009	0.0095	0.034	0.74	0.041	0.0048	0.028	0.00027	86
Passive Closure	26	2046-04-01	0.001	0.000095	0.01	0.034	1.4	0.045	0.0051	0.03	0.00028	86

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Transitional Closure	23	2043-07-01	0.00003	0.00093	0.02	0.000024	0.016	0.00042	0.0000043	0.00073	0.000014	0.0021
Transitional Closure	23	2043-08-01	0.000064	0.001	0.021	0.000041	0.016	0.00041	0.0000045	0.00066	0.000013	0.0021
Transitional Closure	23	2043-09-01	0.000044	0.00099	0.026	0.000031	0.018	0.00031	0.000004	0.00075	0.000011	0.0022
Transitional Closure	23	2043-10-01	0.000029	0.0013	0.022	0.000019	0.014	0.00028	0.0000035	0.00098	0.0000088	0.0021
Transitional Closure	23	2043-11-01	0.00006	0.0025	0.028	0.000025	0.038	0.00032	0.0000043	0.0011	0.000014	0.0027
Transitional Closure	23	2043-12-01	0.000074	0.0037	0.046	0.000027	0.041	0.00034	0.0000048	0.0012	0.000017	0.0031
Transitional Closure	23	2044-01-01	0.000081	0.005	0.046	0.000089	0.04	0.00035	0.0000048	0.0012	0.000017	0.0033
Transitional Closure	23	2044-02-01	0.000091	0.0061	0.059	0.000028	0.039	0.00036	0.0000047	0.0013	0.000016	0.0033
Transitional Closure	24	2044-03-01	0.00011	0.0073	0.079	0.000027	0.049	0.00042	0.0000043	0.0012	0.000014	0.0031
Transitional Closure	24	2044-04-01	0.00014	0.0089	0.094	0.000097	0.033	0.00047	0.0000046	0.001	0.000013	0.003
Transitional Closure	24	2044-05-01	0.000053	0.0014	0.069	0.000031	0.019	0.00073	0.0000049	0.0005	0.000011	0.0015
Transitional Closure	24	2044-06-01	0.000039	0.00093	0.028	0.000025	0.017	0.00051	0.0000047	0.00071	0.000013	0.0022
Transitional Closure	24	2044-07-01	0.00003	0.00093	0.02	0.000024	0.016	0.00042	0.0000043	0.00073	0.000014	0.0021
Transitional Closure	24	2044-08-01	0.000064	0.001	0.021	0.000041	0.016	0.00041	0.0000045	0.00066	0.000013	0.0021
Transitional Closure	24	2044-09-01	0.000044	0.00099	0.026	0.000031	0.017	0.00031	0.000004	0.00074	0.000011	0.0022
Transitional Closure	24	2044-10-01	0.000029	0.0013	0.022	0.000019	0.014	0.00028	0.0000034	0.00098	0.0000087	0.0021
Transitional Closure	24	2044-11-01	0.00006	0.0025	0.028	0.000025	0.038	0.00032	0.0000043	0.0011	0.000014	0.0027
Transitional Closure	24	2044-12-01	0.000073	0.0037	0.046	0.000027	0.041	0.00034	0.0000048	0.0012	0.000017	0.0031
Transitional Closure	24	2045-01-01	0.00008	0.0049	0.046	0.000088	0.04	0.00034	0.0000048	0.0012	0.000017	0.0032
Transitional Closure	24	2045-02-01	0.000092	0.0061	0.059	0.00003	0.039	0.00037	0.0000048	0.0013	0.000017	0.0034
Transitional Closure	25	2045-03-01	0.00011	0.0072	0.078	0.000027	0.049	0.00041	0.0000042	0.0012	0.000014	0.0031
Transitional Closure	25	2045-04-01	0.00014	0.0088	0.093	0.000095	0.032	0.00046	0.0000045	0.001	0.000013	0.0029
Transitional Closure	25	2045-05-01	0.000053	0.0014	0.069	0.000031	0.019	0.00073	0.0000049	0.0005	0.000011	0.0015
Transitional Closure	25	2045-06-01	0.000039	0.00093	0.028	0.000025	0.016	0.00051	0.0000047	0.00071	0.000012	0.0022
Passive Closure	25	2045-07-01	0.00061	0.0012	0.28	0.0035	0.15	0.0015	0.0000074	0.00068	0.000044	0.0045
Passive Closure	25	2045-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000067	0.0068
Passive Closure	25	2045-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000059	0.0062
Passive Closure	25	2045-10-01	0.00074	0.0015	0.33	0.004	0.19	0.0016	0.0000088	0.001	0.000053	0.006
Passive Closure	25	2045-11-01	0.00086	0.0023	0.38	0.0046	0.23	0.0019	0.0000098	0.0011	0.000061	0.0068
Passive Closure	25	2045-12-01	0.001	0.003	0.45	0.0053	0.27	0.0021	0.000011	0.0011	0.00007	0.0077
Passive Closure	25	2046-01-01	0.0011	0.0036	0.49	0.006	0.29	0.0023	0.000012	0.0011	0.000078	0.0084
Passive Closure	25	2046-02-01	0.0012	0.0042	0.54	0.0065	0.31	0.0025	0.000013	0.0012	0.000084	0.009
Passive Closure	26	2046-03-01	0.0013	0.0046	0.59	0.007	0.34	0.0027	0.000013	0.0011	0.000089	0.0095
Passive Closure	26	2046-04-01	0.0014	0.0052	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000095	0.0099

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Transitional Closure	23	2043-07-01	0.0063
Transitional Closure	23	2043-08-01	0.0047
Transitional Closure	23	2043-09-01	0.0073
Transitional Closure	23	2043-10-01	0.012
Transitional Closure	23	2043-11-01	0.016
Transitional Closure	23	2043-12-01	0.018
Transitional Closure	23	2044-01-01	0.02
Transitional Closure	23	2044-02-01	0.022
Transitional Closure	24	2044-03-01	0.032
Transitional Closure	24	2044-04-01	0.026
Transitional Closure	24	2044-05-01	0.0074
Transitional Closure	24	2044-06-01	0.0054
Transitional Closure	24	2044-07-01	0.0064
Transitional Closure	24	2044-08-01	0.0047
Transitional Closure	24	2044-09-01	0.0074
Transitional Closure	24	2044-10-01	0.012
Transitional Closure	24	2044-11-01	0.016
Transitional Closure	24	2044-12-01	0.019
Transitional Closure	24	2045-01-01	0.02
Transitional Closure	24	2045-02-01	0.022
Transitional Closure	25	2045-03-01	0.032
Transitional Closure	25	2045-04-01	0.026
Transitional Closure	25	2045-05-01	0.0074
Transitional Closure	25	2045-06-01	0.0054
Passive Closure	25	2045-07-01	0.016
Passive Closure	25	2045-08-01	0.017
Passive Closure	25	2045-09-01	0.019
Passive Closure	25	2045-10-01	0.021
Passive Closure	25	2045-11-01	0.027
Passive Closure	25	2045-12-01	0.029
Passive Closure	25	2046-01-01	0.03
Passive Closure	25	2046-02-01	0.031
Passive Closure	26	2046-03-01	0.038
Passive Closure	26	2046-04-01	0.033

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Passive Closure	26	2046-05-01	190	73	0.27	0.0074	0.041	0.021	0.11	0.87	0.00065	0.00058	0.091
Passive Closure	26	2046-06-01	250	96	0.18	0.0042	0.03	0.018	0.12	0.54	0.00055	0.00048	0.052
Passive Closure	26	2046-07-01	250	99	0.18	0.0047	0.035	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	26	2046-08-01	250	89	0.19	0.0051	0.032	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	26	2046-09-01	240	82	0.2	0.0048	0.027	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	26	2046-10-01	240	80	0.2	0.0036	0.024	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	26	2046-11-01	250	89	0.26	0.0046	0.032	0.017	0.12	0.42	0.00035	0.00037	0.035
Passive Closure	26	2046-12-01	270	99	0.26	0.0045	0.032	0.018	0.13	0.46	0.00029	0.00025	0.042
Passive Closure	26	2047-01-01	280	110	0.25	0.004	0.033	0.02	0.14	0.44	0.00027	0.00029	0.055
Passive Closure	26	2047-02-01	290	110	0.23	0.0037	0.031	0.024	0.14	0.46	0.00028	0.0003	0.047
Passive Closure	27	2047-03-01	300	120	0.2	0.0029	0.026	0.022	0.15	0.43	0.00033	0.0003	0.048
Passive Closure	27	2047-04-01	310	120	0.17	0.0028	0.022	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	27	2047-05-01	190	73	0.26	0.0071	0.04	0.021	0.11	0.87	0.00065	0.00058	0.091
Passive Closure	27	2047-06-01	250	96	0.17	0.004	0.029	0.018	0.12	0.54	0.00055	0.00048	0.052
Passive Closure	27	2047-07-01	250	99	0.18	0.0045	0.034	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	27	2047-08-01	250	89	0.19	0.0049	0.031	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	27	2047-09-01	240	82	0.2	0.0046	0.026	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	27	2047-10-01	240	80	0.19	0.0034	0.023	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	27	2047-11-01	250	89	0.25	0.0045	0.031	0.017	0.12	0.42	0.00035	0.00037	0.035
Passive Closure	27	2047-12-01	270	98	0.26	0.0043	0.031	0.018	0.13	0.46	0.00029	0.00025	0.042
Passive Closure	27	2048-01-01	280	110	0.24	0.0039	0.032	0.02	0.14	0.44	0.00027	0.00029	0.055
Passive Closure	27	2048-02-01	290	110	0.22	0.0034	0.029	0.024	0.14	0.45	0.00028	0.0003	0.047
Passive Closure	28	2048-03-01	300	120	0.19	0.0028	0.026	0.022	0.15	0.43	0.00033	0.0003	0.048
Passive Closure	28	2048-04-01	310	120	0.16	0.0027	0.022	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	28	2048-05-01	190	73	0.25	0.0068	0.038	0.021	0.11	0.87	0.00065	0.00058	0.091
Passive Closure	28	2048-06-01	250	96	0.17	0.0038	0.028	0.018	0.12	0.54	0.00055	0.00048	0.052
Passive Closure	28	2048-07-01	250	99	0.17	0.0043	0.032	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	28	2048-08-01	250	89	0.18	0.0047	0.03	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	28	2048-09-01	240	82	0.19	0.0044	0.025	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	28	2048-10-01	240	80	0.19	0.0033	0.023	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	28	2048-11-01	250	89	0.24	0.0043	0.03	0.017	0.12	0.42	0.00035	0.00037	0.035
Passive Closure	28	2048-12-01	270	99	0.25	0.0041	0.03	0.018	0.13	0.46	0.00029	0.00025	0.042
Passive Closure	28	2049-01-01	280	110	0.23	0.0037	0.031	0.02	0.14	0.44	0.00027	0.00029	0.055
Passive Closure	28	2049-02-01	290	110	0.22	0.0034	0.03	0.024	0.14	0.45	0.00028	0.0003	0.047

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	26	2046-05-01	0.003	0.017	0.00018	53	0.00081	0.0019	0.51	0.0058	0.21	0.0022	0.000011
Passive Closure	26	2046-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0055	0.26	0.0023	0.000012
Passive Closure	26	2046-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	26	2046-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011
Passive Closure	26	2046-09-01	0.0029	0.017	0.00018	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	26	2046-10-01	0.0028	0.016	0.0002	68	0.00076	0.0016	0.41	0.0041	0.2	0.0017	0.0000088
Passive Closure	26	2046-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Passive Closure	26	2046-12-01	0.0037	0.022	0.00023	78	0.001	0.0031	0.55	0.0053	0.27	0.0021	0.000011
Passive Closure	26	2047-01-01	0.0041	0.024	0.00027	80	0.0011	0.0038	0.75	0.0061	0.31	0.0024	0.000012
Passive Closure	26	2047-02-01	0.0045	0.026	0.00028	82	0.0012	0.0042	0.64	0.0065	0.32	0.0025	0.000013
Passive Closure	27	2047-03-01	0.0047	0.028	0.00028	84	0.0013	0.0047	0.66	0.007	0.33	0.0027	0.000013
Passive Closure	27	2047-04-01	0.005	0.03	0.00028	86	0.0014	0.0053	0.71	0.0075	0.35	0.0029	0.000015
Passive Closure	27	2047-05-01	0.003	0.017	0.00018	53	0.00081	0.0019	0.51	0.0058	0.21	0.0022	0.000011
Passive Closure	27	2047-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0055	0.26	0.0023	0.000012
Passive Closure	27	2047-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	27	2047-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011
Passive Closure	27	2047-09-01	0.0029	0.017	0.00018	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	27	2047-10-01	0.0028	0.016	0.0002	67	0.00076	0.0016	0.41	0.0041	0.19	0.0017	0.0000088
Passive Closure	27	2047-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Passive Closure	27	2047-12-01	0.0037	0.022	0.00023	77	0.001	0.0031	0.55	0.0053	0.27	0.0021	0.000011
Passive Closure	27	2048-01-01	0.0041	0.024	0.00027	80	0.0011	0.0038	0.75	0.0061	0.31	0.0024	0.000012
Passive Closure	27	2048-02-01	0.0044	0.026	0.00028	82	0.0012	0.0042	0.64	0.0065	0.32	0.0025	0.000013
Passive Closure	28	2048-03-01	0.0047	0.028	0.00028	84	0.0013	0.0047	0.66	0.007	0.33	0.0027	0.000013
Passive Closure	28	2048-04-01	0.0051	0.03	0.00029	86	0.0014	0.0053	0.71	0.0075	0.35	0.0029	0.000015
Passive Closure	28	2048-05-01	0.003	0.017	0.00018	53	0.00081	0.0019	0.51	0.0058	0.21	0.0022	0.000011
Passive Closure	28	2048-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0055	0.26	0.0023	0.000012
Passive Closure	28	2048-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	28	2048-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011
Passive Closure	28	2048-09-01	0.0029	0.017	0.00017	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	28	2048-10-01	0.0028	0.016	0.0002	67	0.00076	0.0016	0.41	0.0041	0.19	0.0017	0.0000088
Passive Closure	28	2048-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Passive Closure	28	2048-12-01	0.0037	0.022	0.00023	77	0.001	0.0031	0.55	0.0053	0.27	0.0021	0.000011
Passive Closure	28	2049-01-01	0.0041	0.024	0.00027	80	0.0011	0.0038	0.75	0.0061	0.31	0.0024	0.000012
Passive Closure	28	2049-02-01	0.0044	0.026	0.00028	82	0.0012	0.0042	0.64	0.0065	0.32	0.0025	0.000013

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Passive Closure	26	2046-05-01	0.00087	0.000071	0.0058	0.027	6.4	0.063	0.003	0.017	0.00016	53
Passive Closure	26	2046-06-01	0.0008	0.000073	0.0075	0.019	2.1	0.039	0.0038	0.022	0.00018	69
Passive Closure	26	2046-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	26	2046-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.033	0.0034	0.02	0.00016	71
Passive Closure	26	2046-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	26	2046-10-01	0.001	0.000053	0.006	0.025	1.5	0.025	0.0028	0.016	0.00018	66
Passive Closure	26	2046-11-01	0.0011	0.000061	0.0068	0.03	1	0.029	0.0032	0.019	0.00018	72
Passive Closure	26	2046-12-01	0.0011	0.000071	0.0077	0.032	1.3	0.032	0.0037	0.022	0.00021	77
Passive Closure	26	2047-01-01	0.0011	0.000078	0.0084	0.036	1.1	0.036	0.0041	0.024	0.00022	79
Passive Closure	26	2047-02-01	0.0012	0.000084	0.009	0.034	0.75	0.038	0.0045	0.026	0.00025	82
Passive Closure	27	2047-03-01	0.0012	0.000089	0.0094	0.034	0.74	0.04	0.0047	0.028	0.00027	86
Passive Closure	27	2047-04-01	0.001	0.000095	0.0099	0.034	1.4	0.045	0.005	0.03	0.00028	86
Passive Closure	27	2047-05-01	0.00087	0.000071	0.0058	0.026	6.4	0.063	0.003	0.017	0.00016	52
Passive Closure	27	2047-06-01	0.0008	0.000073	0.0075	0.019	2.1	0.039	0.0038	0.022	0.00018	69
Passive Closure	27	2047-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	27	2047-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.033	0.0034	0.02	0.00016	71
Passive Closure	27	2047-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	27	2047-10-01	0.001	0.000053	0.0059	0.025	1.5	0.025	0.0028	0.016	0.00018	66
Passive Closure	27	2047-11-01	0.0011	0.000061	0.0068	0.03	0.99	0.029	0.0032	0.019	0.00018	72
Passive Closure	27	2047-12-01	0.0011	0.000071	0.0077	0.032	1.3	0.032	0.0037	0.022	0.00021	77
Passive Closure	27	2048-01-01	0.0011	0.000078	0.0084	0.036	1.1	0.036	0.0041	0.024	0.00022	79
Passive Closure	27	2048-02-01	0.0012	0.000084	0.009	0.034	0.75	0.038	0.0044	0.026	0.00025	82
Passive Closure	28	2048-03-01	0.0012	0.000089	0.0094	0.034	0.74	0.04	0.0047	0.028	0.00027	86
Passive Closure	28	2048-04-01	0.001	0.000095	0.01	0.034	1.4	0.045	0.0051	0.03	0.00028	86
Passive Closure	28	2048-05-01	0.00087	0.000071	0.0058	0.026	6.4	0.063	0.003	0.017	0.00016	52
Passive Closure	28	2048-06-01	0.0008	0.000073	0.0075	0.019	2.1	0.039	0.0038	0.022	0.00018	69
Passive Closure	28	2048-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	28	2048-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.033	0.0034	0.02	0.00016	71
Passive Closure	28	2048-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	28	2048-10-01	0.001	0.000053	0.0059	0.025	1.5	0.025	0.0028	0.016	0.00018	66
Passive Closure	28	2048-11-01	0.0011	0.000061	0.0068	0.03	0.99	0.029	0.0032	0.019	0.00018	72
Passive Closure	28	2048-12-01	0.0011	0.000071	0.0077	0.032	1.3	0.032	0.0037	0.022	0.00021	77
Passive Closure	28	2049-01-01	0.0011	0.000078	0.0084	0.036	1.1	0.036	0.0041	0.024	0.00022	79
Passive Closure	28	2049-02-01	0.0012	0.000084	0.009	0.034	0.75	0.038	0.0044	0.026	0.00025	82

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Passive Closure	26	2046-05-01	0.00078	0.0018	0.41	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0058
Passive Closure	26	2046-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075
Passive Closure	26	2046-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000073	0.0074
Passive Closure	26	2046-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000066	0.0068
Passive Closure	26	2046-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0062
Passive Closure	26	2046-10-01	0.00073	0.0015	0.33	0.004	0.19	0.0016	0.0000087	0.001	0.000052	0.006
Passive Closure	26	2046-11-01	0.00086	0.0023	0.38	0.0046	0.23	0.0019	0.0000098	0.0011	0.000061	0.0068
Passive Closure	26	2046-12-01	0.00099	0.003	0.45	0.0053	0.27	0.0021	0.000011	0.0011	0.00007	0.0077
Passive Closure	26	2047-01-01	0.0011	0.0036	0.49	0.006	0.29	0.0023	0.000012	0.0011	0.000077	0.0084
Passive Closure	26	2047-02-01	0.0012	0.0042	0.54	0.0065	0.31	0.0025	0.000013	0.0012	0.000084	0.009
Passive Closure	27	2047-03-01	0.0013	0.0046	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000089	0.0094
Passive Closure	27	2047-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000095	0.0099
Passive Closure	27	2047-05-01	0.00078	0.0018	0.41	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0058
Passive Closure	27	2047-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075
Passive Closure	27	2047-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000073	0.0074
Passive Closure	27	2047-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000066	0.0067
Passive Closure	27	2047-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0061
Passive Closure	27	2047-10-01	0.00073	0.0015	0.33	0.004	0.19	0.0016	0.0000087	0.001	0.000052	0.0059
Passive Closure	27	2047-11-01	0.00086	0.0023	0.38	0.0046	0.23	0.0019	0.0000098	0.0011	0.000061	0.0068
Passive Closure	27	2047-12-01	0.00099	0.003	0.45	0.0053	0.27	0.0021	0.000011	0.0011	0.00007	0.0077
Passive Closure	27	2048-01-01	0.0011	0.0037	0.49	0.006	0.29	0.0023	0.000012	0.0011	0.000077	0.0084
Passive Closure	27	2048-02-01	0.0012	0.0042	0.54	0.0065	0.31	0.0025	0.000013	0.0012	0.000083	0.009
Passive Closure	28	2048-03-01	0.0013	0.0047	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000089	0.0094
Passive Closure	28	2048-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000095	0.0099
Passive Closure	28	2048-05-01	0.00078	0.0018	0.41	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0057
Passive Closure	28	2048-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075
Passive Closure	28	2048-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000073	0.0074
Passive Closure	28	2048-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000066	0.0067
Passive Closure	28	2048-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0061
Passive Closure	28	2048-10-01	0.00073	0.0015	0.33	0.004	0.19	0.0016	0.0000087	0.001	0.000052	0.0059
Passive Closure	28	2048-11-01	0.00086	0.0023	0.38	0.0046	0.23	0.0019	0.0000098	0.0011	0.000061	0.0068
Passive Closure	28	2048-12-01	0.00099	0.003	0.45	0.0053	0.27	0.0021	0.000011	0.0011	0.00007	0.0077
Passive Closure	28	2049-01-01	0.0011	0.0037	0.49	0.006	0.29	0.0023	0.000012	0.0011	0.000077	0.0084
Passive Closure	28	2049-02-01	0.0012	0.0042	0.54	0.0065	0.31	0.0025	0.000013	0.0012	0.000084	0.009

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Passive Closure	26	2046-05-01	0.024
Passive Closure	26	2046-06-01	0.019
Passive Closure	26	2046-07-01	0.02
Passive Closure	26	2046-08-01	0.017
Passive Closure	26	2046-09-01	0.019
Passive Closure	26	2046-10-01	0.021
Passive Closure	26	2046-11-01	0.027
Passive Closure	26	2046-12-01	0.029
Passive Closure	26	2047-01-01	0.03
Passive Closure	26	2047-02-01	0.031
Passive Closure	27	2047-03-01	0.038
Passive Closure	27	2047-04-01	0.033
Passive Closure	27	2047-05-01	0.024
Passive Closure	27	2047-06-01	0.019
Passive Closure	27	2047-07-01	0.02
Passive Closure	27	2047-08-01	0.017
Passive Closure	27	2047-09-01	0.019
Passive Closure	27	2047-10-01	0.021
Passive Closure	27	2047-11-01	0.027
Passive Closure	27	2047-12-01	0.029
Passive Closure	27	2048-01-01	0.03
Passive Closure	27	2048-02-01	0.031
Passive Closure	28	2048-03-01	0.038
Passive Closure	28	2048-04-01	0.033
Passive Closure	28	2048-05-01	0.024
Passive Closure	28	2048-06-01	0.019
Passive Closure	28	2048-07-01	0.02
Passive Closure	28	2048-08-01	0.017
Passive Closure	28	2048-09-01	0.019
Passive Closure	28	2048-10-01	0.021
Passive Closure	28	2048-11-01	0.027
Passive Closure	28	2048-12-01	0.029
Passive Closure	28	2049-01-01	0.03
Passive Closure	28	2049-02-01	0.031

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Passive Closure	29	2049-03-01	300	120	0.19	0.0027	0.025	0.022	0.15	0.43	0.00033	0.0003	0.048
Passive Closure	29	2049-04-01	310	120	0.16	0.0026	0.021	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	29	2049-05-01	190	73	0.23	0.0065	0.037	0.021	0.11	0.87	0.00065	0.00058	0.091
Passive Closure	29	2049-06-01	250	96	0.16	0.0037	0.027	0.018	0.12	0.54	0.00055	0.00048	0.052
Passive Closure	29	2049-07-01	250	99	0.16	0.0041	0.031	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	29	2049-08-01	250	89	0.17	0.0045	0.029	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	29	2049-09-01	240	82	0.18	0.0042	0.024	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	29	2049-10-01	240	80	0.18	0.0032	0.022	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	29	2049-11-01	250	89	0.23	0.0041	0.029	0.017	0.12	0.42	0.00035	0.00037	0.035
Passive Closure	29	2049-12-01	270	99	0.24	0.0039	0.029	0.018	0.13	0.46	0.00029	0.00025	0.042
Passive Closure	29	2050-01-01	280	110	0.23	0.0035	0.03	0.02	0.14	0.44	0.00027	0.00029	0.055
Passive Closure	29	2050-02-01	290	110	0.21	0.0033	0.029	0.024	0.14	0.45	0.00028	0.0003	0.047
Passive Closure	30	2050-03-01	300	120	0.18	0.0026	0.025	0.022	0.15	0.43	0.00033	0.0003	0.048
Passive Closure	30	2050-04-01	310	120	0.16	0.0025	0.021	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	30	2050-05-01	190	73	0.22	0.0063	0.035	0.021	0.11	0.87	0.00065	0.00058	0.091
Passive Closure	30	2050-06-01	250	96	0.15	0.0035	0.026	0.018	0.12	0.54	0.00055	0.00048	0.052
Passive Closure	30	2050-07-01	250	99	0.15	0.0039	0.03	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	30	2050-08-01	250	89	0.16	0.0043	0.028	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	30	2050-09-01	240	82	0.17	0.004	0.023	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	30	2050-10-01	240	80	0.17	0.003	0.021	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	30	2050-11-01	250	89	0.23	0.0039	0.028	0.017	0.12	0.42	0.00035	0.00037	0.035
Passive Closure	30	2050-12-01	270	99	0.23	0.0037	0.028	0.018	0.13	0.46	0.00029	0.00025	0.042
Passive Closure	30	2051-01-01	280	110	0.22	0.0034	0.029	0.02	0.14	0.44	0.00027	0.00028	0.055
Passive Closure	30	2051-02-01	290	110	0.21	0.0031	0.028	0.024	0.14	0.45	0.00028	0.0003	0.047
Passive Closure	31	2051-03-01	300	120	0.18	0.0025	0.024	0.022	0.15	0.43	0.00033	0.0003	0.048
Passive Closure	31	2051-04-01	310	120	0.15	0.0024	0.02	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	31	2051-05-01	190	73	0.21	0.0061	0.034	0.021	0.11	0.87	0.00065	0.00058	0.091
Passive Closure	31	2051-06-01	250	96	0.14	0.0034	0.025	0.018	0.12	0.54	0.00055	0.00048	0.052
Passive Closure	31	2051-07-01	250	99	0.14	0.0037	0.03	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	31	2051-08-01	250	89	0.15	0.0042	0.027	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	31	2051-09-01	240	82	0.17	0.0039	0.022	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	31	2051-10-01	240	80	0.17	0.0029	0.021	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	31	2051-11-01	250	89	0.22	0.0038	0.027	0.017	0.12	0.42	0.00035	0.00037	0.035
Passive Closure	31	2051-12-01	270	99	0.23	0.0036	0.028	0.018	0.13	0.46	0.00029	0.00025	0.042

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Passive Closure	29	2049-03-01	0.0047	0.028	0.00028	84	0.0013	0.0047	0.66	0.007	0.33	0.0027	0.000013
Passive Closure	29	2049-04-01	0.0051	0.03	0.00029	86	0.0014	0.0053	0.71	0.0075	0.35	0.0029	0.000015
Passive Closure	29	2049-05-01	0.003	0.017	0.00018	53	0.00081	0.0019	0.51	0.0058	0.21	0.0022	0.000011
Passive Closure	29	2049-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0055	0.26	0.0023	0.000012
Passive Closure	29	2049-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	29	2049-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011
Passive Closure	29	2049-09-01	0.0029	0.017	0.00017	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	29	2049-10-01	0.0028	0.016	0.0002	67	0.00076	0.0016	0.41	0.0041	0.19	0.0017	0.0000088
Passive Closure	29	2049-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Passive Closure	29	2049-12-01	0.0037	0.022	0.00023	77	0.001	0.0031	0.55	0.0053	0.27	0.0021	0.000011
Passive Closure	29	2050-01-01	0.0041	0.024	0.00027	80	0.0011	0.0038	0.75	0.0061	0.31	0.0024	0.000012
Passive Closure	29	2050-02-01	0.0044	0.026	0.00028	82	0.0012	0.0042	0.64	0.0065	0.32	0.0025	0.000013
Passive Closure	30	2050-03-01	0.0047	0.028	0.00028	84	0.0013	0.0047	0.66	0.007	0.33	0.0027	0.000013
Passive Closure	30	2050-04-01	0.0051	0.03	0.00029	86	0.0014	0.0053	0.71	0.0075	0.36	0.0029	0.000015
Passive Closure	30	2050-05-01	0.003	0.017	0.00018	53	0.00081	0.0019	0.51	0.0058	0.21	0.0022	0.000011
Passive Closure	30	2050-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0055	0.26	0.0023	0.000012
Passive Closure	30	2050-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	30	2050-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011
Passive Closure	30	2050-09-01	0.0029	0.017	0.00017	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	30	2050-10-01	0.0028	0.016	0.0002	67	0.00076	0.0016	0.41	0.0041	0.19	0.0017	0.0000088
Passive Closure	30	2050-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Passive Closure	30	2050-12-01	0.0037	0.022	0.00023	77	0.001	0.0031	0.55	0.0053	0.27	0.0021	0.000011
Passive Closure	30	2051-01-01	0.0041	0.024	0.00027	80	0.0011	0.0038	0.75	0.0061	0.31	0.0024	0.000012
Passive Closure	30	2051-02-01	0.0044	0.026	0.00028	82	0.0012	0.0042	0.64	0.0065	0.32	0.0025	0.000013
Passive Closure	31	2051-03-01	0.0047	0.028	0.00028	83	0.0013	0.0047	0.66	0.007	0.33	0.0027	0.000013
Passive Closure	31	2051-04-01	0.0051	0.03	0.00029	86	0.0014	0.0053	0.71	0.0075	0.36	0.0029	0.000015
Passive Closure	31	2051-05-01	0.003	0.017	0.00018	53	0.00081	0.0019	0.51	0.0058	0.21	0.0022	0.000011
Passive Closure	31	2051-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0055	0.26	0.0023	0.000012
Passive Closure	31	2051-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	31	2051-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011
Passive Closure	31	2051-09-01	0.0029	0.017	0.00017	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	31	2051-10-01	0.0028	0.016	0.0002	67	0.00076	0.0016	0.41	0.0041	0.19	0.0017	0.0000088
Passive Closure	31	2051-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Passive Closure	31	2051-12-01	0.0037	0.022	0.00023	77	0.001	0.0031	0.55	0.0053	0.27	0.0021	0.000011

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Passive Closure	29	2049-03-01	0.0012	0.000089	0.0094	0.034	0.73	0.04	0.0047	0.028	0.00027	86
Passive Closure	29	2049-04-01	0.001	0.000095	0.01	0.034	1.4	0.045	0.0051	0.03	0.00028	86
Passive Closure	29	2049-05-01	0.00087	0.000071	0.0058	0.026	6.4	0.063	0.003	0.017	0.00016	52
Passive Closure	29	2049-06-01	0.0008	0.000073	0.0075	0.019	2.1	0.039	0.0038	0.022	0.00018	69
Passive Closure	29	2049-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	29	2049-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.033	0.0034	0.02	0.00016	71
Passive Closure	29	2049-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	29	2049-10-01	0.001	0.000053	0.0059	0.025	1.5	0.025	0.0028	0.016	0.00018	66
Passive Closure	29	2049-11-01	0.0011	0.000061	0.0068	0.03	0.99	0.029	0.0032	0.019	0.00018	72
Passive Closure	29	2049-12-01	0.0011	0.000071	0.0077	0.032	1.3	0.032	0.0037	0.022	0.00021	77
Passive Closure	29	2050-01-01	0.0011	0.000078	0.0084	0.036	1.1	0.036	0.0041	0.024	0.00022	79
Passive Closure	29	2050-02-01	0.0012	0.000084	0.009	0.034	0.75	0.038	0.0044	0.026	0.00025	82
Passive Closure	30	2050-03-01	0.0012	0.000089	0.0094	0.034	0.73	0.04	0.0047	0.028	0.00027	86
Passive Closure	30	2050-04-01	0.001	0.000095	0.01	0.034	1.4	0.045	0.0051	0.03	0.00028	86
Passive Closure	30	2050-05-01	0.00087	0.000071	0.0058	0.026	6.4	0.063	0.003	0.017	0.00016	52
Passive Closure	30	2050-06-01	0.0008	0.000073	0.0075	0.019	2.1	0.039	0.0038	0.022	0.00018	69
Passive Closure	30	2050-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	30	2050-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.033	0.0034	0.02	0.00016	71
Passive Closure	30	2050-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	30	2050-10-01	0.001	0.000053	0.0059	0.025	1.5	0.025	0.0028	0.016	0.00018	66
Passive Closure	30	2050-11-01	0.0011	0.000061	0.0068	0.03	0.99	0.029	0.0032	0.019	0.00018	72
Passive Closure	30	2050-12-01	0.0011	0.000071	0.0077	0.032	1.3	0.032	0.0037	0.022	0.00021	77
Passive Closure	30	2051-01-01	0.0011	0.000078	0.0084	0.036	1.1	0.036	0.0041	0.024	0.00022	79
Passive Closure	30	2051-02-01	0.0012	0.000084	0.009	0.034	0.75	0.038	0.0044	0.026	0.00025	82
Passive Closure	31	2051-03-01	0.0012	0.000089	0.0094	0.034	0.73	0.04	0.0047	0.028	0.00027	86
Passive Closure	31	2051-04-01	0.001	0.000096	0.01	0.034	1.4	0.045	0.0051	0.03	0.00028	86
Passive Closure	31	2051-05-01	0.00087	0.000071	0.0058	0.027	6.4	0.063	0.003	0.017	0.00016	52
Passive Closure	31	2051-06-01	0.0008	0.000073	0.0075	0.019	2.1	0.039	0.0038	0.022	0.00018	69
Passive Closure	31	2051-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	31	2051-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.033	0.0034	0.02	0.00016	71
Passive Closure	31	2051-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	31	2051-10-01	0.001	0.000053	0.006	0.025	1.5	0.025	0.0028	0.016	0.00018	66
Passive Closure	31	2051-11-01	0.0011	0.000061	0.0068	0.03	0.99	0.029	0.0032	0.019	0.00018	72
Passive Closure	31	2051-12-01	0.0011	0.000071	0.0077	0.032	1.3	0.032	0.0037	0.022	0.00021	77

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Passive Closure	29	2049-03-01	0.0013	0.0047	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000089	0.0094
Passive Closure	29	2049-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000095	0.0099
Passive Closure	29	2049-05-01	0.00078	0.0018	0.41	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0057
Passive Closure	29	2049-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075
Passive Closure	29	2049-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000073	0.0074
Passive Closure	29	2049-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000066	0.0067
Passive Closure	29	2049-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0061
Passive Closure	29	2049-10-01	0.00073	0.0015	0.33	0.004	0.19	0.0016	0.0000087	0.001	0.000052	0.0059
Passive Closure	29	2049-11-01	0.00086	0.0023	0.38	0.0046	0.23	0.0019	0.0000098	0.0011	0.000061	0.0068
Passive Closure	29	2049-12-01	0.00099	0.003	0.45	0.0053	0.27	0.0021	0.000011	0.0011	0.00007	0.0077
Passive Closure	29	2050-01-01	0.0011	0.0037	0.49	0.006	0.29	0.0023	0.000012	0.0011	0.000077	0.0084
Passive Closure	29	2050-02-01	0.0012	0.0042	0.54	0.0065	0.31	0.0025	0.000013	0.0012	0.000084	0.009
Passive Closure	30	2050-03-01	0.0013	0.0047	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000089	0.0094
Passive Closure	30	2050-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000095	0.01
Passive Closure	30	2050-05-01	0.00078	0.0018	0.41	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0057
Passive Closure	30	2050-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075
Passive Closure	30	2050-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000073	0.0074
Passive Closure	30	2050-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000066	0.0067
Passive Closure	30	2050-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0061
Passive Closure	30	2050-10-01	0.00073	0.0015	0.33	0.004	0.19	0.0016	0.0000087	0.001	0.000052	0.0059
Passive Closure	30	2050-11-01	0.00086	0.0023	0.38	0.0046	0.23	0.0019	0.0000098	0.0011	0.000061	0.0068
Passive Closure	30	2050-12-01	0.00099	0.003	0.45	0.0053	0.27	0.0021	0.000011	0.0011	0.00007	0.0077
Passive Closure	30	2051-01-01	0.0011	0.0037	0.49	0.006	0.29	0.0023	0.000012	0.0011	0.000077	0.0084
Passive Closure	30	2051-02-01	0.0012	0.0042	0.54	0.0065	0.31	0.0025	0.000013	0.0012	0.000084	0.009
Passive Closure	31	2051-03-01	0.0013	0.0047	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000089	0.0094
Passive Closure	31	2051-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000095	0.01
Passive Closure	31	2051-05-01	0.00078	0.0018	0.41	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0057
Passive Closure	31	2051-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075
Passive Closure	31	2051-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000073	0.0074
Passive Closure	31	2051-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000066	0.0067
Passive Closure	31	2051-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0062
Passive Closure	31	2051-10-01	0.00073	0.0015	0.33	0.004	0.19	0.0016	0.0000087	0.001	0.000052	0.0059
Passive Closure	31	2051-11-01	0.00086	0.0023	0.38	0.0046	0.23	0.0019	0.0000098	0.0011	0.000061	0.0068
Passive Closure	31	2051-12-01	0.00099	0.003	0.45	0.0053	0.27	0.0021	0.000011	0.0011	0.00007	0.0077

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Passive Closure	29	2049-03-01	0.038
Passive Closure	29	2049-04-01	0.033
Passive Closure	29	2049-05-01	0.024
Passive Closure	29	2049-06-01	0.019
Passive Closure	29	2049-07-01	0.02
Passive Closure	29	2049-08-01	0.017
Passive Closure	29	2049-09-01	0.019
Passive Closure	29	2049-10-01	0.021
Passive Closure	29	2049-11-01	0.027
Passive Closure	29	2049-12-01	0.029
Passive Closure	29	2050-01-01	0.03
Passive Closure	29	2050-02-01	0.031
Passive Closure	30	2050-03-01	0.038
Passive Closure	30	2050-04-01	0.033
Passive Closure	30	2050-05-01	0.024
Passive Closure	30	2050-06-01	0.019
Passive Closure	30	2050-07-01	0.02
Passive Closure	30	2050-08-01	0.017
Passive Closure	30	2050-09-01	0.019
Passive Closure	30	2050-10-01	0.021
Passive Closure	30	2050-11-01	0.027
Passive Closure	30	2050-12-01	0.029
Passive Closure	30	2051-01-01	0.03
Passive Closure	30	2051-02-01	0.031
Passive Closure	31	2051-03-01	0.038
Passive Closure	31	2051-04-01	0.033
Passive Closure	31	2051-05-01	0.024
Passive Closure	31	2051-06-01	0.019
Passive Closure	31	2051-07-01	0.02
Passive Closure	31	2051-08-01	0.017
Passive Closure	31	2051-09-01	0.019
Passive Closure	31	2051-10-01	0.021
Passive Closure	31	2051-11-01	0.027
Passive Closure	31	2051-12-01	0.029

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Passive Closure	31	2052-01-01	280	110	0.21	0.0032	0.028	0.02	0.14	0.44	0.00027	0.00028	0.055
Passive Closure	31	2052-02-01	290	110	0.2	0.0028	0.026	0.024	0.14	0.45	0.00028	0.0003	0.047
Passive Closure	32	2052-03-01	300	120	0.18	0.0024	0.024	0.022	0.15	0.43	0.00033	0.0003	0.048
Passive Closure	32	2052-04-01	310	120	0.15	0.0024	0.02	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	32	2052-05-01	190	73	0.2	0.0058	0.033	0.021	0.11	0.87	0.00065	0.00058	0.091
Passive Closure	32	2052-06-01	250	96	0.14	0.0032	0.025	0.018	0.12	0.54	0.00055	0.00048	0.052
Passive Closure	32	2052-07-01	250	99	0.14	0.0036	0.029	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	32	2052-08-01	250	89	0.15	0.004	0.026	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	32	2052-09-01	240	82	0.16	0.0037	0.021	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	32	2052-10-01	240	80	0.16	0.0028	0.02	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	32	2052-11-01	250	89	0.21	0.0036	0.027	0.017	0.12	0.42	0.00035	0.00037	0.035
Passive Closure	32	2052-12-01	270	99	0.22	0.0034	0.027	0.018	0.13	0.46	0.00029	0.00025	0.042
Passive Closure	32	2053-01-01	280	110	0.21	0.0031	0.028	0.02	0.14	0.44	0.00027	0.00028	0.055
Passive Closure	32	2053-02-01	290	110	0.2	0.0029	0.027	0.024	0.14	0.45	0.00028	0.0003	0.047
Passive Closure	33	2053-03-01	300	120	0.17	0.0023	0.023	0.022	0.15	0.43	0.00033	0.0003	0.048
Passive Closure	33	2053-04-01	310	120	0.15	0.0023	0.02	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	33	2053-05-01	190	73	0.19	0.0056	0.032	0.021	0.11	0.87	0.00065	0.00058	0.091
Passive Closure	33	2053-06-01	250	96	0.13	0.0031	0.024	0.018	0.12	0.54	0.00055	0.00048	0.052
Passive Closure	33	2053-07-01	250	99	0.13	0.0034	0.028	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	33	2053-08-01	250	89	0.14	0.0038	0.025	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	33	2053-09-01	240	82	0.15	0.0036	0.021	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	33	2053-10-01	240	80	0.16	0.0027	0.019	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	33	2053-11-01	250	89	0.21	0.0035	0.026	0.017	0.12	0.42	0.00035	0.00037	0.035
Passive Closure	33	2053-12-01	270	99	0.21	0.0033	0.026	0.018	0.13	0.46	0.00029	0.00025	0.042
Passive Closure	33	2054-01-01	280	110	0.2	0.003	0.027	0.02	0.14	0.44	0.00027	0.00028	0.055
Passive Closure	33	2054-02-01	290	110	0.19	0.0027	0.026	0.024	0.14	0.45	0.00028	0.0003	0.047
Passive Closure	34	2054-03-01	300	120	0.17	0.0022	0.022	0.022	0.15	0.43	0.00033	0.0003	0.048
Passive Closure	34	2054-04-01	310	120	0.14	0.0022	0.019	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	34	2054-05-01	190	73	0.19	0.0054	0.03	0.021	0.11	0.87	0.00065	0.00058	0.091
Passive Closure	34	2054-06-01	250	96	0.13	0.003	0.023	0.018	0.12	0.54	0.00055	0.00048	0.052
Passive Closure	34	2054-07-01	250	99	0.12	0.0033	0.027	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	34	2054-08-01	250	89	0.13	0.0037	0.024	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	34	2054-09-01	240	82	0.15	0.0034	0.02	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	34	2054-10-01	240	80	0.16	0.0026	0.019	0.015	0.11	0.62	0.00028	0.00028	0.033

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Passive Closure	31	2052-01-01	0.0041	0.024	0.00027	80	0.0011	0.0038	0.75	0.0061	0.31	0.0024	0.000012
Passive Closure	31	2052-02-01	0.0044	0.026	0.00028	82	0.0012	0.0043	0.64	0.0065	0.32	0.0025	0.000013
Passive Closure	32	2052-03-01	0.0047	0.028	0.00028	84	0.0013	0.0047	0.66	0.007	0.33	0.0027	0.000013
Passive Closure	32	2052-04-01	0.0051	0.03	0.00029	86	0.0014	0.0053	0.71	0.0076	0.36	0.0029	0.000015
Passive Closure	32	2052-05-01	0.003	0.017	0.00018	53	0.00081	0.0019	0.51	0.0058	0.21	0.0022	0.000011
Passive Closure	32	2052-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0055	0.26	0.0023	0.000012
Passive Closure	32	2052-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	32	2052-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011
Passive Closure	32	2052-09-01	0.0029	0.017	0.00017	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	32	2052-10-01	0.0028	0.016	0.0002	67	0.00076	0.0016	0.41	0.0041	0.19	0.0017	0.0000088
Passive Closure	32	2052-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Passive Closure	32	2052-12-01	0.0037	0.022	0.00023	77	0.001	0.0031	0.55	0.0053	0.27	0.0021	0.000011
Passive Closure	32	2053-01-01	0.0041	0.024	0.00027	80	0.0011	0.0038	0.75	0.0061	0.31	0.0024	0.000012
Passive Closure	32	2053-02-01	0.0045	0.026	0.00028	82	0.0012	0.0043	0.64	0.0065	0.32	0.0025	0.000013
Passive Closure	33	2053-03-01	0.0047	0.028	0.00028	84	0.0013	0.0047	0.66	0.007	0.33	0.0027	0.000013
Passive Closure	33	2053-04-01	0.0051	0.03	0.00029	86	0.0014	0.0053	0.71	0.0076	0.36	0.0029	0.000015
Passive Closure	33	2053-05-01	0.003	0.017	0.00018	53	0.00081	0.0019	0.51	0.0058	0.21	0.0022	0.000011
Passive Closure	33	2053-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0055	0.26	0.0023	0.000012
Passive Closure	33	2053-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	33	2053-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011
Passive Closure	33	2053-09-01	0.0029	0.017	0.00017	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	33	2053-10-01	0.0028	0.016	0.0002	67	0.00076	0.0016	0.41	0.0041	0.19	0.0017	0.0000088
Passive Closure	33	2053-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Passive Closure	33	2053-12-01	0.0037	0.022	0.00023	77	0.001	0.0031	0.55	0.0053	0.27	0.0021	0.000011
Passive Closure	33	2054-01-01	0.0041	0.024	0.00027	80	0.0011	0.0038	0.75	0.0061	0.31	0.0024	0.000012
Passive Closure	33	2054-02-01	0.0045	0.026	0.00028	82	0.0012	0.0043	0.64	0.0065	0.32	0.0025	0.000013
Passive Closure	34	2054-03-01	0.0047	0.028	0.00028	84	0.0013	0.0047	0.66	0.007	0.33	0.0027	0.000013
Passive Closure	34	2054-04-01	0.0051	0.03	0.00029	86	0.0014	0.0053	0.71	0.0075	0.36	0.0029	0.000015
Passive Closure	34	2054-05-01	0.003	0.017	0.00018	53	0.00081	0.0019	0.51	0.0058	0.21	0.0022	0.000011
Passive Closure	34	2054-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0055	0.26	0.0023	0.000012
Passive Closure	34	2054-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	34	2054-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011
Passive Closure	34	2054-09-01	0.0029	0.017	0.00017	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	34	2054-10-01	0.0028	0.016	0.0002	67	0.00076	0.0016	0.41	0.0041	0.19	0.0017	0.0000088

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Passive Closure	31	2052-01-01	0.0011	0.000078	0.0085	0.036	1.1	0.036	0.0041	0.024	0.00022	79
Passive Closure	31	2052-02-01	0.0012	0.000084	0.009	0.034	0.75	0.038	0.0044	0.026	0.00025	82
Passive Closure	32	2052-03-01	0.0012	0.000089	0.0094	0.034	0.73	0.04	0.0047	0.028	0.00027	86
Passive Closure	32	2052-04-01	0.001	0.000096	0.01	0.034	1.4	0.045	0.0051	0.03	0.00028	86
Passive Closure	32	2052-05-01	0.00087	0.000071	0.0058	0.027	6.4	0.063	0.003	0.017	0.00016	52
Passive Closure	32	2052-06-01	0.0008	0.000073	0.0076	0.019	2.1	0.039	0.0038	0.022	0.00018	69
Passive Closure	32	2052-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	32	2052-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.033	0.0034	0.02	0.00016	71
Passive Closure	32	2052-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	32	2052-10-01	0.001	0.000053	0.006	0.025	1.5	0.025	0.0028	0.016	0.00018	66
Passive Closure	32	2052-11-01	0.0011	0.000061	0.0068	0.03	0.99	0.029	0.0032	0.019	0.00018	72
Passive Closure	32	2052-12-01	0.0011	0.000071	0.0077	0.032	1.3	0.032	0.0037	0.022	0.00021	77
Passive Closure	32	2053-01-01	0.0011	0.000079	0.0085	0.036	1.1	0.036	0.0041	0.024	0.00022	79
Passive Closure	32	2053-02-01	0.0012	0.000084	0.009	0.034	0.75	0.038	0.0044	0.026	0.00025	82
Passive Closure	33	2053-03-01	0.0012	0.000089	0.0094	0.034	0.73	0.04	0.0047	0.028	0.00027	86
Passive Closure	33	2053-04-01	0.001	0.000096	0.01	0.034	1.4	0.045	0.0051	0.03	0.00028	86
Passive Closure	33	2053-05-01	0.00087	0.000071	0.0058	0.027	6.4	0.063	0.003	0.017	0.00016	52
Passive Closure	33	2053-06-01	0.0008	0.000073	0.0075	0.019	2.1	0.039	0.0038	0.022	0.00018	69
Passive Closure	33	2053-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	33	2053-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.033	0.0034	0.02	0.00016	71
Passive Closure	33	2053-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	33	2053-10-01	0.001	0.000053	0.006	0.025	1.5	0.025	0.0028	0.016	0.00018	66
Passive Closure	33	2053-11-01	0.0011	0.000061	0.0068	0.03	0.99	0.029	0.0032	0.019	0.00018	72
Passive Closure	33	2053-12-01	0.0011	0.000071	0.0077	0.032	1.3	0.032	0.0037	0.022	0.00021	77
Passive Closure	33	2054-01-01	0.0011	0.000079	0.0085	0.036	1.1	0.036	0.0041	0.024	0.00022	79
Passive Closure	33	2054-02-01	0.0012	0.000084	0.009	0.034	0.75	0.038	0.0044	0.026	0.00025	82
Passive Closure	34	2054-03-01	0.0012	0.000089	0.0094	0.034	0.73	0.04	0.0047	0.028	0.00027	86
Passive Closure	34	2054-04-01	0.001	0.000096	0.01	0.034	1.4	0.045	0.0051	0.03	0.00028	86
Passive Closure	34	2054-05-01	0.00087	0.000071	0.0058	0.027	6.4	0.063	0.003	0.017	0.00016	52
Passive Closure	34	2054-06-01	0.0008	0.000073	0.0075	0.019	2.1	0.039	0.0038	0.022	0.00018	69
Passive Closure	34	2054-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	34	2054-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.033	0.0034	0.02	0.00016	71
Passive Closure	34	2054-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	34	2054-10-01	0.001	0.000053	0.006	0.025	1.5	0.025	0.0028	0.016	0.00018	66

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Passive Closure	31	2052-01-01	0.0011	0.0037	0.49	0.006	0.29	0.0023	0.000012	0.0011	0.000077	0.0084
Passive Closure	31	2052-02-01	0.0012	0.0042	0.54	0.0065	0.31	0.0025	0.000013	0.0012	0.000083	0.009
Passive Closure	32	2052-03-01	0.0013	0.0047	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000089	0.0095
Passive Closure	32	2052-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000095	0.01
Passive Closure	32	2052-05-01	0.00078	0.0018	0.41	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0057
Passive Closure	32	2052-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075
Passive Closure	32	2052-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000073	0.0074
Passive Closure	32	2052-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000066	0.0067
Passive Closure	32	2052-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0062
Passive Closure	32	2052-10-01	0.00073	0.0015	0.33	0.004	0.19	0.0016	0.0000087	0.001	0.000052	0.0059
Passive Closure	32	2052-11-01	0.00086	0.0023	0.38	0.0046	0.23	0.0019	0.0000098	0.0011	0.000061	0.0068
Passive Closure	32	2052-12-01	0.00099	0.003	0.45	0.0053	0.27	0.0021	0.000011	0.0011	0.00007	0.0077
Passive Closure	32	2053-01-01	0.0011	0.0037	0.49	0.006	0.29	0.0023	0.000012	0.0011	0.000077	0.0084
Passive Closure	32	2053-02-01	0.0012	0.0042	0.54	0.0065	0.31	0.0025	0.000013	0.0012	0.000084	0.009
Passive Closure	33	2053-03-01	0.0013	0.0047	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000089	0.0094
Passive Closure	33	2053-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000095	0.01
Passive Closure	33	2053-05-01	0.00078	0.0018	0.41	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0057
Passive Closure	33	2053-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075
Passive Closure	33	2053-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000073	0.0074
Passive Closure	33	2053-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000066	0.0067
Passive Closure	33	2053-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0062
Passive Closure	33	2053-10-01	0.00073	0.0015	0.33	0.004	0.19	0.0016	0.0000087	0.001	0.000052	0.0059
Passive Closure	33	2053-11-01	0.00086	0.0023	0.38	0.0046	0.23	0.0019	0.0000098	0.0011	0.000061	0.0068
Passive Closure	33	2053-12-01	0.00099	0.003	0.45	0.0053	0.27	0.0021	0.000011	0.0011	0.00007	0.0077
Passive Closure	33	2054-01-01	0.0011	0.0037	0.49	0.006	0.29	0.0023	0.000012	0.0011	0.000077	0.0084
Passive Closure	33	2054-02-01	0.0012	0.0042	0.54	0.0065	0.31	0.0025	0.000013	0.0012	0.000084	0.009
Passive Closure	34	2054-03-01	0.0013	0.0047	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000089	0.0094
Passive Closure	34	2054-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000095	0.01
Passive Closure	34	2054-05-01	0.00078	0.0018	0.41	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0057
Passive Closure	34	2054-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075
Passive Closure	34	2054-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000073	0.0074
Passive Closure	34	2054-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000066	0.0067
Passive Closure	34	2054-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0062
Passive Closure	34	2054-10-01	0.00073	0.0015	0.33	0.004	0.19	0.0016	0.0000087	0.001	0.000052	0.0059

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Passive Closure	31	2052-01-01	0.03
Passive Closure	31	2052-02-01	0.031
Passive Closure	32	2052-03-01	0.038
Passive Closure	32	2052-04-01	0.033
Passive Closure	32	2052-05-01	0.024
Passive Closure	32	2052-06-01	0.019
Passive Closure	32	2052-07-01	0.02
Passive Closure	32	2052-08-01	0.017
Passive Closure	32	2052-09-01	0.019
Passive Closure	32	2052-10-01	0.021
Passive Closure	32	2052-11-01	0.027
Passive Closure	32	2052-12-01	0.029
Passive Closure	32	2053-01-01	0.03
Passive Closure	32	2053-02-01	0.031
Passive Closure	33	2053-03-01	0.038
Passive Closure	33	2053-04-01	0.033
Passive Closure	33	2053-05-01	0.024
Passive Closure	33	2053-06-01	0.019
Passive Closure	33	2053-07-01	0.02
Passive Closure	33	2053-08-01	0.017
Passive Closure	33	2053-09-01	0.019
Passive Closure	33	2053-10-01	0.021
Passive Closure	33	2053-11-01	0.027
Passive Closure	33	2053-12-01	0.029
Passive Closure	33	2054-01-01	0.03
Passive Closure	33	2054-02-01	0.031
Passive Closure	34	2054-03-01	0.038
Passive Closure	34	2054-04-01	0.033
Passive Closure	34	2054-05-01	0.024
Passive Closure	34	2054-06-01	0.019
Passive Closure	34	2054-07-01	0.02
Passive Closure	34	2054-08-01	0.017
Passive Closure	34	2054-09-01	0.019
Passive Closure	34	2054-10-01	0.021

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Passive Closure	34	2054-11-01	250	89	0.2	0.0033	0.025	0.017	0.12	0.42	0.00035	0.00037	0.035
Passive Closure	34	2054-12-01	270	99	0.21	0.0031	0.025	0.018	0.13	0.46	0.00029	0.00025	0.042
Passive Closure	34	2055-01-01	280	110	0.2	0.0028	0.026	0.02	0.14	0.44	0.00027	0.00028	0.055
Passive Closure	34	2055-02-01	290	110	0.19	0.0026	0.025	0.024	0.14	0.45	0.00028	0.0003	0.047
Passive Closure	35	2055-03-01	300	120	0.16	0.0021	0.022	0.022	0.15	0.43	0.00033	0.0003	0.048
Passive Closure	35	2055-04-01	310	120	0.14	0.0021	0.019	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	35	2055-05-01	190	73	0.18	0.0052	0.029	0.021	0.11	0.87	0.00065	0.00058	0.091
Passive Closure	35	2055-06-01	250	96	0.12	0.0028	0.022	0.018	0.12	0.54	0.00055	0.00048	0.052
Passive Closure	35	2055-07-01	250	99	0.12	0.0031	0.026	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	35	2055-08-01	250	89	0.13	0.0035	0.024	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	35	2055-09-01	240	82	0.14	0.0033	0.019	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	35	2055-10-01	240	80	0.15	0.0025	0.018	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	35	2055-11-01	250	89	0.19	0.0032	0.024	0.017	0.12	0.42	0.00035	0.00037	0.035
Passive Closure	35	2055-12-01	270	99	0.2	0.003	0.024	0.018	0.13	0.46	0.00029	0.00025	0.042
Passive Closure	35	2056-01-01	280	110	0.19	0.0027	0.026	0.02	0.14	0.44	0.00027	0.00028	0.055
Passive Closure	35	2056-02-01	290	110	0.18	0.0024	0.024	0.024	0.14	0.45	0.00028	0.0003	0.047
Passive Closure	36	2056-03-01	300	120	0.13	0.0014	0.018	0.022	0.15	0.43	0.00033	0.0003	0.048
Passive Closure	36	2056-04-01	310	120	0.11	0.0015	0.015	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	36	2056-05-01	190	73	0.091	0.0032	0.018	0.021	0.11	0.87	0.00065	0.00058	0.091
Passive Closure	36	2056-06-01	250	96	0.093	0.0022	0.019	0.018	0.12	0.54	0.00055	0.00048	0.052
Passive Closure	36	2056-07-01	250	99	0.082	0.0023	0.022	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	36	2056-08-01	250	89	0.085	0.0026	0.018	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	36	2056-09-01	240	82	0.1	0.0024	0.014	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	36	2056-10-01	240	80	0.11	0.0014	0.012	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	36	2056-11-01	250	89	0.15	0.0021	0.018	0.017	0.12	0.42	0.00035	0.00037	0.035
Passive Closure	36	2056-12-01	270	99	0.15	0.0019	0.018	0.018	0.13	0.46	0.00029	0.00025	0.042
Passive Closure	36	2057-01-01	280	110	0.15	0.0018	0.02	0.02	0.14	0.44	0.00027	0.00028	0.055
Passive Closure	36	2057-02-01	290	110	0.14	0.0017	0.02	0.024	0.14	0.45	0.00028	0.0003	0.047
Passive Closure	37	2057-03-01	300	120	0.13	0.0013	0.018	0.022	0.15	0.43	0.00033	0.0003	0.048
Passive Closure	37	2057-04-01	310	120	0.11	0.0015	0.015	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	37	2057-05-01	190	73	0.088	0.0032	0.018	0.021	0.11	0.87	0.00065	0.00058	0.091
Passive Closure	37	2057-06-01	250	96	0.089	0.0021	0.018	0.018	0.12	0.54	0.00055	0.00048	0.052
Passive Closure	37	2057-07-01	250	99	0.078	0.0022	0.021	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	37	2057-08-01	250	89	0.081	0.0025	0.018	0.015	0.12	0.53	0.00043	0.00036	0.04

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Passive Closure	34	2054-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Passive Closure	34	2054-12-01	0.0037	0.022	0.00023	77	0.001	0.0031	0.55	0.0053	0.27	0.0021	0.000011
Passive Closure	34	2055-01-01	0.0041	0.024	0.00027	80	0.0011	0.0038	0.75	0.0061	0.31	0.0024	0.000012
Passive Closure	34	2055-02-01	0.0044	0.026	0.00028	82	0.0012	0.0043	0.64	0.0065	0.32	0.0025	0.000013
Passive Closure	35	2055-03-01	0.0047	0.028	0.00028	83	0.0013	0.0047	0.66	0.007	0.33	0.0027	0.000013
Passive Closure	35	2055-04-01	0.0051	0.03	0.00029	86	0.0014	0.0053	0.71	0.0075	0.36	0.0029	0.000015
Passive Closure	35	2055-05-01	0.003	0.017	0.00018	53	0.00081	0.0019	0.51	0.0058	0.21	0.0022	0.000011
Passive Closure	35	2055-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0055	0.26	0.0023	0.000012
Passive Closure	35	2055-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	35	2055-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011
Passive Closure	35	2055-09-01	0.0029	0.017	0.00017	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	35	2055-10-01	0.0028	0.016	0.0002	67	0.00076	0.0016	0.41	0.0041	0.19	0.0017	0.0000088
Passive Closure	35	2055-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Passive Closure	35	2055-12-01	0.0037	0.022	0.00023	77	0.001	0.0031	0.55	0.0053	0.27	0.0021	0.000011
Passive Closure	35	2056-01-01	0.0041	0.024	0.00027	80	0.0011	0.0038	0.75	0.0061	0.31	0.0024	0.000012
Passive Closure	35	2056-02-01	0.0044	0.026	0.00028	82	0.0012	0.0043	0.64	0.0065	0.32	0.0025	0.000013
Passive Closure	36	2056-03-01	0.0047	0.028	0.00028	84	0.0013	0.0047	0.66	0.007	0.33	0.0027	0.000013
Passive Closure	36	2056-04-01	0.0051	0.03	0.00029	86	0.0014	0.0053	0.71	0.0076	0.36	0.0029	0.000015
Passive Closure	36	2056-05-01	0.003	0.017	0.00018	53	0.00081	0.0019	0.51	0.0058	0.21	0.0022	0.000011
Passive Closure	36	2056-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0055	0.26	0.0023	0.000012
Passive Closure	36	2056-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	36	2056-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011
Passive Closure	36	2056-09-01	0.0029	0.017	0.00017	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	36	2056-10-01	0.0028	0.016	0.0002	67	0.00076	0.0016	0.41	0.0041	0.19	0.0017	0.0000088
Passive Closure	36	2056-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Passive Closure	36	2056-12-01	0.0037	0.022	0.00023	77	0.001	0.0031	0.55	0.0053	0.27	0.0021	0.000011
Passive Closure	36	2057-01-01	0.0041	0.024	0.00027	80	0.0011	0.0038	0.75	0.0061	0.31	0.0024	0.000012
Passive Closure	36	2057-02-01	0.0045	0.026	0.00028	82	0.0012	0.0043	0.64	0.0065	0.32	0.0025	0.000013
Passive Closure	37	2057-03-01	0.0047	0.028	0.00028	84	0.0013	0.0047	0.66	0.007	0.33	0.0027	0.000013
Passive Closure	37	2057-04-01	0.0051	0.03	0.00029	86	0.0014	0.0053	0.71	0.0076	0.36	0.0029	0.000015
Passive Closure	37	2057-05-01	0.003	0.017	0.00018	53	0.00081	0.0019	0.51	0.0058	0.21	0.0022	0.000011
Passive Closure	37	2057-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0055	0.26	0.0023	0.000012
Passive Closure	37	2057-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	37	2057-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Passive Closure	34	2054-11-01	0.0011	0.000061	0.0068	0.03	0.99	0.029	0.0032	0.019	0.00018	72
Passive Closure	34	2054-12-01	0.0011	0.000071	0.0077	0.032	1.3	0.032	0.0037	0.022	0.00021	77
Passive Closure	34	2055-01-01	0.0011	0.000078	0.0085	0.036	1.1	0.036	0.0041	0.024	0.00022	79
Passive Closure	34	2055-02-01	0.0012	0.000084	0.009	0.034	0.75	0.038	0.0044	0.026	0.00025	82
Passive Closure	35	2055-03-01	0.0012	0.000089	0.0094	0.034	0.73	0.04	0.0047	0.028	0.00027	86
Passive Closure	35	2055-04-01	0.001	0.000096	0.01	0.034	1.4	0.045	0.0051	0.03	0.00028	86
Passive Closure	35	2055-05-01	0.00087	0.000071	0.0058	0.027	6.4	0.063	0.003	0.017	0.00016	52
Passive Closure	35	2055-06-01	0.0008	0.000073	0.0075	0.019	2.1	0.039	0.0038	0.022	0.00018	69
Passive Closure	35	2055-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	35	2055-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.033	0.0034	0.02	0.00016	71
Passive Closure	35	2055-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	35	2055-10-01	0.001	0.000053	0.006	0.025	1.5	0.025	0.0028	0.016	0.00018	66
Passive Closure	35	2055-11-01	0.0011	0.000061	0.0068	0.03	0.99	0.029	0.0032	0.019	0.00018	72
Passive Closure	35	2055-12-01	0.0011	0.000071	0.0077	0.032	1.3	0.032	0.0037	0.022	0.00021	77
Passive Closure	35	2056-01-01	0.0011	0.000078	0.0085	0.036	1.1	0.036	0.0041	0.024	0.00022	79
Passive Closure	35	2056-02-01	0.0012	0.000084	0.009	0.034	0.75	0.038	0.0044	0.026	0.00025	82
Passive Closure	36	2056-03-01	0.0012	0.000089	0.0094	0.034	0.73	0.04	0.0047	0.028	0.00027	86
Passive Closure	36	2056-04-01	0.001	0.000096	0.01	0.034	1.4	0.045	0.0051	0.03	0.00028	86
Passive Closure	36	2056-05-01	0.00087	0.000071	0.0058	0.027	6.4	0.063	0.003	0.017	0.00016	52
Passive Closure	36	2056-06-01	0.0008	0.000073	0.0076	0.019	2.1	0.039	0.0038	0.022	0.00018	69
Passive Closure	36	2056-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	36	2056-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.033	0.0034	0.02	0.00016	71
Passive Closure	36	2056-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	36	2056-10-01	0.001	0.000053	0.006	0.025	1.5	0.025	0.0028	0.016	0.00018	66
Passive Closure	36	2056-11-01	0.0011	0.000061	0.0068	0.03	0.99	0.029	0.0032	0.019	0.00018	72
Passive Closure	36	2056-12-01	0.0011	0.000071	0.0077	0.032	1.3	0.032	0.0037	0.022	0.00021	77
Passive Closure	36	2057-01-01	0.0011	0.000079	0.0085	0.036	1.1	0.036	0.0041	0.024	0.00022	79
Passive Closure	36	2057-02-01	0.0012	0.000084	0.009	0.034	0.75	0.038	0.0044	0.026	0.00025	82
Passive Closure	37	2057-03-01	0.0012	0.000089	0.0094	0.034	0.73	0.04	0.0047	0.028	0.00027	86
Passive Closure	37	2057-04-01	0.001	0.000096	0.01	0.034	1.4	0.045	0.0051	0.03	0.00028	86
Passive Closure	37	2057-05-01	0.00087	0.000071	0.0058	0.027	6.4	0.063	0.003	0.017	0.00016	52
Passive Closure	37	2057-06-01	0.0008	0.000073	0.0075	0.019	2.1	0.039	0.0038	0.022	0.00018	69
Passive Closure	37	2057-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	37	2057-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.033	0.0034	0.02	0.00016	71

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Passive Closure	34	2054-11-01	0.00086	0.0023	0.38	0.0046	0.23	0.0019	0.0000098	0.0011	0.000061	0.0068
Passive Closure	34	2054-12-01	0.00099	0.003	0.45	0.0053	0.27	0.0021	0.000011	0.0011	0.00007	0.0077
Passive Closure	34	2055-01-01	0.0011	0.0037	0.49	0.006	0.29	0.0023	0.000012	0.0011	0.000077	0.0084
Passive Closure	34	2055-02-01	0.0012	0.0042	0.54	0.0065	0.31	0.0025	0.000013	0.0012	0.000084	0.009
Passive Closure	35	2055-03-01	0.0013	0.0047	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000089	0.0094
Passive Closure	35	2055-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000095	0.01
Passive Closure	35	2055-05-01	0.00078	0.0018	0.41	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0057
Passive Closure	35	2055-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075
Passive Closure	35	2055-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000073	0.0074
Passive Closure	35	2055-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000066	0.0067
Passive Closure	35	2055-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0062
Passive Closure	35	2055-10-01	0.00073	0.0015	0.33	0.004	0.19	0.0016	0.0000087	0.001	0.000052	0.0059
Passive Closure	35	2055-11-01	0.00086	0.0023	0.38	0.0046	0.23	0.0019	0.0000098	0.0011	0.000061	0.0068
Passive Closure	35	2055-12-01	0.00099	0.003	0.45	0.0053	0.27	0.0021	0.000011	0.0011	0.00007	0.0077
Passive Closure	35	2056-01-01	0.0011	0.0037	0.49	0.006	0.29	0.0023	0.000012	0.0011	0.000077	0.0084
Passive Closure	35	2056-02-01	0.0012	0.0042	0.54	0.0065	0.31	0.0025	0.000013	0.0012	0.000083	0.009
Passive Closure	36	2056-03-01	0.0013	0.0047	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000089	0.0095
Passive Closure	36	2056-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000095	0.01
Passive Closure	36	2056-05-01	0.00078	0.0018	0.41	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0057
Passive Closure	36	2056-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075
Passive Closure	36	2056-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000073	0.0074
Passive Closure	36	2056-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000066	0.0067
Passive Closure	36	2056-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0062
Passive Closure	36	2056-10-01	0.00073	0.0015	0.33	0.004	0.19	0.0016	0.0000087	0.001	0.000052	0.0059
Passive Closure	36	2056-11-01	0.00086	0.0023	0.38	0.0046	0.23	0.0019	0.0000098	0.0011	0.000061	0.0068
Passive Closure	36	2056-12-01	0.00099	0.003	0.45	0.0053	0.27	0.0021	0.000011	0.0011	0.00007	0.0077
Passive Closure	36	2057-01-01	0.0011	0.0037	0.49	0.006	0.29	0.0023	0.000012	0.0011	0.000077	0.0084
Passive Closure	36	2057-02-01	0.0012	0.0042	0.54	0.0065	0.31	0.0025	0.000013	0.0012	0.000084	0.009
Passive Closure	37	2057-03-01	0.0013	0.0047	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000089	0.0094
Passive Closure	37	2057-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000095	0.01
Passive Closure	37	2057-05-01	0.00078	0.0018	0.41	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0057
Passive Closure	37	2057-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075
Passive Closure	37	2057-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000073	0.0074
Passive Closure	37	2057-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000066	0.0067

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Passive Closure	34	2054-11-01	0.027
Passive Closure	34	2054-12-01	0.029
Passive Closure	34	2055-01-01	0.03
Passive Closure	34	2055-02-01	0.031
Passive Closure	35	2055-03-01	0.038
Passive Closure	35	2055-04-01	0.033
Passive Closure	35	2055-05-01	0.024
Passive Closure	35	2055-06-01	0.019
Passive Closure	35	2055-07-01	0.02
Passive Closure	35	2055-08-01	0.017
Passive Closure	35	2055-09-01	0.019
Passive Closure	35	2055-10-01	0.021
Passive Closure	35	2055-11-01	0.027
Passive Closure	35	2055-12-01	0.029
Passive Closure	35	2056-01-01	0.03
Passive Closure	35	2056-02-01	0.031
Passive Closure	36	2056-03-01	0.038
Passive Closure	36	2056-04-01	0.033
Passive Closure	36	2056-05-01	0.024
Passive Closure	36	2056-06-01	0.019
Passive Closure	36	2056-07-01	0.02
Passive Closure	36	2056-08-01	0.017
Passive Closure	36	2056-09-01	0.019
Passive Closure	36	2056-10-01	0.021
Passive Closure	36	2056-11-01	0.027
Passive Closure	36	2056-12-01	0.029
Passive Closure	36	2057-01-01	0.03
Passive Closure	36	2057-02-01	0.031
Passive Closure	37	2057-03-01	0.038
Passive Closure	37	2057-04-01	0.033
Passive Closure	37	2057-05-01	0.024
Passive Closure	37	2057-06-01	0.019
Passive Closure	37	2057-07-01	0.02
Passive Closure	37	2057-08-01	0.017

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Passive Closure	37	2057-09-01	240	82	0.097	0.0023	0.014	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	37	2057-10-01	240	81	0.1	0.0014	0.012	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	37	2057-11-01	250	88	0.14	0.002	0.018	0.017	0.12	0.42	0.00035	0.00037	0.034
Passive Closure	37	2057-12-01	270	98	0.15	0.0018	0.018	0.018	0.13	0.46	0.00029	0.00025	0.042
Passive Closure	37	2058-01-01	280	110	0.15	0.0017	0.02	0.02	0.14	0.44	0.00027	0.00029	0.055
Passive Closure	37	2058-02-01	290	110	0.14	0.0016	0.02	0.024	0.14	0.45	0.00028	0.0003	0.047
Passive Closure	38	2058-03-01	300	120	0.13	0.0013	0.018	0.022	0.15	0.43	0.00033	0.0003	0.047
Passive Closure	38	2058-04-01	310	120	0.11	0.0015	0.015	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	38	2058-05-01	190	73	0.069	0.0027	0.015	0.02	0.1	0.87	0.00064	0.00057	0.089
Passive Closure	38	2058-06-01	230	85	0.056	0.0014	0.014	0.016	0.11	0.54	0.00058	0.0005	0.047
Passive Closure	38	2058-07-01	230	87	0.046	0.0015	0.017	0.011	0.11	0.39	0.00037	0.00065	0.043
Passive Closure	38	2058-08-01	240	81	0.048	0.0018	0.014	0.013	0.11	0.54	0.00044	0.00037	0.037
Passive Closure	38	2058-09-01	240	78	0.069	0.0017	0.0099	0.012	0.11	0.67	0.00046	0.00046	0.036
Passive Closure	38	2058-10-01	230	77	0.1	0.0014	0.012	0.015	0.11	0.63	0.00028	0.00029	0.032
Passive Closure	38	2058-11-01	250	84	0.13	0.0017	0.016	0.016	0.12	0.42	0.00035	0.00038	0.032
Passive Closure	38	2058-12-01	260	93	0.14	0.0016	0.017	0.018	0.12	0.45	0.00029	0.00024	0.039
Passive Closure	38	2059-01-01	280	100	0.14	0.0016	0.019	0.019	0.13	0.44	0.00027	0.00028	0.053
Passive Closure	38	2059-02-01	280	110	0.14	0.0015	0.019	0.023	0.14	0.45	0.00028	0.0003	0.045
Passive Closure	39	2059-03-01	290	110	0.13	0.0012	0.017	0.021	0.14	0.42	0.00033	0.00029	0.046
Passive Closure	39	2059-04-01	300	120	0.11	0.0014	0.014	0.017	0.15	0.59	0.00034	0.00028	0.05
Passive Closure	39	2059-05-01	190	73	0.081	0.003	0.017	0.021	0.1	0.87	0.00065	0.00058	0.09
Passive Closure	39	2059-06-01	250	96	0.082	0.0019	0.017	0.018	0.12	0.54	0.00055	0.00048	0.052
Passive Closure	39	2059-07-01	250	99	0.07	0.002	0.02	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	39	2059-08-01	250	89	0.074	0.0023	0.017	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	39	2059-09-01	240	82	0.09	0.0022	0.013	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	39	2059-10-01	240	80	0.1	0.0013	0.012	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	39	2059-11-01	250	89	0.14	0.0019	0.017	0.017	0.12	0.42	0.00035	0.00037	0.035
Passive Closure	39	2059-12-01	270	98	0.15	0.0017	0.017	0.018	0.13	0.46	0.00029	0.00025	0.042
Passive Closure	39	2060-01-01	280	110	0.14	0.0016	0.019	0.02	0.14	0.44	0.00027	0.00029	0.055
Passive Closure	39	2060-02-01	290	110	0.13	0.0014	0.019	0.024	0.14	0.45	0.00028	0.0003	0.047
Passive Closure	40	2060-03-01	300	120	0.12	0.0012	0.017	0.022	0.15	0.43	0.00033	0.0003	0.047
Passive Closure	40	2060-04-01	310	120	0.11	0.0014	0.015	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	40	2060-05-01	190	73	0.079	0.0029	0.017	0.021	0.11	0.87	0.00065	0.00058	0.091
Passive Closure	40	2060-06-01	250	96	0.08	0.0019	0.017	0.018	0.12	0.54	0.00055	0.00048	0.052

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Passive Closure	37	2057-09-01	0.0029	0.017	0.00017	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	37	2057-10-01	0.0028	0.016	0.0002	68	0.00076	0.0016	0.41	0.0041	0.2	0.0017	0.0000089
Passive Closure	37	2057-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000098
Passive Closure	37	2057-12-01	0.0037	0.022	0.00023	77	0.001	0.003	0.54	0.0053	0.27	0.0021	0.000011
Passive Closure	37	2058-01-01	0.0041	0.024	0.00027	80	0.0011	0.0038	0.75	0.006	0.31	0.0024	0.000012
Passive Closure	37	2058-02-01	0.0044	0.026	0.00028	82	0.0012	0.0042	0.64	0.0065	0.31	0.0025	0.000013
Passive Closure	38	2058-03-01	0.0047	0.028	0.00028	83	0.0013	0.0047	0.66	0.0069	0.33	0.0027	0.000013
Passive Closure	38	2058-04-01	0.005	0.03	0.00028	86	0.0014	0.0053	0.71	0.0075	0.35	0.0029	0.000015
Passive Closure	38	2058-05-01	0.003	0.017	0.00018	53	0.00081	0.0018	0.51	0.0059	0.21	0.0022	0.000011
Passive Closure	38	2058-06-01	0.0033	0.019	0.00016	64	0.00089	0.0012	0.47	0.0052	0.23	0.0021	0.00001
Passive Closure	38	2058-07-01	0.0032	0.019	0.00018	66	0.00086	0.0012	0.45	0.005	0.22	0.002	0.000013
Passive Closure	38	2058-08-01	0.003	0.018	0.00017	69	0.00085	0.0011	0.42	0.0049	0.21	0.0019	0.00001
Passive Closure	38	2058-09-01	0.0027	0.016	0.00017	67	0.00074	0.0013	0.39	0.0044	0.19	0.0017	0.000009
Passive Closure	38	2058-10-01	0.0026	0.015	0.00019	67	0.00071	0.0013	0.39	0.0038	0.18	0.0016	0.0000084
Passive Closure	38	2058-11-01	0.003	0.017	0.00021	71	0.00082	0.0019	0.46	0.0043	0.22	0.0018	0.0000093
Passive Closure	38	2058-12-01	0.0035	0.02	0.00022	76	0.00095	0.0027	0.52	0.005	0.25	0.002	0.00001
Passive Closure	38	2059-01-01	0.0039	0.023	0.00026	78	0.0011	0.0035	0.73	0.0057	0.29	0.0023	0.000012
Passive Closure	38	2059-02-01	0.0042	0.025	0.00026	80	0.0012	0.0039	0.62	0.0062	0.3	0.0024	0.000012
Passive Closure	39	2059-03-01	0.0045	0.027	0.00027	82	0.0012	0.0043	0.64	0.0066	0.32	0.0026	0.000013
Passive Closure	39	2059-04-01	0.0048	0.029	0.00027	84	0.0014	0.0049	0.69	0.0072	0.34	0.0028	0.000014
Passive Closure	39	2059-05-01	0.003	0.017	0.00018	53	0.0008	0.0019	0.51	0.0057	0.21	0.0022	0.000011
Passive Closure	39	2059-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0056	0.26	0.0023	0.000012
Passive Closure	39	2059-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	39	2059-08-01	0.0034	0.02	0.00018	72	0.00093	0.0014	0.45	0.0051	0.23	0.0021	0.000011
Passive Closure	39	2059-09-01	0.0029	0.017	0.00018	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	39	2059-10-01	0.0028	0.016	0.0002	67	0.00076	0.0016	0.41	0.0041	0.19	0.0017	0.0000088
Passive Closure	39	2059-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Passive Closure	39	2059-12-01	0.0037	0.022	0.00023	77	0.001	0.003	0.54	0.0053	0.27	0.0021	0.000011
Passive Closure	39	2060-01-01	0.0041	0.024	0.00027	80	0.0011	0.0038	0.75	0.006	0.3	0.0024	0.000012
Passive Closure	39	2060-02-01	0.0044	0.026	0.00027	82	0.0012	0.0042	0.64	0.0065	0.31	0.0025	0.000013
Passive Closure	40	2060-03-01	0.0047	0.028	0.00028	83	0.0013	0.0046	0.66	0.0069	0.33	0.0027	0.000013
Passive Closure	40	2060-04-01	0.005	0.03	0.00028	86	0.0014	0.0052	0.71	0.0075	0.35	0.0029	0.000015
Passive Closure	40	2060-05-01	0.003	0.017	0.00018	53	0.00081	0.0019	0.51	0.0058	0.21	0.0022	0.000011
Passive Closure	40	2060-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0055	0.26	0.0023	0.000012

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Passive Closure	37	2057-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	37	2057-10-01	0.001	0.000053	0.006	0.025	1.5	0.026	0.0028	0.016	0.00018	66
Passive Closure	37	2057-11-01	0.0011	0.00006	0.0068	0.03	0.99	0.029	0.0032	0.019	0.00018	72
Passive Closure	37	2057-12-01	0.0011	0.00007	0.0076	0.032	1.3	0.032	0.0037	0.021	0.00021	77
Passive Closure	37	2058-01-01	0.0011	0.000078	0.0084	0.036	1.1	0.035	0.0041	0.024	0.00022	79
Passive Closure	37	2058-02-01	0.0012	0.000084	0.009	0.034	0.75	0.038	0.0044	0.026	0.00025	82
Passive Closure	38	2058-03-01	0.0012	0.000089	0.0094	0.034	0.73	0.04	0.0047	0.028	0.00027	86
Passive Closure	38	2058-04-01	0.001	0.000095	0.0099	0.034	1.4	0.045	0.005	0.03	0.00028	86
Passive Closure	38	2058-05-01	0.00085	0.00007	0.0057	0.027	6.3	0.061	0.003	0.017	0.00016	52
Passive Closure	38	2058-06-01	0.00076	0.000065	0.0065	0.019	2.2	0.034	0.0033	0.019	0.00016	64
Passive Closure	38	2058-07-01	0.00077	0.000064	0.0063	0.021	2.3	0.032	0.0032	0.019	0.00016	66
Passive Closure	38	2058-08-01	0.00073	0.000061	0.006	0.019	2.2	0.03	0.003	0.018	0.00015	69
Passive Closure	38	2058-09-01	0.00086	0.000055	0.0057	0.021	1.7	0.026	0.0027	0.016	0.00014	67
Passive Closure	38	2058-10-01	0.001	0.000049	0.0057	0.025	1.6	0.024	0.0026	0.015	0.00017	65
Passive Closure	38	2058-11-01	0.0011	0.000056	0.0064	0.029	0.99	0.027	0.003	0.017	0.00017	71
Passive Closure	38	2058-12-01	0.0011	0.000066	0.0072	0.031	1.3	0.03	0.0034	0.02	0.00019	75
Passive Closure	38	2059-01-01	0.0011	0.000074	0.008	0.035	1.1	0.034	0.0039	0.023	0.00021	77
Passive Closure	38	2059-02-01	0.0012	0.00008	0.0086	0.033	0.73	0.036	0.0042	0.025	0.00023	80
Passive Closure	39	2059-03-01	0.0012	0.000085	0.009	0.033	0.71	0.038	0.0045	0.027	0.00025	84
Passive Closure	39	2059-04-01	0.001	0.00009	0.0095	0.033	1.4	0.043	0.0048	0.029	0.00027	84
Passive Closure	39	2059-05-01	0.00087	0.00007	0.0058	0.026	6.4	0.062	0.003	0.017	0.00016	52
Passive Closure	39	2059-06-01	0.0008	0.000073	0.0075	0.019	2.1	0.039	0.0038	0.022	0.00018	69
Passive Closure	39	2059-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	39	2059-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.034	0.0034	0.02	0.00016	71
Passive Closure	39	2059-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	39	2059-10-01	0.001	0.000053	0.0059	0.025	1.5	0.025	0.0028	0.016	0.00018	66
Passive Closure	39	2059-11-01	0.0011	0.000061	0.0068	0.03	0.99	0.029	0.0032	0.019	0.00018	72
Passive Closure	39	2059-12-01	0.0011	0.00007	0.0076	0.032	1.3	0.032	0.0037	0.021	0.0002	77
Passive Closure	39	2060-01-01	0.0011	0.000078	0.0084	0.036	1.1	0.035	0.0041	0.024	0.00022	79
Passive Closure	39	2060-02-01	0.0012	0.000083	0.0089	0.034	0.75	0.038	0.0044	0.026	0.00024	82
Passive Closure	40	2060-03-01	0.0012	0.000089	0.0094	0.034	0.73	0.04	0.0047	0.028	0.00026	86
Passive Closure	40	2060-04-01	0.001	0.000094	0.0099	0.034	1.4	0.045	0.005	0.03	0.00028	86
Passive Closure	40	2060-05-01	0.00087	0.000071	0.0058	0.026	6.4	0.063	0.003	0.017	0.00016	52
Passive Closure	40	2060-06-01	0.0008	0.000073	0.0075	0.019	2.1	0.039	0.0038	0.022	0.00018	69

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Passive Closure	37	2057-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0062
Passive Closure	37	2057-10-01	0.00074	0.0015	0.33	0.004	0.19	0.0016	0.0000088	0.001	0.000053	0.006
Passive Closure	37	2057-11-01	0.00085	0.0022	0.38	0.0045	0.23	0.0018	0.0000097	0.0011	0.00006	0.0067
Passive Closure	37	2057-12-01	0.00098	0.003	0.44	0.0053	0.26	0.0021	0.000011	0.0011	0.000069	0.0076
Passive Closure	37	2058-01-01	0.0011	0.0036	0.49	0.0059	0.29	0.0023	0.000012	0.0011	0.000077	0.0084
Passive Closure	37	2058-02-01	0.0012	0.0042	0.53	0.0064	0.31	0.0025	0.000013	0.0012	0.000083	0.009
Passive Closure	38	2058-03-01	0.0013	0.0046	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000088	0.0094
Passive Closure	38	2058-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000094	0.0099
Passive Closure	38	2058-05-01	0.00078	0.0016	0.41	0.0057	0.2	0.0021	0.000011	0.00082	0.00007	0.0056
Passive Closure	38	2058-06-01	0.00087	0.0011	0.39	0.0051	0.22	0.0021	0.00001	0.00076	0.000064	0.0065
Passive Closure	38	2058-07-01	0.00084	0.0011	0.38	0.0049	0.21	0.0019	0.0000098	0.00079	0.000063	0.0063
Passive Closure	38	2058-08-01	0.00083	0.0011	0.36	0.0048	0.2	0.0019	0.00001	0.00073	0.000061	0.006
Passive Closure	38	2058-09-01	0.00072	0.0011	0.33	0.0043	0.18	0.0016	0.0000089	0.00082	0.000055	0.0057
Passive Closure	38	2058-10-01	0.00068	0.0012	0.31	0.0037	0.17	0.0015	0.0000083	0.001	0.000049	0.0056
Passive Closure	38	2058-11-01	0.0008	0.0019	0.35	0.0043	0.22	0.0018	0.0000092	0.0011	0.000056	0.0064
Passive Closure	38	2058-12-01	0.00093	0.0026	0.42	0.0049	0.25	0.002	0.00001	0.0011	0.000065	0.0072
Passive Closure	38	2059-01-01	0.001	0.0033	0.46	0.0056	0.27	0.0022	0.000011	0.0011	0.000073	0.008
Passive Closure	38	2059-02-01	0.0011	0.0038	0.51	0.0061	0.3	0.0024	0.000012	0.0012	0.000079	0.0086
Passive Closure	39	2059-03-01	0.0012	0.0043	0.55	0.0066	0.32	0.0026	0.000013	0.0011	0.000084	0.009
Passive Closure	39	2059-04-01	0.0013	0.0049	0.6	0.0071	0.33	0.0028	0.000013	0.00098	0.00009	0.0095
Passive Closure	39	2059-05-01	0.00078	0.0017	0.4	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0057
Passive Closure	39	2059-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075
Passive Closure	39	2059-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000074	0.0074
Passive Closure	39	2059-08-01	0.00091	0.0014	0.39	0.0051	0.22	0.002	0.000011	0.00078	0.000067	0.0068
Passive Closure	39	2059-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0062
Passive Closure	39	2059-10-01	0.00073	0.0015	0.33	0.004	0.19	0.0016	0.0000087	0.001	0.000052	0.0059
Passive Closure	39	2059-11-01	0.00085	0.0022	0.38	0.0045	0.23	0.0019	0.0000098	0.0011	0.00006	0.0068
Passive Closure	39	2059-12-01	0.00099	0.003	0.44	0.0053	0.26	0.0021	0.000011	0.0011	0.000069	0.0076
Passive Closure	39	2060-01-01	0.0011	0.0036	0.49	0.0059	0.29	0.0023	0.000012	0.0011	0.000077	0.0084
Passive Closure	39	2060-02-01	0.0012	0.0041	0.53	0.0064	0.31	0.0025	0.000012	0.0012	0.000083	0.0089
Passive Closure	40	2060-03-01	0.0013	0.0046	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000088	0.0094
Passive Closure	40	2060-04-01	0.0014	0.0052	0.62	0.0074	0.35	0.0029	0.000014	0.00099	0.000094	0.0099
Passive Closure	40	2060-05-01	0.00078	0.0018	0.4	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0057
Passive Closure	40	2060-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Passive Closure	37	2057-09-01	0.019
Passive Closure	37	2057-10-01	0.021
Passive Closure	37	2057-11-01	0.027
Passive Closure	37	2057-12-01	0.029
Passive Closure	37	2058-01-01	0.03
Passive Closure	37	2058-02-01	0.031
Passive Closure	38	2058-03-01	0.038
Passive Closure	38	2058-04-01	0.033
Passive Closure	38	2058-05-01	0.024
Passive Closure	38	2058-06-01	0.018
Passive Closure	38	2058-07-01	0.019
Passive Closure	38	2058-08-01	0.016
Passive Closure	38	2058-09-01	0.019
Passive Closure	38	2058-10-01	0.02
Passive Closure	38	2058-11-01	0.026
Passive Closure	38	2058-12-01	0.028
Passive Closure	38	2059-01-01	0.029
Passive Closure	38	2059-02-01	0.03
Passive Closure	39	2059-03-01	0.037
Passive Closure	39	2059-04-01	0.032
Passive Closure	39	2059-05-01	0.024
Passive Closure	39	2059-06-01	0.019
Passive Closure	39	2059-07-01	0.02
Passive Closure	39	2059-08-01	0.017
Passive Closure	39	2059-09-01	0.019
Passive Closure	39	2059-10-01	0.021
Passive Closure	39	2059-11-01	0.027
Passive Closure	39	2059-12-01	0.029
Passive Closure	39	2060-01-01	0.03
Passive Closure	39	2060-02-01	0.031
Passive Closure	40	2060-03-01	0.037
Passive Closure	40	2060-04-01	0.033
Passive Closure	40	2060-05-01	0.024
Passive Closure	40	2060-06-01	0.019

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Passive Closure	40	2060-07-01	250	99	0.068	0.002	0.02	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	40	2060-08-01	250	88	0.071	0.0023	0.017	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	40	2060-09-01	240	82	0.087	0.0021	0.012	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	40	2060-10-01	240	80	0.099	0.0013	0.012	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	40	2060-11-01	250	89	0.13	0.0018	0.017	0.017	0.12	0.42	0.00035	0.00037	0.035
Passive Closure	40	2060-12-01	270	98	0.14	0.0017	0.017	0.018	0.13	0.46	0.00029	0.00025	0.042
Passive Closure	40	2061-01-01	280	110	0.14	0.0015	0.019	0.02	0.14	0.44	0.00027	0.00029	0.055
Passive Closure	40	2061-02-01	290	110	0.14	0.0014	0.019	0.024	0.14	0.45	0.00028	0.0003	0.047
Passive Closure	41	2061-03-01	300	120	0.12	0.0012	0.017	0.022	0.15	0.43	0.00033	0.0003	0.048
Passive Closure	41	2061-04-01	310	120	0.11	0.0014	0.014	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	41	2061-05-01	190	73	0.076	0.0029	0.016	0.021	0.11	0.87	0.00065	0.00058	0.091
Passive Closure	41	2061-06-01	250	96	0.077	0.0018	0.017	0.018	0.12	0.54	0.00055	0.00048	0.052
Passive Closure	41	2061-07-01	250	99	0.065	0.0019	0.02	0.013	0.13	0.4	0.00037	0.00064	0.048
Passive Closure	41	2061-08-01	250	89	0.068	0.0022	0.016	0.015	0.12	0.53	0.00043	0.00036	0.04
Passive Closure	41	2061-09-01	240	82	0.085	0.002	0.012	0.014	0.11	0.66	0.00045	0.00046	0.038
Passive Closure	41	2061-10-01	240	80	0.098	0.0013	0.011	0.015	0.11	0.62	0.00028	0.00028	0.033
Passive Closure	41	2061-11-01	250	89	0.13	0.0018	0.016	0.017	0.12	0.42	0.00035	0.00037	0.035
Receiving Environment Water Quality Model - KZ-37 - Dry Year -1 Model													
Construction	-1	2020-03-01	230	63	0.21	0.0038	0.07	0.011	0.073	0.59	0.00013	0.0001	0.0057
Construction	-1	2020-04-01	240	65	0.19	0.0038	0.07	0.008	0.075	0.71	0.00012	0.000084	0.0067
Construction	-1	2020-05-01	100	28	0.43	0.011	0.079	0.013	0.043	0.65	0.00043	0.00037	0.058
Construction	-1	2020-06-01	120	27	0.35	0.0079	0.06	0.013	0.047	0.4	0.00034	0.00028	0.018
Construction	-1	2020-07-01	120	33	0.43	0.01	0.074	0.0059	0.052	0.27	0.00022	0.0005	0.016
Construction	-1	2020-08-01	150	39	0.52	0.012	0.085	0.0095	0.062	0.39	0.00021	0.00014	0.013
Construction	-1	2020-09-01	180	49	0.62	0.014	0.096	0.011	0.077	0.56	0.00025	0.00025	0.016
Construction	-1	2020-10-01	200	58	0.63	0.014	0.1	0.013	0.086	0.61	0.00013	0.00014	0.014
Construction	-1	2020-11-01	260	79	0.75	0.016	0.13	0.014	0.11	0.58	0.00019	0.0002	0.015
Construction	-1	2020-12-01	290	88	0.73	0.016	0.13	0.016	0.12	0.68	0.00015	0.0001	0.018
Construction	-1	2021-01-01	300	91	0.66	0.014	0.13	0.016	0.12	0.7	0.00011	0.00012	0.023
Construction	-1	2021-02-01	310	96	0.61	0.013	0.13	0.019	0.12	0.74	0.00011	0.00012	0.016
Receiving Environment Water Quality Model - KZ-37 - Wet Year -1 Model													
Construction	-1	2020-03-01	230	62	0.2	0.0038	0.069	0.011	0.073	0.59	0.00013	0.0001	0.0057

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Passive Closure	40	2060-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	40	2060-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011
Passive Closure	40	2060-09-01	0.0029	0.017	0.00017	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	40	2060-10-01	0.0028	0.016	0.0002	67	0.00076	0.0016	0.41	0.0041	0.19	0.0017	0.0000088
Passive Closure	40	2060-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Passive Closure	40	2060-12-01	0.0037	0.022	0.00023	77	0.001	0.0031	0.55	0.0053	0.27	0.0021	0.000011
Passive Closure	40	2061-01-01	0.0041	0.024	0.00027	80	0.0011	0.0038	0.75	0.0061	0.31	0.0024	0.000012
Passive Closure	40	2061-02-01	0.0044	0.026	0.00028	82	0.0012	0.0042	0.64	0.0065	0.32	0.0025	0.000013
Passive Closure	41	2061-03-01	0.0047	0.028	0.00028	83	0.0013	0.0047	0.66	0.0069	0.33	0.0027	0.000013
Passive Closure	41	2061-04-01	0.005	0.03	0.00028	86	0.0014	0.0053	0.71	0.0075	0.35	0.0029	0.000015
Passive Closure	41	2061-05-01	0.003	0.017	0.00018	53	0.00081	0.0019	0.51	0.0058	0.21	0.0022	0.000011
Passive Closure	41	2061-06-01	0.0038	0.022	0.00018	69	0.001	0.0014	0.52	0.0055	0.26	0.0023	0.000012
Passive Closure	41	2061-07-01	0.0038	0.022	0.0002	71	0.001	0.0015	0.51	0.0056	0.26	0.0022	0.000014
Passive Closure	41	2061-08-01	0.0034	0.02	0.00018	72	0.00092	0.0014	0.45	0.0051	0.23	0.002	0.000011
Passive Closure	41	2061-09-01	0.0029	0.017	0.00017	69	0.00078	0.0015	0.41	0.0045	0.2	0.0017	0.0000097
Passive Closure	41	2061-10-01	0.0028	0.016	0.0002	67	0.00076	0.0016	0.41	0.0041	0.19	0.0017	0.0000088
Passive Closure	41	2061-11-01	0.0032	0.019	0.00022	72	0.00087	0.0023	0.49	0.0046	0.24	0.0019	0.0000099
Receiving Environment Water Quality Model - KZ-37 - Dry Year -1 Model													**Receiving Environme**
Construction	-1	2020-03-01	0.00021	0.002	0.00015	59	0.00022	0.00037	0.087	0.000083	0.14	0.00091	0.0000028
Construction	-1	2020-04-01	0.00022	0.0021	0.00015	60	0.00024	0.00042	0.093	0.00011	0.14	0.001	0.0000034
Construction	-1	2020-05-01	0.00018	0.00099	0.000086	27	0.00014	0.00064	0.088	0.000094	0.067	0.0011	0.000003
Construction	-1	2020-06-01	0.00023	0.00089	0.000065	31	0.00012	0.00038	0.049	0.000058	0.056	0.00084	0.0000025
Construction	-1	2020-07-01	0.00031	0.001	0.000082	33	0.00015	0.00037	0.041	0.00005	0.071	0.0011	0.0000032
Construction	-1	2020-08-01	0.00042	0.0014	0.00012	41	0.00024	0.00038	0.04	0.000098	0.099	0.0016	0.0000028
Construction	-1	2020-09-01	0.00053	0.0017	0.00014	48	0.0003	0.00048	0.05	0.000092	0.13	0.002	0.0000033
Construction	-1	2020-10-01	0.00058	0.0021	0.00018	54	0.00036	0.00046	0.063	0.0001	0.16	0.0025	0.0000034
Construction	-1	2020-11-01	0.00078	0.0028	0.00025	69	0.00053	0.00053	0.095	0.00014	0.24	0.0035	0.0000042
Construction	-1	2020-12-01	0.00081	0.0031	0.00027	77	0.00057	0.00058	0.11	0.00014	0.27	0.0037	0.0000045
Construction	-1	2021-01-01	0.00075	0.0032	0.00028	79	0.00057	0.00066	0.21	0.00022	0.27	0.0035	0.0000048
Construction	-1	2021-02-01	0.0007	0.0032	0.00028	82	0.00057	0.00063	0.12	0.00015	0.28	0.0036	0.0000045
Receiving Environment Water Quality Model - KZ-37 - Wet Year -1 Model													**Receiving Environme**
Construction	-1	2020-03-01	0.00021	0.002	0.00015	58	0.00022	0.00037	0.087	0.000082	0.14	0.0009	0.0000028

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Passive Closure	40	2060-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	40	2060-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.033	0.0034	0.02	0.00016	71
Passive Closure	40	2060-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	40	2060-10-01	0.001	0.000053	0.0059	0.025	1.5	0.025	0.0028	0.016	0.00018	66
Passive Closure	40	2060-11-01	0.0011	0.000061	0.0068	0.03	0.99	0.029	0.0032	0.019	0.00018	72
Passive Closure	40	2060-12-01	0.0011	0.000071	0.0077	0.032	1.3	0.032	0.0037	0.022	0.00021	77
Passive Closure	40	2061-01-01	0.0011	0.000078	0.0084	0.036	1.1	0.036	0.0041	0.024	0.00022	79
Passive Closure	40	2061-02-01	0.0012	0.000084	0.009	0.034	0.75	0.038	0.0044	0.026	0.00025	82
Passive Closure	41	2061-03-01	0.0012	0.000089	0.0094	0.034	0.73	0.04	0.0047	0.028	0.00027	86
Passive Closure	41	2061-04-01	0.001	0.000095	0.0099	0.034	1.4	0.045	0.005	0.03	0.00028	86
Passive Closure	41	2061-05-01	0.00087	0.000071	0.0058	0.026	6.4	0.063	0.003	0.017	0.00016	52
Passive Closure	41	2061-06-01	0.0008	0.000073	0.0075	0.019	2.1	0.039	0.0038	0.022	0.00018	69
Passive Closure	41	2061-07-01	0.00082	0.000074	0.0074	0.022	2.2	0.038	0.0038	0.022	0.00018	71
Passive Closure	41	2061-08-01	0.00078	0.000067	0.0068	0.02	2.1	0.033	0.0034	0.02	0.00016	71
Passive Closure	41	2061-09-01	0.0009	0.000059	0.0062	0.022	1.7	0.028	0.0029	0.017	0.00015	69
Passive Closure	41	2061-10-01	0.001	0.000053	0.0059	0.025	1.5	0.025	0.0028	0.016	0.00018	66
Passive Closure	41	2061-11-01	0.0011	0.000061	0.0068	0.03	0.99	0.029	0.0032	0.019	0.00018	72
Receiving Environment Water Quality Model - KZ-37 - Dry Year -1 Model			**nt Water Quality Model - KZ-37 - Dry Year -1 Model**									
Construction	-1	2020-03-01	0.00072	0.000089	0.0031	0.03	0.82	0.0038	0.00021	0.002	0.00014	60
Construction	-1	2020-04-01	0.00065	0.0001	0.0032	0.031	1.3	0.0052	0.00022	0.002	0.00015	61
Construction	-1	2020-05-01	0.00041	0.000068	0.0016	0.016	5.3	0.046	0.00018	0.00096	0.000077	27
Construction	-1	2020-06-01	0.00055	0.000083	0.0018	0.012	1.5	0.011	0.00023	0.00088	0.000063	31
Construction	-1	2020-07-01	0.00063	0.00013	0.0019	0.016	1.6	0.013	0.00032	0.001	0.000075	33
Construction	-1	2020-08-01	0.00084	0.00022	0.0023	0.023	1.4	0.012	0.00042	0.0014	0.0001	41
Construction	-1	2020-09-01	0.0012	0.0003	0.0029	0.029	1.2	0.013	0.00053	0.0017	0.00013	48
Construction	-1	2020-10-01	0.0014	0.00038	0.0031	0.039	1.2	0.011	0.00058	0.0021	0.00017	54
Construction	-1	2020-11-01	0.0019	0.00057	0.0041	0.056	1	0.013	0.00079	0.0028	0.00023	70
Construction	-1	2020-12-01	0.0019	0.00059	0.0045	0.061	1.3	0.013	0.0008	0.0031	0.00025	77
Construction	-1	2021-01-01	0.0018	0.00054	0.0047	0.062	1.3	0.012	0.00074	0.0031	0.00025	79
Construction	-1	2021-02-01	0.0018	0.00054	0.0048	0.062	1	0.011	0.0007	0.0032	0.00026	82
Receiving Environment Water Quality Model - KZ-37 - Wet Year -1 Model			**nt Water Quality Model - KZ-37 - Wet Year -1 Model**									
Construction	-1	2020-03-01	0.00072	0.000088	0.0031	0.03	0.82	0.0038	0.00021	0.002	0.00014	60

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Passive Closure	40	2060-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000073	0.0074
Passive Closure	40	2060-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000066	0.0067
Passive Closure	40	2060-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0061
Passive Closure	40	2060-10-01	0.00073	0.0015	0.33	0.004	0.19	0.0016	0.0000087	0.001	0.000052	0.0059
Passive Closure	40	2060-11-01	0.00086	0.0023	0.38	0.0046	0.23	0.0019	0.0000098	0.0011	0.000061	0.0068
Passive Closure	40	2060-12-01	0.00099	0.003	0.45	0.0053	0.27	0.0021	0.000011	0.0011	0.00007	0.0077
Passive Closure	40	2061-01-01	0.0011	0.0036	0.49	0.006	0.29	0.0023	0.000012	0.0011	0.000077	0.0084
Passive Closure	40	2061-02-01	0.0012	0.0042	0.53	0.0064	0.31	0.0025	0.000013	0.0012	0.000083	0.009
Passive Closure	41	2061-03-01	0.0013	0.0046	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000089	0.0094
Passive Closure	41	2061-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000094	0.0099
Passive Closure	41	2061-05-01	0.00078	0.0018	0.4	0.0056	0.2	0.0021	0.000011	0.00084	0.00007	0.0057
Passive Closure	41	2061-06-01	0.001	0.0013	0.45	0.0055	0.25	0.0023	0.000012	0.0008	0.000072	0.0075
Passive Closure	41	2061-07-01	0.00098	0.0013	0.44	0.0056	0.25	0.0022	0.000011	0.00084	0.000073	0.0074
Passive Closure	41	2061-08-01	0.00091	0.0014	0.39	0.005	0.22	0.002	0.000011	0.00078	0.000066	0.0067
Passive Closure	41	2061-09-01	0.00076	0.0013	0.34	0.0044	0.19	0.0017	0.0000096	0.00086	0.000058	0.0061
Passive Closure	41	2061-10-01	0.00073	0.0015	0.33	0.004	0.19	0.0016	0.0000087	0.001	0.000052	0.0059
Passive Closure	41	2061-11-01	0.00086	0.0023	0.38	0.0046	0.23	0.0019	0.0000098	0.0011	0.000061	0.0068
Receiving Environment Water Quality Model - KZ-37 - Dry Year -1 Model												
Construction	-1	2020-03-01	0.00022	0.00036	0.048	0.000068	0.14	0.00091	0.0000028	0.00066	0.000089	0.0031
Construction	-1	2020-04-01	0.00024	0.00042	0.052	0.000094	0.14	0.001	0.000003	0.00061	0.0001	0.0032
Construction	-1	2020-05-01	0.00013	0.00057	0.053	0.000041	0.065	0.001	0.0000032	0.0004	0.000068	0.0016
Construction	-1	2020-06-01	0.00012	0.00033	0.023	0.000031	0.054	0.00084	0.0000023	0.00055	0.000083	0.0018
Construction	-1	2020-07-01	0.00015	0.00032	0.019	0.000038	0.068	0.001	0.0000024	0.00064	0.00013	0.0019
Construction	-1	2020-08-01	0.00024	0.00035	0.022	0.000062	0.097	0.0016	0.0000028	0.00084	0.00022	0.0023
Construction	-1	2020-09-01	0.00029	0.00039	0.027	0.000067	0.12	0.002	0.0000033	0.0012	0.0003	0.0029
Construction	-1	2020-10-01	0.00035	0.0004	0.028	0.000074	0.15	0.0024	0.0000034	0.0014	0.00038	0.0031
Construction	-1	2020-11-01	0.00053	0.00051	0.038	0.00011	0.24	0.0035	0.0000042	0.0018	0.00057	0.0041
Construction	-1	2020-12-01	0.00057	0.00055	0.051	0.00012	0.26	0.0037	0.0000045	0.0019	0.00059	0.0046
Construction	-1	2021-01-01	0.00055	0.00057	0.049	0.00015	0.26	0.0035	0.0000045	0.0018	0.00054	0.0047
Construction	-1	2021-02-01	0.00056	0.00059	0.054	0.00012	0.27	0.0035	0.0000045	0.0018	0.00054	0.0048
Receiving Environment Water Quality Model - KZ-37 - Wet Year -1 Model												
Construction	-1	2020-03-01	0.00021	0.00035	0.048	0.000067	0.14	0.00091	0.0000028	0.00067	0.000089	0.0031

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Passive Closure	40	2060-07-01	0.02
Passive Closure	40	2060-08-01	0.017
Passive Closure	40	2060-09-01	0.019
Passive Closure	40	2060-10-01	0.021
Passive Closure	40	2060-11-01	0.027
Passive Closure	40	2060-12-01	0.029
Passive Closure	40	2061-01-01	0.03
Passive Closure	40	2061-02-01	0.031
Passive Closure	41	2061-03-01	0.038
Passive Closure	41	2061-04-01	0.033
Passive Closure	41	2061-05-01	0.024
Passive Closure	41	2061-06-01	0.019
Passive Closure	41	2061-07-01	0.02
Passive Closure	41	2061-08-01	0.017
Passive Closure	41	2061-09-01	0.019
Passive Closure	41	2061-10-01	0.021
Passive Closure	41	2061-11-01	0.027
Receiving Environment Water Quality Model - KZ-37 - Dry Year -1 Model			
Construction	-1	2020-03-01	0.032
Construction	-1	2020-04-01	0.03
Construction	-1	2020-05-01	0.015
Construction	-1	2020-06-01	0.012
Construction	-1	2020-07-01	0.015
Construction	-1	2020-08-01	0.021
Construction	-1	2020-09-01	0.028
Construction	-1	2020-10-01	0.037
Construction	-1	2020-11-01	0.055
Construction	-1	2020-12-01	0.059
Construction	-1	2021-01-01	0.058
Construction	-1	2021-02-01	0.06
Receiving Environment Water Quality Model - KZ-37 - Wet Year -1 Model			
Construction	-1	2020-03-01	0.032

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Construction	-1	2020-04-01	230	64	0.19	0.0038	0.07	0.008	0.074	0.71	0.00012	0.000085	0.0067
Construction	-1	2020-05-01	73	17	0.24	0.0069	0.047	0.013	0.032	0.59	0.00045	0.0004	0.06
Construction	-1	2020-06-01	89	14	0.14	0.0029	0.025	0.014	0.034	0.34	0.00038	0.00031	0.017
Construction	-1	2020-07-01	90	19	0.15	0.0038	0.03	0.0044	0.035	0.19	0.00025	0.00055	0.012
Construction	-1	2020-08-01	110	19	0.18	0.0044	0.032	0.0082	0.039	0.31	0.00024	0.00016	0.009
Construction	-1	2020-09-01	120	24	0.22	0.005	0.033	0.0088	0.046	0.45	0.00026	0.00027	0.01
Construction	-1	2020-10-01	130	31	0.28	0.0057	0.042	0.011	0.054	0.47	0.00014	0.00014	0.0089
Construction	-1	2020-11-01	170	48	0.43	0.0088	0.07	0.011	0.073	0.4	0.0002	0.00021	0.0099
Construction	-1	2020-12-01	210	59	0.47	0.0096	0.083	0.012	0.082	0.49	0.00014	0.00011	0.013
Construction	-1	2021-01-01	230	64	0.46	0.0093	0.089	0.012	0.087	0.53	0.00013	0.00013	0.021
Construction	-1	2021-02-01	240	70	0.44	0.0088	0.092	0.015	0.095	0.59	0.00013	0.00015	0.012
Receiving Environment Water Quality Model - KZ-37 - Dry Year 2 Model													
Production	2	2022-03-01	170	37	0.47	0.0086	0.056	0.017	0.083	0.26	0.00027	0.00022	0.015
Production	2	2022-04-01	180	36	0.42	0.0082	0.049	0.012	0.079	0.46	0.00029	0.00019	0.016
Production	2	2022-05-01	130	47	1.3	0.032	0.17	0.02	0.11	0.62	0.00059	0.00051	0.097
Production	2	2022-06-01	170	52	1	0.023	0.12	0.02	0.12	0.35	0.00046	0.00038	0.047
Production	2	2022-07-01	180	62	1.2	0.028	0.15	0.012	0.14	0.19	0.00032	0.00065	0.048
Production	2	2022-08-01	200	63	1.2	0.029	0.15	0.016	0.15	0.3	0.00032	0.00023	0.044
Production	2	2022-09-01	200	65	1.2	0.027	0.13	0.015	0.15	0.43	0.00032	0.00032	0.041
Production	2	2022-10-01	190	60	0.9	0.02	0.098	0.015	0.13	0.42	0.00018	0.00018	0.029
Production	2	2022-11-01	200	64	1	0.022	0.11	0.016	0.14	0.25	0.00025	0.00026	0.032
Production	2	2022-12-01	200	62	0.98	0.021	0.11	0.018	0.13	0.28	0.0002	0.00014	0.033
Production	2	2023-01-01	200	58	0.93	0.02	0.11	0.02	0.13	0.26	0.00017	0.00018	0.041
Production	2	2023-02-01	210	58	0.89	0.018	0.1	0.025	0.13	0.25	0.00018	0.00019	0.03
Receiving Environment Water Quality Model - KZ-37 - Wet Year 2 Model													
Production	2	2022-03-01	170	37	0.46	0.0084	0.056	0.017	0.083	0.26	0.00027	0.00022	0.015
Production	2	2022-04-01	170	35	0.41	0.0081	0.048	0.012	0.079	0.46	0.00029	0.00019	0.016
Production	2	2022-05-01	99	30	0.66	0.017	0.086	0.017	0.077	0.58	0.00056	0.00049	0.082
Production	2	2022-06-01	120	26	0.35	0.0078	0.044	0.016	0.066	0.36	0.00048	0.0004	0.029
Production	2	2022-07-01	130	34	0.39	0.0092	0.05	0.0066	0.075	0.2	0.00033	0.00066	0.026
Production	2	2022-08-01	150	34	0.38	0.0092	0.047	0.01	0.08	0.32	0.00034	0.00025	0.021
Production	2	2022-09-01	150	38	0.4	0.0092	0.042	0.01	0.086	0.45	0.00034	0.00035	0.021

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Construction	-1	2020-04-01	0.00022	0.0021	0.00015	60	0.00024	0.00042	0.094	0.00011	0.14	0.001	0.0000034
Construction	-1	2020-05-01	0.00011	0.00062	0.000061	20	0.000094	0.00061	0.086	0.000085	0.039	0.00092	0.0000026
Construction	-1	2020-06-01	0.000087	0.00045	0.000034	24	0.000057	0.00032	0.044	0.000041	0.022	0.0005	0.000002
Construction	-1	2020-07-01	0.00011	0.00042	0.000045	25	0.000059	0.0003	0.039	0.00003	0.027	0.00054	0.0000027
Construction	-1	2020-08-01	0.00015	0.00059	0.000063	30	0.000096	0.00027	0.035	0.000075	0.035	0.0007	0.000002
Construction	-1	2020-09-01	0.00019	0.00064	0.000064	33	0.00011	0.00032	0.04	0.000054	0.045	0.00079	0.000002
Construction	-1	2020-10-01	0.00023	0.00091	0.000098	37	0.00015	0.00028	0.052	0.000062	0.064	0.0011	0.0000021
Construction	-1	2020-11-01	0.00041	0.0015	0.00015	49	0.00029	0.00033	0.087	0.00009	0.13	0.0019	0.0000028
Construction	-1	2020-12-01	0.00049	0.0019	0.00018	58	0.00036	0.00039	0.1	0.000095	0.17	0.0023	0.0000032
Construction	-1	2021-01-01	0.00049	0.0022	0.0002	61	0.00039	0.00051	0.24	0.00019	0.19	0.0023	0.0000037
Construction	-1	2021-02-01	0.00048	0.0022	0.00021	65	0.00039	0.00048	0.13	0.00012	0.2	0.0025	0.0000035
Receiving Environment Water Quality Model - KZ-37 - Dry Year 2 Model													**Receiving Environme**
Production	2	2022-03-01	0.00033	0.00099	0.00012	38	0.000056	0.0003	0.19	0.0024	0.056	0.00044	0.0000043
Production	2	2022-04-01	0.00033	0.001	0.000098	38	0.000074	0.00037	0.22	0.0026	0.051	0.00046	0.0000053
Production	2	2022-05-01	0.00061	0.0014	0.00012	18	0.0001	0.001	0.19	0.0014	0.1	0.0015	0.0000075
Production	2	2022-06-01	0.00068	0.0014	0.000095	28	0.00009	0.0007	0.13	0.0011	0.097	0.001	0.000007
Production	2	2022-07-01	0.00079	0.0015	0.00011	29	0.000089	0.00072	0.13	0.0012	0.11	0.0011	0.0000086
Production	2	2022-08-01	0.0008	0.0016	0.00012	34	0.00011	0.00069	0.13	0.0015	0.12	0.0011	0.0000079
Production	2	2022-09-01	0.00074	0.0015	0.00011	33	0.000096	0.00072	0.13	0.0015	0.12	0.0011	0.0000076
Production	2	2022-10-01	0.00052	0.0014	0.00013	32	0.000069	0.00057	0.13	0.0018	0.11	0.00098	0.0000065
Production	2	2022-11-01	0.00069	0.0016	0.00014	35	0.000088	0.00053	0.17	0.0023	0.13	0.001	0.000007
Production	2	2022-12-01	0.00072	0.0016	0.00014	37	0.000093	0.00051	0.19	0.0026	0.13	0.00096	0.0000068
Production	2	2023-01-01	0.00071	0.0016	0.00015	38	0.00011	0.00057	0.34	0.003	0.12	0.00089	0.0000069
Production	2	2023-02-01	0.00068	0.0016	0.00015	38	0.00009	0.0005	0.21	0.0031	0.11	0.00084	0.0000064
Receiving Environment Water Quality Model - KZ-37 - Wet Year 2 Model													**Receiving Environme**
Production	2	2022-03-01	0.00033	0.00099	0.00012	38	0.000056	0.0003	0.19	0.0024	0.056	0.00044	0.0000042
Production	2	2022-04-01	0.00033	0.001	0.000098	38	0.000074	0.00037	0.22	0.0026	0.05	0.00046	0.0000053
Production	2	2022-05-01	0.00032	0.0012	0.00011	14	0.000073	0.00087	0.16	0.00091	0.063	0.0012	0.0000057
Production	2	2022-06-01	0.00023	0.00097	0.000068	25	0.000049	0.00051	0.097	0.0005	0.039	0.00062	0.0000041
Production	2	2022-07-01	0.00027	0.0011	0.000089	26	0.00004	0.00053	0.1	0.00061	0.048	0.00062	0.0000056
Production	2	2022-08-01	0.00027	0.0012	0.0001	31	0.000059	0.00048	0.1	0.00074	0.052	0.00066	0.0000047
Production	2	2022-09-01	0.00027	0.0011	0.000096	31	0.000054	0.00054	0.11	0.00077	0.058	0.00062	0.0000046

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Construction	-1	2020-04-01	0.00065	0.0001	0.0032	0.03	1.3	0.0052	0.00022	0.002	0.00014	60
Construction	-1	2020-05-01	0.00032	0.000037	0.00099	0.011	5.5	0.046	0.00011	0.00058	0.000052	19
Construction	-1	2020-06-01	0.0004	0.000027	0.0011	0.0053	1.5	0.0088	0.000087	0.00043	0.000033	24
Construction	-1	2020-07-01	0.0004	0.000044	0.00097	0.0075	1.7	0.0086	0.00012	0.00042	0.000037	25
Construction	-1	2020-08-01	0.00048	0.000074	0.0012	0.0095	1.4	0.0073	0.00015	0.00059	0.000042	30
Construction	-1	2020-09-01	0.00067	0.0001	0.0015	0.012	1	0.0062	0.00019	0.00064	0.000054	33
Construction	-1	2020-10-01	0.0009	0.00015	0.0017	0.019	1	0.0058	0.00023	0.00088	0.000085	36
Construction	-1	2020-11-01	0.0012	0.00029	0.0025	0.034	0.75	0.0078	0.00042	0.0015	0.00013	49
Construction	-1	2020-12-01	0.0013	0.00035	0.003	0.042	1.1	0.0082	0.00049	0.0019	0.00016	57
Construction	-1	2021-01-01	0.0013	0.00035	0.0033	0.046	1	0.0083	0.00048	0.0021	0.00017	61
Construction	-1	2021-02-01	0.0014	0.00037	0.0035	0.046	0.79	0.0081	0.00048	0.0022	0.00019	66
Receiving Environment Water Quality Model - KZ-37 - Dry Year 2 Model			**nt Water Quality Model - KZ-37 - Dry Year 2 Model**									
Production	2	2022-03-01	0.0017	0.000091	0.0022	0.023	0.47	0.01	0.00033	0.00094	0.000095	42
Production	2	2022-04-01	0.0016	0.000086	0.0021	0.021	1.4	0.013	0.00032	0.00091	0.000091	38
Production	2	2022-05-01	0.0013	0.00019	0.0027	0.016	6.8	0.079	0.00061	0.0013	0.0001	17
Production	2	2022-06-01	0.0014	0.00018	0.0035	0.012	1.9	0.037	0.00068	0.0014	0.000092	28
Production	2	2022-07-01	0.0015	0.0002	0.0037	0.014	2.1	0.042	0.0008	0.0015	0.000099	29
Production	2	2022-08-01	0.0015	0.00023	0.0038	0.014	1.8	0.04	0.0008	0.0016	0.000099	33
Production	2	2022-09-01	0.0016	0.00024	0.0037	0.015	1.3	0.036	0.00074	0.0015	0.0001	34
Production	2	2022-10-01	0.0016	0.00023	0.0027	0.019	1.2	0.025	0.00052	0.0014	0.00011	31
Production	2	2022-11-01	0.0019	0.00024	0.0035	0.024	0.81	0.029	0.0007	0.0016	0.00011	35
Production	2	2022-12-01	0.0019	0.00023	0.0036	0.025	1.1	0.027	0.00071	0.0016	0.00012	36
Production	2	2023-01-01	0.002	0.0002	0.0037	0.028	0.93	0.025	0.0007	0.0015	0.00011	37
Production	2	2023-02-01	0.0021	0.00019	0.0036	0.026	0.51	0.024	0.00068	0.0015	0.00012	38
Receiving Environment Water Quality Model - KZ-37 - Wet Year 2 Model			**nt Water Quality Model - KZ-37 - Wet Year 2 Model**									
Production	2	2022-03-01	0.0017	0.000092	0.0022	0.023	0.46	0.01	0.00033	0.00094	0.000095	42
Production	2	2022-04-01	0.0016	0.000086	0.0021	0.021	1.4	0.012	0.00032	0.0009	0.000091	38
Production	2	2022-05-01	0.0011	0.00012	0.0015	0.014	6.4	0.064	0.00032	0.0012	0.000094	14
Production	2	2022-06-01	0.0009	0.000068	0.0016	0.008	1.9	0.018	0.00023	0.00095	0.000065	25
Production	2	2022-07-01	0.00098	0.000088	0.0015	0.011	2.1	0.019	0.00027	0.0011	0.000077	26
Production	2	2022-08-01	0.001	0.0001	0.0016	0.011	1.8	0.017	0.00027	0.0012	0.000077	30
Production	2	2022-09-01	0.0012	0.00011	0.0018	0.012	1.4	0.015	0.00027	0.0011	0.000081	32

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Construction	-1	2020-04-01	0.00024	0.00042	0.052	0.000094	0.14	0.001	0.000003	0.00061	0.0001	0.0032
Construction	-1	2020-05-01	0.000086	0.00053	0.049	0.000027	0.038	0.00084	0.0000029	0.00031	0.000037	0.00098
Construction	-1	2020-06-01	0.000048	0.00026	0.017	0.000013	0.019	0.0005	0.0000018	0.0004	0.000027	0.0011
Construction	-1	2020-07-01	0.000053	0.00024	0.012	0.000015	0.024	0.00052	0.0000017	0.00042	0.000044	0.00096
Construction	-1	2020-08-01	0.000094	0.00024	0.013	0.000033	0.033	0.00069	0.000002	0.00048	0.000074	0.0012
Construction	-1	2020-09-01	0.00011	0.00023	0.017	0.000028	0.043	0.00077	0.000002	0.00065	0.0001	0.0015
Construction	-1	2020-10-01	0.00014	0.00022	0.015	0.000031	0.061	0.001	0.0000021	0.00087	0.00015	0.0017
Construction	-1	2020-11-01	0.00028	0.00031	0.024	0.000057	0.13	0.0019	0.0000028	0.0012	0.00029	0.0025
Construction	-1	2020-12-01	0.00035	0.00036	0.037	0.000071	0.17	0.0023	0.0000032	0.0013	0.00035	0.003
Construction	-1	2021-01-01	0.00036	0.0004	0.034	0.0001	0.18	0.0023	0.0000033	0.0013	0.00035	0.0033
Construction	-1	2021-02-01	0.00039	0.00044	0.038	0.000085	0.19	0.0024	0.0000035	0.0014	0.00037	0.0035
Receiving Environment Water Quality Model - KZ-37 - Dry Year 2 Model												
Production	2	2022-03-01	0.000052	0.00026	0.092	0.0023	0.064	0.00046	0.0000042	0.0016	0.000091	0.0022
Production	2	2022-04-01	0.000063	0.00038	0.11	0.0026	0.045	0.00043	0.0000045	0.0016	0.000086	0.0021
Production	2	2022-05-01	0.000092	0.00091	0.13	0.0013	0.097	0.0014	0.0000078	0.0013	0.00019	0.0027
Production	2	2022-06-01	0.000078	0.00062	0.089	0.0011	0.093	0.001	0.0000068	0.0014	0.00018	0.0035
Production	2	2022-07-01	0.00008	0.00063	0.087	0.0012	0.11	0.0011	0.0000073	0.0015	0.0002	0.0037
Production	2	2022-08-01	0.0001	0.00064	0.093	0.0015	0.12	0.0011	0.0000078	0.0015	0.00023	0.0038
Production	2	2022-09-01	0.000088	0.0006	0.095	0.0015	0.12	0.0011	0.0000075	0.0016	0.00024	0.0037
Production	2	2022-10-01	0.000059	0.00048	0.088	0.0017	0.11	0.00095	0.0000064	0.0016	0.00023	0.0027
Production	2	2022-11-01	0.000083	0.00049	0.099	0.0023	0.13	0.001	0.000007	0.0018	0.00024	0.0034
Production	2	2022-12-01	0.000085	0.00046	0.11	0.0026	0.12	0.00093	0.0000068	0.0019	0.00023	0.0036
Production	2	2023-01-01	0.000079	0.00044	0.1	0.0029	0.11	0.00082	0.0000064	0.0019	0.0002	0.0037
Production	2	2023-02-01	0.000078	0.00043	0.11	0.003	0.1	0.00079	0.0000064	0.0021	0.00019	0.0036
Receiving Environment Water Quality Model - KZ-37 - Wet Year 2 Model												
Production	2	2022-03-01	0.000052	0.00026	0.092	0.0024	0.064	0.00046	0.0000042	0.0016	0.000092	0.0022
Production	2	2022-04-01	0.000063	0.00038	0.11	0.0026	0.045	0.00043	0.0000045	0.0016	0.000086	0.0021
Production	2	2022-05-01	0.000062	0.00077	0.099	0.00084	0.061	0.0011	0.0000059	0.0011	0.00012	0.0015
Production	2	2022-06-01	0.000037	0.00043	0.046	0.00046	0.036	0.00061	0.0000039	0.0009	0.000068	0.0017
Production	2	2022-07-01	0.000031	0.00043	0.046	0.00058	0.043	0.0006	0.0000041	0.001	0.000088	0.0015
Production	2	2022-08-01	0.000055	0.00043	0.05	0.00069	0.049	0.00064	0.0000045	0.001	0.0001	0.0016
Production	2	2022-09-01	0.000045	0.0004	0.055	0.00073	0.056	0.0006	0.0000045	0.0011	0.00011	0.0018

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Construction	-1	2020-04-01	0.03
Construction	-1	2020-05-01	0.0095
Construction	-1	2020-06-01	0.005
Construction	-1	2020-07-01	0.0067
Construction	-1	2020-08-01	0.0079
Construction	-1	2020-09-01	0.011
Construction	-1	2020-10-01	0.017
Construction	-1	2020-11-01	0.032
Construction	-1	2020-12-01	0.039
Construction	-1	2021-01-01	0.041
Construction	-1	2021-02-01	0.044
Receiving Environment Water Quality Model - KZ-37 - Dry Year 2 Model			
Production	2	2022-03-01	0.028
Production	2	2022-04-01	0.02
Production	2	2022-05-01	0.014
Production	2	2022-06-01	0.011
Production	2	2022-07-01	0.013
Production	2	2022-08-01	0.012
Production	2	2022-09-01	0.014
Production	2	2022-10-01	0.016
Production	2	2022-11-01	0.022
Production	2	2022-12-01	0.023
Production	2	2023-01-01	0.022
Production	2	2023-02-01	0.023
Receiving Environment Water Quality Model - KZ-37 - Wet Year 2 Model			
Production	2	2022-03-01	0.028
Production	2	2022-04-01	0.02
Production	2	2022-05-01	0.012
Production	2	2022-06-01	0.0074
Production	2	2022-07-01	0.0096
Production	2	2022-08-01	0.0091
Production	2	2022-09-01	0.011

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Production	2	2022-10-01	150	40	0.39	0.0081	0.04	0.012	0.088	0.44	0.00021	0.00021	0.018
Production	2	2022-11-01	170	47	0.56	0.012	0.061	0.013	0.1	0.27	0.00027	0.00029	0.02
Production	2	2022-12-01	170	47	0.59	0.012	0.065	0.013	0.099	0.28	0.0002	0.00016	0.023
Production	2	2023-01-01	170	44	0.57	0.012	0.067	0.014	0.094	0.25	0.00018	0.00019	0.032
Production	2	2023-02-01	170	44	0.56	0.011	0.067	0.018	0.097	0.27	0.00018	0.00021	0.021
Receiving Environment Water Quality Model - KZ-37 - Dry Year 9 Model													
Production	9	2029-03-01	310	140	0.84	0.018	0.098	0.022	0.12	0.19	0.00021	0.00017	0.058
Production	9	2029-04-01	280	110	0.72	0.015	0.086	0.016	0.11	0.36	0.00022	0.00015	0.057
Production	9	2029-05-01	510	150	2.4	0.058	0.28	0.029	0.2	0.59	0.00057	0.0005	0.15
Production	9	2029-06-01	520	150	2.2	0.05	0.23	0.031	0.21	0.35	0.00046	0.00039	0.093
Production	9	2029-07-01	560	170	2.4	0.056	0.26	0.023	0.23	0.18	0.00032	0.00066	0.095
Production	9	2029-08-01	620	170	2.3	0.053	0.24	0.025	0.23	0.28	0.00029	0.00021	0.088
Production	9	2029-09-01	610	170	2	0.046	0.21	0.023	0.22	0.39	0.00029	0.00029	0.081
Production	9	2029-10-01	560	160	1.4	0.032	0.14	0.019	0.18	0.36	0.00015	0.00015	0.06
Production	9	2029-11-01	570	180	1.5	0.034	0.16	0.02	0.19	0.19	0.00019	0.0002	0.071
Production	9	2029-12-01	530	190	1.4	0.031	0.15	0.022	0.18	0.23	0.00016	0.00011	0.075
Production	9	2030-01-01	460	180	1.3	0.028	0.15	0.024	0.16	0.2	0.00013	0.00013	0.078
Production	9	2030-02-01	440	190	1.2	0.026	0.14	0.028	0.16	0.18	0.00013	0.00015	0.073
Receiving Environment Water Quality Model - KZ-37 - Wet Year 9 Model													
Production	9	2029-03-01	310	130	0.82	0.017	0.096	0.022	0.12	0.19	0.00021	0.00017	0.057
Production	9	2029-04-01	280	110	0.71	0.015	0.084	0.016	0.11	0.36	0.00022	0.00015	0.057
Production	9	2029-05-01	300	130	1.1	0.027	0.13	0.019	0.11	0.5	0.0005	0.00044	0.11
Production	9	2029-06-01	240	93	0.69	0.016	0.072	0.018	0.092	0.35	0.00046	0.00039	0.048
Production	9	2029-07-01	280	120	0.79	0.019	0.084	0.0098	0.11	0.19	0.00033	0.00066	0.05
Production	9	2029-08-01	320	120	0.74	0.017	0.076	0.013	0.11	0.31	0.00033	0.00024	0.046
Production	9	2029-09-01	350	130	0.74	0.017	0.07	0.013	0.11	0.44	0.00033	0.00034	0.046
Production	9	2029-10-01	380	130	0.7	0.015	0.064	0.015	0.12	0.45	0.0002	0.0002	0.042
Production	9	2029-11-01	440	160	0.9	0.02	0.091	0.016	0.14	0.24	0.00024	0.00025	0.054
Production	9	2029-12-01	420	170	0.9	0.02	0.097	0.017	0.13	0.24	0.00017	0.00013	0.059
Production	9	2030-01-01	370	160	0.85	0.018	0.097	0.017	0.12	0.21	0.00014	0.00015	0.064
Production	9	2030-02-01	350	160	0.81	0.017	0.094	0.021	0.12	0.21	0.00014	0.00016	0.057

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Production	2	2022-10-01	0.00023	0.0011	0.00012	32	0.000044	0.00045	0.12	0.00098	0.063	0.00063	0.0000043
Production	2	2022-11-01	0.00037	0.0013	0.00013	35	0.000062	0.00043	0.17	0.0015	0.091	0.00072	0.0000051
Production	2	2022-12-01	0.00043	0.0012	0.00013	35	0.00007	0.0004	0.18	0.0018	0.091	0.0007	0.000005
Production	2	2023-01-01	0.00044	0.0012	0.00014	36	0.000089	0.00048	0.34	0.0021	0.095	0.00067	0.0000052
Production	2	2023-02-01	0.00043	0.0011	0.00013	36	0.000069	0.0004	0.2	0.0022	0.081	0.00062	0.0000048
Receiving Environment Water Quality Model - KZ-37 - Dry Year 9 Model												**Receiving Environment Wa**	
Production	9	2029-03-01	0.0007	0.0021	0.00017	32	0.00046	0.0037	0.21	0.0031	0.28	0.0032	0.000017
Production	9	2029-04-01	0.00065	0.002	0.00016	32	0.00036	0.0042	0.22	0.0034	0.2	0.0023	0.000014
Production	9	2029-05-01	0.0014	0.0021	0.00015	24	0.0014	0.0033	0.2	0.0017	0.82	0.01	0.000043
Production	9	2029-06-01	0.0015	0.002	0.00012	36	0.0012	0.0025	0.15	0.0014	0.75	0.0089	0.00004
Production	9	2029-07-01	0.0017	0.0021	0.00014	37	0.0014	0.0027	0.15	0.0016	0.83	0.0098	0.000045
Production	9	2029-08-01	0.0016	0.0022	0.00015	39	0.0015	0.0028	0.15	0.0019	0.92	0.011	0.000048
Production	9	2029-09-01	0.0014	0.0021	0.00014	38	0.0015	0.0028	0.15	0.0019	0.92	0.011	0.000048
Production	9	2029-10-01	0.00092	0.0019	0.00015	32	0.0014	0.0027	0.15	0.0021	0.84	0.01	0.000043
Production	9	2029-11-01	0.0011	0.0022	0.00017	32	0.0014	0.0033	0.18	0.0027	0.84	0.0099	0.000044
Production	9	2029-12-01	0.0011	0.0023	0.00017	34	0.0012	0.0037	0.19	0.003	0.75	0.0088	0.000039
Production	9	2030-01-01	0.0011	0.0023	0.00018	34	0.001	0.0041	0.29	0.0033	0.6	0.007	0.000032
Production	9	2030-02-01	0.001	0.0024	0.00019	35	0.0009	0.0045	0.22	0.0034	0.54	0.0062	0.000029
Receiving Environment Water Quality Model - KZ-37 - Wet Year 9 Model												**Receiving Environme**	
Production	9	2029-03-01	0.00069	0.002	0.00017	32	0.00045	0.0037	0.2	0.0031	0.28	0.0031	0.000017
Production	9	2029-04-01	0.00065	0.002	0.00016	32	0.00036	0.0042	0.22	0.0034	0.2	0.0023	0.000014
Production	9	2029-05-01	0.00061	0.0017	0.00012	16	0.00077	0.0026	0.18	0.00098	0.46	0.0059	0.000026
Production	9	2029-06-01	0.00046	0.0012	0.000081	27	0.00046	0.0015	0.12	0.0006	0.27	0.0035	0.000016
Production	9	2029-07-01	0.00054	0.0013	0.0001	29	0.00055	0.0018	0.13	0.00074	0.34	0.0042	0.00002
Production	9	2029-08-01	0.00051	0.0015	0.00012	33	0.00066	0.0019	0.13	0.00089	0.39	0.0048	0.000022
Production	9	2029-09-01	0.00051	0.0014	0.00011	33	0.00071	0.002	0.13	0.00095	0.43	0.0052	0.000023
Production	9	2029-10-01	0.00045	0.0015	0.00014	34	0.00079	0.002	0.14	0.0013	0.48	0.0059	0.000026
Production	9	2029-11-01	0.00068	0.0019	0.00016	33	0.00096	0.0026	0.19	0.0019	0.59	0.007	0.000031
Production	9	2029-12-01	0.00075	0.002	0.00016	33	0.00091	0.003	0.2	0.0023	0.56	0.0065	0.000029
Production	9	2030-01-01	0.00072	0.0019	0.00017	32	0.00076	0.0032	0.31	0.0026	0.46	0.0053	0.000025
Production	9	2030-02-01	0.00069	0.002	0.00017	32	0.00067	0.0034	0.21	0.0026	0.4	0.0047	0.000022

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Production	2	2022-10-01	0.0013	0.00013	0.0016	0.016	1.3	0.012	0.00023	0.0011	0.000096	31
Production	2	2022-11-01	0.0016	0.00016	0.0022	0.022	0.87	0.016	0.00038	0.0013	0.000099	35
Production	2	2022-12-01	0.0016	0.00016	0.0024	0.024	1.1	0.016	0.00042	0.0012	0.0001	35
Production	2	2023-01-01	0.0016	0.00014	0.0025	0.026	0.86	0.016	0.00043	0.0011	0.000091	35
Production	2	2023-02-01	0.0017	0.00013	0.0025	0.024	0.5	0.015	0.00043	0.0011	0.000098	36
Receiving Environment Water Quality Model - KZ-37 - Dry Year 9 Model			**ıter Quality Model - KZ-37 - Dry Year 9 Model**									
Production	9	2029-03-01	0.0022	0.00023	0.0036	0.028	0.42	0.055	0.00071	0.002	0.00016	35
Production	9	2029-04-01	0.002	0.00018	0.0033	0.028	1.1	0.055	0.00064	0.0019	0.00016	33
Production	9	2029-05-01	0.0019	0.00058	0.006	0.019	6.8	0.13	0.0014	0.0021	0.00014	24
Production	9	2029-06-01	0.002	0.00052	0.0071	0.015	1.9	0.083	0.0015	0.002	0.00012	36
Production	9	2029-07-01	0.0021	0.00057	0.0076	0.017	2.1	0.09	0.0017	0.0021	0.00013	38
Production	9	2029-08-01	0.0021	0.00064	0.0071	0.018	1.7	0.086	0.0016	0.0022	0.00013	39
Production	9	2029-09-01	0.0021	0.00064	0.0064	0.018	1.2	0.077	0.0014	0.0021	0.00013	38
Production	9	2029-10-01	0.0019	0.0006	0.0041	0.02	1.1	0.057	0.00092	0.0019	0.00014	31
Production	9	2029-11-01	0.0022	0.0006	0.0051	0.025	0.68	0.068	0.0011	0.0022	0.00015	33
Production	9	2029-12-01	0.0022	0.00053	0.0052	0.027	0.91	0.07	0.0011	0.0023	0.00016	34
Production	9	2030-01-01	0.0023	0.00043	0.0051	0.03	0.8	0.067	0.0011	0.0022	0.00016	34
Production	9	2030-02-01	0.0024	0.00039	0.0049	0.03	0.46	0.067	0.001	0.0023	0.00017	35
Receiving Environment Water Quality Model - KZ-37 - Wet Year 9 Model			**nt Water Quality Model - KZ-37 - Wet Year 9 Model**									
Production	9	2029-03-01	0.0021	0.00023	0.0035	0.028	0.42	0.054	0.0007	0.002	0.00015	35
Production	9	2029-04-01	0.002	0.00018	0.0033	0.028	1.1	0.055	0.00064	0.0019	0.00016	33
Production	9	2029-05-01	0.0013	0.00032	0.0027	0.015	5.7	0.095	0.00061	0.0016	0.00011	15
Production	9	2029-06-01	0.0011	0.00019	0.0026	0.0093	1.8	0.039	0.00046	0.0012	0.000078	27
Production	9	2029-07-01	0.0012	0.00024	0.0027	0.012	2.1	0.045	0.00054	0.0013	0.000092	29
Production	9	2029-08-01	0.0013	0.00028	0.0026	0.013	1.7	0.043	0.00051	0.0015	0.000094	32
Production	9	2029-09-01	0.0014	0.0003	0.0027	0.014	1.3	0.041	0.00051	0.0014	0.000098	33
Production	9	2029-10-01	0.0016	0.00034	0.0024	0.018	1.3	0.038	0.00045	0.0015	0.00012	33
Production	9	2029-11-01	0.0019	0.00042	0.0033	0.024	0.79	0.051	0.00069	0.0019	0.00013	33
Production	9	2029-12-01	0.0019	0.0004	0.0035	0.026	0.93	0.054	0.00074	0.0019	0.00014	32
Production	9	2030-01-01	0.0019	0.00032	0.0035	0.028	0.77	0.052	0.00071	0.0019	0.00013	31
Production	9	2030-02-01	0.002	0.00029	0.0035	0.027	0.44	0.052	0.00069	0.0019	0.00014	32

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Production	2	2022-10-01	0.000032	0.00034	0.059	0.00094	0.057	0.00059	0.0000043	0.0012	0.00013	0.0016
Production	2	2022-11-01	0.000056	0.00037	0.077	0.0015	0.087	0.00071	0.0000051	0.0015	0.00016	0.0022
Production	2	2022-12-01	0.00006	0.00034	0.089	0.0018	0.088	0.00067	0.000005	0.0016	0.00016	0.0024
Production	2	2023-01-01	0.000056	0.00033	0.078	0.002	0.078	0.00059	0.0000048	0.0015	0.00014	0.0025
Production	2	2023-02-01	0.000056	0.00033	0.083	0.0022	0.075	0.00058	0.0000047	0.0017	0.00013	0.0025
Receiving Environment Water Quality Model - KZ-37 - Dry Year 9 Model												
Production	9	2029-03-01	0.00046	0.0037	0.14	0.0031	0.29	0.0032	0.000017	0.0021	0.00023	0.0036
Production	9	2029-04-01	0.00035	0.0042	0.15	0.0033	0.2	0.0023	0.000014	0.002	0.00018	0.0033
Production	9	2029-05-01	0.0014	0.0032	0.16	0.0016	0.82	0.01	0.000044	0.0019	0.00058	0.006
Production	9	2029-06-01	0.0012	0.0024	0.11	0.0014	0.74	0.0089	0.00004	0.002	0.00052	0.0071
Production	9	2029-07-01	0.0014	0.0026	0.11	0.0015	0.82	0.0098	0.000044	0.0021	0.00057	0.0075
Production	9	2029-08-01	0.0015	0.0028	0.12	0.0018	0.92	0.011	0.000048	0.0021	0.00064	0.0071
Production	9	2029-09-01	0.0015	0.0027	0.12	0.0019	0.92	0.011	0.000048	0.0021	0.00064	0.0064
Production	9	2029-10-01	0.0014	0.0026	0.12	0.0021	0.84	0.01	0.000043	0.0019	0.0006	0.0041
Production	9	2029-11-01	0.0014	0.0032	0.13	0.0027	0.84	0.0099	0.000044	0.0022	0.0006	0.0051
Production	9	2029-12-01	0.0012	0.0037	0.15	0.003	0.74	0.0087	0.000039	0.0023	0.00053	0.0052
Production	9	2030-01-01	0.00098	0.004	0.14	0.0032	0.59	0.0069	0.000032	0.0022	0.00043	0.005
Production	9	2030-02-01	0.00089	0.0044	0.15	0.0034	0.53	0.0062	0.000029	0.0024	0.00039	0.005
Receiving Environment Water Quality Model - KZ-37 - Wet Year 9 Model												
Production	9	2029-03-01	0.00045	0.0037	0.14	0.0031	0.28	0.0031	0.000017	0.0021	0.00023	0.0035
Production	9	2029-04-01	0.00035	0.0042	0.15	0.0034	0.2	0.0023	0.000014	0.002	0.00018	0.0033
Production	9	2029-05-01	0.00076	0.0025	0.14	0.00092	0.45	0.0059	0.000026	0.0013	0.00032	0.0027
Production	9	2029-06-01	0.00045	0.0015	0.078	0.00055	0.27	0.0035	0.000016	0.0011	0.00019	0.0026
Production	9	2029-07-01	0.00055	0.0017	0.086	0.00071	0.33	0.0041	0.000019	0.0012	0.00024	0.0026
Production	9	2029-08-01	0.00066	0.0018	0.094	0.00084	0.39	0.0048	0.000022	0.0013	0.00028	0.0025
Production	9	2029-09-01	0.00071	0.0018	0.098	0.00091	0.43	0.0052	0.000023	0.0014	0.0003	0.0027
Production	9	2029-10-01	0.00078	0.0019	0.097	0.0012	0.48	0.0058	0.000026	0.0015	0.00034	0.0024
Production	9	2029-11-01	0.00096	0.0026	0.12	0.0019	0.59	0.007	0.000031	0.0018	0.00042	0.0033
Production	9	2029-12-01	0.00091	0.0029	0.13	0.0023	0.56	0.0065	0.000029	0.0019	0.0004	0.0035
Production	9	2030-01-01	0.00073	0.0031	0.12	0.0025	0.45	0.0052	0.000024	0.0019	0.00032	0.0035
Production	9	2030-02-01	0.00066	0.0034	0.13	0.0026	0.4	0.0046	0.000022	0.002	0.00029	0.0035

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Production	2	2022-10-01	0.014
Production	2	2022-11-01	0.019
Production	2	2022-12-01	0.02
Production	2	2023-01-01	0.02
Production	2	2023-02-01	0.02
Receiving Environment Water Quality Model - KZ-37 - Dry Year 9 Model			
Production	9	2029-03-01	0.031
Production	9	2029-04-01	0.027
Production	9	2029-05-01	0.018
Production	9	2029-06-01	0.014
Production	9	2029-07-01	0.016
Production	9	2029-08-01	0.016
Production	9	2029-09-01	0.017
Production	9	2029-10-01	0.019
Production	9	2029-11-01	0.024
Production	9	2029-12-01	0.026
Production	9	2030-01-01	0.026
Production	9	2030-02-01	0.028
Receiving Environment Water Quality Model - KZ-37 - Wet Year 9 Model			
Production	9	2029-03-01	0.031
Production	9	2029-04-01	0.027
Production	9	2029-05-01	0.014
Production	9	2029-06-01	0.0088
Production	9	2029-07-01	0.011
Production	9	2029-08-01	0.011
Production	9	2029-09-01	0.013
Production	9	2029-10-01	0.016
Production	9	2029-11-01	0.022
Production	9	2029-12-01	0.023
Production	9	2030-01-01	0.023
Production	9	2030-02-01	0.024

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Receiving Environment Water Quality Model - KZ-37 - Dry Year 12 Model													
Active Closure	12	2032-03-01	880	110	2	0.045	0.48	0.029	0.15	0.22	0.00025	0.0002	0.03
Active Closure	12	2032-04-01	940	100	1.9	0.042	0.46	0.023	0.15	0.42	0.00025	0.00018	0.031
Active Closure	12	2032-05-01	370	86	2.9	0.068	0.53	0.034	0.14	0.79	0.00069	0.0006	0.11
Active Closure	12	2032-06-01	380	65	2.1	0.048	0.37	0.032	0.13	0.46	0.0006	0.0005	0.045
Active Closure	12	2032-07-01	480	84	2.6	0.061	0.49	0.025	0.16	0.23	0.00036	0.00076	0.042
Active Closure	12	2032-08-01	610	93	2.8	0.065	0.56	0.028	0.17	0.36	0.00035	0.00025	0.037
Active Closure	12	2032-09-01	650	95	2.7	0.061	0.55	0.025	0.16	0.5	0.00035	0.00036	0.036
Active Closure	12	2032-10-01	730	94	2.4	0.053	0.53	0.022	0.15	0.45	0.00018	0.00018	0.029
Active Closure	12	2032-11-01	940	110	2.8	0.064	0.64	0.026	0.18	0.23	0.00023	0.00025	0.032
Active Closure	12	2032-12-01	1100	110	2.9	0.064	0.66	0.029	0.18	0.27	0.00019	0.00013	0.036
Active Closure	12	2033-01-01	1100	110	2.7	0.061	0.64	0.031	0.18	0.24	0.00016	0.00016	0.044
Active Closure	12	2033-02-01	1200	110	2.6	0.058	0.62	0.037	0.18	0.22	0.00016	0.00018	0.036
Receiving Environment Water Quality Model - KZ-37 - Wet Year 12 Model													
Active Closure	12	2032-03-01	890	110	1.7	0.037	0.4	0.028	0.14	0.22	0.00025	0.0002	0.03
Active Closure	12	2032-04-01	940	100	1.6	0.035	0.38	0.022	0.14	0.42	0.00025	0.00018	0.031
Active Closure	12	2032-05-01	220	120	2.1	0.049	0.45	0.023	0.11	0.62	0.00053	0.00047	0.093
Active Closure	12	2032-06-01	210	45	0.98	0.022	0.21	0.021	0.084	0.44	0.00057	0.00047	0.031
Active Closure	12	2032-07-01	260	61	1	0.024	0.22	0.011	0.089	0.25	0.00035	0.00073	0.028
Active Closure	12	2032-08-01	330	65	1.1	0.027	0.25	0.015	0.095	0.4	0.00038	0.00028	0.024
Active Closure	12	2032-09-01	380	66	1.1	0.026	0.24	0.015	0.099	0.56	0.00039	0.0004	0.024
Active Closure	12	2032-10-01	500	69	1.1	0.024	0.25	0.017	0.1	0.54	0.00022	0.00022	0.021
Active Closure	12	2032-11-01	780	97	1.7	0.038	0.4	0.02	0.13	0.26	0.00026	0.00027	0.026
Active Closure	12	2032-12-01	990	110	2	0.044	0.49	0.023	0.15	0.26	0.00018	0.00013	0.033
Active Closure	12	2033-01-01	1100	110	2	0.045	0.5	0.025	0.15	0.22	0.00014	0.00015	0.042
Active Closure	12	2033-02-01	1200	110	2	0.044	0.5	0.031	0.16	0.21	0.00015	0.00016	0.034
Receiving Environment Water Quality Model - KZ-37 - Dry Year 20 Model													
Transitional Closure	20	2040-03-01	170	29	1.9	0.041	0.38	0.033	0.093	0.28	0.00032	0.00026	0.017
Transitional Closure	20	2040-04-01	180	26	2	0.044	0.42	0.024	0.091	0.53	0.00031	0.00023	0.019
Transitional Closure	20	2040-05-01	82	19	1.2	0.03	0.19	0.027	0.073	0.7	0.00061	0.00053	0.086
Transitional Closure	20	2040-06-01	140	30	1.1	0.024	0.16	0.029	0.095	0.44	0.00057	0.00047	0.036

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Receiving Environment Water Quality Model - KZ-37 - Dry Year 12 Model													**Receiving Environme**
Active Closure	12	2032-03-01	0.00073	0.002	0.00016	40	0.0018	0.0049	0.18	0.00047	1.5	0.019	0.00004
Active Closure	12	2032-04-01	0.0007	0.0019	0.00015	41	0.002	0.0058	0.2	0.00055	1.6	0.02	0.000044
Active Closure	12	2032-05-01	0.0011	0.0024	0.00012	26	0.00067	0.0028	0.21	0.00037	0.53	0.0072	0.000021
Active Closure	12	2032-06-01	0.0012	0.0023	0.000077	41	0.0006	0.0017	0.12	0.00031	0.48	0.0061	0.000018
Active Closure	12	2032-07-01	0.0014	0.0026	0.0001	42	0.00079	0.002	0.11	0.00034	0.65	0.0082	0.000025
Active Closure	12	2032-08-01	0.0013	0.0026	0.00011	44	0.0011	0.0022	0.11	0.00048	0.9	0.011	0.000029
Active Closure	12	2032-09-01	0.0012	0.0023	0.00011	43	0.0012	0.0022	0.11	0.00048	0.99	0.012	0.00003
Active Closure	12	2032-10-01	0.00079	0.0017	0.00013	39	0.0014	0.0023	0.13	0.00051	1.2	0.015	0.000033
Active Closure	12	2032-11-01	0.001	0.0022	0.00014	40	0.0019	0.0031	0.16	0.00061	1.6	0.02	0.000044
Active Closure	12	2032-12-01	0.0011	0.0023	0.00015	43	0.0022	0.0039	0.17	0.00062	1.8	0.023	0.00005
Active Closure	12	2033-01-01	0.0011	0.0024	0.00017	43	0.0024	0.0048	0.3	0.00075	2	0.025	0.000053
Active Closure	12	2033-02-01	0.001	0.0024	0.00018	44	0.0026	0.0055	0.19	0.00064	2.1	0.026	0.000055
Receiving Environment Water Quality Model - KZ-37 - Wet Year 12 Model													**Receiving Environmer**
Active Closure	12	2032-03-01	0.00069	0.0019	0.00015	40	0.0019	0.0048	0.18	0.00048	1.5	0.019	0.00004
Active Closure	12	2032-04-01	0.00067	0.0019	0.00015	41	0.0021	0.0057	0.2	0.00056	1.7	0.021	0.000044
Active Closure	12	2032-05-01	0.00058	0.002	0.00013	18	0.00031	0.0025	0.21	0.0004	0.24	0.0035	0.000012
Active Closure	12	2032-06-01	0.0004	0.001	0.000055	32	0.00024	0.001	0.11	0.00016	0.18	0.0025	0.0000086
Active Closure	12	2032-07-01	0.00045	0.0011	0.000082	35	0.00033	0.0012	0.11	0.0002	0.27	0.0036	0.000013
Active Closure	12	2032-08-01	0.00044	0.0012	0.000088	39	0.00049	0.0012	0.099	0.00029	0.38	0.005	0.000014
Active Closure	12	2032-09-01	0.00044	0.0011	0.000088	41	0.00059	0.0013	0.11	0.00029	0.47	0.006	0.000015
Active Closure	12	2032-10-01	0.00037	0.001	0.00012	42	0.00089	0.0014	0.12	0.00038	0.73	0.0093	0.000021
Active Closure	12	2032-11-01	0.00064	0.0016	0.00013	39	0.0016	0.0022	0.16	0.00056	1.3	0.017	0.000036
Active Closure	12	2032-12-01	0.00079	0.0019	0.00013	39	0.0021	0.003	0.16	0.00063	1.8	0.022	0.000046
Active Closure	12	2033-01-01	0.00082	0.0021	0.00016	39	0.0024	0.0038	0.29	0.00077	2	0.025	0.000052
Active Closure	12	2033-02-01	0.00082	0.0021	0.00016	39	0.0026	0.0044	0.19	0.00068	2.2	0.027	0.000055
Receiving Environment Water Quality Model - KZ-37 - Dry Year 20 Model													**Receiving Environme**
Transitional Closure	20	2040-03-01	0.00064	0.0015	0.00017	45	0.00014	0.0078	0.17	0.000065	0.062	0.00067	0.0000049
Transitional Closure	20	2040-04-01	0.00061	0.0015	0.00018	46	0.00019	0.0098	0.19	0.00016	0.062	0.0008	0.0000063
Transitional Closure	20	2040-05-01	0.00083	0.0015	0.000076	22	0.000086	0.0022	0.14	0.00015	0.033	0.00099	0.0000063
Transitional Closure	20	2040-06-01	0.001	0.0019	0.000057	38	0.000076	0.0015	0.09	0.0001	0.034	0.00062	0.0000066

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Receiving Environment Water Quality Model - KZ-37 - Dry Year 12 Model			**nt Water Quality Model - KZ-37 - Dry Year 12 Model**									
Active Closure	12	2032-03-01	0.0016	0.0002	0.0029	0.023	0.19	0.026	0.00073	0.0019	0.00014	43
Active Closure	12	2032-04-01	0.0014	0.00022	0.0029	0.023	0.97	0.028	0.00069	0.0018	0.00015	41
Active Closure	12	2032-05-01	0.0012	0.000086	0.003	0.016	7.8	0.086	0.0011	0.0023	0.0001	26
Active Closure	12	2032-06-01	0.0012	0.000081	0.0037	0.0097	2.2	0.032	0.0012	0.0023	0.000073	41
Active Closure	12	2032-07-01	0.0013	0.00011	0.0039	0.012	2.3	0.035	0.0014	0.0026	0.000085	43
Active Closure	12	2032-08-01	0.0013	0.00014	0.0037	0.012	1.8	0.034	0.0013	0.0026	0.000086	44
Active Closure	12	2032-09-01	0.0014	0.00015	0.0036	0.014	1.3	0.03	0.0012	0.0023	0.000091	44
Active Closure	12	2032-10-01	0.0014	0.00016	0.0027	0.018	1.1	0.025	0.00079	0.0017	0.00011	38
Active Closure	12	2032-11-01	0.0016	0.00022	0.0033	0.021	0.53	0.03	0.001	0.0022	0.00011	40
Active Closure	12	2032-12-01	0.0016	0.00025	0.0035	0.023	0.81	0.03	0.0011	0.0023	0.00013	42
Active Closure	12	2033-01-01	0.0016	0.00027	0.0036	0.026	0.66	0.03	0.001	0.0023	0.00013	42
Active Closure	12	2033-02-01	0.0016	0.00028	0.0037	0.025	0.22	0.029	0.001	0.0023	0.00015	44
Receiving Environment Water Quality Model - KZ-37 - Wet Year 12 Model			**nt Water Quality Model - KZ-37 - Wet Year 12 Model**									
Active Closure	12	2032-03-01	0.0016	0.00021	0.0028	0.023	0.2	0.026	0.00069	0.0019	0.00014	43
Active Closure	12	2032-04-01	0.0014	0.00022	0.0028	0.023	0.98	0.028	0.00066	0.0018	0.00015	41
Active Closure	12	2032-05-01	0.0012	0.000041	0.0015	0.016	6	0.073	0.00058	0.0019	0.00011	17
Active Closure	12	2032-06-01	0.00076	0.000029	0.0017	0.007	2.1	0.019	0.0004	0.00099	0.000051	32
Active Closure	12	2032-07-01	0.00082	0.000043	0.0016	0.011	2.3	0.02	0.00045	0.0011	0.000063	36
Active Closure	12	2032-08-01	0.00083	0.000056	0.0017	0.0095	2	0.02	0.00045	0.0012	0.000059	39
Active Closure	12	2032-09-01	0.00098	0.000067	0.002	0.012	1.4	0.017	0.00043	0.0011	0.000066	41
Active Closure	12	2032-10-01	0.0012	0.000099	0.0019	0.018	1.3	0.016	0.00037	0.001	0.000094	41
Active Closure	12	2032-11-01	0.0014	0.00018	0.0025	0.02	0.59	0.023	0.00065	0.0016	0.000094	40
Active Closure	12	2032-12-01	0.0014	0.00023	0.0027	0.021	0.79	0.027	0.00078	0.0019	0.00011	39
Active Closure	12	2033-01-01	0.0015	0.00026	0.0029	0.024	0.59	0.028	0.00081	0.002	0.00012	38
Active Closure	12	2033-02-01	0.0015	0.00028	0.003	0.022	0.21	0.028	0.00082	0.002	0.00013	39
Receiving Environment Water Quality Model - KZ-37 - Dry Year 20 Model			**nt Water Quality Model - KZ-37 - Dry Year 20 Model**									
Transitional Closure	20	2040-03-01	0.0014	0.000017	0.0032	0.027	0.24	0.012	0.00065	0.0014	0.00015	49
Transitional Closure	20	2040-04-01	0.0012	0.000017	0.0032	0.029	1.2	0.015	0.00059	0.0013	0.00017	46
Transitional Closure	20	2040-05-01	0.0007	0.000019	0.0024	0.011	6.9	0.065	0.00083	0.0015	0.000061	21
Transitional Closure	20	2040-06-01	0.00094	0.000022	0.0034	0.0076	2.1	0.023	0.001	0.0019	0.000053	37

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Receiving Environment Water Quality Model - KZ-37 - Dry Year 12 Model												
Active Closure	12	2032-03-01	0.0018	0.0048	0.11	0.00044	1.5	0.019	0.00004	0.0015	0.0002	0.0029
Active Closure	12	2032-04-01	0.002	0.0059	0.12	0.00051	1.6	0.02	0.000043	0.0013	0.00022	0.0029
Active Closure	12	2032-05-01	0.00065	0.0027	0.13	0.00025	0.52	0.0071	0.000021	0.0012	0.000086	0.0029
Active Closure	12	2032-06-01	0.00058	0.0016	0.056	0.00024	0.47	0.0061	0.000018	0.0012	0.000081	0.0037
Active Closure	12	2032-07-01	0.00078	0.0018	0.056	0.00031	0.64	0.0082	0.000023	0.0013	0.00011	0.0039
Active Closure	12	2032-08-01	0.0011	0.0021	0.068	0.00042	0.9	0.011	0.000029	0.0013	0.00014	0.0037
Active Closure	12	2032-09-01	0.0012	0.0021	0.073	0.00043	0.98	0.012	0.00003	0.0013	0.00015	0.0036
Active Closure	12	2032-10-01	0.0014	0.0022	0.07	0.00047	1.2	0.015	0.000033	0.0013	0.00016	0.0027
Active Closure	12	2032-11-01	0.0019	0.0031	0.086	0.00057	1.6	0.02	0.000044	0.0015	0.00022	0.0033
Active Closure	12	2032-12-01	0.0022	0.0038	0.1	0.0006	1.8	0.023	0.00005	0.0016	0.00025	0.0035
Active Closure	12	2033-01-01	0.0024	0.0046	0.098	0.00065	2	0.025	0.000053	0.0016	0.00027	0.0035
Active Closure	12	2033-02-01	0.0025	0.0055	0.11	0.00061	2.1	0.026	0.000055	0.0016	0.00028	0.0037
Receiving Environment Water Quality Model - KZ-37 - Wet Year 12 Model												
Active Closure	12	2032-03-01	0.0019	0.0048	0.11	0.00045	1.5	0.019	0.00004	0.0015	0.00021	0.0028
Active Closure	12	2032-04-01	0.002	0.0058	0.12	0.00052	1.7	0.021	0.000044	0.0013	0.00022	0.0028
Active Closure	12	2032-05-01	0.0003	0.0024	0.15	0.0003	0.24	0.0034	0.000012	0.0011	0.000041	0.0015
Active Closure	12	2032-06-01	0.00022	0.00092	0.046	0.0001	0.18	0.0025	0.0000086	0.00075	0.000029	0.0018
Active Closure	12	2032-07-01	0.00032	0.001	0.047	0.00016	0.26	0.0036	0.00001	0.00085	0.000042	0.0016
Active Closure	12	2032-08-01	0.00049	0.0012	0.052	0.00023	0.38	0.005	0.000014	0.00083	0.000056	0.0017
Active Closure	12	2032-09-01	0.00058	0.0011	0.057	0.00024	0.47	0.006	0.000015	0.00094	0.000067	0.0019
Active Closure	12	2032-10-01	0.00087	0.0012	0.051	0.00032	0.73	0.0092	0.000021	0.0012	0.000099	0.0019
Active Closure	12	2032-11-01	0.0016	0.0021	0.073	0.00051	1.3	0.017	0.000036	0.0014	0.00018	0.0025
Active Closure	12	2032-12-01	0.0021	0.003	0.095	0.00061	1.8	0.022	0.000046	0.0014	0.00023	0.0027
Active Closure	12	2033-01-01	0.0024	0.0037	0.095	0.00068	2	0.025	0.000052	0.0014	0.00026	0.0029
Active Closure	12	2033-02-01	0.0026	0.0044	0.1	0.00064	2.2	0.027	0.000055	0.0015	0.00028	0.003
Receiving Environment Water Quality Model - KZ-37 - Dry Year 20 Model												
Transitional Closure	20	2040-03-01	0.00014	0.0078	0.083	0.000034	0.069	0.00068	0.0000049	0.0013	0.000017	0.0032
Transitional Closure	20	2040-04-01	0.00018	0.0098	0.099	0.00011	0.057	0.00078	0.0000053	0.0011	0.000017	0.0031
Transitional Closure	20	2040-05-01	0.000073	0.0021	0.075	0.000042	0.03	0.00088	0.0000066	0.00069	0.000019	0.0023
Transitional Closure	20	2040-06-01	0.000058	0.0014	0.031	0.000039	0.029	0.00061	0.0000066	0.00094	0.000022	0.0034

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Receiving Environment Water Quality Model - KZ-37 - Dry Year 12 Model			
Active Closure	12	2032-03-01	0.027
Active Closure	12	2032-04-01	0.022
Active Closure	12	2032-05-01	0.014
Active Closure	12	2032-06-01	0.0089
Active Closure	12	2032-07-01	0.011
Active Closure	12	2032-08-01	0.01
Active Closure	12	2032-09-01	0.012
Active Closure	12	2032-10-01	0.015
Active Closure	12	2032-11-01	0.019
Active Closure	12	2032-12-01	0.02
Active Closure	12	2033-01-01	0.021
Active Closure	12	2033-02-01	0.022
Receiving Environment Water Quality Model - KZ-37 - Wet Year 12 Model			
Active Closure	12	2032-03-01	0.027
Active Closure	12	2032-04-01	0.021
Active Closure	12	2032-05-01	0.014
Active Closure	12	2032-06-01	0.0062
Active Closure	12	2032-07-01	0.0085
Active Closure	12	2032-08-01	0.0068
Active Closure	12	2032-09-01	0.0098
Active Closure	12	2032-10-01	0.014
Active Closure	12	2032-11-01	0.018
Active Closure	12	2032-12-01	0.018
Active Closure	12	2033-01-01	0.019
Active Closure	12	2033-02-01	0.02
Receiving Environment Water Quality Model - KZ-37 - Dry Year 20 Model			
Transitional Closure	20	2040-03-01	0.031
Transitional Closure	20	2040-04-01	0.028
Transitional Closure	20	2040-05-01	0.0091
Transitional Closure	20	2040-06-01	0.0068

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Transitional Closure	20	2040-07-01	150	37	1.3	0.03	0.19	0.022	0.11	0.23	0.00035	0.00076	0.032
Transitional Closure	20	2040-08-01	160	33	1.3	0.031	0.2	0.025	0.1	0.38	0.00036	0.00026	0.026
Transitional Closure	20	2040-09-01	160	33	1.2	0.027	0.17	0.022	0.097	0.53	0.00037	0.00037	0.024
Transitional Closure	20	2040-10-01	140	29	1	0.022	0.16	0.02	0.08	0.51	0.0002	0.0002	0.016
Transitional Closure	20	2040-11-01	150	32	1.4	0.031	0.24	0.024	0.093	0.28	0.00028	0.0003	0.018
Transitional Closure	20	2040-12-01	170	34	1.7	0.036	0.3	0.029	0.097	0.34	0.00024	0.00016	0.023
Transitional Closure	20	2041-01-01	180	34	1.8	0.039	0.34	0.032	0.099	0.31	0.0002	0.00021	0.034
Transitional Closure	20	2041-02-01	180	35	2	0.042	0.37	0.039	0.11	0.3	0.00021	0.00023	0.023
Receiving Environment Water Quality Model - KZ-37 - Wet Year 20 Model													
Transitional Closure	20	2040-03-01	170	29	1.8	0.04	0.37	0.033	0.092	0.28	0.00032	0.00026	0.016
Transitional Closure	20	2040-04-01	170	26	2	0.043	0.41	0.024	0.09	0.54	0.00031	0.00023	0.019
Transitional Closure	20	2040-05-01	60	11	0.55	0.014	0.085	0.019	0.045	0.63	0.00055	0.00048	0.071
Transitional Closure	20	2040-06-01	100	16	0.29	0.0066	0.046	0.017	0.049	0.39	0.00051	0.00042	0.023
Transitional Closure	20	2040-07-01	110	23	0.34	0.0083	0.058	0.0088	0.056	0.24	0.00034	0.0007	0.019
Transitional Closure	20	2040-08-01	130	19	0.33	0.0083	0.054	0.013	0.055	0.39	0.00037	0.00027	0.014
Transitional Closure	20	2040-09-01	130	22	0.35	0.0081	0.051	0.012	0.058	0.53	0.00037	0.00038	0.014
Transitional Closure	20	2040-10-01	140	26	0.44	0.009	0.066	0.016	0.066	0.57	0.00023	0.00023	0.012
Transitional Closure	20	2040-11-01	150	27	0.84	0.018	0.14	0.019	0.075	0.3	0.0003	0.00033	0.013
Transitional Closure	20	2040-12-01	150	28	1.2	0.025	0.2	0.023	0.079	0.33	0.00023	0.00016	0.018
Transitional Closure	20	2041-01-01	150	28	1.4	0.029	0.25	0.026	0.082	0.29	0.00019	0.0002	0.029
Transitional Closure	20	2041-02-01	160	29	1.5	0.032	0.28	0.033	0.089	0.28	0.0002	0.00022	0.019
Receiving Environment Water Quality Model - KZ-37 - Dry Year 38 Model													
Passive Closure	38	2058-03-01	300	120	0.13	0.0013	0.018	0.022	0.15	0.43	0.00033	0.0003	0.048
Passive Closure	38	2058-04-01	310	120	0.11	0.0015	0.015	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	38	2058-05-01	210	83	0.12	0.0039	0.022	0.023	0.12	0.85	0.00064	0.00057	0.095
Passive Closure	38	2058-06-01	260	100	0.13	0.003	0.024	0.021	0.13	0.54	0.00055	0.00048	0.054
Passive Closure	38	2058-07-01	280	110	0.12	0.0032	0.027	0.016	0.15	0.41	0.00036	0.00062	0.054
Passive Closure	38	2058-08-01	270	99	0.13	0.0037	0.025	0.018	0.14	0.52	0.00041	0.00035	0.046
Passive Closure	38	2058-09-01	260	92	0.14	0.0033	0.019	0.017	0.13	0.64	0.00043	0.00044	0.043
Passive Closure	38	2058-10-01	250	87	0.11	0.0017	0.014	0.016	0.12	0.6	0.00027	0.00028	0.036
Passive Closure	38	2058-11-01	260	96	0.15	0.0022	0.019	0.017	0.13	0.43	0.00034	0.00037	0.038
Passive Closure	38	2058-12-01	280	110	0.15	0.002	0.019	0.019	0.13	0.47	0.00029	0.00025	0.045

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Transitional Closure	20	2040-07-01	0.0012	0.0021	0.000074	40	0.000065	0.0017	0.075	0.000073	0.038	0.00057	0.000009
Transitional Closure	20	2040-08-01	0.0012	0.0021	0.000084	44	0.000091	0.0019	0.065	0.00012	0.035	0.00055	0.000007
Transitional Closure	20	2040-09-01	0.00099	0.0017	0.000077	43	0.000075	0.0019	0.071	0.000091	0.033	0.00044	0.0000061
Transitional Closure	20	2040-10-01	0.0006	0.0012	0.0001	40	0.000057	0.0021	0.085	0.000076	0.027	0.00037	0.0000043
Transitional Closure	20	2040-11-01	0.00087	0.0016	0.00012	42	0.000081	0.0033	0.12	0.000077	0.05	0.00041	0.0000053
Transitional Closure	20	2040-12-01	0.00096	0.0018	0.00013	47	0.0001	0.0046	0.14	0.000069	0.055	0.00048	0.0000057
Transitional Closure	20	2041-01-01	0.00093	0.0019	0.00017	48	0.00014	0.006	0.32	0.00022	0.069	0.00055	0.0000063
Transitional Closure	20	2041-02-01	0.00089	0.0019	0.00018	49	0.00013	0.0073	0.19	0.000084	0.058	0.00057	0.0000057
Receiving Environment Water Quality Model - KZ-37 - Wet Year 20 Model													**Receiving Environme**
Transitional Closure	20	2040-03-01	0.00063	0.0015	0.00017	46	0.00014	0.0076	0.17	0.000065	0.061	0.00066	0.0000048
Transitional Closure	20	2040-04-01	0.00059	0.0014	0.00017	46	0.00019	0.0095	0.19	0.00016	0.061	0.00079	0.0000062
Transitional Closure	20	2040-05-01	0.00037	0.00077	0.000057	17	0.000061	0.0013	0.13	0.00013	0.02	0.00081	0.000004
Transitional Closure	20	2040-06-01	0.00028	0.00066	0.000035	28	0.000044	0.00066	0.078	0.000071	0.015	0.00045	0.0000032
Transitional Closure	20	2040-07-01	0.00034	0.00067	0.000057	33	0.000032	0.00077	0.081	0.000051	0.017	0.00041	0.0000056
Transitional Closure	20	2040-08-01	0.00031	0.00068	0.000058	37	0.00006	0.00071	0.064	0.000093	0.014	0.00039	0.0000034
Transitional Closure	20	2040-09-01	0.0003	0.0006	0.000059	37	0.000049	0.00085	0.07	0.000076	0.016	0.00032	0.0000032
Transitional Closure	20	2040-10-01	0.00024	0.0006	0.000099	42	0.00004	0.001	0.093	0.000077	0.019	0.00032	0.000003
Transitional Closure	20	2040-11-01	0.00049	0.001	0.0001	42	0.00006	0.0019	0.12	0.000071	0.041	0.00035	0.0000038
Transitional Closure	20	2040-12-01	0.00065	0.0013	0.00011	43	0.000079	0.0032	0.13	0.000058	0.045	0.00039	0.0000043
Transitional Closure	20	2041-01-01	0.00069	0.0014	0.00014	43	0.00011	0.0045	0.3	0.0002	0.058	0.00046	0.000005
Transitional Closure	20	2041-02-01	0.00068	0.0015	0.00015	44	0.0001	0.0055	0.17	0.000074	0.048	0.00047	0.0000046
Receiving Environment Water Quality Model - KZ-37 - Dry Year 38 Model													**Receiving Environme**
Passive Closure	38	2058-03-01	0.0047	0.028	0.00028	84	0.0013	0.0047	0.66	0.007	0.33	0.0027	0.000013
Passive Closure	38	2058-04-01	0.0051	0.03	0.00029	86	0.0014	0.0053	0.72	0.0076	0.36	0.0029	0.000015
Passive Closure	38	2058-05-01	0.0035	0.02	0.0002	57	0.00092	0.0023	0.54	0.006	0.23	0.0024	0.000012
Passive Closure	38	2058-06-01	0.0041	0.023	0.00019	70	0.001	0.0017	0.52	0.0056	0.27	0.0024	0.000013
Passive Closure	38	2058-07-01	0.0046	0.026	0.00022	77	0.0012	0.0018	0.57	0.0063	0.3	0.0026	0.000016
Passive Closure	38	2058-08-01	0.0039	0.022	0.0002	75	0.001	0.0019	0.49	0.0054	0.26	0.0022	0.000013
Passive Closure	38	2058-09-01	0.0035	0.019	0.00019	72	0.0009	0.002	0.45	0.0048	0.23	0.002	0.000011
Passive Closure	38	2058-10-01	0.0031	0.018	0.00022	70	0.00084	0.0021	0.45	0.0045	0.22	0.0018	0.0000097
Passive Closure	38	2058-11-01	0.0036	0.021	0.00024	75	0.00096	0.0028	0.52	0.0051	0.26	0.002	0.000011
Passive Closure	38	2058-12-01	0.004	0.024	0.00025	80	0.0011	0.0035	0.58	0.0058	0.29	0.0023	0.000012

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Transitional Closure	20	2040-07-01	0.001	0.000027	0.0036	0.0097	2.3	0.026	0.0012	0.0021	0.000059	40
Transitional Closure	20	2040-08-01	0.00097	0.000025	0.0036	0.0095	1.9	0.022	0.0012	0.0021	0.000056	44
Transitional Closure	20	2040-09-01	0.001	0.000022	0.0034	0.011	1.3	0.018	0.00099	0.0017	0.000058	43
Transitional Closure	20	2040-10-01	0.0011	0.000014	0.0025	0.016	1.2	0.011	0.0006	0.0011	0.000081	39
Transitional Closure	20	2040-11-01	0.0012	0.00002	0.0033	0.02	0.63	0.015	0.00089	0.0016	0.000083	42
Transitional Closure	20	2040-12-01	0.0013	0.000022	0.0036	0.024	1	0.015	0.00095	0.0018	0.00011	46
Transitional Closure	20	2041-01-01	0.0014	0.000021	0.0037	0.029	0.85	0.015	0.00091	0.0018	0.00012	47
Transitional Closure	20	2041-02-01	0.0015	0.000021	0.0038	0.028	0.3	0.015	0.00089	0.0018	0.00014	49
Receiving Environment Water Quality Model - KZ-37 - Wet Year 20 Model			**nt Water Quality Model - KZ-37 - Wet Year 20 Model**									
Transitional Closure	20	2040-03-01	0.0014	0.000017	0.0031	0.027	0.24	0.011	0.00063	0.0014	0.00015	49
Transitional Closure	20	2040-04-01	0.0012	0.000016	0.0031	0.028	1.2	0.015	0.00058	0.0013	0.00017	46
Transitional Closure	20	2040-05-01	0.00045	0.0000089	0.0012	0.0086	6.2	0.051	0.00037	0.00072	0.000043	17
Transitional Closure	20	2040-06-01	0.00053	0.0000061	0.0014	0.0048	1.9	0.012	0.00028	0.00063	0.000031	28
Transitional Closure	20	2040-07-01	0.00056	0.0000081	0.0014	0.0078	2.2	0.012	0.00034	0.00065	0.000039	33
Transitional Closure	20	2040-08-01	0.00053	0.000007	0.0014	0.0063	1.9	0.0099	0.00031	0.00067	0.00003	36
Transitional Closure	20	2040-09-01	0.00067	0.000007	0.0017	0.0086	1.4	0.0076	0.00029	0.0006	0.000038	38
Transitional Closure	20	2040-10-01	0.00097	0.0000059	0.0018	0.015	1.4	0.0064	0.00024	0.00055	0.000071	41
Transitional Closure	20	2040-11-01	0.0011	0.000011	0.0024	0.018	0.69	0.0092	0.00051	0.001	0.000062	43
Transitional Closure	20	2040-12-01	0.0011	0.000015	0.0028	0.02	1	0.01	0.00064	0.0013	0.000081	43
Transitional Closure	20	2041-01-01	0.0012	0.000016	0.003	0.024	0.78	0.011	0.00067	0.0013	0.000093	42
Transitional Closure	20	2041-02-01	0.0013	0.000016	0.0031	0.023	0.28	0.011	0.00067	0.0014	0.00011	44
Receiving Environment Water Quality Model - KZ-37 - Dry Year 38 Model			**nt Water Quality Model - KZ-37 - Dry Year 38 Model**									
Passive Closure	38	2058-03-01	0.0012	0.00009	0.0095	0.034	0.74	0.041	0.0047	0.028	0.00027	86
Passive Closure	38	2058-04-01	0.001	0.000096	0.01	0.034	1.4	0.045	0.0051	0.03	0.00028	86
Passive Closure	38	2058-05-01	0.00091	0.000077	0.0067	0.027	6.3	0.068	0.0035	0.02	0.00018	57
Passive Closure	38	2058-06-01	0.00089	0.000077	0.0081	0.02	2.1	0.041	0.0041	0.023	0.00019	70
Passive Closure	38	2058-07-01	0.00092	0.000088	0.0089	0.024	2.1	0.045	0.0046	0.026	0.00021	77
Passive Closure	38	2058-08-01	0.00088	0.000076	0.0079	0.021	2	0.039	0.0039	0.022	0.00018	75
Passive Closure	38	2058-09-01	0.00097	0.000068	0.0073	0.022	1.6	0.034	0.0035	0.019	0.00017	72
Passive Closure	38	2058-10-01	0.0011	0.000059	0.0066	0.027	1.5	0.029	0.0031	0.018	0.00019	69
Passive Closure	38	2058-11-01	0.0011	0.000068	0.0075	0.031	1	0.032	0.0036	0.021	0.0002	75
Passive Closure	38	2058-12-01	0.0011	0.000077	0.0083	0.034	1.3	0.035	0.004	0.023	0.00022	79

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Transitional Closure	20	2040-07-01	0.000055	0.0016	0.023	0.000042	0.032	0.00054	0.0000069	0.001	0.000027	0.0036
Transitional Closure	20	2040-08-01	0.000088	0.0018	0.026	0.00006	0.032	0.00054	0.000007	0.00097	0.000025	0.0035
Transitional Closure	20	2040-09-01	0.000064	0.0017	0.03	0.000046	0.031	0.00041	0.0000061	0.001	0.000022	0.0034
Transitional Closure	20	2040-10-01	0.000043	0.002	0.025	0.000025	0.021	0.00033	0.0000043	0.001	0.000014	0.0025
Transitional Closure	20	2040-11-01	0.000077	0.0033	0.034	0.000033	0.046	0.0004	0.0000053	0.0012	0.00002	0.0033
Transitional Closure	20	2040-12-01	0.000092	0.0046	0.052	0.000034	0.052	0.00045	0.0000057	0.0013	0.000022	0.0036
Transitional Closure	20	2041-01-01	0.0001	0.0059	0.054	0.0001	0.051	0.00047	0.0000057	0.0013	0.000021	0.0037
Transitional Closure	20	2041-02-01	0.00012	0.0072	0.068	0.000036	0.052	0.00051	0.0000057	0.0015	0.000021	0.0038
Receiving Environment Water Quality Model - KZ-37 - Wet Year 20 Model												
Transitional Closure	20	2040-03-01	0.00013	0.0076	0.082	0.000033	0.068	0.00067	0.0000048	0.0013	0.000017	0.0032
Transitional Closure	20	2040-04-01	0.00018	0.0095	0.098	0.00011	0.056	0.00077	0.0000053	0.0011	0.000016	0.0031
Transitional Closure	20	2040-05-01	0.000048	0.0012	0.066	0.000027	0.017	0.0007	0.0000043	0.00043	0.0000087	0.0012
Transitional Closure	20	2040-06-01	0.000027	0.00058	0.024	0.000015	0.0098	0.00044	0.0000032	0.00052	0.0000062	0.0014
Transitional Closure	20	2040-07-01	0.00002	0.00063	0.019	0.000015	0.0098	0.00038	0.0000032	0.00059	0.0000076	0.0014
Transitional Closure	20	2040-08-01	0.000057	0.00066	0.019	0.000032	0.01	0.00038	0.0000034	0.00052	0.0000068	0.0014
Transitional Closure	20	2040-09-01	0.000037	0.00066	0.024	0.000025	0.013	0.00029	0.0000032	0.00064	0.0000067	0.0017
Transitional Closure	20	2040-10-01	0.000024	0.00089	0.019	0.000015	0.012	0.00028	0.000003	0.00092	0.000006	0.0018
Transitional Closure	20	2040-11-01	0.000055	0.0019	0.025	0.000021	0.037	0.00034	0.0000038	0.0011	0.000011	0.0024
Transitional Closure	20	2040-12-01	0.000069	0.0031	0.042	0.000024	0.042	0.00036	0.0000043	0.0011	0.000015	0.0028
Transitional Closure	20	2041-01-01	0.000078	0.0043	0.042	0.000085	0.042	0.00038	0.0000045	0.0011	0.000015	0.003
Transitional Closure	20	2041-02-01	0.000091	0.0054	0.054	0.000028	0.042	0.00042	0.0000046	0.0013	0.000016	0.0031
Receiving Environment Water Quality Model - KZ-37 - Dry Year 38 Model												
Passive Closure	38	2058-03-01	0.0013	0.0047	0.58	0.007	0.34	0.0027	0.000013	0.0011	0.000089	0.0095
Passive Closure	38	2058-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000095	0.01
Passive Closure	38	2058-05-01	0.00089	0.0021	0.45	0.0059	0.23	0.0023	0.000012	0.00088	0.000077	0.0067
Passive Closure	38	2058-06-01	0.001	0.0016	0.46	0.0056	0.26	0.0024	0.000013	0.00088	0.000077	0.0081
Passive Closure	38	2058-07-01	0.0011	0.0017	0.51	0.0063	0.29	0.0025	0.000013	0.00094	0.000087	0.0089
Passive Closure	38	2058-08-01	0.001	0.0019	0.43	0.0053	0.25	0.0022	0.000012	0.00088	0.000075	0.0078
Passive Closure	38	2058-09-01	0.00088	0.0018	0.39	0.0047	0.23	0.0019	0.000011	0.00094	0.000067	0.0073
Passive Closure	38	2058-10-01	0.00082	0.002	0.37	0.0045	0.21	0.0018	0.0000096	0.001	0.000059	0.0066
Passive Closure	38	2058-11-01	0.00095	0.0027	0.42	0.0051	0.26	0.002	0.000011	0.0011	0.000068	0.0074
Passive Closure	38	2058-12-01	0.0011	0.0034	0.48	0.0057	0.29	0.0023	0.000012	0.0012	0.000076	0.0083

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Zinc (Zn), dissolved mg/L
Transitional Closure	20	2040-07-01	0.0081
Transitional Closure	20	2040-08-01	0.0069
Transitional Closure	20	2040-09-01	0.0091
Transitional Closure	20	2040-10-01	0.012
Transitional Closure	20	2040-11-01	0.018
Transitional Closure	20	2040-12-01	0.02
Transitional Closure	20	2041-01-01	0.022
Transitional Closure	20	2041-02-01	0.025
Receiving Environment Water Quality Model - KZ-37 - Wet Year 20 Model			
Transitional Closure	20	2040-03-01	0.031
Transitional Closure	20	2040-04-01	0.027
Transitional Closure	20	2040-05-01	0.0067
Transitional Closure	20	2040-06-01	0.004
Transitional Closure	20	2040-07-01	0.0058
Transitional Closure	20	2040-08-01	0.0037
Transitional Closure	20	2040-09-01	0.0066
Transitional Closure	20	2040-10-01	0.011
Transitional Closure	20	2040-11-01	0.016
Transitional Closure	20	2040-12-01	0.017
Transitional Closure	20	2041-01-01	0.018
Transitional Closure	20	2041-02-01	0.02
Receiving Environment Water Quality Model - KZ-37 - Dry Year 38 Model			
Passive Closure	38	2058-03-01	0.038
Passive Closure	38	2058-04-01	0.033
Passive Closure	38	2058-05-01	0.024
Passive Closure	38	2058-06-01	0.019
Passive Closure	38	2058-07-01	0.022
Passive Closure	38	2058-08-01	0.019
Passive Closure	38	2058-09-01	0.02
Passive Closure	38	2058-10-01	0.023
Passive Closure	38	2058-11-01	0.029
Passive Closure	38	2058-12-01	0.03

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Passive Closure	38	2059-01-01	290	110	0.15	0.0018	0.02	0.021	0.14	0.45	0.00028	0.00029	0.057
Passive Closure	38	2059-02-01	300	120	0.14	0.0016	0.02	0.025	0.15	0.46	0.00028	0.0003	0.049
Receiving Environment Water Quality Model - KZ-37 - Wet Year 38 Model													
Passive Closure	38	2058-03-01	300	120	0.13	0.0013	0.018	0.022	0.15	0.43	0.00033	0.0003	0.047
Passive Closure	38	2058-04-01	310	120	0.11	0.0015	0.015	0.017	0.15	0.59	0.00034	0.00028	0.052
Passive Closure	38	2058-05-01	190	73	0.069	0.0027	0.015	0.02	0.1	0.87	0.00064	0.00057	0.089
Passive Closure	38	2058-06-01	230	85	0.056	0.0014	0.014	0.016	0.11	0.54	0.00058	0.0005	0.047
Passive Closure	38	2058-07-01	230	87	0.046	0.0015	0.017	0.011	0.11	0.39	0.00037	0.00065	0.043
Passive Closure	38	2058-08-01	240	81	0.048	0.0018	0.014	0.013	0.11	0.54	0.00044	0.00037	0.037
Passive Closure	38	2058-09-01	240	78	0.069	0.0017	0.0099	0.012	0.11	0.67	0.00046	0.00046	0.036
Passive Closure	38	2058-10-01	230	77	0.1	0.0014	0.012	0.015	0.11	0.63	0.00028	0.00029	0.032
Passive Closure	38	2058-11-01	250	84	0.13	0.0017	0.016	0.016	0.12	0.42	0.00035	0.00038	0.032
Passive Closure	38	2058-12-01	260	93	0.14	0.0016	0.017	0.018	0.12	0.45	0.00029	0.00024	0.039
Passive Closure	38	2059-01-01	280	100	0.14	0.0016	0.019	0.019	0.13	0.44	0.00027	0.00028	0.053
Passive Closure	38	2059-02-01	280	110	0.14	0.0015	0.019	0.023	0.14	0.45	0.00028	0.0003	0.045

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L
Passive Closure	38	2059-01-01	0.0044	0.026	0.00028	82	0.0012	0.0041	0.77	0.0065	0.32	0.0025	0.000013
Passive Closure	38	2059-02-01	0.0047	0.028	0.00029	84	0.0013	0.0046	0.67	0.0068	0.33	0.0027	0.000013
Receiving Environment Water Quality Model - KZ-37 - Wet Year 38 Model													**Receiving Environmer**
Passive Closure	38	2058-03-01	0.0047	0.028	0.00028	83	0.0013	0.0047	0.66	0.0069	0.33	0.0027	0.000013
Passive Closure	38	2058-04-01	0.005	0.03	0.00028	86	0.0014	0.0053	0.71	0.0075	0.35	0.0029	0.000015
Passive Closure	38	2058-05-01	0.003	0.017	0.00018	53	0.00081	0.0018	0.51	0.0059	0.21	0.0022	0.000011
Passive Closure	38	2058-06-01	0.0033	0.019	0.00016	64	0.00089	0.0012	0.47	0.0052	0.23	0.0021	0.00001
Passive Closure	38	2058-07-01	0.0032	0.019	0.00018	66	0.00086	0.0012	0.45	0.005	0.22	0.002	0.000013
Passive Closure	38	2058-08-01	0.003	0.018	0.00017	69	0.00085	0.0011	0.42	0.0049	0.21	0.0019	0.00001
Passive Closure	38	2058-09-01	0.0027	0.016	0.00017	67	0.00074	0.0013	0.39	0.0044	0.19	0.0017	0.000009
Passive Closure	38	2058-10-01	0.0026	0.015	0.00019	67	0.00071	0.0013	0.39	0.0038	0.18	0.0016	0.0000084
Passive Closure	38	2058-11-01	0.003	0.017	0.00021	71	0.00082	0.0019	0.46	0.0043	0.22	0.0018	0.0000093
Passive Closure	38	2058-12-01	0.0035	0.02	0.00022	76	0.00095	0.0027	0.52	0.005	0.25	0.002	0.00001
Passive Closure	38	2059-01-01	0.0039	0.023	0.00026	78	0.0011	0.0035	0.73	0.0057	0.29	0.0023	0.000012
Passive Closure	38	2059-02-01	0.0042	0.025	0.00026	80	0.0012	0.0039	0.62	0.0062	0.3	0.0024	0.000012

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L
Passive Closure	38	2059-01-01	0.0012	0.000084	0.0089	0.037	1.1	0.038	0.0044	0.026	0.00024	81
Passive Closure	38	2059-02-01	0.0012	0.000089	0.0094	0.035	0.77	0.04	0.0047	0.028	0.00026	84
Receiving Environment Water Quality Model - KZ-37 - Wet Year 38 Model			**nt Water Quality Model - KZ-37 - Wet Year 38 Model**									
Passive Closure	38	2058-03-01	0.0012	0.000089	0.0094	0.034	0.73	0.04	0.0047	0.028	0.00027	86
Passive Closure	38	2058-04-01	0.001	0.000095	0.0099	0.034	1.4	0.045	0.005	0.03	0.00028	86
Passive Closure	38	2058-05-01	0.00085	0.00007	0.0057	0.027	6.3	0.061	0.003	0.017	0.00016	52
Passive Closure	38	2058-06-01	0.00076	0.000065	0.0065	0.019	2.2	0.034	0.0033	0.019	0.00016	64
Passive Closure	38	2058-07-01	0.00077	0.000064	0.0063	0.021	2.3	0.032	0.0032	0.019	0.00016	66
Passive Closure	38	2058-08-01	0.00073	0.000061	0.006	0.019	2.2	0.03	0.003	0.018	0.00015	69
Passive Closure	38	2058-09-01	0.00086	0.000055	0.0057	0.021	1.7	0.026	0.0027	0.016	0.00014	67
Passive Closure	38	2058-10-01	0.001	0.000049	0.0057	0.025	1.6	0.024	0.0026	0.015	0.00017	65
Passive Closure	38	2058-11-01	0.0011	0.000056	0.0064	0.029	0.99	0.027	0.003	0.017	0.00017	71
Passive Closure	38	2058-12-01	0.0011	0.000066	0.0072	0.031	1.3	0.03	0.0034	0.02	0.00019	75
Passive Closure	38	2059-01-01	0.0011	0.000074	0.008	0.035	1.1	0.034	0.0039	0.023	0.00021	77
Passive Closure	38	2059-02-01	0.0012	0.00008	0.0086	0.033	0.73	0.036	0.0042	0.025	0.00023	80

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

Phase	Year	Date	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L
Passive Closure	38	2059-01-01	0.0012	0.004	0.52	0.0064	0.31	0.0025	0.000013	0.0011	0.000083	0.0089
Passive Closure	38	2059-02-01	0.0013	0.0045	0.56	0.0068	0.33	0.0026	0.000013	0.0012	0.000088	0.0094
Receiving Environment Water Quality Model - KZ-37 - Wet Year 38 Model												
Passive Closure	38	2058-03-01	0.0013	0.0046	0.58	0.0069	0.34	0.0027	0.000013	0.0011	0.000088	0.0094
Passive Closure	38	2058-04-01	0.0014	0.0053	0.63	0.0075	0.35	0.0029	0.000014	0.00099	0.000094	0.0099
Passive Closure	38	2058-05-01	0.00078	0.0016	0.41	0.0057	0.2	0.0021	0.000011	0.00082	0.00007	0.0056
Passive Closure	38	2058-06-01	0.00087	0.0011	0.39	0.0051	0.22	0.0021	0.00001	0.00076	0.000064	0.0065
Passive Closure	38	2058-07-01	0.00084	0.0011	0.38	0.0049	0.21	0.0019	0.0000098	0.00079	0.000063	0.0063
Passive Closure	38	2058-08-01	0.00083	0.0011	0.36	0.0048	0.2	0.0019	0.00001	0.00073	0.000061	0.006
Passive Closure	38	2058-09-01	0.00072	0.0011	0.33	0.0043	0.18	0.0016	0.0000089	0.00082	0.000055	0.0057
Passive Closure	38	2058-10-01	0.00068	0.0012	0.31	0.0037	0.17	0.0015	0.0000083	0.001	0.000049	0.0056
Passive Closure	38	2058-11-01	0.0008	0.0019	0.35	0.0043	0.22	0.0018	0.0000092	0.0011	0.000056	0.0064
Passive Closure	38	2058-12-01	0.00093	0.0026	0.42	0.0049	0.25	0.002	0.00001	0.0011	0.000065	0.0072
Passive Closure	38	2059-01-01	0.001	0.0033	0.46	0.0056	0.27	0.0022	0.000011	0.0011	0.000073	0.008
Passive Closure	38	2059-02-01	0.0011	0.0038	0.51	0.0061	0.3	0.0024	0.000012	0.0012	0.000079	0.0086

Appendix F1: Receiving Environment Water Quality Model Results - Geona Creek at KZ-37

			Zinc (Zn), dissolved
Phase	**Year**	**Date**	**mg/L**
Passive Closure	38	2059-01-01	0.031
Passive Closure	38	2059-02-01	0.032
Receiving Environment Water Quality Model - KZ-37 - Wet Year 38 Model			
Passive Closure	38	2058-03-01	0.038
Passive Closure	38	2058-04-01	0.033
Passive Closure	38	2058-05-01	0.024
Passive Closure	38	2058-06-01	0.018
Passive Closure	38	2058-07-01	0.019
Passive Closure	38	2058-08-01	0.016
Passive Closure	38	2058-09-01	0.019
Passive Closure	38	2058-10-01	0.02
Passive Closure	38	2058-11-01	0.026
Passive Closure	38	2058-12-01	0.028
Passive Closure	38	2059-01-01	0.029
Passive Closure	38	2059-02-01	0.03

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L
Receiving Environment Water Quality Model - KZ-15 - Mean Model											
Baseline	-3	2018-03-01	300	43	0.21	0.001	0.017	0.005	0.13	0.62	0.00055
Baseline	-3	2018-04-01	250	35	0.18	0.001	0.013	0.0032	0.12	0.61	0.00038
Baseline	-3	2018-05-01	93	13	0.03	0.001	0.006	0.011	0.051	0.76	0.00073
Baseline	-3	2018-06-01	110	20	0.024	0.001	0.015	0.0054	0.064	0.56	0.00064
Baseline	-3	2018-07-01	150	23	0.014	0.001	0.016	0.003	0.066	0.25	0.0005
Baseline	-3	2018-08-01	150	23	0.023	0.0025	0.006	0.0032	0.065	0.25	0.0005
Baseline	-3	2018-09-01	150	25	0.05	0.001	0.0038	0.0031	0.066	0.61	0.00061
Baseline	-3	2018-10-01	180	31	0.14	0.001	0.01	0.0036	0.078	0.59	0.00025
Baseline	-3	2018-11-01	220	33	0.19	0.001	0.0089	0.0035	0.094	0.25	0.00025
Baseline	-3	2018-12-01	250	35	0.2	0.001	0.0097	0.0036	0.1	0.59	0.00025
Baseline	-3	2019-01-01	260	37	0.23	0.001	0.03	0.0037	0.1	0.78	0.00025
Baseline	-3	2019-02-01	280	40	0.21	0.001	0.02	0.0029	0.12	0.4	0.00025
Construction	-2	2019-03-01	290	42	0.2	0.00098	0.014	0.0078	0.12	0.6	0.00046
Construction	-2	2019-04-01	240	31	0.17	0.00065	0.0072	0.0036	0.11	0.56	0.00033
Construction	-2	2019-05-01	92	13	0.027	0.00079	0.0035	0.0066	0.051	0.74	0.00056
Construction	-2	2019-06-01	120	18	0.02	0.00097	0.012	0.0068	0.063	0.53	0.00062
Construction	-2	2019-07-01	150	22	0.0057	0.00097	0.016	0.0025	0.064	0.27	0.00041
Construction	-2	2019-08-01	140	19	0.0056	0.0026	0.0054	0.0043	0.062	0.33	0.00044
Construction	-2	2019-09-01	150	28	0.03	0.0011	0.012	0.0035	0.063	0.64	0.00067
Construction	-2	2019-10-01	190	38	0.13	0.0011	0.014	0.0053	0.079	0.46	0.00024
Construction	-2	2019-11-01	250	48	0.17	0.0014	0.03	0.0042	0.097	0.31	0.00012
Construction	-2	2019-12-01	280	57	0.18	0.0014	0.043	0.0046	0.1	0.69	0.000072
Construction	-2	2020-01-01	310	64	0.19	0.0015	0.063	0.0052	0.099	1.1	0.00018
Construction	-2	2020-02-01	340	72	0.17	0.0015	0.045	0.0067	0.12	0.75	0.00018
Construction	-1	2020-03-01	310	59	0.21	0.0023	0.037	0.0065	0.11	0.7	0.00031
Construction	-1	2020-04-01	270	51	0.18	0.0019	0.035	0.004	0.11	0.54	0.00014
Construction	-1	2020-05-01	96	17	0.12	0.003	0.02	0.0045	0.05	0.63	0.00044
Construction	-1	2020-06-01	110	19	0.082	0.0023	0.022	0.0068	0.061	0.48	0.00053
Construction	-1	2020-07-01	140	23	0.082	0.0026	0.026	0.0025	0.062	0.24	0.00037
Construction	-1	2020-08-01	140	21	0.1	0.0046	0.019	0.0042	0.061	0.28	0.00036
Construction	-1	2020-09-01	140	25	0.13	0.0033	0.02	0.004	0.061	0.55	0.00061

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L
Receiving Environment Water Quality Model - KZ-15 - Mean Model											
Baseline	-3	2018-03-01	0.0005	0.0067	0.000029	0.00054	0.000068	86	0.000059	0.00024	0.088
Baseline	-3	2018-04-01	0.00038	0.006	0.000025	0.00046	0.000034	73	0.000047	0.00028	0.053
Baseline	-3	2018-05-01	0.00084	0.037	0.000029	0.00055	0.00004	29	0.00009	0.0015	0.17
Baseline	-3	2018-06-01	0.00053	0.017	0.000035	0.00041	0.000027	35	0.000052	0.00088	0.095
Baseline	-3	2018-07-01	0.00069	0.013	0.000031	0.00036	0.000021	46	0.000041	0.00046	0.058
Baseline	-3	2018-08-01	0.0005	0.01	0.000038	0.00044	0.000024	47	0.0002	0.00059	0.066
Baseline	-3	2018-09-01	0.00056	0.0068	0.00003	0.0004	0.000034	46	0.000059	0.00043	0.061
Baseline	-3	2018-10-01	0.00025	0.012	0.000031	0.00056	0.000038	55	0.000047	0.00042	0.093
Baseline	-3	2018-11-01	0.00025	0.01	0.000036	0.00055	0.000048	64	0.000061	0.00033	0.11
Baseline	-3	2018-12-01	0.00025	0.01	0.000033	0.00051	0.000046	72	0.00004	0.00028	0.076
Baseline	-3	2019-01-01	0.00025	0.0031	0.000032	0.00053	0.000054	75	0.000059	0.00031	0.086
Baseline	-3	2019-02-01	0.00025	0.0089	0.00003	0.0005	0.000076	79	0.000067	0.00024	0.091
Construction	-2	2019-03-01	0.00045	0.0073	0.000028	0.00054	0.000077	80	0.000016	0.00025	0.06
Construction	-2	2019-04-01	0.00029	0.0069	0.000024	0.00045	0.00003	70	0.000027	0.00029	0.076
Construction	-2	2019-05-01	0.00065	0.029	0.000021	0.0004	0.000025	28	0.000022	0.00092	0.075
Construction	-2	2019-06-01	0.00052	0.0079	0.000024	0.00035	0.000013	36	0.000015	0.0004	0.039
Construction	-2	2019-07-01	0.00054	0.0056	0.000031	0.00034	0.000021	45	0.000025	0.00032	0.035
Construction	-2	2019-08-01	0.00054	0.0043	0.000031	0.00044	0.00002	45	0.0002	0.00054	0.033
Construction	-2	2019-09-01	0.00062	0.0061	0.000045	0.00062	0.000044	47	0.000073	0.00053	0.038
Construction	-2	2019-10-01	0.00024	0.012	0.00005	0.00089	0.000068	56	0.000057	0.00045	0.045
Construction	-2	2019-11-01	0.00025	0.01	0.000082	0.0012	0.00009	69	0.0001	0.00041	0.063
Construction	-2	2019-12-01	0.00018	0.011	0.0001	0.0015	0.0001	76	0.0001	0.00038	0.068
Construction	-2	2020-01-01	0.00019	0.0086	0.00013	0.0017	0.00013	84	0.00014	0.00051	0.14
Construction	-2	2020-02-01	0.00018	0.0083	0.00014	0.0017	0.00015	84	0.00015	0.00043	0.077
Construction	-1	2020-03-01	0.00034	0.0064	0.00011	0.0013	0.00011	80	0.0001	0.00033	0.041
Construction	-1	2020-04-01	0.00016	0.0043	0.00011	0.0013	0.000076	72	0.00012	0.00033	0.047
Construction	-1	2020-05-01	0.00054	0.021	0.000056	0.00054	0.000025	28	0.000039	0.00075	0.031
Construction	-1	2020-06-01	0.00044	0.0053	0.00006	0.00046	0.000015	34	0.000027	0.00035	0.015
Construction	-1	2020-07-01	0.00048	0.0042	0.000077	0.00048	0.000018	42	0.000046	0.00023	0.012
Construction	-1	2020-08-01	0.00047	0.0036	0.0001	0.00064	0.000027	42	0.00023	0.00049	0.014
Construction	-1	2020-09-01	0.00056	0.0061	0.00011	0.00062	0.000036	41	0.000093	0.00043	0.013

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Receiving Environment Water Quality Model - KZ-15 - Mean Model			Receiving Environment Water Quality Model - KZ-15 - Mean Model								
Baseline	-3	2018-03-01	0.000024	0.08	0.0012	0.0000025	0.0016	0.000001	0.0056	0.0089	0.89
Baseline	-3	2018-04-01	0.000028	0.028	0.0009	0.0000025	0.0012	0.000001	0.0048	0.005	1.3
Baseline	-3	2018-05-01	0.00013	0.026	0.0009	0.000005	0.00043	0.0000025	0.00093	0.0057	3.9
Baseline	-3	2018-06-01	0.000056	0.018	0.0005	0.000005	0.00044	0.000001	0.0011	0.0036	2
Baseline	-3	2018-07-01	0.000054	0.016	0.00049	0.0000025	0.00043	0.000001	0.0012	0.003	2.5
Baseline	-3	2018-08-01	0.00008	0.019	0.0005	0.0000025	0.0005	0.000001	0.0017	0.0034	2
Baseline	-3	2018-09-01	0.000036	0.017	0.0005	0.0000025	0.00065	0.000001	0.0015	0.0031	1.8
Baseline	-3	2018-10-01	0.000049	0.034	0.00049	0.0000025	0.0012	0.000001	0.0023	0.0042	1.2
Baseline	-3	2018-11-01	0.00031	0.047	0.00066	0.0000025	0.0013	0.000001	0.0035	0.0058	1.2
Baseline	-3	2018-12-01	0.00002	0.037	0.00077	0.0000025	0.0014	0.000001	0.0038	0.006	1.6
Baseline	-3	2019-01-01	0.000031	0.047	0.00093	0.0000025	0.0015	0.000001	0.0046	0.0064	1.7
Baseline	-3	2019-02-01	0.000025	0.084	0.0013	0.0000025	0.0014	0.000001	0.0063	0.0099	0.57
Construction	-2	2019-03-01	0.000043	0.046	0.0012	0.0000025	0.0016	0.0000011	0.0055	0.012	0.78
Construction	-2	2019-04-01	0.00006	0.012	0.00086	0.000003	0.0011	0.0000011	0.0047	0.0059	1.3
Construction	-2	2019-05-01	0.000075	0.0086	0.0006	0.0000036	0.00041	0.00000098	0.00094	0.0042	2.9
Construction	-2	2019-06-01	0.000034	0.014	0.00033	0.0000036	0.00042	0.00000034	0.0012	0.0021	1.6
Construction	-2	2019-07-01	0.000018	0.015	0.00043	0.0000028	0.00039	0.0000013	0.0012	0.0031	2.2
Construction	-2	2019-08-01	0.000077	0.015	0.00051	0.0000027	0.00032	0.0000012	0.0016	0.0023	2
Construction	-2	2019-09-01	0.000059	0.022	0.00051	0.0000027	0.00048	0.0000015	0.0016	0.0068	1.8
Construction	-2	2019-10-01	0.000078	0.04	0.00048	0.0000026	0.0011	0.0000014	0.0027	0.01	1.3
Construction	-2	2019-11-01	0.00035	0.079	0.00071	0.0000028	0.0011	0.0000028	0.0042	0.015	1.1
Construction	-2	2019-12-01	0.00006	0.078	0.00084	0.000003	0.0012	0.0000075	0.0047	0.019	1.9
Construction	-2	2020-01-01	0.00012	0.1	0.0011	0.0000033	0.0013	0.000021	0.0056	0.022	2.2
Construction	-2	2020-02-01	0.000083	0.11	0.0014	0.0000032	0.0012	0.000029	0.0075	0.025	0.68
Construction	-1	2020-03-01	0.000056	0.08	0.0014	0.0000026	0.0014	0.000043	0.0062	0.018	0.94
Construction	-1	2020-04-01	0.000071	0.072	0.0011	0.0000029	0.00097	0.000051	0.0054	0.015	0.99
Construction	-1	2020-05-01	0.000031	0.019	0.00059	0.0000032	0.00037	0.000017	0.0012	0.0044	1.9
Construction	-1	2020-06-01	0.000015	0.022	0.00038	0.0000035	0.00041	0.000016	0.0014	0.0026	1.4
Construction	-1	2020-07-01	0.000011	0.024	0.00053	0.0000018	0.00039	0.000024	0.0014	0.0033	1.9
Construction	-1	2020-08-01	0.00007	0.03	0.00071	0.0000024	0.00036	0.000043	0.0019	0.0047	1.7
Construction	-1	2020-09-01	0.000041	0.025	0.00076	0.0000025	0.00059	0.000055	0.0016	0.0057	1.6

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L
Receiving Environment Water Quality Model - KZ-15 - Mean Model										
Baseline	-3	2018-03-01	0.00099	0.000037	0.00034	0.000065	86	0.000043	0.00024	0.0077
Baseline	-3	2018-04-01	0.0011	0.000033	0.00037	0.000031	81	0.000025	0.00026	0.017
Baseline	-3	2018-05-01	0.016	0.00003	0.00041	0.000023	25	0.000039	0.0013	0.061
Baseline	-3	2018-06-01	0.0066	0.000037	0.00035	0.000017	32	0.000025	0.00077	0.026
Baseline	-3	2018-07-01	0.0039	0.000033	0.00032	0.000017	46	0.000019	0.00046	0.018
Baseline	-3	2018-08-01	0.003	0.000031	0.0004	0.000021	47	0.0002	0.00048	0.017
Baseline	-3	2018-09-01	0.0033	0.00003	0.00034	0.000022	46	0.000022	0.00052	0.019
Baseline	-3	2018-10-01	0.0016	0.00003	0.00046	0.000022	55	0.000021	0.0003	0.013
Baseline	-3	2018-11-01	0.0012	0.000032	0.00034	0.000034	63	0.000025	0.00025	0.0076
Baseline	-3	2018-12-01	0.00088	0.000031	0.00035	0.000047	70	0.00003	0.00023	0.01
Baseline	-3	2019-01-01	0.0019	0.000032	0.00033	0.000043	76	0.000031	0.00025	0.0079
Baseline	-3	2019-02-01	0.00092	0.000028	0.00033	0.00006	80	0.00004	0.00021	0.0079
Construction	-2	2019-03-01	0.0012	0.000038	0.00033	0.000058	81	0.000015	0.00023	0.0082
Construction	-2	2019-04-01	0.0026	0.000036	0.00032	0.000024	78	0.000019	0.0003	0.014
Construction	-2	2019-05-01	0.018	0.000025	0.00038	0.000017	25	0.000024	0.001	0.035
Construction	-2	2019-06-01	0.0063	0.000027	0.00034	0.000015	33	0.000018	0.00049	0.01
Construction	-2	2019-07-01	0.0033	0.00003	0.00031	0.000013	44	0.000014	0.00033	0.0072
Construction	-2	2019-08-01	0.0031	0.000024	0.00041	0.000011	44	0.00021	0.00046	0.0072
Construction	-2	2019-09-01	0.0037	0.000045	0.00058	0.00003	47	0.000036	0.00055	0.016
Construction	-2	2019-10-01	0.002	0.000049	0.0008	0.000047	56	0.000036	0.00033	0.014
Construction	-2	2019-11-01	0.002	0.00008	0.001	0.000065	68	0.000074	0.00032	0.021
Construction	-2	2019-12-01	0.0016	0.0001	0.0013	0.00009	74	0.0001	0.00032	0.031
Construction	-2	2020-01-01	0.0029	0.00012	0.0015	0.0001	84	0.00013	0.00033	0.031
Construction	-2	2020-02-01	0.0023	0.00014	0.0016	0.00012	88	0.00014	0.0004	0.034
Construction	-1	2020-03-01	0.0018	0.00012	0.0011	0.000097	79	0.0001	0.00033	0.023
Construction	-1	2020-04-01	0.0026	0.00013	0.0012	0.000073	79	0.00012	0.00034	0.026
Construction	-1	2020-05-01	0.016	0.000062	0.00055	0.000022	25	0.000044	0.00091	0.018
Construction	-1	2020-06-01	0.0064	0.000062	0.00046	0.000018	31	0.000036	0.00045	0.0062
Construction	-1	2020-07-01	0.004	0.000078	0.00045	0.000016	41	0.000039	0.0003	0.0044
Construction	-1	2020-08-01	0.0038	0.000093	0.00062	0.000022	41	0.00024	0.00043	0.0053
Construction	-1	2020-09-01	0.0049	0.00012	0.00058	0.000025	42	0.000058	0.00051	0.0063

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Receiving Environment Water Quality Model - KZ-15 - Mean Model										
Baseline	-3	2018-03-01	0.000006	0.062	0.0011	0.0000025	0.0016	0.000001	0.0056	0.0085
Baseline	-3	2018-04-01	0.0000025	0.016	0.00097	0.0000025	0.0012	0.000001	0.0047	0.0046
Baseline	-3	2018-05-01	0.000036	0.0084	0.0007	0.0000025	0.00044	0.000001	0.00088	0.0027
Baseline	-3	2018-06-01	0.000014	0.0073	0.0005	0.0000025	0.00047	0.000001	0.0011	0.0027
Baseline	-3	2018-07-01	0.0000098	0.0072	0.00045	0.0000025	0.00042	0.000001	0.0011	0.0021
Baseline	-3	2018-08-01	0.00005	0.012	0.0005	0.0000025	0.0005	0.000001	0.0016	0.0025
Baseline	-3	2018-09-01	0.000007	0.01	0.00046	0.0000025	0.0006	0.000001	0.0014	0.0022
Baseline	-3	2018-10-01	0.0000025	0.016	0.00041	0.0000025	0.0011	0.000001	0.0023	0.0021
Baseline	-3	2018-11-01	0.0000025	0.028	0.00059	0.0000025	0.0013	0.000001	0.0032	0.0046
Baseline	-3	2018-12-01	0.0000025	0.028	0.00079	0.0000025	0.0016	0.000001	0.0039	0.0064
Baseline	-3	2019-01-01	0.000033	0.04	0.00088	0.0000025	0.0015	0.000001	0.0044	0.0074
Baseline	-3	2019-02-01	0.0000025	0.063	0.0011	0.0000025	0.0015	0.000001	0.006	0.0085
Construction	-2	2019-03-01	0.000004	0.033	0.0011	0.0000025	0.0015	0.0000012	0.0055	0.014
Construction	-2	2019-04-01	0.000019	0.0085	0.00091	0.0000026	0.0012	0.0000011	0.0046	0.0045
Construction	-2	2019-05-01	0.000012	0.0044	0.00058	0.0000021	0.00042	0.00000068	0.0009	0.003
Construction	-2	2019-06-01	0.0000041	0.0035	0.00047	0.0000027	0.00044	0.00000075	0.0012	0.0017
Construction	-2	2019-07-01	0.0000023	0.0049	0.00043	0.0000024	0.00033	0.00000079	0.0011	0.0021
Construction	-2	2019-08-01	0.000055	0.0063	0.00051	0.0000027	0.00032	0.0000011	0.0015	0.0012
Construction	-2	2019-09-01	0.000022	0.02	0.00047	0.0000027	0.00042	0.0000013	0.0016	0.0059
Construction	-2	2019-10-01	0.000016	0.026	0.00041	0.0000026	0.00098	0.0000015	0.0026	0.0086
Construction	-2	2019-11-01	0.000029	0.058	0.00064	0.0000028	0.0011	0.0000029	0.0039	0.014
Construction	-2	2019-12-01	0.000037	0.077	0.00087	0.000003	0.0013	0.0000074	0.0048	0.017
Construction	-2	2020-01-01	0.000069	0.093	0.0011	0.0000031	0.0012	0.000021	0.0055	0.021
Construction	-2	2020-02-01	0.000052	0.1	0.0012	0.0000032	0.0012	0.000029	0.0071	0.023
Construction	-1	2020-03-01	0.000032	0.067	0.0013	0.0000026	0.0013	0.000043	0.0061	0.018
Construction	-1	2020-04-01	0.000048	0.071	0.0012	0.0000028	0.00098	0.000051	0.0053	0.015
Construction	-1	2020-05-01	0.000013	0.017	0.00061	0.0000017	0.0004	0.000017	0.0011	0.004
Construction	-1	2020-06-01	0.0000076	0.013	0.00052	0.0000024	0.00043	0.000017	0.0014	0.0025
Construction	-1	2020-07-01	0.0000072	0.017	0.00053	0.0000023	0.00032	0.000024	0.0013	0.003
Construction	-1	2020-08-01	0.000061	0.023	0.00071	0.0000024	0.00037	0.000043	0.0018	0.0042
Construction	-1	2020-09-01	0.000018	0.023	0.00072	0.0000025	0.00053	0.000055	0.0016	0.0054

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-10-01	170	34	0.23	0.0035	0.022	0.0057	0.077	0.41	0.00021
Construction	-1	2020-11-01	230	43	0.33	0.005	0.04	0.0047	0.099	0.17	0.00013
Construction	-1	2020-12-01	260	51	0.37	0.0056	0.051	0.0054	0.11	0.58	0.00011
Construction	-1	2021-01-01	280	56	0.38	0.0055	0.07	0.006	0.1	0.94	0.0002
Construction	-1	2021-02-01	310	64	0.35	0.0054	0.053	0.0074	0.13	0.58	0.0002
Production	1	2021-03-01	280	42	0.27	0.0028	0.023	0.0082	0.12	0.57	0.00044
Production	1	2021-04-01	240	33	0.23	0.0022	0.016	0.0038	0.11	0.5	0.00029
Production	1	2021-05-01	98	18	0.2	0.0047	0.026	0.0067	0.059	0.66	0.00053
Production	1	2021-06-01	120	21	0.12	0.0033	0.025	0.0076	0.068	0.49	0.00057
Production	1	2021-07-01	150	25	0.12	0.0035	0.029	0.003	0.07	0.23	0.0004
Production	1	2021-08-01	140	23	0.12	0.0051	0.02	0.0046	0.07	0.27	0.0004
Production	1	2021-09-01	140	25	0.14	0.0035	0.018	0.0042	0.068	0.53	0.00064
Production	1	2021-10-01	170	32	0.21	0.003	0.015	0.0055	0.08	0.38	0.00023
Production	1	2021-11-01	210	35	0.3	0.0041	0.025	0.0044	0.099	0.1	0.00017
Production	1	2021-12-01	230	38	0.32	0.0043	0.03	0.0049	0.1	0.48	0.00015
Production	1	2022-01-01	250	41	0.34	0.0041	0.046	0.0049	0.1	0.79	0.00024
Production	1	2022-02-01	270	46	0.31	0.0039	0.028	0.0064	0.12	0.42	0.00024
Production	2	2022-03-01	310	52	0.3	0.0034	0.026	0.0079	0.13	0.58	0.00045
Production	2	2022-04-01	270	43	0.26	0.0027	0.02	0.0037	0.12	0.5	0.00029
Production	2	2022-05-01	120	26	0.29	0.0066	0.034	0.0071	0.076	0.65	0.00053
Production	2	2022-06-01	120	25	0.2	0.0049	0.032	0.0081	0.077	0.49	0.00057
Production	2	2022-07-01	150	29	0.2	0.0054	0.036	0.0036	0.08	0.23	0.0004
Production	2	2022-08-01	150	28	0.21	0.0071	0.027	0.0052	0.082	0.27	0.0004
Production	2	2022-09-01	150	30	0.22	0.0054	0.025	0.0047	0.08	0.53	0.00064
Production	2	2022-10-01	180	37	0.28	0.0046	0.02	0.0059	0.09	0.39	0.00023
Production	2	2022-11-01	230	44	0.39	0.0062	0.033	0.0051	0.12	0.1	0.00017
Production	2	2022-12-01	250	48	0.42	0.0065	0.039	0.0057	0.12	0.48	0.00015
Production	2	2023-01-01	270	51	0.42	0.006	0.054	0.0055	0.12	0.79	0.00023
Production	2	2023-02-01	300	56	0.39	0.0057	0.036	0.0068	0.14	0.41	0.00023
Production	3	2023-03-01	360	76	0.34	0.0043	0.031	0.0085	0.15	0.57	0.00044
Production	3	2023-04-01	360	81	0.29	0.0036	0.024	0.0045	0.15	0.5	0.00029
Production	3	2023-05-01	210	67	0.36	0.0083	0.037	0.0092	0.13	0.68	0.00058
Production	3	2023-06-01	130	30	0.25	0.0062	0.037	0.0086	0.084	0.49	0.00057
Production	3	2023-07-01	180	40	0.27	0.0069	0.042	0.0044	0.094	0.24	0.00041

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-10-01	0.00021	0.013	0.00013	0.00089	0.000055	51	0.000092	0.0004	0.018
Construction	-1	2020-11-01	0.00024	0.013	0.00023	0.0012	0.000091	64	0.00017	0.00039	0.033
Construction	-1	2020-12-01	0.00019	0.013	0.00027	0.0014	0.00011	71	0.00018	0.00037	0.042
Construction	-1	2021-01-01	0.0002	0.0094	0.00028	0.0015	0.00013	78	0.00022	0.00046	0.093
Construction	-1	2021-02-01	0.0002	0.011	0.00028	0.0015	0.00015	81	0.00021	0.0004	0.052
Production	1	2021-03-01	0.00044	0.0082	0.000072	0.0006	0.000074	77	0.000017	0.00025	0.051
Production	1	2021-04-01	0.00027	0.0072	0.000068	0.00054	0.000035	66	0.000027	0.00028	0.065
Production	1	2021-05-01	0.00063	0.026	0.000094	0.00063	0.00003	26	0.000021	0.00093	0.053
Production	1	2021-06-01	0.00047	0.0084	0.000091	0.00054	0.000021	34	0.000018	0.00043	0.029
Production	1	2021-07-01	0.00053	0.0074	0.0001	0.00057	0.000024	42	0.000029	0.0003	0.029
Production	1	2021-08-01	0.0005	0.007	0.0001	0.0007	0.00003	41	0.0002	0.00054	0.036
Production	1	2021-09-01	0.00059	0.0087	0.0001	0.00064	0.000037	39	0.000053	0.00046	0.032
Production	1	2021-10-01	0.00024	0.014	0.000085	0.00078	0.000048	47	0.000032	0.00041	0.035
Production	1	2021-11-01	0.00027	0.014	0.00014	0.00085	0.000067	56	0.000052	0.00038	0.062
Production	1	2021-12-01	0.00023	0.015	0.00015	0.00081	0.000069	61	0.000028	0.00032	0.068
Production	1	2022-01-01	0.00024	0.011	0.00015	0.00084	0.000088	66	0.000052	0.00041	0.13
Production	1	2022-02-01	0.00025	0.013	0.00015	0.00078	0.00011	68	0.000024	0.00032	0.087
Production	2	2022-03-01	0.00044	0.01	0.00014	0.00095	0.00011	77	0.000025	0.00033	0.094
Production	2	2022-04-01	0.00028	0.0087	0.00014	0.0009	0.000071	66	0.000033	0.00036	0.1
Production	2	2022-05-01	0.00063	0.027	0.00015	0.0009	0.000046	26	0.000027	0.001	0.07
Production	2	2022-06-01	0.00047	0.011	0.00014	0.00062	0.000025	34	0.000023	0.00046	0.034
Production	2	2022-07-01	0.00053	0.01	0.00015	0.00065	0.000028	42	0.000035	0.00033	0.035
Production	2	2022-08-01	0.0005	0.01	0.00016	0.00081	0.000036	42	0.0002	0.00059	0.045
Production	2	2022-09-01	0.00059	0.011	0.00015	0.00073	0.000042	40	0.000059	0.0005	0.039
Production	2	2022-10-01	0.00023	0.016	0.00013	0.00088	0.000053	47	0.000037	0.00045	0.042
Production	2	2022-11-01	0.00026	0.017	0.0002	0.0011	0.000077	57	0.00006	0.00043	0.077
Production	2	2022-12-01	0.00022	0.018	0.00023	0.0011	0.000083	61	0.000037	0.00039	0.08
Production	2	2023-01-01	0.00023	0.014	0.00023	0.0011	0.0001	67	0.000061	0.00047	0.14
Production	2	2023-02-01	0.00024	0.015	0.00022	0.0011	0.00012	68	0.000029	0.00039	0.096
Production	3	2023-03-01	0.00044	0.011	0.00019	0.0013	0.00012	77	0.000031	0.00038	0.12
Production	3	2023-04-01	0.00028	0.0099	0.00019	0.0014	0.000087	66	0.000037	0.00043	0.16
Production	3	2023-05-01	0.00068	0.029	0.00023	0.0017	0.000088	28	0.00004	0.0012	0.14
Production	3	2023-06-01	0.00047	0.013	0.00019	0.00068	0.000028	35	0.000029	0.00049	0.036
Production	3	2023-07-01	0.00054	0.013	0.00021	0.00083	0.000039	43	0.000041	0.00038	0.047

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-10-01	0.000063	0.046	0.00085	0.0000025	0.0012	0.000076	0.0026	0.0089	1.1
Construction	-1	2020-11-01	0.00034	0.09	0.0015	0.0000028	0.0014	0.00015	0.0041	0.016	0.99
Construction	-1	2020-12-01	0.000058	0.093	0.0018	0.000003	0.0016	0.00019	0.0046	0.02	1.7
Construction	-1	2021-01-01	0.00011	0.11	0.002	0.0000033	0.0017	0.00019	0.0054	0.024	1.9
Construction	-1	2021-02-01	0.000076	0.13	0.0023	0.0000032	0.0016	0.0002	0.0073	0.028	0.47
Production	1	2021-03-01	0.00021	0.047	0.0011	0.0000026	0.0016	0.0000084	0.0056	0.01	0.77
Production	1	2021-04-01	0.00031	0.011	0.00085	0.0000031	0.0012	0.000012	0.0047	0.0059	1.1
Production	1	2021-05-01	0.00028	0.018	0.00066	0.0000042	0.00058	0.000025	0.0012	0.004	2.6
Production	1	2021-06-01	0.00018	0.02	0.00036	0.0000042	0.00054	0.000016	0.0015	0.0024	1.5
Production	1	2021-07-01	0.0002	0.022	0.00047	0.0000026	0.00052	0.00002	0.0014	0.003	2.1
Production	1	2021-08-01	0.00031	0.024	0.00055	0.0000031	0.00049	0.000026	0.0018	0.0033	1.8
Production	1	2021-09-01	0.0003	0.016	0.00053	0.0000031	0.00067	0.000028	0.0015	0.0038	1.7
Production	1	2021-10-01	0.00038	0.029	0.0005	0.0000029	0.0012	0.000029	0.0024	0.0054	1.1
Production	1	2021-11-01	0.00088	0.051	0.00073	0.0000033	0.0014	0.000043	0.0036	0.0083	1
Production	1	2021-12-01	0.00074	0.038	0.00082	0.0000034	0.0015	0.000049	0.0039	0.0095	1.7
Production	1	2022-01-01	0.00089	0.051	0.001	0.0000036	0.0017	0.000052	0.0046	0.012	1.8
Production	1	2022-02-01	0.00094	0.063	0.0013	0.0000035	0.0016	0.000054	0.0064	0.015	0.38
Production	2	2022-03-01	0.0011	0.066	0.0013	0.0000038	0.002	0.000058	0.0057	0.016	0.91
Production	2	2022-04-01	0.0013	0.025	0.00094	0.0000041	0.0017	0.000055	0.0048	0.012	1.3
Production	2	2022-05-01	0.00047	0.04	0.00083	0.0000051	0.00077	0.000074	0.0014	0.0059	2.7
Production	2	2022-06-01	0.00023	0.03	0.00043	0.0000046	0.0006	0.000035	0.0017	0.0028	1.5
Production	2	2022-07-01	0.00026	0.033	0.00055	0.000003	0.00059	0.000043	0.0016	0.0035	2.1
Production	2	2022-08-01	0.00038	0.038	0.00066	0.0000037	0.00058	0.000054	0.0021	0.004	1.9
Production	2	2022-09-01	0.00037	0.03	0.00064	0.0000036	0.00075	0.000057	0.0017	0.0043	1.7
Production	2	2022-10-01	0.00046	0.042	0.0006	0.0000034	0.0013	0.000058	0.0025	0.0061	1.2
Production	2	2022-11-01	0.001	0.072	0.00088	0.000004	0.0016	0.000088	0.0039	0.0095	1.1
Production	2	2022-12-01	0.00096	0.061	0.001	0.0000042	0.0017	0.000099	0.0042	0.011	1.7
Production	2	2023-01-01	0.0012	0.074	0.0012	0.0000045	0.0019	0.0001	0.0049	0.014	1.9
Production	2	2023-02-01	0.0012	0.087	0.0014	0.0000043	0.0019	0.0001	0.0067	0.017	0.45
Production	3	2023-03-01	0.0012	0.079	0.0013	0.000005	0.0022	0.000074	0.0059	0.019	1
Production	3	2023-04-01	0.0014	0.038	0.001	0.0000061	0.002	0.000072	0.0051	0.017	1.5
Production	3	2023-05-01	0.00074	0.086	0.0012	0.0000079	0.0013	0.00017	0.0017	0.012	3.1
Production	3	2023-06-01	0.00019	0.034	0.00046	0.000005	0.00065	0.000037	0.0019	0.003	1.5
Production	3	2023-07-01	0.00026	0.043	0.00063	0.0000038	0.00072	0.000059	0.0019	0.0046	2.2

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-10-01	0.0032	0.00013	0.0008	0.000037	51	0.00007	0.0003	0.0064
Construction	-1	2020-11-01	0.0043	0.00023	0.001	0.000073	63	0.00014	0.00031	0.011
Construction	-1	2020-12-01	0.0042	0.00027	0.0012	0.0001	70	0.00018	0.00031	0.017
Construction	-1	2021-01-01	0.0053	0.00027	0.0013	0.0001	78	0.00019	0.00031	0.017
Construction	-1	2021-02-01	0.0044	0.00028	0.0014	0.00013	84	0.00021	0.00036	0.02
Production	1	2021-03-01	0.0025	0.000082	0.00041	0.000061	77	0.000014	0.00024	0.018
Production	1	2021-04-01	0.0034	0.00008	0.00041	0.00003	74	0.000019	0.00028	0.026
Production	1	2021-05-01	0.02	0.000099	0.00061	0.000026	23	0.00003	0.001	0.032
Production	1	2021-06-01	0.009	0.000093	0.00054	0.000024	31	0.000024	0.00051	0.015
Production	1	2021-07-01	0.0065	0.0001	0.00054	0.000021	41	0.000021	0.00035	0.013
Production	1	2021-08-01	0.0061	0.000098	0.00068	0.000024	40	0.00021	0.00047	0.015
Production	1	2021-09-01	0.0067	0.0001	0.00059	0.000024	40	0.000018	0.00053	0.017
Production	1	2021-10-01	0.0041	0.000084	0.00069	0.000028	47	0.000009	0.0003	0.016
Production	1	2021-11-01	0.0052	0.00013	0.00065	0.000045	55	0.000017	0.00028	0.024
Production	1	2021-12-01	0.0047	0.00015	0.00065	0.00006	59	0.000019	0.00025	0.032
Production	1	2022-01-01	0.0056	0.00015	0.00063	0.000059	66	0.000018	0.00025	0.033
Production	1	2022-02-01	0.0045	0.00015	0.00062	0.000076	70	0.000018	0.00027	0.038
Production	2	2022-03-01	0.0041	0.00015	0.00076	0.000095	77	0.000019	0.00032	0.057
Production	2	2022-04-01	0.0046	0.00015	0.00078	0.000064	74	0.000021	0.00035	0.067
Production	2	2022-05-01	0.021	0.00016	0.00088	0.000042	23	0.000037	0.0011	0.047
Production	2	2022-06-01	0.011	0.00014	0.00061	0.000027	31	0.000029	0.00054	0.019
Production	2	2022-07-01	0.0092	0.00015	0.00062	0.000026	41	0.000026	0.00038	0.019
Production	2	2022-08-01	0.0089	0.00015	0.00078	0.00003	41	0.00021	0.00051	0.023
Production	2	2022-09-01	0.0094	0.00015	0.00069	0.00003	40	0.000024	0.00057	0.024
Production	2	2022-10-01	0.0062	0.00012	0.00079	0.000034	48	0.000014	0.00034	0.025
Production	2	2022-11-01	0.0083	0.0002	0.00087	0.000057	56	0.000024	0.00034	0.039
Production	2	2022-12-01	0.0081	0.00022	0.00092	0.000075	60	0.000027	0.00032	0.05
Production	2	2023-01-01	0.0087	0.00022	0.00091	0.000077	67	0.000027	0.00033	0.054
Production	2	2023-02-01	0.0073	0.00022	0.0009	0.000096	71	0.000025	0.00034	0.06
Production	3	2023-03-01	0.0057	0.0002	0.0011	0.00011	76	0.000021	0.00038	0.096
Production	3	2023-04-01	0.0061	0.0002	0.0012	0.000082	74	0.000023	0.00043	0.13
Production	3	2023-05-01	0.023	0.00024	0.0016	0.000087	24	0.00005	0.0013	0.13
Production	3	2023-06-01	0.014	0.00019	0.00067	0.00003	31	0.000033	0.00057	0.024
Production	3	2023-07-01	0.012	0.00021	0.0008	0.000036	42	0.000032	0.00043	0.035

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-10-01	0.000016	0.03	0.00078	0.0000025	0.0011	0.000076	0.0025	0.0078
Construction	-1	2020-11-01	0.00003	0.07	0.0014	0.0000028	0.0014	0.00015	0.0038	0.015
Construction	-1	2020-12-01	0.000037	0.085	0.0018	0.000003	0.0017	0.00019	0.0046	0.019
Construction	-1	2021-01-01	0.000071	0.1	0.0019	0.0000031	0.0016	0.00019	0.0053	0.024
Construction	-1	2021-02-01	0.000047	0.11	0.0022	0.0000032	0.0016	0.0002	0.0069	0.026
Production	1	2021-03-01	0.00018	0.032	0.0011	0.0000026	0.0016	0.0000085	0.0056	0.011
Production	1	2021-04-01	0.00027	0.0091	0.0009	0.0000028	0.0012	0.000012	0.0047	0.0048
Production	1	2021-05-01	0.00026	0.012	0.00064	0.0000026	0.0006	0.000025	0.0011	0.0035
Production	1	2021-06-01	0.00017	0.011	0.0005	0.0000029	0.00056	0.000016	0.0015	0.0022
Production	1	2021-07-01	0.00019	0.013	0.00047	0.0000029	0.00047	0.000019	0.0014	0.0026
Production	1	2021-08-01	0.0003	0.017	0.00056	0.0000031	0.0005	0.000026	0.0018	0.0027
Production	1	2021-09-01	0.00028	0.013	0.0005	0.000003	0.00061	0.000028	0.0015	0.0033
Production	1	2021-10-01	0.00033	0.013	0.00043	0.0000029	0.0011	0.000029	0.0023	0.0041
Production	1	2021-11-01	0.00056	0.03	0.00065	0.0000032	0.0014	0.000043	0.0033	0.0066
Production	1	2021-12-01	0.00071	0.028	0.00084	0.0000034	0.0017	0.000049	0.0039	0.0082
Production	1	2022-01-01	0.00085	0.041	0.00095	0.0000034	0.0017	0.000052	0.0045	0.011
Production	1	2022-02-01	0.0009	0.04	0.0011	0.0000035	0.0017	0.000054	0.0061	0.012
Production	2	2022-03-01	0.0011	0.048	0.0012	0.0000038	0.002	0.000058	0.0057	0.016
Production	2	2022-04-01	0.0012	0.023	0.001	0.0000039	0.0017	0.000055	0.0048	0.01
Production	2	2022-05-01	0.00045	0.034	0.00081	0.0000034	0.00079	0.000073	0.0013	0.0054
Production	2	2022-06-01	0.00022	0.021	0.00056	0.0000033	0.00062	0.000035	0.0017	0.0027
Production	2	2022-07-01	0.00025	0.025	0.00055	0.0000034	0.00054	0.000042	0.0016	0.0032
Production	2	2022-08-01	0.00036	0.031	0.00066	0.0000036	0.00058	0.000054	0.002	0.0034
Production	2	2022-09-01	0.00034	0.027	0.0006	0.0000036	0.00069	0.000057	0.0017	0.0039
Production	2	2022-10-01	0.00041	0.026	0.00054	0.0000034	0.0012	0.000058	0.0024	0.0047
Production	2	2022-11-01	0.00072	0.051	0.00081	0.000004	0.0016	0.000088	0.0036	0.0077
Production	2	2022-12-01	0.00093	0.052	0.001	0.0000042	0.0019	0.000099	0.0042	0.0099
Production	2	2023-01-01	0.0011	0.064	0.0011	0.0000043	0.0019	0.0001	0.0048	0.013
Production	2	2023-02-01	0.0012	0.064	0.0013	0.0000043	0.0019	0.0001	0.0063	0.014
Production	3	2023-03-01	0.0012	0.062	0.0012	0.000005	0.0022	0.000075	0.0059	0.019
Production	3	2023-04-01	0.0014	0.035	0.0011	0.0000059	0.0021	0.000072	0.0051	0.016
Production	3	2023-05-01	0.00072	0.078	0.0011	0.0000062	0.0013	0.00017	0.0016	0.012
Production	3	2023-06-01	0.00018	0.024	0.00059	0.0000037	0.00067	0.000038	0.0019	0.0029
Production	3	2023-07-01	0.00025	0.035	0.00063	0.0000041	0.00067	0.000058	0.0018	0.0043

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-08-01	190	43	0.27	0.0086	0.032	0.006	0.1	0.27	0.00041
Production	3	2023-09-01	180	46	0.28	0.0068	0.03	0.0055	0.1	0.54	0.00064
Production	3	2023-10-01	220	56	0.33	0.0056	0.024	0.0066	0.11	0.41	0.00024
Production	3	2023-11-01	310	78	0.44	0.0074	0.037	0.0063	0.15	0.13	0.00018
Production	3	2023-12-01	350	91	0.45	0.0072	0.041	0.007	0.17	0.51	0.00017
Production	3	2024-01-01	350	85	0.45	0.0067	0.057	0.0062	0.15	0.78	0.00023
Production	3	2024-02-01	400	99	0.41	0.0062	0.04	0.0074	0.18	0.4	0.00023
Production	4	2024-03-01	440	110	0.38	0.0053	0.036	0.0098	0.18	0.57	0.00045
Production	4	2024-04-01	390	97	0.32	0.0043	0.029	0.0052	0.17	0.5	0.00029
Production	4	2024-05-01	220	73	0.46	0.011	0.044	0.0097	0.14	0.68	0.00058
Production	4	2024-06-01	130	29	0.31	0.0074	0.043	0.0089	0.085	0.48	0.00056
Production	4	2024-07-01	180	40	0.33	0.0084	0.048	0.0047	0.098	0.23	0.00041
Production	4	2024-08-01	180	44	0.35	0.01	0.038	0.0063	0.11	0.27	0.00041
Production	4	2024-09-01	180	47	0.35	0.0084	0.035	0.0058	0.11	0.54	0.00064
Production	4	2024-10-01	210	55	0.39	0.0071	0.029	0.0068	0.12	0.41	0.00024
Production	4	2024-11-01	290	75	0.53	0.0093	0.043	0.0065	0.16	0.12	0.00017
Production	4	2024-12-01	330	87	0.54	0.0092	0.048	0.0073	0.17	0.5	0.00016
Production	4	2025-01-01	360	91	0.52	0.0083	0.062	0.0065	0.16	0.78	0.00023
Production	4	2025-02-01	390	97	0.48	0.0078	0.046	0.0076	0.18	0.39	0.00023
Production	5	2025-03-01	410	97	0.41	0.0062	0.039	0.0097	0.18	0.57	0.00045
Production	5	2025-04-01	350	80	0.35	0.0049	0.03	0.0049	0.16	0.49	0.00028
Production	5	2025-05-01	160	52	0.55	0.013	0.054	0.009	0.12	0.65	0.00055
Production	5	2025-06-01	140	34	0.39	0.0094	0.049	0.0094	0.096	0.49	0.00057
Production	5	2025-07-01	180	41	0.42	0.01	0.054	0.005	0.1	0.24	0.00041
Production	5	2025-08-01	180	43	0.43	0.012	0.044	0.0066	0.11	0.27	0.00041
Production	5	2025-09-01	170	45	0.43	0.01	0.041	0.006	0.11	0.54	0.00064
Production	5	2025-10-01	200	52	0.44	0.0083	0.032	0.0069	0.12	0.4	0.00024
Production	5	2025-11-01	270	68	0.6	0.011	0.049	0.0065	0.15	0.1	0.00017
Production	5	2025-12-01	300	76	0.62	0.011	0.055	0.0073	0.17	0.48	0.00015
Production	5	2026-01-01	330	81	0.59	0.0099	0.068	0.0068	0.16	0.78	0.00022
Production	5	2026-02-01	360	88	0.54	0.0091	0.05	0.0078	0.18	0.39	0.00023
Production	6	2026-03-01	380	86	0.44	0.0069	0.041	0.0095	0.17	0.56	0.00044
Production	6	2026-04-01	340	77	0.37	0.0054	0.032	0.0049	0.16	0.49	0.00028
Production	6	2026-05-01	170	63	0.59	0.014	0.058	0.009	0.12	0.65	0.00054

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-08-01	0.0005	0.013	0.00022	0.0011	0.000053	43	0.00021	0.00065	0.067
Production	3	2023-09-01	0.00059	0.014	0.00021	0.001	0.000061	41	0.000066	0.00056	0.058
Production	3	2023-10-01	0.00024	0.019	0.00017	0.0013	0.000077	49	0.000045	0.00052	0.071
Production	3	2023-11-01	0.00026	0.02	0.00026	0.0016	0.00012	58	0.00007	0.00054	0.14
Production	3	2023-12-01	0.00022	0.02	0.00028	0.0017	0.00014	64	0.000048	0.0005	0.13
Production	3	2024-01-01	0.00023	0.013	0.00027	0.0015	0.00014	68	0.000065	0.00052	0.16
Production	3	2024-02-01	0.00023	0.016	0.00026	0.0015	0.00018	70	0.00004	0.00046	0.15
Production	4	2024-03-01	0.00044	0.013	0.00025	0.0016	0.00016	77	0.000039	0.00045	0.17
Production	4	2024-04-01	0.00029	0.011	0.00023	0.0015	0.00011	67	0.000042	0.00046	0.18
Production	4	2024-05-01	0.00068	0.031	0.00027	0.0016	0.000091	28	0.000047	0.0013	0.14
Production	4	2024-06-01	0.00047	0.014	0.00022	0.00063	0.000024	35	0.000031	0.00049	0.031
Production	4	2024-07-01	0.00054	0.014	0.00024	0.00078	0.000035	43	0.000045	0.00039	0.042
Production	4	2024-08-01	0.0005	0.015	0.00025	0.001	0.000049	43	0.00021	0.00067	0.061
Production	4	2024-09-01	0.00059	0.016	0.00023	0.00097	0.000057	41	0.000069	0.00058	0.053
Production	4	2024-10-01	0.00024	0.02	0.00019	0.0012	0.000071	49	0.000047	0.00054	0.063
Production	4	2024-11-01	0.00026	0.022	0.00029	0.0015	0.00011	58	0.000073	0.00056	0.12
Production	4	2024-12-01	0.00022	0.022	0.00032	0.0016	0.00012	63	0.000051	0.00053	0.12
Production	4	2025-01-01	0.00023	0.015	0.00031	0.0015	0.00014	68	0.00007	0.00056	0.16
Production	4	2025-02-01	0.00023	0.018	0.0003	0.0015	0.00017	70	0.000044	0.00048	0.14
Production	5	2025-03-01	0.00044	0.013	0.00026	0.0015	0.00015	77	0.000041	0.00044	0.14
Production	5	2025-04-01	0.00028	0.011	0.00024	0.0012	0.000097	66	0.000043	0.00043	0.14
Production	5	2025-05-01	0.00065	0.033	0.00028	0.0012	0.000063	27	0.000044	0.0012	0.088
Production	5	2025-06-01	0.00047	0.016	0.00025	0.00071	0.000029	35	0.000035	0.00052	0.038
Production	5	2025-07-01	0.00054	0.016	0.00027	0.00078	0.000035	43	0.000048	0.00042	0.041
Production	5	2025-08-01	0.0005	0.016	0.00027	0.00097	0.000046	43	0.00022	0.00069	0.055
Production	5	2025-09-01	0.00059	0.017	0.00026	0.0009	0.000052	41	0.000072	0.0006	0.047
Production	5	2025-10-01	0.00024	0.02	0.0002	0.0011	0.000064	49	0.000049	0.00055	0.052
Production	5	2025-11-01	0.00026	0.023	0.00032	0.0014	0.000093	57	0.000075	0.00059	0.096
Production	5	2025-12-01	0.00022	0.023	0.00035	0.0015	0.0001	62	0.000053	0.00055	0.098
Production	5	2026-01-01	0.00023	0.017	0.00034	0.0015	0.00013	67	0.000073	0.00059	0.14
Production	5	2026-02-01	0.00023	0.019	0.00032	0.0014	0.00015	69	0.000045	0.0005	0.12
Production	6	2026-03-01	0.00043	0.015	0.00027	0.0014	0.00015	76	0.000042	0.0012	0.13
Production	6	2026-04-01	0.00028	0.013	0.00024	0.0013	0.00012	66	0.000046	0.0017	0.14
Production	6	2026-05-01	0.00064	0.04	0.00029	0.0012	0.000065	27	0.000083	0.0019	0.089

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-08-01	0.00041	0.054	0.00077	0.0000047	0.00077	0.000083	0.0023	0.0057	1.9
Production	3	2023-09-01	0.0004	0.048	0.00077	0.0000046	0.00095	0.000089	0.002	0.0061	1.8
Production	3	2023-10-01	0.00052	0.063	0.00075	0.0000047	0.0016	0.000097	0.0027	0.0087	1.3
Production	3	2023-11-01	0.0012	0.1	0.0011	0.0000061	0.002	0.00015	0.0042	0.014	1.2
Production	3	2023-12-01	0.0011	0.093	0.0012	0.0000067	0.0023	0.00016	0.0045	0.017	1.9
Production	3	2024-01-01	0.0011	0.088	0.0013	0.0000062	0.0024	0.00012	0.0052	0.018	2
Production	3	2024-02-01	0.0013	0.11	0.0015	0.0000066	0.0025	0.00013	0.007	0.022	0.7
Production	4	2024-03-01	0.0015	0.099	0.0015	0.0000069	0.0028	0.00011	0.0062	0.023	1.2
Production	4	2024-04-01	0.0016	0.049	0.0011	0.0000072	0.0024	0.000096	0.0053	0.02	1.5
Production	4	2024-05-01	0.00075	0.11	0.0014	0.0000086	0.0014	0.00022	0.0018	0.012	3.1
Production	4	2024-06-01	0.00018	0.036	0.00047	0.000005	0.00063	0.00004	0.002	0.0026	1.5
Production	4	2024-07-01	0.00026	0.048	0.00067	0.000004	0.0007	0.00007	0.002	0.0042	2.1
Production	4	2024-08-01	0.00041	0.061	0.00084	0.0000049	0.00074	0.000099	0.0024	0.0052	1.9
Production	4	2024-09-01	0.00041	0.055	0.00084	0.0000049	0.00093	0.00011	0.0021	0.0057	1.8
Production	4	2024-10-01	0.00053	0.069	0.00082	0.0000048	0.0015	0.00011	0.0028	0.008	1.2
Production	4	2024-11-01	0.0012	0.11	0.0012	0.0000062	0.0019	0.00017	0.0043	0.013	1.2
Production	4	2024-12-01	0.0011	0.1	0.0013	0.0000068	0.0022	0.00019	0.0046	0.015	1.8
Production	4	2025-01-01	0.0013	0.11	0.0014	0.0000069	0.0024	0.00017	0.0053	0.018	2
Production	4	2025-02-01	0.0014	0.12	0.0017	0.0000069	0.0024	0.00016	0.0071	0.021	0.63
Production	5	2025-03-01	0.0016	0.1	0.0015	0.0000067	0.0026	0.00013	0.0062	0.021	1.1
Production	5	2025-04-01	0.0016	0.047	0.0011	0.0000064	0.0022	0.0001	0.0053	0.016	1.3
Production	5	2025-05-01	0.00055	0.091	0.0012	0.0000072	0.001	0.00018	0.0019	0.008	2.8
Production	5	2025-06-01	0.00025	0.049	0.00058	0.0000055	0.0007	0.00007	0.0022	0.0034	1.5
Production	5	2025-07-01	0.00029	0.057	0.00074	0.0000042	0.00071	0.000088	0.0022	0.0042	2.1
Production	5	2025-08-01	0.00043	0.067	0.0009	0.000005	0.00072	0.00011	0.0025	0.005	1.9
Production	5	2025-09-01	0.00041	0.06	0.00088	0.0000049	0.00089	0.00012	0.0022	0.0053	1.7
Production	5	2025-10-01	0.00052	0.072	0.00085	0.0000047	0.0014	0.00012	0.0028	0.0072	1.2
Production	5	2025-11-01	0.0012	0.11	0.0012	0.000006	0.0018	0.00018	0.0043	0.011	1.1
Production	5	2025-12-01	0.0011	0.11	0.0014	0.0000064	0.002	0.0002	0.0047	0.013	1.7
Production	5	2026-01-01	0.0013	0.12	0.0015	0.0000066	0.0022	0.0002	0.0054	0.016	1.9
Production	5	2026-02-01	0.0014	0.13	0.0018	0.0000066	0.0022	0.00019	0.0071	0.02	0.55
Production	6	2026-03-01	0.0015	0.11	0.0016	0.0000062	0.0025	0.00014	0.0062	0.019	1
Production	6	2026-04-01	0.0016	0.053	0.0011	0.0000063	0.0021	0.00011	0.0053	0.016	1.3
Production	6	2026-05-01	0.00054	0.11	0.0015	0.0000081	0.001	0.00019	0.0019	0.0077	2.7

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-08-01	0.012	0.00021	0.0011	0.000047	42	0.00022	0.00057	0.046
Production	3	2023-09-01	0.012	0.00021	0.00098	0.000048	41	0.000031	0.00063	0.048
Production	3	2023-10-01	0.0084	0.00017	0.0012	0.000058	49	0.000021	0.00041	0.053
Production	3	2023-11-01	0.011	0.00026	0.0015	0.0001	58	0.000034	0.00045	0.09
Production	3	2023-12-01	0.01	0.00028	0.0015	0.00013	62	0.000036	0.00044	0.12
Production	3	2024-01-01	0.0099	0.00027	0.0013	0.00012	68	0.000034	0.0004	0.1
Production	3	2024-02-01	0.0083	0.00026	0.0014	0.00016	72	0.000027	0.00042	0.13
Production	4	2024-03-01	0.0073	0.00026	0.0014	0.00015	77	0.000025	0.00045	0.15
Production	4	2024-04-01	0.007	0.00024	0.0014	0.00011	74	0.000026	0.00046	0.16
Production	4	2024-05-01	0.025	0.00028	0.0016	0.00009	25	0.000056	0.0013	0.12
Production	4	2024-06-01	0.015	0.00022	0.00062	0.000027	32	0.000036	0.00057	0.02
Production	4	2024-07-01	0.014	0.00024	0.00076	0.000033	42	0.000035	0.00044	0.029
Production	4	2024-08-01	0.013	0.00024	0.001	0.000043	42	0.00022	0.00059	0.039
Production	4	2024-09-01	0.014	0.00024	0.00093	0.000044	41	0.000034	0.00065	0.042
Production	4	2024-10-01	0.0096	0.00019	0.0011	0.000052	49	0.000023	0.00043	0.045
Production	4	2024-11-01	0.013	0.00029	0.0014	0.00009	57	0.000037	0.00048	0.077
Production	4	2024-12-01	0.012	0.00032	0.0014	0.00012	61	0.000039	0.00047	0.1
Production	4	2025-01-01	0.011	0.0003	0.0014	0.00012	68	0.00004	0.00044	0.11
Production	4	2025-02-01	0.0098	0.0003	0.0013	0.00015	72	0.000032	0.00043	0.12
Production	5	2025-03-01	0.0079	0.00027	0.0013	0.00014	77	0.000027	0.00044	0.13
Production	5	2025-04-01	0.0073	0.00025	0.0011	0.000093	74	0.000027	0.00042	0.12
Production	5	2025-05-01	0.027	0.00029	0.0012	0.000059	24	0.000055	0.0012	0.065
Production	5	2025-06-01	0.017	0.00025	0.0007	0.000032	32	0.000041	0.0006	0.023
Production	5	2025-07-01	0.015	0.00027	0.00075	0.000033	42	0.000039	0.00047	0.025
Production	5	2025-08-01	0.015	0.00027	0.00095	0.00004	42	0.00023	0.00061	0.03
Production	5	2025-09-01	0.015	0.00026	0.00086	0.00004	41	0.000037	0.00067	0.032
Production	5	2025-10-01	0.01	0.0002	0.00097	0.000045	49	0.000025	0.00044	0.035
Production	5	2025-11-01	0.014	0.00032	0.0012	0.000075	56	0.000039	0.0005	0.059
Production	5	2025-12-01	0.013	0.00034	0.0013	0.000099	60	0.000041	0.00048	0.077
Production	5	2026-01-01	0.013	0.00033	0.0013	0.00011	67	0.000042	0.00046	0.087
Production	5	2026-02-01	0.011	0.00032	0.0013	0.00013	72	0.000036	0.00045	0.098
Production	6	2026-03-01	0.0092	0.00028	0.0012	0.00014	76	0.00003	0.0012	0.11
Production	6	2026-04-01	0.0089	0.00025	0.0011	0.00012	74	0.000031	0.0017	0.12
Production	6	2026-05-01	0.035	0.0003	0.0012	0.000062	24	0.000094	0.002	0.075

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-08-01	0.00039	0.046	0.00077	0.0000046	0.00077	0.000082	0.0023	0.005
Production	3	2023-09-01	0.00037	0.044	0.00073	0.0000046	0.0009	0.000089	0.002	0.0057
Production	3	2023-10-01	0.00047	0.046	0.00069	0.0000046	0.0015	0.000097	0.0027	0.0071
Production	3	2023-11-01	0.00084	0.081	0.001	0.0000061	0.002	0.00015	0.0039	0.012
Production	3	2023-12-01	0.0011	0.084	0.0012	0.0000067	0.0025	0.00016	0.0046	0.016
Production	3	2024-01-01	0.0011	0.08	0.0012	0.0000061	0.0024	0.00012	0.0051	0.017
Production	3	2024-02-01	0.0013	0.087	0.0014	0.0000066	0.0025	0.00013	0.0066	0.02
Production	4	2024-03-01	0.0015	0.081	0.0014	0.0000069	0.0028	0.00011	0.0061	0.024
Production	4	2024-04-01	0.0016	0.044	0.0011	0.000007	0.0024	0.000096	0.0052	0.019
Production	4	2024-05-01	0.00074	0.099	0.0013	0.0000068	0.0014	0.00022	0.0018	0.012
Production	4	2024-06-01	0.00017	0.027	0.0006	0.0000037	0.00064	0.000041	0.002	0.0025
Production	4	2024-07-01	0.00025	0.04	0.00067	0.0000043	0.00065	0.000069	0.002	0.0039
Production	4	2024-08-01	0.0004	0.054	0.00084	0.0000048	0.00075	0.000099	0.0024	0.0046
Production	4	2024-09-01	0.00038	0.051	0.0008	0.0000048	0.00087	0.00011	0.0021	0.0053
Production	4	2024-10-01	0.00048	0.052	0.00075	0.0000048	0.0014	0.00011	0.0027	0.0064
Production	4	2024-11-01	0.00086	0.09	0.0011	0.0000062	0.0019	0.00017	0.004	0.011
Production	4	2024-12-01	0.0011	0.094	0.0013	0.0000068	0.0023	0.00019	0.0047	0.014
Production	4	2025-01-01	0.0013	0.099	0.0014	0.0000068	0.0024	0.00017	0.0052	0.018
Production	4	2025-02-01	0.0013	0.099	0.0015	0.0000069	0.0024	0.00016	0.0067	0.019
Production	5	2025-03-01	0.0015	0.086	0.0014	0.0000067	0.0026	0.00013	0.0061	0.021
Production	5	2025-04-01	0.0016	0.042	0.0012	0.0000062	0.0022	0.0001	0.0052	0.016
Production	5	2025-05-01	0.00054	0.084	0.0012	0.0000055	0.001	0.00018	0.0018	0.0076
Production	5	2025-06-01	0.00024	0.04	0.00071	0.0000042	0.00072	0.000071	0.0022	0.0032
Production	5	2025-07-01	0.00028	0.048	0.00074	0.0000045	0.00066	0.000087	0.0021	0.0039
Production	5	2025-08-01	0.00041	0.06	0.0009	0.0000049	0.00073	0.00011	0.0025	0.0044
Production	5	2025-09-01	0.00039	0.057	0.00085	0.0000049	0.00084	0.00012	0.0021	0.0049
Production	5	2025-10-01	0.00047	0.055	0.00078	0.0000047	0.0013	0.00012	0.0028	0.0057
Production	5	2025-11-01	0.00084	0.093	0.0012	0.0000059	0.0018	0.00018	0.004	0.0091
Production	5	2025-12-01	0.0011	0.097	0.0014	0.0000064	0.0022	0.0002	0.0047	0.012
Production	5	2026-01-01	0.0013	0.11	0.0015	0.0000065	0.0022	0.0002	0.0053	0.016
Production	5	2026-02-01	0.0014	0.11	0.0016	0.0000066	0.0023	0.00019	0.0068	0.018
Production	6	2026-03-01	0.0015	0.088	0.0015	0.0000062	0.0025	0.00014	0.0061	0.02
Production	6	2026-04-01	0.0016	0.048	0.0012	0.0000062	0.0021	0.00011	0.0052	0.015
Production	6	2026-05-01	0.00053	0.1	0.0015	0.0000064	0.001	0.00019	0.0019	0.0073

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-06-01	150	43	0.43	0.01	0.052	0.0095	0.098	0.49	0.00057
Production	6	2026-07-01	190	54	0.45	0.011	0.057	0.0052	0.1	0.24	0.00041
Production	6	2026-08-01	200	64	0.45	0.013	0.046	0.0067	0.11	0.27	0.0004
Production	6	2026-09-01	190	67	0.45	0.011	0.042	0.0061	0.11	0.54	0.00064
Production	6	2026-10-01	230	75	0.45	0.0086	0.033	0.007	0.12	0.4	0.00024
Production	6	2026-11-01	300	110	0.61	0.011	0.05	0.0066	0.15	0.1	0.00016
Production	6	2026-12-01	340	130	0.62	0.011	0.056	0.0074	0.16	0.48	0.00015
Production	6	2027-01-01	370	130	0.6	0.01	0.068	0.0068	0.16	0.78	0.00022
Production	6	2027-02-01	400	140	0.54	0.0092	0.05	0.0078	0.18	0.39	0.00022
Production	7	2027-03-01	390	120	0.45	0.007	0.041	0.0095	0.16	0.56	0.00044
Production	7	2027-04-01	340	99	0.37	0.0055	0.032	0.005	0.15	0.48	0.00028
Production	7	2027-05-01	220	81	0.6	0.014	0.058	0.009	0.11	0.64	0.00053
Production	7	2027-06-01	170	49	0.43	0.01	0.052	0.0096	0.097	0.49	0.00057
Production	7	2027-07-01	210	59	0.45	0.011	0.057	0.0053	0.1	0.23	0.00041
Production	7	2027-08-01	230	65	0.46	0.013	0.046	0.0068	0.11	0.27	0.0004
Production	7	2027-09-01	230	67	0.45	0.011	0.042	0.0062	0.1	0.54	0.00064
Production	7	2027-10-01	260	73	0.45	0.0086	0.033	0.0071	0.11	0.39	0.00023
Production	7	2027-11-01	350	100	0.61	0.011	0.05	0.0066	0.15	0.094	0.00016
Production	7	2027-12-01	380	120	0.62	0.011	0.056	0.0074	0.15	0.47	0.00015
Production	7	2028-01-01	400	140	0.6	0.01	0.068	0.007	0.15	0.77	0.00022
Production	7	2028-02-01	430	150	0.52	0.0087	0.047	0.0078	0.17	0.39	0.00022
Production	8	2028-03-01	420	130	0.44	0.0069	0.04	0.0095	0.16	0.56	0.00044
Production	8	2028-04-01	370	110	0.37	0.0054	0.032	0.005	0.15	0.48	0.00028
Production	8	2028-05-01	270	85	0.59	0.013	0.057	0.0091	0.11	0.64	0.00053
Production	8	2028-06-01	190	50	0.42	0.01	0.051	0.0097	0.095	0.48	0.00057
Production	8	2028-07-01	230	60	0.44	0.011	0.056	0.0053	0.1	0.23	0.00041
Production	8	2028-08-01	250	66	0.44	0.012	0.045	0.0068	0.1	0.27	0.0004
Production	8	2028-09-01	250	68	0.43	0.01	0.041	0.0063	0.1	0.53	0.00064
Production	8	2028-10-01	280	73	0.44	0.0082	0.032	0.0071	0.11	0.39	0.00023
Production	8	2028-11-01	380	100	0.59	0.011	0.048	0.0066	0.14	0.091	0.00015
Production	8	2028-12-01	410	120	0.6	0.011	0.054	0.0074	0.15	0.47	0.00014
Production	8	2029-01-01	430	140	0.57	0.0095	0.066	0.007	0.15	0.77	0.00022
Production	8	2029-02-01	460	160	0.52	0.0087	0.048	0.008	0.16	0.39	0.00022
Production	9	2029-03-01	430	130	0.43	0.0066	0.039	0.0095	0.16	0.56	0.00043

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-06-01	0.00047	0.019	0.00027	0.00074	0.000032	35	0.000058	0.00083	0.041
Production	6	2026-07-01	0.00054	0.02	0.00029	0.0008	0.000036	44	0.000084	0.00078	0.043
Production	6	2026-08-01	0.0005	0.021	0.00029	0.00099	0.000047	43	0.00028	0.0011	0.057
Production	6	2026-09-01	0.00059	0.022	0.00027	0.00091	0.000053	41	0.00014	0.001	0.049
Production	6	2026-10-01	0.00024	0.026	0.00021	0.0011	0.000064	49	0.00014	0.001	0.052
Production	6	2026-11-01	0.00025	0.035	0.00033	0.0014	0.000093	57	0.00021	0.0014	0.095
Production	6	2026-12-01	0.00022	0.04	0.00036	0.0016	0.00011	61	0.00021	0.0016	0.099
Production	6	2027-01-01	0.00022	0.037	0.00035	0.0018	0.00013	67	0.00024	0.0019	0.14
Production	6	2027-02-01	0.00023	0.043	0.00033	0.0019	0.00015	69	0.00021	0.002	0.12
Production	7	2027-03-01	0.00043	0.034	0.00027	0.0017	0.00015	76	0.00014	0.002	0.12
Production	7	2027-04-01	0.00028	0.03	0.00025	0.0015	0.00012	66	0.00012	0.0022	0.13
Production	7	2027-05-01	0.00064	0.043	0.0003	0.0012	0.000065	28	0.0003	0.002	0.088
Production	7	2027-06-01	0.00047	0.02	0.00027	0.00074	0.000031	35	0.00015	0.00085	0.04
Production	7	2027-07-01	0.00053	0.02	0.00029	0.00079	0.000036	44	0.0002	0.00079	0.042
Production	7	2027-08-01	0.0005	0.021	0.00029	0.00097	0.000046	43	0.00041	0.0011	0.056
Production	7	2027-09-01	0.00059	0.022	0.00028	0.0009	0.000052	41	0.00029	0.0011	0.048
Production	7	2027-10-01	0.00023	0.026	0.00022	0.001	0.000062	48	0.00027	0.001	0.05
Production	7	2027-11-01	0.00025	0.034	0.00034	0.0014	0.00009	57	0.00041	0.0014	0.089
Production	7	2027-12-01	0.00021	0.038	0.00037	0.0015	0.0001	61	0.00041	0.0016	0.095
Production	7	2028-01-01	0.00022	0.036	0.00035	0.0017	0.00012	67	0.00042	0.0019	0.14
Production	7	2028-02-01	0.00023	0.04	0.00032	0.0017	0.00015	69	0.00037	0.002	0.12
Production	8	2028-03-01	0.00043	0.038	0.00028	0.0018	0.00015	76	0.00026	0.0022	0.12
Production	8	2028-04-01	0.00028	0.036	0.00025	0.0017	0.00012	66	0.00021	0.0024	0.13
Production	8	2028-05-01	0.00064	0.044	0.00031	0.0013	0.000066	28	0.0005	0.002	0.09
Production	8	2028-06-01	0.00047	0.02	0.00028	0.00074	0.000032	36	0.00023	0.00087	0.04
Production	8	2028-07-01	0.00053	0.02	0.0003	0.0008	0.000036	44	0.00028	0.00081	0.043
Production	8	2028-08-01	0.0005	0.021	0.0003	0.00098	0.000047	43	0.00052	0.0012	0.057
Production	8	2028-09-01	0.00059	0.022	0.00028	0.00091	0.000053	41	0.00039	0.0011	0.048
Production	8	2028-10-01	0.00023	0.026	0.00022	0.0011	0.000063	48	0.00037	0.0011	0.051
Production	8	2028-11-01	0.00025	0.034	0.00034	0.0014	0.000092	56	0.00054	0.0015	0.09
Production	8	2028-12-01	0.00021	0.039	0.00037	0.0015	0.0001	61	0.00055	0.0017	0.096
Production	8	2029-01-01	0.00022	0.036	0.00035	0.0017	0.00013	66	0.00055	0.002	0.14
Production	8	2029-02-01	0.00022	0.041	0.00034	0.0018	0.00015	69	0.0005	0.0022	0.12
Production	9	2029-03-01	0.00043	0.038	0.00028	0.0018	0.00015	76	0.00034	0.0023	0.12

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-06-01	0.00026	0.063	0.00075	0.0000062	0.00072	0.00008	0.0022	0.0035	1.5
Production	6	2026-07-01	0.0003	0.077	0.00098	0.0000052	0.00073	0.000097	0.0022	0.0043	2.1
Production	6	2026-08-01	0.00044	0.1	0.0013	0.0000067	0.00073	0.00013	0.0026	0.005	1.9
Production	6	2026-09-01	0.00043	0.098	0.0014	0.0000068	0.0009	0.00013	0.0022	0.0053	1.7
Production	6	2026-10-01	0.00054	0.12	0.0014	0.000007	0.0014	0.00014	0.0029	0.0072	1.2
Production	6	2026-11-01	0.0012	0.18	0.0021	0.0000094	0.0018	0.0002	0.0044	0.011	1.1
Production	6	2026-12-01	0.0011	0.19	0.0024	0.00001	0.002	0.00022	0.0047	0.013	1.7
Production	6	2027-01-01	0.0013	0.2	0.0026	0.000011	0.0022	0.00022	0.0054	0.016	1.9
Production	6	2027-02-01	0.0014	0.21	0.0028	0.000011	0.0022	0.00021	0.0071	0.02	0.54
Production	7	2027-03-01	0.0015	0.15	0.0022	0.0000085	0.0024	0.00015	0.0062	0.019	0.96
Production	7	2027-04-01	0.0016	0.09	0.0016	0.0000082	0.0021	0.00012	0.0053	0.016	1.3
Production	7	2027-05-01	0.00057	0.22	0.0029	0.000013	0.00099	0.00022	0.002	0.0076	2.6
Production	7	2027-06-01	0.00028	0.11	0.0014	0.0000086	0.00072	0.000096	0.0023	0.0035	1.5
Production	7	2027-07-01	0.00032	0.13	0.0017	0.0000081	0.00072	0.00012	0.0022	0.0043	2.1
Production	7	2027-08-01	0.00046	0.17	0.0022	0.00001	0.00072	0.00015	0.0026	0.005	1.9
Production	7	2027-09-01	0.00045	0.17	0.0023	0.00001	0.00089	0.00015	0.0023	0.0053	1.7
Production	7	2027-10-01	0.00055	0.19	0.0023	0.00001	0.0014	0.00016	0.0029	0.007	1.2
Production	7	2027-11-01	0.0012	0.28	0.0034	0.000014	0.0017	0.00023	0.0044	0.011	1
Production	7	2027-12-01	0.0012	0.29	0.0037	0.000015	0.002	0.00025	0.0047	0.012	1.7
Production	7	2028-01-01	0.0013	0.29	0.0038	0.000015	0.0022	0.00024	0.0054	0.016	1.9
Production	7	2028-02-01	0.0014	0.29	0.0039	0.000015	0.0021	0.00023	0.007	0.019	0.49
Production	8	2028-03-01	0.0015	0.22	0.003	0.000012	0.0024	0.00017	0.0062	0.019	0.96
Production	8	2028-04-01	0.0017	0.13	0.0022	0.00001	0.0021	0.00014	0.0053	0.016	1.3
Production	8	2028-05-01	0.0006	0.32	0.0043	0.000019	0.001	0.00025	0.002	0.0079	2.6
Production	8	2028-06-01	0.00029	0.15	0.0019	0.000011	0.00072	0.00011	0.0023	0.0035	1.5
Production	8	2028-07-01	0.00033	0.17	0.0023	0.00001	0.00072	0.00013	0.0022	0.0043	2.1
Production	8	2028-08-01	0.00048	0.22	0.0029	0.000013	0.00073	0.00016	0.0026	0.0051	1.9
Production	8	2028-09-01	0.00047	0.22	0.003	0.000013	0.00089	0.00017	0.0023	0.0054	1.7
Production	8	2028-10-01	0.00057	0.23	0.0029	0.000013	0.0014	0.00017	0.0029	0.0071	1.2
Production	8	2028-11-01	0.0012	0.35	0.0043	0.000018	0.0017	0.00024	0.0044	0.011	1
Production	8	2028-12-01	0.0012	0.35	0.0046	0.000019	0.002	0.00026	0.0047	0.013	1.7
Production	8	2029-01-01	0.0014	0.35	0.0046	0.000019	0.0022	0.00026	0.0054	0.016	1.9
Production	8	2029-02-01	0.0015	0.36	0.0047	0.000018	0.0022	0.00025	0.0071	0.019	0.49
Production	9	2029-03-01	0.0015	0.25	0.0035	0.000013	0.0024	0.00018	0.0062	0.019	0.95

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-06-01	0.02	0.00027	0.00073	0.000035	32	0.000064	0.00091	0.029
Production	6	2026-07-01	0.019	0.00029	0.00077	0.000034	42	0.000075	0.00084	0.032
Production	6	2026-08-01	0.02	0.00028	0.00096	0.000041	42	0.00029	0.0011	0.038
Production	6	2026-09-01	0.02	0.00027	0.00087	0.00004	41	0.00011	0.0011	0.039
Production	6	2026-10-01	0.017	0.00021	0.00098	0.000045	49	0.00011	0.00091	0.038
Production	6	2026-11-01	0.026	0.00033	0.0012	0.000075	56	0.00017	0.0013	0.062
Production	6	2026-12-01	0.03	0.00036	0.0014	0.0001	60	0.0002	0.0015	0.079
Production	6	2027-01-01	0.034	0.00034	0.0016	0.00011	67	0.00021	0.0018	0.088
Production	6	2027-02-01	0.035	0.00033	0.0017	0.00013	72	0.0002	0.0019	0.099
Production	7	2027-03-01	0.028	0.00028	0.0015	0.00014	75	0.00013	0.002	0.099
Production	7	2027-04-01	0.026	0.00026	0.0014	0.00011	73	0.00011	0.0022	0.11
Production	7	2027-05-01	0.038	0.00031	0.0012	0.000061	24	0.00031	0.0021	0.074
Production	7	2027-06-01	0.02	0.00028	0.00073	0.000034	32	0.00016	0.00093	0.029
Production	7	2027-07-01	0.019	0.00029	0.00076	0.000033	43	0.00019	0.00084	0.031
Production	7	2027-08-01	0.02	0.00029	0.00095	0.00004	42	0.00042	0.0011	0.037
Production	7	2027-09-01	0.02	0.00028	0.00086	0.00004	41	0.00025	0.0011	0.038
Production	7	2027-10-01	0.016	0.00022	0.00095	0.000044	49	0.00025	0.00091	0.037
Production	7	2027-11-01	0.025	0.00034	0.0012	0.000072	56	0.00037	0.0013	0.058
Production	7	2027-12-01	0.029	0.00037	0.0014	0.000096	59	0.0004	0.0015	0.074
Production	7	2028-01-01	0.032	0.00035	0.0015	0.0001	67	0.00039	0.0017	0.082
Production	7	2028-02-01	0.033	0.00032	0.0016	0.00012	71	0.00037	0.0019	0.092
Production	8	2028-03-01	0.033	0.00029	0.0016	0.00014	75	0.00025	0.0022	0.1
Production	8	2028-04-01	0.032	0.00026	0.0016	0.00012	73	0.00019	0.0024	0.11
Production	8	2028-05-01	0.04	0.00031	0.0013	0.000063	25	0.00051	0.0021	0.076
Production	8	2028-06-01	0.021	0.00028	0.00074	0.000034	32	0.00023	0.00095	0.029
Production	8	2028-07-01	0.02	0.0003	0.00077	0.000034	43	0.00027	0.00087	0.031
Production	8	2028-08-01	0.02	0.00029	0.00096	0.000041	42	0.00053	0.0011	0.038
Production	8	2028-09-01	0.02	0.00028	0.00087	0.00004	41	0.00035	0.0012	0.039
Production	8	2028-10-01	0.016	0.00022	0.00096	0.000044	49	0.00034	0.00095	0.038
Production	8	2028-11-01	0.025	0.00034	0.0012	0.000074	56	0.0005	0.0014	0.06
Production	8	2028-12-01	0.029	0.00037	0.0014	0.000098	59	0.00054	0.0017	0.076
Production	8	2029-01-01	0.033	0.00035	0.0015	0.00011	67	0.00052	0.0019	0.085
Production	8	2029-02-01	0.034	0.00033	0.0016	0.00013	71	0.00049	0.0021	0.095
Production	9	2029-03-01	0.033	0.00029	0.0016	0.00014	75	0.00033	0.0023	0.1

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-06-01	0.00025	0.054	0.00088	0.0000049	0.00074	0.000081	0.0022	0.0034
Production	6	2026-07-01	0.00029	0.068	0.00098	0.0000055	0.00067	0.000096	0.0021	0.004
Production	6	2026-08-01	0.00042	0.094	0.0013	0.0000066	0.00074	0.00013	0.0025	0.0044
Production	6	2026-09-01	0.0004	0.095	0.0013	0.0000067	0.00084	0.00013	0.0022	0.0049
Production	6	2026-10-01	0.00049	0.1	0.0014	0.000007	0.0013	0.00014	0.0028	0.0057
Production	6	2026-11-01	0.00086	0.16	0.0021	0.0000094	0.0018	0.0002	0.0041	0.0092
Production	6	2026-12-01	0.0011	0.18	0.0024	0.00001	0.0022	0.00022	0.0048	0.012
Production	6	2027-01-01	0.0013	0.19	0.0026	0.000011	0.0022	0.00022	0.0053	0.016
Production	6	2027-02-01	0.0014	0.19	0.0027	0.000011	0.0023	0.00021	0.0068	0.018
Production	7	2027-03-01	0.0015	0.14	0.0021	0.0000085	0.0024	0.00015	0.0061	0.019
Production	7	2027-04-01	0.0016	0.087	0.0017	0.000008	0.0021	0.00012	0.0052	0.015
Production	7	2027-05-01	0.00056	0.21	0.0029	0.000012	0.001	0.00022	0.0019	0.0072
Production	7	2027-06-01	0.00027	0.1	0.0015	0.0000073	0.00074	0.000097	0.0022	0.0033
Production	7	2027-07-01	0.00031	0.13	0.0017	0.0000084	0.00067	0.00011	0.0022	0.004
Production	7	2027-08-01	0.00044	0.16	0.0022	0.00001	0.00073	0.00015	0.0026	0.0044
Production	7	2027-09-01	0.00042	0.17	0.0023	0.00001	0.00083	0.00015	0.0022	0.0049
Production	7	2027-10-01	0.0005	0.17	0.0023	0.00001	0.0013	0.00016	0.0028	0.0056
Production	7	2027-11-01	0.00089	0.26	0.0034	0.000014	0.0017	0.00023	0.0041	0.0089
Production	7	2027-12-01	0.0011	0.28	0.0037	0.000015	0.0021	0.00025	0.0048	0.012
Production	7	2028-01-01	0.0013	0.28	0.0037	0.000015	0.0021	0.00024	0.0053	0.015
Production	7	2028-02-01	0.0014	0.27	0.0037	0.000015	0.0022	0.00023	0.0067	0.017
Production	8	2028-03-01	0.0015	0.2	0.0029	0.000012	0.0024	0.00017	0.0061	0.019
Production	8	2028-04-01	0.0016	0.13	0.0023	0.00001	0.0021	0.00014	0.0052	0.015
Production	8	2028-05-01	0.00059	0.32	0.0042	0.000017	0.001	0.00025	0.002	0.0074
Production	8	2028-06-01	0.00028	0.14	0.002	0.0000093	0.00074	0.00011	0.0023	0.0034
Production	8	2028-07-01	0.00032	0.17	0.0023	0.00001	0.00067	0.00013	0.0022	0.004
Production	8	2028-08-01	0.00046	0.22	0.0029	0.000013	0.00073	0.00016	0.0026	0.0045
Production	8	2028-09-01	0.00044	0.22	0.0029	0.000013	0.00084	0.00017	0.0022	0.005
Production	8	2028-10-01	0.00052	0.22	0.0029	0.000013	0.0013	0.00017	0.0028	0.0057
Production	8	2028-11-01	0.00091	0.33	0.0042	0.000018	0.0017	0.00024	0.0041	0.0091
Production	8	2028-12-01	0.0012	0.35	0.0047	0.000019	0.0021	0.00026	0.0048	0.012
Production	8	2029-01-01	0.0013	0.34	0.0046	0.000019	0.0021	0.00026	0.0053	0.016
Production	8	2029-02-01	0.0014	0.33	0.0046	0.000018	0.0022	0.00025	0.0068	0.017
Production	9	2029-03-01	0.0015	0.23	0.0034	0.000013	0.0024	0.00018	0.0061	0.019

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	9	2029-04-01	370	110	0.36	0.0052	0.031	0.005	0.15	0.48	0.00027
Production	9	2029-05-01	290	87	0.55	0.013	0.055	0.009	0.11	0.64	0.00053
Production	9	2029-06-01	200	50	0.4	0.0095	0.049	0.0096	0.093	0.48	0.00056
Production	9	2029-07-01	240	60	0.41	0.01	0.054	0.0053	0.099	0.23	0.00041
Production	9	2029-08-01	270	66	0.42	0.012	0.043	0.0068	0.1	0.27	0.0004
Production	9	2029-09-01	260	68	0.41	0.0097	0.039	0.0062	0.098	0.53	0.00063
Production	9	2029-10-01	290	73	0.42	0.0078	0.03	0.007	0.11	0.39	0.00023
Production	9	2029-11-01	390	100	0.56	0.01	0.046	0.0065	0.14	0.086	0.00015
Production	9	2029-12-01	420	120	0.57	0.01	0.052	0.0073	0.15	0.47	0.00014
Production	9	2030-01-01	440	140	0.55	0.009	0.065	0.007	0.14	0.77	0.00022
Production	9	2030-02-01	460	160	0.5	0.0083	0.046	0.0079	0.16	0.39	0.00022
Production	10	2030-03-01	440	130	0.42	0.0063	0.038	0.0095	0.15	0.55	0.00043
Production	10	2030-04-01	380	110	0.35	0.0049	0.029	0.005	0.15	0.48	0.00027
Production	10	2030-05-01	300	87	0.52	0.012	0.052	0.009	0.099	0.64	0.00053
Production	10	2030-06-01	200	49	0.37	0.009	0.047	0.0096	0.088	0.48	0.00056
Production	10	2030-07-01	250	59	0.39	0.0097	0.052	0.0052	0.093	0.23	0.00041
Production	10	2030-08-01	280	66	0.39	0.011	0.041	0.0068	0.095	0.27	0.0004
Production	10	2030-09-01	270	67	0.38	0.0091	0.038	0.0062	0.092	0.53	0.00063
Active Closure	10	2030-10-01	180	42	0.53	0.01	0.085	0.0072	0.086	0.41	0.00024
Active Closure	10	2030-11-01	230	56	0.77	0.015	0.13	0.0068	0.11	0.086	0.00015
Active Closure	10	2030-12-01	260	61	0.85	0.016	0.15	0.0076	0.11	0.46	0.00013
Active Closure	10	2031-01-01	290	62	0.83	0.015	0.16	0.0077	0.11	0.78	0.00022
Active Closure	10	2031-02-01	320	64	0.76	0.014	0.13	0.0092	0.13	0.4	0.00022
Active Closure	11	2031-03-01	350	65	0.66	0.012	0.12	0.01	0.13	0.55	0.00042
Active Closure	11	2031-04-01	320	53	0.57	0.01	0.098	0.0058	0.12	0.48	0.00027
Active Closure	11	2031-05-01	130	44	0.74	0.017	0.14	0.0088	0.073	0.66	0.0005
Active Closure	11	2031-06-01	140	28	0.39	0.0094	0.078	0.0097	0.077	0.51	0.0006
Active Closure	11	2031-07-01	180	33	0.41	0.01	0.087	0.0053	0.079	0.25	0.00042
Active Closure	11	2031-08-01	190	34	0.46	0.013	0.094	0.007	0.08	0.29	0.00041
Active Closure	11	2031-09-01	200	36	0.47	0.011	0.092	0.0064	0.078	0.57	0.00065
Active Closure	11	2031-10-01	250	46	0.55	0.011	0.099	0.0075	0.091	0.41	0.00024
Active Closure	11	2031-11-01	350	57	0.82	0.016	0.16	0.0074	0.11	0.091	0.00016
Active Closure	11	2031-12-01	410	62	0.91	0.018	0.18	0.0085	0.12	0.47	0.00014
Active Closure	11	2032-01-01	450	63	0.89	0.017	0.19	0.0084	0.12	0.77	0.00022

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	9	2029-04-01	0.00028	0.038	0.00025	0.0018	0.00012	65	0.00026	0.0026	0.13
Production	9	2029-05-01	0.00063	0.045	0.00031	0.0013	0.000067	28	0.0006	0.0021	0.09
Production	9	2029-06-01	0.00047	0.02	0.00027	0.00075	0.000032	35	0.00026	0.00088	0.04
Production	9	2029-07-01	0.00053	0.02	0.00029	0.0008	0.000037	44	0.00032	0.00083	0.043
Production	9	2029-08-01	0.0005	0.021	0.0003	0.00098	0.000047	43	0.00057	0.0012	0.056
Production	9	2029-09-01	0.00059	0.022	0.00028	0.00091	0.000053	41	0.00043	0.0011	0.048
Production	9	2029-10-01	0.00023	0.026	0.00022	0.001	0.000062	48	0.0004	0.0011	0.051
Production	9	2029-11-01	0.00025	0.034	0.00035	0.0014	0.000092	56	0.00058	0.0015	0.088
Production	9	2029-12-01	0.00021	0.038	0.00038	0.0015	0.0001	61	0.0006	0.0018	0.096
Production	9	2030-01-01	0.00022	0.035	0.00036	0.0017	0.00013	66	0.0006	0.0021	0.14
Production	9	2030-02-01	0.00022	0.041	0.00034	0.0018	0.00015	68	0.00054	0.0023	0.12
Production	10	2030-03-01	0.00043	0.035	0.00025	0.002	0.00015	75	0.00036	0.0024	0.12
Production	10	2030-04-01	0.00027	0.036	0.00023	0.0019	0.00012	65	0.00028	0.0027	0.13
Production	10	2030-05-01	0.00063	0.04	0.00027	0.0015	0.000068	27	0.00064	0.0021	0.091
Production	10	2030-06-01	0.00047	0.014	0.00024	0.00093	0.000031	34	0.00027	0.00089	0.04
Production	10	2030-07-01	0.00053	0.014	0.00026	0.00098	0.000036	42	0.00034	0.00084	0.043
Production	10	2030-08-01	0.0005	0.016	0.00027	0.0012	0.000047	41	0.0006	0.0012	0.057
Production	10	2030-09-01	0.00058	0.017	0.00026	0.0011	0.000052	39	0.00047	0.0011	0.049
Active Closure	10	2030-10-01	0.00024	0.017	0.00015	0.00086	0.000052	49	0.000046	0.00075	0.037
Active Closure	10	2030-11-01	0.00026	0.018	0.00024	0.001	0.000066	56	0.000097	0.00095	0.059
Active Closure	10	2030-12-01	0.00021	0.019	0.00027	0.0011	0.000066	60	0.00011	0.0011	0.061
Active Closure	10	2031-01-01	0.00022	0.015	0.00026	0.0011	0.000084	65	0.00017	0.0013	0.12
Active Closure	10	2031-02-01	0.00023	0.016	0.00024	0.00098	0.0001	67	0.00017	0.0013	0.067
Active Closure	11	2031-03-01	0.00042	0.013	0.0002	0.00097	0.000094	75	0.0002	0.0014	0.06
Active Closure	11	2031-04-01	0.00026	0.012	0.00017	0.00084	0.000054	65	0.00023	0.0016	0.065
Active Closure	11	2031-05-01	0.0006	0.033	0.00024	0.00095	0.00004	27	0.00007	0.0014	0.07
Active Closure	11	2031-06-01	0.0005	0.0099	0.0002	0.00069	0.000019	37	0.000062	0.00064	0.031
Active Closure	11	2031-07-01	0.00056	0.0085	0.00022	0.0007	0.000022	45	0.000091	0.00053	0.028
Active Closure	11	2031-08-01	0.00051	0.0092	0.00022	0.00082	0.000029	44	0.0003	0.00082	0.038
Active Closure	11	2031-09-01	0.0006	0.011	0.00021	0.00074	0.000037	43	0.00018	0.00076	0.031
Active Closure	11	2031-10-01	0.00024	0.017	0.00017	0.00086	0.000052	50	0.00022	0.00078	0.037
Active Closure	11	2031-11-01	0.00025	0.018	0.00027	0.0011	0.000066	57	0.00039	0.001	0.061
Active Closure	11	2031-12-01	0.00021	0.019	0.0003	0.0011	0.000068	61	0.00047	0.0012	0.058
Active Closure	11	2032-01-01	0.00022	0.015	0.0003	0.0011	0.000084	66	0.00055	0.0015	0.1

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	9	2029-04-01	0.0016	0.16	0.0025	0.000012	0.002	0.00014	0.0052	0.016	1.2
Production	9	2029-05-01	0.00062	0.37	0.0049	0.000021	0.001	0.00026	0.002	0.0079	2.6
Production	9	2029-06-01	0.00029	0.16	0.0021	0.000011	0.00072	0.00011	0.0022	0.0036	1.5
Production	9	2029-07-01	0.00034	0.19	0.0025	0.000011	0.00072	0.00013	0.0022	0.0044	2.1
Production	9	2029-08-01	0.00049	0.25	0.0032	0.000014	0.00073	0.00016	0.0026	0.0051	1.9
Production	9	2029-09-01	0.00048	0.24	0.0033	0.000014	0.00089	0.00017	0.0022	0.0054	1.7
Production	9	2029-10-01	0.00058	0.25	0.0032	0.000014	0.0014	0.00017	0.0029	0.007	1.1
Production	9	2029-11-01	0.0012	0.37	0.0046	0.000019	0.0017	0.00024	0.0044	0.011	1
Production	9	2029-12-01	0.0012	0.38	0.005	0.00002	0.0019	0.00026	0.0047	0.013	1.6
Production	9	2030-01-01	0.0014	0.37	0.0049	0.00002	0.0022	0.00025	0.0054	0.016	1.9
Production	9	2030-02-01	0.0015	0.37	0.005	0.000019	0.0021	0.00025	0.0071	0.02	0.48
Production	10	2030-03-01	0.0015	0.26	0.0037	0.000014	0.0023	0.00018	0.0058	0.02	0.94
Production	10	2030-04-01	0.0017	0.17	0.0027	0.000012	0.002	0.00014	0.0049	0.017	1.2
Production	10	2030-05-01	0.00062	0.39	0.0052	0.000023	0.00097	0.00026	0.0014	0.0081	2.6
Production	10	2030-06-01	0.00029	0.17	0.0022	0.000012	0.00067	0.00011	0.0017	0.0036	1.5
Production	10	2030-07-01	0.00035	0.21	0.0027	0.000012	0.00067	0.00013	0.0017	0.0044	2.1
Production	10	2030-08-01	0.0005	0.26	0.0035	0.000015	0.00068	0.00017	0.0021	0.0052	1.9
Production	10	2030-09-01	0.00049	0.26	0.0036	0.000016	0.00084	0.00017	0.0018	0.0054	1.7
Active Closure	10	2030-10-01	0.00011	0.035	0.00059	0.0000034	0.0012	0.0000054	0.0025	0.0059	1.1
Active Closure	10	2030-11-01	0.00039	0.081	0.0011	0.0000045	0.0014	0.000011	0.0037	0.0076	0.9
Active Closure	10	2030-12-01	0.000095	0.1	0.0016	0.0000054	0.0015	0.000016	0.004	0.0082	1.5
Active Closure	10	2031-01-01	0.00014	0.14	0.0022	0.0000061	0.0016	0.00002	0.0047	0.011	1.7
Active Closure	10	2031-02-01	0.000098	0.18	0.0028	0.0000065	0.0015	0.000022	0.0065	0.013	0.25
Active Closure	11	2031-03-01	0.000091	0.19	0.003	0.0000067	0.0017	0.000024	0.0057	0.012	0.72
Active Closure	11	2031-04-01	0.00011	0.18	0.0029	0.0000074	0.0012	0.000026	0.0049	0.0077	1.1
Active Closure	11	2031-05-01	0.00011	0.053	0.0011	0.0000057	0.00063	0.000011	0.0014	0.0052	2.4
Active Closure	11	2031-06-01	0.000053	0.053	0.00079	0.0000055	0.00054	0.0000086	0.0017	0.0022	1.6
Active Closure	11	2031-07-01	0.000051	0.07	0.0011	0.0000045	0.00052	0.000012	0.0016	0.0028	2.2
Active Closure	11	2031-08-01	0.00013	0.1	0.0016	0.0000055	0.00048	0.000016	0.002	0.0029	1.9
Active Closure	11	2031-09-01	0.00011	0.12	0.0018	0.000006	0.00066	0.000019	0.0017	0.0036	1.7
Active Closure	11	2031-10-01	0.00014	0.18	0.0024	0.0000069	0.0012	0.000024	0.0025	0.0059	1.1
Active Closure	11	2031-11-01	0.00045	0.33	0.0042	0.00001	0.0014	0.000043	0.0038	0.0076	0.91
Active Closure	11	2031-12-01	0.00017	0.4	0.0054	0.000013	0.0015	0.000055	0.0041	0.0082	1.5
Active Closure	11	2032-01-01	0.00022	0.46	0.0061	0.000014	0.0016	0.00006	0.0049	0.011	1.7

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	9	2029-04-01	0.035	0.00026	0.0016	0.00012	73	0.00025	0.0025	0.11
Production	9	2029-05-01	0.04	0.00031	0.0013	0.000064	25	0.00061	0.0022	0.077
Production	9	2029-06-01	0.021	0.00028	0.00074	0.000035	32	0.00026	0.00097	0.029
Production	9	2029-07-01	0.019	0.00029	0.00077	0.000034	43	0.00031	0.00089	0.032
Production	9	2029-08-01	0.02	0.00029	0.00096	0.000041	42	0.00058	0.0011	0.039
Production	9	2029-09-01	0.02	0.00028	0.00087	0.000041	41	0.0004	0.0012	0.039
Production	9	2029-10-01	0.016	0.00022	0.00096	0.000044	48	0.00038	0.00098	0.038
Production	9	2029-11-01	0.025	0.00035	0.0012	0.000074	55	0.00055	0.0014	0.06
Production	9	2029-12-01	0.029	0.00038	0.0014	0.000098	59	0.00059	0.0017	0.076
Production	9	2030-01-01	0.032	0.00035	0.0015	0.00011	66	0.00057	0.002	0.084
Production	9	2030-02-01	0.033	0.00034	0.0016	0.00013	71	0.00054	0.0022	0.094
Production	10	2030-03-01	0.029	0.00026	0.0018	0.00014	75	0.00035	0.0024	0.1
Production	10	2030-04-01	0.032	0.00024	0.0018	0.00012	73	0.00027	0.0027	0.11
Production	10	2030-05-01	0.035	0.00027	0.0015	0.000064	24	0.00065	0.0022	0.078
Production	10	2030-06-01	0.015	0.00024	0.00092	0.000034	32	0.00028	0.00097	0.029
Production	10	2030-07-01	0.014	0.00026	0.00096	0.000034	42	0.00033	0.00089	0.032
Production	10	2030-08-01	0.015	0.00026	0.0011	0.000041	42	0.00061	0.0011	0.039
Production	10	2030-09-01	0.016	0.00026	0.001	0.00004	41	0.00044	0.0012	0.04
Active Closure	10	2030-10-01	0.0065	0.00015	0.00076	0.000031	50	0.000021	0.00063	0.017
Active Closure	10	2030-11-01	0.0091	0.00024	0.00085	0.000044	56	0.000062	0.00087	0.025
Active Closure	10	2030-12-01	0.0093	0.00026	0.00091	0.000059	59	0.0001	0.001	0.032
Active Closure	10	2031-01-01	0.01	0.00025	0.00087	0.000057	65	0.00014	0.0012	0.029
Active Closure	10	2031-02-01	0.0087	0.00024	0.00082	0.000072	70	0.00017	0.0013	0.029
Active Closure	11	2031-03-01	0.0079	0.00021	0.00078	0.000081	75	0.0002	0.0014	0.031
Active Closure	11	2031-04-01	0.0081	0.00019	0.00072	0.000049	73	0.00022	0.0016	0.033
Active Closure	11	2031-05-01	0.025	0.00024	0.00094	0.000034	24	0.000074	0.0015	0.046
Active Closure	11	2031-06-01	0.01	0.00021	0.00068	0.000021	33	0.000065	0.00071	0.013
Active Closure	11	2031-07-01	0.0078	0.00022	0.00067	0.000019	44	0.00008	0.00057	0.012
Active Closure	11	2031-08-01	0.008	0.00021	0.0008	0.000022	44	0.00031	0.00075	0.016
Active Closure	11	2031-09-01	0.0084	0.00021	0.00069	0.000023	43	0.00015	0.00082	0.018
Active Closure	11	2031-10-01	0.0066	0.00017	0.00077	0.000032	50	0.00019	0.00067	0.018
Active Closure	11	2031-11-01	0.0093	0.00027	0.00086	0.000046	56	0.00036	0.00094	0.026
Active Closure	11	2031-12-01	0.0096	0.0003	0.00093	0.000061	60	0.00046	0.0011	0.033
Active Closure	11	2032-01-01	0.011	0.00029	0.0009	0.00006	67	0.00052	0.0013	0.031

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	9	2029-04-01	0.0016	0.16	0.0026	0.000011	0.0021	0.00014	0.0052	0.015
Production	9	2029-05-01	0.0006	0.36	0.0049	0.00002	0.001	0.00026	0.0019	0.0075
Production	9	2029-06-01	0.00028	0.15	0.0022	0.00001	0.00074	0.00011	0.0022	0.0034
Production	9	2029-07-01	0.00033	0.18	0.0025	0.000011	0.00067	0.00013	0.0021	0.004
Production	9	2029-08-01	0.00047	0.24	0.0032	0.000014	0.00073	0.00016	0.0025	0.0045
Production	9	2029-09-01	0.00045	0.24	0.0032	0.000014	0.00083	0.00017	0.0022	0.005
Production	9	2029-10-01	0.00053	0.23	0.0031	0.000014	0.0013	0.00017	0.0028	0.0057
Production	9	2029-11-01	0.00093	0.35	0.0045	0.000019	0.0017	0.00024	0.0041	0.0092
Production	9	2029-12-01	0.0012	0.37	0.005	0.00002	0.0021	0.00026	0.0048	0.012
Production	9	2030-01-01	0.0014	0.36	0.0049	0.00002	0.0021	0.00025	0.0053	0.016
Production	9	2030-02-01	0.0014	0.35	0.0048	0.000019	0.0022	0.00025	0.0068	0.018
Production	10	2030-03-01	0.0015	0.24	0.0036	0.000014	0.0023	0.00018	0.0057	0.02
Production	10	2030-04-01	0.0016	0.16	0.0027	0.000012	0.002	0.00014	0.0049	0.016
Production	10	2030-05-01	0.00061	0.39	0.0052	0.000021	0.00099	0.00026	0.0014	0.0077
Production	10	2030-06-01	0.00028	0.16	0.0024	0.000011	0.00069	0.00011	0.0017	0.0035
Production	10	2030-07-01	0.00034	0.2	0.0027	0.000012	0.00062	0.00013	0.0016	0.0041
Production	10	2030-08-01	0.00049	0.26	0.0035	0.000015	0.00069	0.00017	0.002	0.0046
Production	10	2030-09-01	0.00047	0.26	0.0035	0.000016	0.00079	0.00017	0.0017	0.005
Active Closure	10	2030-10-01	0.000051	0.018	0.00052	0.0000034	0.0011	0.0000055	0.0024	0.0042
Active Closure	10	2030-11-01	0.000071	0.061	0.0011	0.0000045	0.0014	0.000011	0.0034	0.0061
Active Closure	10	2030-12-01	0.000071	0.091	0.0017	0.0000054	0.0016	0.000016	0.0041	0.0072
Active Closure	10	2031-01-01	0.0001	0.13	0.0021	0.000006	0.0016	0.000019	0.0046	0.01
Active Closure	10	2031-02-01	0.000065	0.15	0.0026	0.0000065	0.0016	0.000022	0.0062	0.011
Active Closure	11	2031-03-01	0.000062	0.18	0.0029	0.0000067	0.0016	0.000024	0.0057	0.013
Active Closure	11	2031-04-01	0.000076	0.18	0.003	0.0000071	0.0013	0.000026	0.0048	0.0067
Active Closure	11	2031-05-01	0.000076	0.05	0.0011	0.0000042	0.00065	0.000011	0.0013	0.0045
Active Closure	11	2031-06-01	0.000037	0.043	0.00092	0.0000043	0.00056	0.0000091	0.0016	0.002
Active Closure	11	2031-07-01	0.000042	0.061	0.0011	0.0000045	0.00046	0.000011	0.0015	0.0023
Active Closure	11	2031-08-01	0.00011	0.097	0.0016	0.0000055	0.00049	0.000016	0.002	0.0021
Active Closure	11	2031-09-01	0.000079	0.12	0.0018	0.000006	0.0006	0.000019	0.0017	0.003
Active Closure	11	2031-10-01	0.000087	0.16	0.0023	0.0000069	0.0011	0.000024	0.0025	0.0042
Active Closure	11	2031-11-01	0.00013	0.31	0.0042	0.00001	0.0014	0.000043	0.0035	0.006
Active Closure	11	2031-12-01	0.00015	0.39	0.0054	0.000013	0.0016	0.000055	0.0042	0.0073
Active Closure	11	2032-01-01	0.00018	0.45	0.0061	0.000014	0.0016	0.00006	0.0047	0.01

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L
Active Closure	11	2032-02-01	480	66	0.8	0.015	0.16	0.0097	0.14	0.39	0.00022
Active Closure	12	2032-03-01	510	66	0.73	0.013	0.14	0.011	0.14	0.56	0.00043
Active Closure	12	2032-04-01	470	55	0.63	0.011	0.13	0.0065	0.13	0.49	0.00028
Active Closure	12	2032-05-01	160	44	0.78	0.018	0.16	0.0092	0.077	0.66	0.00051
Active Closure	12	2032-06-01	160	28	0.4	0.0096	0.084	0.0099	0.079	0.51	0.0006
Active Closure	12	2032-07-01	210	33	0.42	0.01	0.094	0.0055	0.081	0.25	0.00042
Active Closure	12	2032-08-01	240	34	0.49	0.014	0.11	0.0072	0.083	0.29	0.00041
Active Closure	12	2032-09-01	250	37	0.49	0.012	0.1	0.0066	0.081	0.57	0.00065
Active Closure	12	2032-10-01	310	46	0.6	0.012	0.12	0.0078	0.095	0.41	0.00024
Active Closure	12	2032-11-01	450	57	0.89	0.018	0.18	0.0079	0.12	0.093	0.00016
Active Closure	12	2032-12-01	530	63	0.98	0.019	0.21	0.0091	0.13	0.47	0.00014
Active Closure	12	2033-01-01	570	64	0.97	0.019	0.22	0.009	0.13	0.77	0.00022
Active Closure	12	2033-02-01	600	67	0.89	0.017	0.19	0.01	0.14	0.39	0.00022
Active Closure	13	2033-03-01	620	67	0.79	0.015	0.17	0.012	0.15	0.56	0.00044
Active Closure	13	2033-04-01	570	55	0.68	0.013	0.15	0.0069	0.14	0.49	0.00028
Active Closure	13	2033-05-01	180	44	0.87	0.02	0.18	0.0095	0.082	0.66	0.00051
Active Closure	13	2033-06-01	180	28	0.42	0.01	0.092	0.01	0.08	0.51	0.0006
Active Closure	13	2033-07-01	230	33	0.45	0.011	0.11	0.0056	0.083	0.25	0.00042
Active Closure	13	2033-08-01	260	35	0.55	0.015	0.13	0.0074	0.085	0.29	0.00041
Active Closure	13	2033-09-01	270	37	0.56	0.013	0.13	0.0068	0.083	0.57	0.00065
Transitional Closure	13	2033-10-01	220	33	0.36	0.0063	0.05	0.0068	0.08	0.41	0.00023
Transitional Closure	13	2033-11-01	310	39	0.58	0.01	0.094	0.0067	0.1	0.097	0.00016
Transitional Closure	13	2033-12-01	380	45	0.71	0.013	0.13	0.0082	0.11	0.48	0.00015
Transitional Closure	13	2034-01-01	440	49	0.79	0.014	0.17	0.0082	0.11	0.78	0.00022
Transitional Closure	13	2034-02-01	500	56	0.81	0.015	0.16	0.0097	0.13	0.39	0.00022
Transitional Closure	14	2034-03-01	550	60	0.81	0.015	0.17	0.012	0.14	0.56	0.00045
Transitional Closure	14	2034-04-01	530	52	0.8	0.015	0.18	0.0068	0.14	0.49	0.00028
Transitional Closure	14	2034-05-01	130	17	0.38	0.0088	0.059	0.0073	0.058	0.63	0.00048
Transitional Closure	14	2034-06-01	130	21	0.25	0.0062	0.047	0.0092	0.071	0.5	0.00059
Transitional Closure	14	2034-07-01	170	25	0.25	0.0066	0.053	0.0048	0.072	0.24	0.00041
Transitional Closure	14	2034-08-01	160	22	0.26	0.0083	0.045	0.0064	0.07	0.28	0.00041
Transitional Closure	14	2034-09-01	160	24	0.26	0.0064	0.042	0.0057	0.067	0.56	0.00064
Transitional Closure	14	2034-10-01	200	31	0.35	0.006	0.044	0.007	0.08	0.44	0.00024
Transitional Closure	14	2034-11-01	270	35	0.55	0.0098	0.083	0.007	0.1	0.12	0.00018

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	11	2032-02-01	0.00023	0.017	0.00027	0.001	0.0001	69	0.00055	0.0015	0.062
Active Closure	12	2032-03-01	0.00043	0.014	0.00024	0.001	0.000096	77	0.00057	0.0017	0.055
Active Closure	12	2032-04-01	0.00028	0.012	0.00021	0.00088	0.000059	67	0.0006	0.0019	0.057
Active Closure	12	2032-05-01	0.00061	0.033	0.00025	0.00096	0.00004	27	0.00014	0.0014	0.069
Active Closure	12	2032-06-01	0.0005	0.0099	0.00021	0.00069	0.00002	37	0.00012	0.00066	0.031
Active Closure	12	2032-07-01	0.00056	0.0085	0.00023	0.0007	0.000023	45	0.00016	0.00055	0.028
Active Closure	12	2032-08-01	0.00051	0.0092	0.00023	0.00083	0.000029	45	0.00041	0.00085	0.038
Active Closure	12	2032-09-01	0.0006	0.011	0.00022	0.00074	0.000037	43	0.0003	0.00078	0.031
Active Closure	12	2032-10-01	0.00024	0.017	0.00018	0.00086	0.000052	50	0.00037	0.00082	0.036
Active Closure	12	2032-11-01	0.00025	0.018	0.00029	0.0011	0.000067	58	0.00064	0.0011	0.061
Active Closure	12	2032-12-01	0.00021	0.019	0.00033	0.0011	0.000069	62	0.00077	0.0013	0.055
Active Closure	12	2033-01-01	0.00022	0.015	0.00033	0.0011	0.000085	67	0.00085	0.0016	0.095
Active Closure	12	2033-02-01	0.00022	0.017	0.00031	0.001	0.0001	70	0.00084	0.0017	0.058
Active Closure	13	2033-03-01	0.00043	0.014	0.00026	0.001	0.000098	77	0.00086	0.0019	0.053
Active Closure	13	2033-04-01	0.00028	0.012	0.00023	0.0009	0.000063	67	0.00086	0.0021	0.056
Active Closure	13	2033-05-01	0.00061	0.033	0.00027	0.00096	0.00004	28	0.00019	0.0015	0.068
Active Closure	13	2033-06-01	0.0005	0.0099	0.00022	0.00069	0.00002	37	0.00015	0.00068	0.031
Active Closure	13	2033-07-01	0.00056	0.0085	0.00023	0.0007	0.000023	45	0.0002	0.00057	0.027
Active Closure	13	2033-08-01	0.0005	0.0093	0.00024	0.00083	0.000029	45	0.00046	0.00087	0.038
Active Closure	13	2033-09-01	0.0006	0.011	0.00023	0.00074	0.000038	43	0.00035	0.00081	0.031
Transitional Closure	13	2033-10-01	0.00023	0.014	0.00013	0.00072	0.000043	49	0.00017	0.00068	0.026
Transitional Closure	13	2033-11-01	0.00025	0.014	0.00023	0.00087	0.000055	57	0.00033	0.00094	0.049
Transitional Closure	13	2033-12-01	0.00021	0.016	0.00027	0.00092	0.000059	62	0.00043	0.0012	0.04
Transitional Closure	13	2034-01-01	0.00022	0.011	0.00028	0.00096	0.000078	68	0.00055	0.0016	0.079
Transitional Closure	13	2034-02-01	0.00023	0.015	0.00028	0.00094	0.0001	70	0.0006	0.0018	0.049
Transitional Closure	14	2034-03-01	0.00044	0.013	0.00024	0.00096	0.000097	78	0.00068	0.002	0.048
Transitional Closure	14	2034-04-01	0.00029	0.012	0.00022	0.00086	0.000065	68	0.00076	0.0023	0.053
Transitional Closure	14	2034-05-01	0.00058	0.026	0.00019	0.00064	0.000022	27	0.00011	0.0011	0.047
Transitional Closure	14	2034-06-01	0.00049	0.0084	0.00018	0.00061	0.000015	36	0.000064	0.00058	0.026
Transitional Closure	14	2034-07-01	0.00055	0.0066	0.0002	0.00061	0.000017	44	0.000076	0.00046	0.021
Transitional Closure	14	2034-08-01	0.0005	0.0065	0.00019	0.00069	0.000021	44	0.00026	0.00073	0.028
Transitional Closure	14	2034-09-01	0.00059	0.0078	0.00017	0.0006	0.000029	42	0.00011	0.00066	0.021
Transitional Closure	14	2034-10-01	0.00024	0.014	0.00013	0.00072	0.000045	51	0.00011	0.0007	0.032
Transitional Closure	14	2034-11-01	0.00026	0.013	0.00022	0.00085	0.000057	59	0.00021	0.00098	0.058

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	11	2032-02-01	0.00017	0.49	0.0067	0.000014	0.0015	0.000062	0.0066	0.013	0.27
Active Closure	12	2032-03-01	0.00016	0.51	0.0069	0.000014	0.0017	0.000064	0.0059	0.012	0.73
Active Closure	12	2032-04-01	0.00018	0.48	0.0068	0.000015	0.0013	0.000065	0.005	0.0082	1
Active Closure	12	2032-05-01	0.00012	0.11	0.0018	0.0000072	0.00063	0.000018	0.0014	0.0052	2.4
Active Closure	12	2032-06-01	0.000064	0.097	0.0013	0.0000066	0.00054	0.000014	0.0017	0.0022	1.6
Active Closure	12	2032-07-01	0.000065	0.13	0.0018	0.0000059	0.00052	0.000019	0.0016	0.0028	2.2
Active Closure	12	2032-08-01	0.00015	0.19	0.0027	0.0000076	0.00048	0.000027	0.0021	0.0029	1.9
Active Closure	12	2032-09-01	0.00013	0.22	0.0031	0.0000083	0.00067	0.000031	0.0018	0.0036	1.7
Active Closure	12	2032-10-01	0.00017	0.31	0.004	0.0000099	0.0012	0.00004	0.0026	0.0059	1.1
Active Closure	12	2032-11-01	0.0005	0.53	0.0068	0.000015	0.0014	0.000069	0.0039	0.0076	0.91
Active Closure	12	2032-12-01	0.00023	0.65	0.0085	0.000018	0.0015	0.000085	0.0042	0.0082	1.5
Active Closure	12	2033-01-01	0.00027	0.71	0.0093	0.00002	0.0016	0.000091	0.0049	0.01	1.7
Active Closure	12	2033-02-01	0.00023	0.74	0.0098	0.00002	0.0015	0.000092	0.0067	0.013	0.28
Active Closure	13	2033-03-01	0.00022	0.74	0.0099	0.00002	0.0017	0.000092	0.0059	0.012	0.74
Active Closure	13	2033-04-01	0.00024	0.7	0.0095	0.00002	0.0013	0.000091	0.0051	0.0087	1
Active Closure	13	2033-05-01	0.00013	0.15	0.0023	0.0000083	0.00063	0.000023	0.0014	0.0052	2.5
Active Closure	13	2033-06-01	0.000071	0.13	0.0017	0.0000073	0.00054	0.000018	0.0017	0.0022	1.6
Active Closure	13	2033-07-01	0.000074	0.16	0.0023	0.0000068	0.00052	0.000023	0.0017	0.0028	2.2
Active Closure	13	2033-08-01	0.00016	0.24	0.0033	0.0000088	0.00049	0.000032	0.0021	0.0029	1.9
Active Closure	13	2033-09-01	0.00014	0.26	0.0036	0.0000093	0.00067	0.000036	0.0018	0.0036	1.7
Transitional Closure	13	2033-10-01	0.000087	0.14	0.0019	0.0000055	0.0011	0.000017	0.0025	0.0049	1.1
Transitional Closure	13	2033-11-01	0.00038	0.27	0.0035	0.0000085	0.0013	0.000033	0.0038	0.0063	0.92
Transitional Closure	13	2033-12-01	0.00011	0.36	0.005	0.000011	0.0014	0.000047	0.0041	0.0071	1.5
Transitional Closure	13	2034-01-01	0.00018	0.45	0.0061	0.000013	0.0016	0.000057	0.0049	0.0096	1.7
Transitional Closure	13	2034-02-01	0.00015	0.53	0.0072	0.000015	0.0015	0.000064	0.0067	0.013	0.3
Transitional Closure	14	2034-03-01	0.00016	0.59	0.0079	0.000016	0.0017	0.00007	0.0059	0.012	0.75
Transitional Closure	14	2034-04-01	0.0002	0.6	0.0083	0.000018	0.0013	0.000077	0.0051	0.009	1
Transitional Closure	14	2034-05-01	0.000064	0.083	0.0015	0.0000056	0.00044	0.000013	0.0013	0.0033	2.2
Transitional Closure	14	2034-06-01	0.000034	0.054	0.00081	0.0000052	0.00049	0.0000081	0.0016	0.0018	1.6
Transitional Closure	14	2034-07-01	0.000024	0.056	0.00092	0.0000038	0.00046	0.0000092	0.0016	0.0022	2.1
Transitional Closure	14	2034-08-01	0.000087	0.063	0.0011	0.0000042	0.0004	0.0000099	0.002	0.0021	1.9
Transitional Closure	14	2034-09-01	0.000055	0.053	0.001	0.000004	0.00057	0.0000095	0.0017	0.0027	1.7
Transitional Closure	14	2034-10-01	0.000076	0.084	0.0012	0.0000043	0.0012	0.000011	0.0025	0.0053	1.2
Transitional Closure	14	2034-11-01	0.00036	0.17	0.0022	0.000006	0.0013	0.00002	0.0038	0.0068	0.97

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	11	2032-02-01	0.009	0.00027	0.00084	0.000076	71	0.00054	0.0015	0.031
Active Closure	12	2032-03-01	0.0083	0.00025	0.00082	0.000086	76	0.00056	0.0017	0.033
Active Closure	12	2032-04-01	0.0085	0.00022	0.00077	0.000055	74	0.00059	0.0019	0.034
Active Closure	12	2032-05-01	0.025	0.00026	0.00095	0.000035	24	0.00014	0.0016	0.045
Active Closure	12	2032-06-01	0.01	0.00021	0.00068	0.000022	33	0.00012	0.00073	0.013
Active Closure	12	2032-07-01	0.0079	0.00023	0.00067	0.000019	44	0.00015	0.00059	0.012
Active Closure	12	2032-08-01	0.008	0.00023	0.0008	0.000022	44	0.00041	0.00077	0.016
Active Closure	12	2032-09-01	0.0084	0.00022	0.0007	0.000023	43	0.00026	0.00084	0.018
Active Closure	12	2032-10-01	0.0066	0.00018	0.00077	0.000032	51	0.00035	0.0007	0.018
Active Closure	12	2032-11-01	0.0094	0.00029	0.00087	0.000047	57	0.00061	0.001	0.027
Active Closure	12	2032-12-01	0.0098	0.00033	0.00095	0.000063	61	0.00076	0.0013	0.033
Active Closure	12	2033-01-01	0.011	0.00032	0.00092	0.000063	67	0.00082	0.0015	0.032
Active Closure	12	2033-02-01	0.0093	0.00031	0.00088	0.00008	72	0.00084	0.0017	0.033
Active Closure	13	2033-03-01	0.0085	0.00027	0.00084	0.000089	77	0.00085	0.0019	0.035
Active Closure	13	2033-04-01	0.0086	0.00024	0.00078	0.000059	75	0.00085	0.0021	0.036
Active Closure	13	2033-05-01	0.025	0.00027	0.00095	0.000035	24	0.00019	0.0016	0.046
Active Closure	13	2033-06-01	0.01	0.00022	0.00068	0.000022	34	0.00015	0.00075	0.013
Active Closure	13	2033-07-01	0.0079	0.00023	0.00067	0.000019	44	0.00019	0.0006	0.012
Active Closure	13	2033-08-01	0.008	0.00023	0.0008	0.000022	44	0.00047	0.00079	0.016
Active Closure	13	2033-09-01	0.0085	0.00023	0.0007	0.000023	43	0.00031	0.00086	0.018
Transitional Closure	13	2033-10-01	0.0039	0.00013	0.00063	0.000023	49	0.00015	0.00057	0.0084
Transitional Closure	13	2033-11-01	0.0054	0.00023	0.00068	0.000036	56	0.00029	0.00086	0.013
Transitional Closure	13	2033-12-01	0.006	0.00027	0.00076	0.000054	61	0.00042	0.0012	0.02
Transitional Closure	13	2034-01-01	0.0076	0.00027	0.00077	0.000057	68	0.00052	0.0014	0.022
Transitional Closure	13	2034-02-01	0.007	0.00027	0.00078	0.000076	73	0.00059	0.0017	0.026
Transitional Closure	14	2034-03-01	0.0069	0.00025	0.00077	0.000089	77	0.00067	0.002	0.031
Transitional Closure	14	2034-04-01	0.0078	0.00023	0.00075	0.00006	75	0.00074	0.0023	0.035
Transitional Closure	14	2034-05-01	0.019	0.0002	0.00064	0.000018	23	0.00011	0.0012	0.025
Transitional Closure	14	2034-06-01	0.0086	0.00019	0.00061	0.000017	33	0.000068	0.00066	0.0087
Transitional Closure	14	2034-07-01	0.0059	0.0002	0.00058	0.000014	43	0.000066	0.0005	0.0061
Transitional Closure	14	2034-08-01	0.0053	0.00018	0.00067	0.000015	43	0.00026	0.00066	0.0067
Transitional Closure	14	2034-09-01	0.0057	0.00017	0.00056	0.000015	42	0.000071	0.00072	0.0083
Transitional Closure	14	2034-10-01	0.0035	0.00013	0.00062	0.000025	51	0.000085	0.00059	0.0071
Transitional Closure	14	2034-11-01	0.0046	0.00022	0.00065	0.000037	58	0.00017	0.0009	0.01

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	11	2032-02-01	0.00014	0.47	0.0065	0.000014	0.0016	0.000062	0.0063	0.011
Active Closure	12	2032-03-01	0.00014	0.49	0.0068	0.000014	0.0017	0.000064	0.0058	0.013
Active Closure	12	2032-04-01	0.00015	0.48	0.0068	0.000014	0.0013	0.000065	0.005	0.0073
Active Closure	12	2032-05-01	0.000091	0.11	0.0018	0.0000057	0.00065	0.000018	0.0014	0.0045
Active Closure	12	2032-06-01	0.000048	0.087	0.0015	0.0000053	0.00056	0.000015	0.0017	0.002
Active Closure	12	2032-07-01	0.000057	0.12	0.0018	0.000006	0.00047	0.000019	0.0016	0.0023
Active Closure	12	2032-08-01	0.00013	0.18	0.0027	0.0000076	0.00049	0.000027	0.002	0.0022
Active Closure	12	2032-09-01	0.0001	0.21	0.003	0.0000083	0.00061	0.000031	0.0017	0.003
Active Closure	12	2032-10-01	0.00012	0.29	0.0039	0.0000099	0.0011	0.00004	0.0025	0.0042
Active Closure	12	2032-11-01	0.00018	0.51	0.0068	0.000015	0.0014	0.000069	0.0036	0.0059
Active Closure	12	2032-12-01	0.00021	0.64	0.0085	0.000018	0.0016	0.000085	0.0043	0.0074
Active Closure	12	2033-01-01	0.00024	0.7	0.0093	0.00002	0.0016	0.000091	0.0048	0.01
Active Closure	12	2033-02-01	0.0002	0.71	0.0096	0.00002	0.0016	0.000092	0.0064	0.011
Active Closure	13	2033-03-01	0.0002	0.72	0.0098	0.00002	0.0017	0.000092	0.0059	0.013
Active Closure	13	2033-04-01	0.00021	0.69	0.0096	0.00002	0.0013	0.000091	0.005	0.0078
Active Closure	13	2033-05-01	0.0001	0.15	0.0023	0.0000068	0.00065	0.000023	0.0014	0.0045
Active Closure	13	2033-06-01	0.000055	0.12	0.0018	0.0000061	0.00056	0.000018	0.0017	0.002
Active Closure	13	2033-07-01	0.000065	0.15	0.0023	0.0000069	0.00047	0.000023	0.0016	0.0024
Active Closure	13	2033-08-01	0.00015	0.23	0.0033	0.0000088	0.00049	0.000032	0.002	0.0022
Active Closure	13	2033-09-01	0.00011	0.25	0.0035	0.0000093	0.00061	0.000035	0.0017	0.0031
Transitional Closure	13	2033-10-01	0.000034	0.12	0.0018	0.0000055	0.001	0.000017	0.0024	0.0032
Transitional Closure	13	2033-11-01	0.000065	0.25	0.0035	0.0000085	0.0013	0.000033	0.0035	0.0046
Transitional Closure	13	2033-12-01	0.00009	0.35	0.005	0.000011	0.0015	0.000047	0.0042	0.0065
Transitional Closure	13	2034-01-01	0.00015	0.44	0.0061	0.000013	0.0015	0.000057	0.0048	0.0096
Transitional Closure	13	2034-02-01	0.00013	0.51	0.007	0.000015	0.0015	0.000064	0.0064	0.011
Transitional Closure	14	2034-03-01	0.00014	0.57	0.0078	0.000016	0.0017	0.000071	0.0059	0.013
Transitional Closure	14	2034-04-01	0.00017	0.6	0.0084	0.000017	0.0013	0.000077	0.005	0.0082
Transitional Closure	14	2034-05-01	0.000031	0.081	0.0015	0.0000042	0.00046	0.000013	0.0013	0.0026
Transitional Closure	14	2034-06-01	0.000018	0.044	0.00094	0.000004	0.00051	0.0000085	0.0016	0.0016
Transitional Closure	14	2034-07-01	0.000016	0.047	0.00092	0.0000039	0.0004	0.0000088	0.0015	0.0018
Transitional Closure	14	2034-08-01	0.00007	0.056	0.0011	0.0000042	0.00041	0.0000098	0.0019	0.0014
Transitional Closure	14	2034-09-01	0.000025	0.05	0.001	0.000004	0.00051	0.0000094	0.0016	0.0022
Transitional Closure	14	2034-10-01	0.000021	0.066	0.0012	0.0000043	0.0011	0.000011	0.0025	0.0033
Transitional Closure	14	2034-11-01	0.000039	0.15	0.0021	0.000006	0.0013	0.00002	0.0035	0.0049

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	14	2034-12-01	320	39	0.68	0.012	0.11	0.0083	0.11	0.51	0.00017
Transitional Closure	14	2035-01-01	350	42	0.75	0.013	0.14	0.0079	0.11	0.79	0.00023
Transitional Closure	14	2035-02-01	390	48	0.76	0.014	0.14	0.0094	0.13	0.4	0.00023
Transitional Closure	15	2035-03-01	430	50	0.76	0.014	0.15	0.011	0.13	0.58	0.00047
Transitional Closure	15	2035-04-01	390	42	0.74	0.014	0.15	0.0062	0.13	0.52	0.0003
Transitional Closure	15	2035-05-01	110	16	0.35	0.0082	0.053	0.0073	0.057	0.64	0.00048
Transitional Closure	15	2035-06-01	130	21	0.24	0.0059	0.044	0.0092	0.07	0.51	0.00059
Transitional Closure	15	2035-07-01	160	24	0.24	0.0062	0.049	0.0048	0.072	0.24	0.00041
Transitional Closure	15	2035-08-01	150	21	0.24	0.0079	0.041	0.0063	0.069	0.29	0.00041
Transitional Closure	15	2035-09-01	150	23	0.25	0.006	0.038	0.0056	0.066	0.56	0.00064
Transitional Closure	15	2035-10-01	180	30	0.33	0.0056	0.04	0.0069	0.079	0.44	0.00024
Transitional Closure	15	2035-11-01	240	33	0.53	0.0092	0.074	0.0068	0.098	0.13	0.00018
Transitional Closure	15	2035-12-01	270	36	0.64	0.011	0.1	0.0082	0.1	0.51	0.00017
Transitional Closure	15	2036-01-01	300	39	0.71	0.012	0.13	0.0076	0.1	0.79	0.00023
Transitional Closure	15	2036-02-01	330	43	0.71	0.013	0.12	0.009	0.12	0.4	0.00024
Transitional Closure	16	2036-03-01	360	46	0.72	0.013	0.13	0.011	0.13	0.58	0.00047
Transitional Closure	16	2036-04-01	310	37	0.7	0.013	0.13	0.0058	0.12	0.53	0.00031
Transitional Closure	16	2036-05-01	98	15	0.33	0.0078	0.049	0.0073	0.056	0.64	0.00048
Transitional Closure	16	2036-06-01	120	20	0.22	0.0056	0.041	0.0092	0.07	0.51	0.00059
Transitional Closure	16	2036-07-01	150	24	0.22	0.0059	0.047	0.0048	0.071	0.24	0.00041
Transitional Closure	16	2036-08-01	150	21	0.23	0.0076	0.038	0.0063	0.068	0.29	0.00041
Transitional Closure	16	2036-09-01	140	23	0.24	0.0058	0.036	0.0056	0.066	0.56	0.00064
Transitional Closure	16	2036-10-01	180	30	0.32	0.0053	0.037	0.0069	0.079	0.44	0.00024
Transitional Closure	16	2036-11-01	220	32	0.51	0.0087	0.068	0.0068	0.097	0.13	0.00018
Transitional Closure	16	2036-12-01	250	35	0.61	0.011	0.092	0.0081	0.1	0.51	0.00017
Transitional Closure	16	2037-01-01	270	37	0.68	0.012	0.12	0.0075	0.1	0.79	0.00023
Transitional Closure	16	2037-02-01	300	42	0.69	0.012	0.11	0.009	0.12	0.41	0.00024
Transitional Closure	17	2037-03-01	320	44	0.68	0.012	0.12	0.011	0.13	0.58	0.00048
Transitional Closure	17	2037-04-01	270	35	0.67	0.012	0.12	0.0056	0.12	0.54	0.00031
Transitional Closure	17	2037-05-01	93	15	0.32	0.0074	0.046	0.0073	0.056	0.64	0.00048
Transitional Closure	17	2037-06-01	120	20	0.21	0.0053	0.04	0.0092	0.07	0.51	0.00059
Transitional Closure	17	2037-07-01	150	24	0.21	0.0057	0.045	0.0047	0.071	0.24	0.00041
Transitional Closure	17	2037-08-01	140	21	0.22	0.0073	0.036	0.0063	0.068	0.29	0.00041
Transitional Closure	17	2037-09-01	140	22	0.23	0.0055	0.034	0.0056	0.065	0.56	0.00064

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	14	2034-12-01	0.00022	0.015	0.00026	0.00087	0.00006	65	0.00025	0.0013	0.038
Transitional Closure	14	2035-01-01	0.00023	0.01	0.00026	0.0009	0.000078	70	0.00033	0.0017	0.078
Transitional Closure	14	2035-02-01	0.00024	0.013	0.00025	0.00087	0.0001	72	0.00034	0.0019	0.046
Transitional Closure	15	2035-03-01	0.00045	0.011	0.00021	0.00088	0.000097	80	0.00038	0.0021	0.043
Transitional Closure	15	2035-04-01	0.0003	0.0096	0.00019	0.00077	0.000063	69	0.00043	0.0025	0.047
Transitional Closure	15	2035-05-01	0.00058	0.026	0.00019	0.00063	0.000022	27	0.000068	0.0011	0.046
Transitional Closure	15	2035-06-01	0.00049	0.0082	0.00018	0.00061	0.000015	36	0.000043	0.00059	0.025
Transitional Closure	15	2035-07-01	0.00055	0.0065	0.00019	0.0006	0.000017	44	0.000053	0.00047	0.021
Transitional Closure	15	2035-08-01	0.0005	0.0063	0.00019	0.00069	0.000021	44	0.00023	0.00073	0.028
Transitional Closure	15	2035-09-01	0.0006	0.0077	0.00017	0.00059	0.000029	42	0.000081	0.00066	0.02
Transitional Closure	15	2035-10-01	0.00024	0.013	0.00013	0.0007	0.000045	51	0.000072	0.0007	0.032
Transitional Closure	15	2035-11-01	0.00026	0.013	0.00021	0.00083	0.000057	59	0.00013	0.00097	0.057
Transitional Closure	15	2035-12-01	0.00022	0.014	0.00025	0.00084	0.000059	65	0.00014	0.0013	0.036
Transitional Closure	15	2036-01-01	0.00024	0.0096	0.00024	0.00087	0.000077	70	0.00019	0.0016	0.078
Transitional Closure	15	2036-02-01	0.00024	0.012	0.00022	0.00081	0.000099	72	0.00018	0.0018	0.044
Transitional Closure	16	2036-03-01	0.00046	0.0098	0.00019	0.00083	0.000095	80	0.00021	0.0021	0.041
Transitional Closure	16	2036-04-01	0.00031	0.0087	0.00017	0.00072	0.000061	69	0.00023	0.0024	0.044
Transitional Closure	16	2036-05-01	0.00058	0.026	0.00018	0.00063	0.000022	27	0.000044	0.0011	0.046
Transitional Closure	16	2036-06-01	0.00049	0.0082	0.00018	0.0006	0.000014	36	0.000031	0.00058	0.025
Transitional Closure	16	2036-07-01	0.00055	0.0064	0.00019	0.0006	0.000017	44	0.000041	0.00046	0.02
Transitional Closure	16	2036-08-01	0.0005	0.0063	0.00019	0.00068	0.000021	44	0.00021	0.00073	0.028
Transitional Closure	16	2036-09-01	0.0006	0.0076	0.00017	0.00059	0.000028	42	0.000066	0.00066	0.02
Transitional Closure	16	2036-10-01	0.00024	0.013	0.00012	0.0007	0.000045	51	0.000053	0.0007	0.032
Transitional Closure	16	2036-11-01	0.00027	0.013	0.00021	0.00082	0.000056	59	0.000089	0.00096	0.057
Transitional Closure	16	2036-12-01	0.00022	0.014	0.00024	0.00083	0.000058	65	0.000084	0.0013	0.035
Transitional Closure	16	2037-01-01	0.00024	0.0094	0.00024	0.00085	0.000076	70	0.00012	0.0016	0.078
Transitional Closure	16	2037-02-01	0.00024	0.012	0.00023	0.00081	0.000098	73	0.0001	0.0018	0.043
Transitional Closure	17	2037-03-01	0.00046	0.0094	0.00018	0.00081	0.000094	80	0.00012	0.0021	0.04
Transitional Closure	17	2037-04-01	0.00031	0.0082	0.00016	0.0007	0.00006	69	0.00014	0.0024	0.043
Transitional Closure	17	2037-05-01	0.00058	0.026	0.00018	0.00062	0.000021	27	0.000032	0.0011	0.046
Transitional Closure	17	2037-06-01	0.00049	0.0082	0.00018	0.0006	0.000014	36	0.000025	0.00058	0.025
Transitional Closure	17	2037-07-01	0.00055	0.0064	0.00019	0.0006	0.000017	44	0.000035	0.00046	0.02
Transitional Closure	17	2037-08-01	0.0005	0.0063	0.00019	0.00068	0.000021	44	0.00021	0.00072	0.027
Transitional Closure	17	2037-09-01	0.0006	0.0076	0.00017	0.00059	0.000028	42	0.00006	0.00066	0.02

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	14	2034-12-01	0.000075	0.21	0.003	0.0000075	0.0014	0.000027	0.0042	0.0077	1.6
Transitional Closure	14	2035-01-01	0.00013	0.26	0.0037	0.0000087	0.0016	0.000032	0.0049	0.01	1.7
Transitional Closure	14	2035-02-01	0.0001	0.31	0.0044	0.0000092	0.0015	0.000035	0.0067	0.013	0.34
Transitional Closure	15	2035-03-01	0.0001	0.34	0.0048	0.0000098	0.0017	0.000038	0.0059	0.013	0.77
Transitional Closure	15	2035-04-01	0.00013	0.33	0.0048	0.000011	0.0012	0.000041	0.0051	0.0092	1.1
Transitional Closure	15	2035-05-01	0.000055	0.047	0.001	0.0000048	0.00044	0.0000086	0.0013	0.0032	2.2
Transitional Closure	15	2035-06-01	0.000029	0.036	0.00058	0.0000048	0.00048	0.0000057	0.0016	0.0018	1.6
Transitional Closure	15	2035-07-01	0.00002	0.036	0.00068	0.0000034	0.00045	0.0000068	0.0016	0.0022	2.1
Transitional Closure	15	2035-08-01	0.000081	0.04	0.00079	0.0000036	0.0004	0.000007	0.002	0.0021	1.9
Transitional Closure	15	2035-09-01	0.000049	0.031	0.00075	0.0000035	0.00057	0.0000067	0.0017	0.0027	1.7
Transitional Closure	15	2035-10-01	0.000068	0.053	0.00083	0.0000035	0.0012	0.0000066	0.0025	0.0053	1.2
Transitional Closure	15	2035-11-01	0.00034	0.1	0.0014	0.0000045	0.0013	0.000012	0.0038	0.0068	0.98
Transitional Closure	15	2035-12-01	0.000053	0.12	0.0018	0.0000053	0.0014	0.000016	0.0042	0.0076	1.6
Transitional Closure	15	2036-01-01	0.0001	0.15	0.0023	0.0000059	0.0015	0.000018	0.0049	0.01	1.7
Transitional Closure	15	2036-02-01	0.000068	0.18	0.0027	0.000006	0.0014	0.000019	0.0067	0.013	0.35
Transitional Closure	16	2036-03-01	0.000067	0.19	0.0029	0.0000062	0.0016	0.00002	0.0059	0.013	0.77
Transitional Closure	16	2036-04-01	0.000093	0.16	0.0028	0.0000068	0.0012	0.000021	0.0051	0.009	1.1
Transitional Closure	16	2036-05-01	0.00005	0.027	0.00076	0.0000043	0.00043	0.0000062	0.0013	0.0032	2.2
Transitional Closure	16	2036-06-01	0.000027	0.026	0.00046	0.0000045	0.00048	0.0000046	0.0016	0.0018	1.6
Transitional Closure	16	2036-07-01	0.000017	0.026	0.00055	0.0000031	0.00045	0.0000056	0.0016	0.0022	2.1
Transitional Closure	16	2036-08-01	0.000078	0.028	0.00064	0.0000033	0.0004	0.0000055	0.002	0.002	1.9
Transitional Closure	16	2036-09-01	0.000047	0.019	0.0006	0.0000032	0.00057	0.0000053	0.0017	0.0027	1.7
Transitional Closure	16	2036-10-01	0.000064	0.037	0.00062	0.0000031	0.0012	0.0000047	0.0025	0.0052	1.2
Transitional Closure	16	2036-11-01	0.00033	0.069	0.00099	0.0000037	0.0013	0.0000079	0.0038	0.0068	0.98
Transitional Closure	16	2036-12-01	0.000041	0.068	0.0012	0.0000041	0.0014	0.00001	0.0042	0.0076	1.6
Transitional Closure	16	2037-01-01	0.00009	0.088	0.0015	0.0000045	0.0015	0.000011	0.0049	0.01	1.7
Transitional Closure	16	2037-02-01	0.000053	0.11	0.0019	0.0000044	0.0014	0.000011	0.0067	0.013	0.35
Transitional Closure	17	2037-03-01	0.000049	0.12	0.002	0.0000044	0.0016	0.000011	0.0059	0.013	0.78
Transitional Closure	17	2037-04-01	0.000073	0.082	0.0017	0.0000048	0.0012	0.000012	0.005	0.0089	1.1
Transitional Closure	17	2037-05-01	0.000048	0.017	0.00064	0.000004	0.00043	0.0000051	0.0013	0.0032	2.2
Transitional Closure	17	2037-06-01	0.000026	0.021	0.0004	0.0000044	0.00048	0.000004	0.0016	0.0018	1.6
Transitional Closure	17	2037-07-01	0.000016	0.021	0.00049	0.000003	0.00045	0.000005	0.0016	0.0022	2.1
Transitional Closure	17	2037-08-01	0.000077	0.022	0.00057	0.0000032	0.00039	0.0000049	0.002	0.002	1.9
Transitional Closure	17	2037-09-01	0.000045	0.013	0.00053	0.000003	0.00057	0.0000046	0.0017	0.0027	1.7

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	14	2034-12-01	0.0048	0.00026	0.00072	0.000055	63	0.00024	0.0012	0.016
Transitional Closure	14	2035-01-01	0.0061	0.00025	0.00071	0.000057	70	0.00029	0.0015	0.017
Transitional Closure	14	2035-02-01	0.0052	0.00025	0.0007	0.000076	75	0.00033	0.0018	0.02
Transitional Closure	15	2035-03-01	0.0049	0.00022	0.00068	0.000088	79	0.00037	0.0021	0.025
Transitional Closure	15	2035-04-01	0.0056	0.0002	0.00065	0.000059	77	0.00041	0.0024	0.028
Transitional Closure	15	2035-05-01	0.019	0.00019	0.00063	0.000017	23	0.000071	0.0012	0.024
Transitional Closure	15	2035-06-01	0.0085	0.00018	0.0006	0.000017	33	0.000046	0.00066	0.0083
Transitional Closure	15	2035-07-01	0.0058	0.00019	0.00057	0.000013	43	0.000043	0.00051	0.0057
Transitional Closure	15	2035-08-01	0.0052	0.00018	0.00066	0.000014	43	0.00024	0.00066	0.0062
Transitional Closure	15	2035-09-01	0.0056	0.00017	0.00055	0.000015	42	0.000045	0.00072	0.0078
Transitional Closure	15	2035-10-01	0.0033	0.00013	0.00061	0.000024	51	0.000047	0.00059	0.0064
Transitional Closure	15	2035-11-01	0.0042	0.00021	0.00063	0.000036	59	0.000093	0.00089	0.009
Transitional Closure	15	2035-12-01	0.0041	0.00024	0.00069	0.000054	63	0.00013	0.0012	0.014
Transitional Closure	15	2036-01-01	0.0053	0.00024	0.00067	0.000055	70	0.00016	0.0015	0.014
Transitional Closure	15	2036-02-01	0.0042	0.00022	0.00064	0.000074	75	0.00017	0.0018	0.017
Transitional Closure	16	2036-03-01	0.004	0.0002	0.00064	0.000086	80	0.00019	0.0021	0.022
Transitional Closure	16	2036-04-01	0.0046	0.00018	0.0006	0.000057	77	0.00021	0.0024	0.025
Transitional Closure	16	2036-05-01	0.019	0.00019	0.00063	0.000017	23	0.000048	0.0012	0.024
Transitional Closure	16	2036-06-01	0.0085	0.00018	0.0006	0.000017	33	0.000034	0.00066	0.008
Transitional Closure	16	2036-07-01	0.0058	0.00019	0.00057	0.000013	43	0.000031	0.0005	0.0055
Transitional Closure	16	2036-08-01	0.0051	0.00018	0.00066	0.000014	43	0.00022	0.00065	0.0059
Transitional Closure	16	2036-09-01	0.0055	0.00017	0.00055	0.000014	42	0.00003	0.00072	0.0076
Transitional Closure	16	2036-10-01	0.0032	0.00012	0.0006	0.000024	51	0.000027	0.00058	0.006
Transitional Closure	16	2036-11-01	0.004	0.00021	0.00062	0.000036	59	0.000053	0.00088	0.0083
Transitional Closure	16	2036-12-01	0.0038	0.00024	0.00068	0.000053	63	0.000072	0.0012	0.013
Transitional Closure	16	2037-01-01	0.005	0.00023	0.00066	0.000054	70	0.000087	0.0015	0.013
Transitional Closure	16	2037-02-01	0.004	0.00022	0.00064	0.000073	75	0.000089	0.0018	0.016
Transitional Closure	17	2037-03-01	0.0035	0.00019	0.00062	0.000085	80	0.0001	0.0021	0.021
Transitional Closure	17	2037-04-01	0.0042	0.00017	0.00058	0.000056	77	0.00012	0.0024	0.023
Transitional Closure	17	2037-05-01	0.019	0.00019	0.00062	0.000017	23	0.000036	0.0012	0.023
Transitional Closure	17	2037-06-01	0.0084	0.00018	0.0006	0.000017	33	0.000029	0.00066	0.008
Transitional Closure	17	2037-07-01	0.0057	0.00019	0.00057	0.000013	43	0.000025	0.0005	0.0054
Transitional Closure	17	2037-08-01	0.0051	0.00018	0.00066	0.000014	43	0.00021	0.00065	0.0058
Transitional Closure	17	2037-09-01	0.0055	0.00017	0.00055	0.000014	42	0.000024	0.00071	0.0075

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Transitional Closure	14	2034-12-01	0.000052	0.2	0.003	0.0000075	0.0016	0.000027	0.0042	0.007
Transitional Closure	14	2035-01-01	0.0001	0.25	0.0037	0.0000085	0.0015	0.000032	0.0048	0.0099
Transitional Closure	14	2035-02-01	0.000071	0.29	0.0042	0.0000092	0.0015	0.000035	0.0064	0.011
Transitional Closure	15	2035-03-01	0.000079	0.32	0.0047	0.0000098	0.0016	0.000038	0.0059	0.013
Transitional Closure	15	2035-04-01	0.0001	0.32	0.0049	0.000011	0.0013	0.000041	0.005	0.0084
Transitional Closure	15	2035-05-01	0.000022	0.044	0.001	0.0000033	0.00046	0.0000084	0.0012	0.0026
Transitional Closure	15	2035-06-01	0.000014	0.026	0.00071	0.0000036	0.0005	0.0000062	0.0016	0.0015
Transitional Closure	15	2035-07-01	0.000011	0.028	0.00068	0.0000035	0.0004	0.0000064	0.0015	0.0017
Transitional Closure	15	2035-08-01	0.000064	0.033	0.00079	0.0000036	0.0004	0.0000069	0.0019	0.0013
Transitional Closure	15	2035-09-01	0.00002	0.027	0.00071	0.0000035	0.00051	0.0000066	0.0016	0.0022
Transitional Closure	15	2035-10-01	0.000013	0.035	0.00076	0.0000035	0.0011	0.0000067	0.0024	0.0032
Transitional Closure	15	2035-11-01	0.000024	0.081	0.0013	0.0000045	0.0013	0.000012	0.0035	0.0049
Transitional Closure	15	2035-12-01	0.000029	0.11	0.0019	0.0000053	0.0015	0.000016	0.0042	0.007
Transitional Closure	15	2036-01-01	0.000072	0.14	0.0022	0.0000057	0.0015	0.000018	0.0048	0.0098
Transitional Closure	15	2036-02-01	0.000039	0.16	0.0026	0.000006	0.0015	0.000019	0.0063	0.011
Transitional Closure	16	2036-03-01	0.000043	0.17	0.0028	0.0000062	0.0016	0.00002	0.0059	0.013
Transitional Closure	16	2036-04-01	0.000062	0.16	0.0028	0.0000066	0.0012	0.000021	0.005	0.0082
Transitional Closure	16	2036-05-01	0.000017	0.024	0.00077	0.0000028	0.00045	0.000006	0.0012	0.0025
Transitional Closure	16	2036-06-01	0.000011	0.016	0.00059	0.0000033	0.0005	0.000005	0.0016	0.0015
Transitional Closure	16	2036-07-01	0.0000086	0.018	0.00055	0.0000032	0.0004	0.0000052	0.0015	0.0017
Transitional Closure	16	2036-08-01	0.000061	0.02	0.00064	0.0000033	0.0004	0.0000055	0.0019	0.0013
Transitional Closure	16	2036-09-01	0.000017	0.015	0.00056	0.0000032	0.00051	0.0000052	0.0016	0.0021
Transitional Closure	16	2036-10-01	0.0000093	0.019	0.00056	0.0000031	0.0011	0.0000047	0.0024	0.0032
Transitional Closure	16	2036-11-01	0.000016	0.048	0.00092	0.0000037	0.0013	0.000008	0.0035	0.0049
Transitional Closure	16	2036-12-01	0.000017	0.059	0.0013	0.0000041	0.0015	0.00001	0.0042	0.0069
Transitional Closure	16	2037-01-01	0.000058	0.079	0.0015	0.0000043	0.0015	0.000011	0.0048	0.0097
Transitional Closure	16	2037-02-01	0.000023	0.092	0.0017	0.0000044	0.0015	0.000011	0.0063	0.011
Transitional Closure	17	2037-03-01	0.000025	0.1	0.0019	0.0000044	0.0016	0.000011	0.0058	0.013
Transitional Closure	17	2037-04-01	0.000042	0.074	0.0018	0.0000046	0.0012	0.000012	0.005	0.0081
Transitional Closure	17	2037-05-01	0.000015	0.014	0.00065	0.0000026	0.00045	0.0000048	0.0012	0.0025
Transitional Closure	17	2037-06-01	0.00001	0.011	0.00053	0.0000032	0.0005	0.0000044	0.0016	0.0015
Transitional Closure	17	2037-07-01	0.0000074	0.013	0.00049	0.0000031	0.0004	0.0000046	0.0015	0.0017
Transitional Closure	17	2037-08-01	0.000059	0.015	0.00057	0.0000032	0.0004	0.0000048	0.0019	0.0013
Transitional Closure	17	2037-09-01	0.000015	0.0096	0.00049	0.000003	0.00051	0.0000045	0.0016	0.0021

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	17	2037-10-01	170	30	0.31	0.0051	0.035	0.0069	0.079	0.45	0.00024
Transitional Closure	17	2037-11-01	210	32	0.49	0.0083	0.064	0.0067	0.096	0.13	0.00018
Transitional Closure	17	2037-12-01	240	34	0.59	0.01	0.087	0.008	0.1	0.51	0.00018
Transitional Closure	17	2038-01-01	250	37	0.65	0.011	0.11	0.0074	0.1	0.79	0.00023
Transitional Closure	17	2038-02-01	280	41	0.66	0.012	0.11	0.009	0.12	0.41	0.00024
Transitional Closure	18	2038-03-01	300	43	0.65	0.011	0.11	0.011	0.13	0.58	0.00048
Transitional Closure	18	2038-04-01	260	34	0.64	0.011	0.11	0.0055	0.12	0.54	0.00031
Transitional Closure	18	2038-05-01	91	15	0.3	0.007	0.043	0.0073	0.056	0.64	0.00048
Transitional Closure	18	2038-06-01	120	20	0.2	0.0051	0.038	0.0092	0.07	0.51	0.00059
Transitional Closure	18	2038-07-01	150	24	0.2	0.0054	0.043	0.0047	0.071	0.24	0.00041
Transitional Closure	18	2038-08-01	140	21	0.2	0.0071	0.034	0.0063	0.068	0.29	0.00041
Transitional Closure	18	2038-09-01	140	22	0.21	0.0052	0.032	0.0056	0.065	0.56	0.00064
Transitional Closure	18	2038-10-01	170	30	0.3	0.0049	0.033	0.0068	0.078	0.45	0.00024
Transitional Closure	18	2038-11-01	210	32	0.47	0.0079	0.061	0.0067	0.096	0.13	0.00018
Transitional Closure	18	2038-12-01	230	34	0.57	0.0097	0.082	0.008	0.1	0.51	0.00018
Transitional Closure	18	2039-01-01	250	36	0.63	0.011	0.11	0.0074	0.099	0.79	0.00023
Transitional Closure	18	2039-02-01	270	41	0.63	0.011	0.1	0.0089	0.12	0.41	0.00024
Transitional Closure	19	2039-03-01	290	43	0.63	0.011	0.1	0.011	0.13	0.58	0.00048
Transitional Closure	19	2039-04-01	250	33	0.61	0.011	0.11	0.0055	0.12	0.54	0.00031
Transitional Closure	19	2039-05-01	90	15	0.29	0.0067	0.041	0.0072	0.056	0.64	0.00048
Transitional Closure	19	2039-06-01	120	20	0.19	0.0049	0.037	0.0092	0.07	0.51	0.00059
Transitional Closure	19	2039-07-01	150	24	0.19	0.0052	0.041	0.0047	0.071	0.24	0.00041
Transitional Closure	19	2039-08-01	140	21	0.19	0.0068	0.033	0.0063	0.068	0.29	0.00041
Transitional Closure	19	2039-09-01	140	22	0.21	0.005	0.03	0.0056	0.065	0.56	0.00064
Transitional Closure	19	2039-10-01	170	30	0.29	0.0047	0.031	0.0068	0.078	0.45	0.00024
Transitional Closure	19	2039-11-01	210	32	0.45	0.0075	0.058	0.0067	0.096	0.13	0.00018
Transitional Closure	19	2039-12-01	230	34	0.55	0.0093	0.078	0.008	0.1	0.51	0.00018
Transitional Closure	19	2040-01-01	250	36	0.61	0.01	0.11	0.0074	0.099	0.79	0.00023
Transitional Closure	19	2040-02-01	270	40	0.6	0.01	0.095	0.0087	0.12	0.41	0.00024
Transitional Closure	20	2040-03-01	290	43	0.61	0.01	0.099	0.011	0.13	0.58	0.00048
Transitional Closure	20	2040-04-01	240	33	0.59	0.01	0.1	0.0055	0.12	0.54	0.00031
Transitional Closure	20	2040-05-01	89	15	0.27	0.0064	0.039	0.0072	0.056	0.64	0.00048
Transitional Closure	20	2040-06-01	120	20	0.18	0.0047	0.035	0.0092	0.07	0.51	0.00059
Transitional Closure	20	2040-07-01	150	24	0.18	0.005	0.04	0.0047	0.071	0.24	0.00041

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	17	2037-10-01	0.00024	0.013	0.00012	0.0007	0.000045	51	0.000043	0.00069	0.032
Transitional Closure	17	2037-11-01	0.00027	0.013	0.00021	0.00081	0.000056	59	0.000071	0.00096	0.057
Transitional Closure	17	2037-12-01	0.00023	0.014	0.00024	0.00082	0.000058	65	0.000057	0.0012	0.035
Transitional Closure	17	2038-01-01	0.00024	0.0093	0.00023	0.00085	0.000076	70	0.000087	0.0016	0.078
Transitional Closure	17	2038-02-01	0.00024	0.012	0.00022	0.0008	0.000098	73	0.000068	0.0018	0.043
Transitional Closure	18	2038-03-01	0.00046	0.0092	0.00018	0.0008	0.000093	80	0.000076	0.002	0.04
Transitional Closure	18	2038-04-01	0.00031	0.0081	0.00015	0.00069	0.000059	69	0.00009	0.0024	0.042
Transitional Closure	18	2038-05-01	0.00058	0.026	0.00018	0.00062	0.000021	27	0.000027	0.0011	0.046
Transitional Closure	18	2038-06-01	0.00049	0.0082	0.00018	0.0006	0.000014	36	0.000022	0.00058	0.025
Transitional Closure	18	2038-07-01	0.00055	0.0064	0.00019	0.0006	0.000017	44	0.000032	0.00046	0.02
Transitional Closure	18	2038-08-01	0.0005	0.0062	0.00018	0.00068	0.000021	44	0.0002	0.00072	0.027
Transitional Closure	18	2038-09-01	0.0006	0.0076	0.00017	0.00059	0.000028	42	0.000057	0.00066	0.02
Transitional Closure	18	2038-10-01	0.00024	0.013	0.00012	0.0007	0.000045	51	0.000039	0.00069	0.032
Transitional Closure	18	2038-11-01	0.00027	0.013	0.00021	0.00081	0.000056	59	0.000062	0.00095	0.057
Transitional Closure	18	2038-12-01	0.00023	0.014	0.00024	0.00082	0.000058	65	0.000045	0.0012	0.035
Transitional Closure	18	2039-01-01	0.00024	0.0093	0.00023	0.00084	0.000076	70	0.000072	0.0016	0.078
Transitional Closure	18	2039-02-01	0.00024	0.012	0.00022	0.0008	0.000098	73	0.000051	0.0018	0.043
Transitional Closure	19	2039-03-01	0.00046	0.0091	0.00017	0.0008	0.000093	80	0.000057	0.002	0.04
Transitional Closure	19	2039-04-01	0.00031	0.008	0.00015	0.00069	0.000059	69	0.00007	0.0024	0.042
Transitional Closure	19	2039-05-01	0.00058	0.026	0.00018	0.00062	0.000021	27	0.000024	0.0011	0.046
Transitional Closure	19	2039-06-01	0.00049	0.0082	0.00018	0.0006	0.000014	36	0.000021	0.00058	0.025
Transitional Closure	19	2039-07-01	0.00055	0.0064	0.00019	0.0006	0.000017	44	0.000031	0.00046	0.02
Transitional Closure	19	2039-08-01	0.0005	0.0062	0.00018	0.00068	0.000021	44	0.0002	0.00072	0.027
Transitional Closure	19	2039-09-01	0.0006	0.0076	0.00017	0.00059	0.000028	42	0.000055	0.00065	0.02
Transitional Closure	19	2039-10-01	0.00024	0.013	0.00012	0.0007	0.000045	51	0.000037	0.00069	0.032
Transitional Closure	19	2039-11-01	0.00027	0.013	0.00021	0.00081	0.000056	59	0.000059	0.00095	0.057
Transitional Closure	19	2039-12-01	0.00023	0.014	0.00024	0.00082	0.000058	65	0.00004	0.0012	0.035
Transitional Closure	19	2040-01-01	0.00024	0.0093	0.00023	0.00084	0.000076	70	0.000066	0.0016	0.079
Transitional Closure	19	2040-02-01	0.00024	0.012	0.00021	0.00078	0.000098	72	0.000044	0.0018	0.043
Transitional Closure	20	2040-03-01	0.00046	0.0091	0.00017	0.0008	0.000093	80	0.000049	0.002	0.04
Transitional Closure	20	2040-04-01	0.00031	0.008	0.00015	0.00069	0.000059	69	0.000061	0.0024	0.043
Transitional Closure	20	2040-05-01	0.00058	0.026	0.00018	0.00062	0.000021	27	0.000023	0.0011	0.046
Transitional Closure	20	2040-06-01	0.00049	0.0082	0.00018	0.0006	0.000014	36	0.000021	0.00058	0.025
Transitional Closure	20	2040-07-01	0.00055	0.0064	0.00019	0.0006	0.000017	44	0.000031	0.00046	0.02

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	17	2037-10-01	0.000062	0.029	0.00053	0.0000029	0.0012	0.0000038	0.0025	0.0052	1.2
Transitional Closure	17	2037-11-01	0.00033	0.053	0.0008	0.0000033	0.0013	0.0000061	0.0038	0.0068	0.98
Transitional Closure	17	2037-12-01	0.000036	0.046	0.00096	0.0000036	0.0014	0.0000075	0.0042	0.0076	1.6
Transitional Closure	17	2038-01-01	0.000084	0.062	0.0012	0.0000038	0.0015	0.0000078	0.0049	0.01	1.8
Transitional Closure	17	2038-02-01	0.000045	0.084	0.0015	0.0000037	0.0014	0.0000079	0.0067	0.013	0.35
Transitional Closure	18	2038-03-01	0.000041	0.084	0.0015	0.0000036	0.0016	0.0000073	0.0059	0.013	0.78
Transitional Closure	18	2038-04-01	0.000063	0.045	0.0013	0.0000039	0.0012	0.0000073	0.005	0.0089	1.1
Transitional Closure	18	2038-05-01	0.000047	0.013	0.00058	0.0000039	0.00043	0.0000046	0.0013	0.0032	2.2
Transitional Closure	18	2038-06-01	0.000025	0.019	0.00037	0.0000044	0.00048	0.0000037	0.0016	0.0018	1.6
Transitional Closure	18	2038-07-01	0.000015	0.019	0.00046	0.000003	0.00045	0.0000048	0.0016	0.0022	2.1
Transitional Closure	18	2038-08-01	0.000076	0.02	0.00053	0.0000031	0.00039	0.0000046	0.002	0.002	1.9
Transitional Closure	18	2038-09-01	0.000045	0.011	0.0005	0.000003	0.00057	0.0000043	0.0017	0.0027	1.7
Transitional Closure	18	2038-10-01	0.000062	0.025	0.00048	0.0000028	0.0012	0.0000034	0.0025	0.0052	1.2
Transitional Closure	18	2038-11-01	0.00033	0.046	0.00071	0.0000031	0.0013	0.0000053	0.0038	0.0068	0.98
Transitional Closure	18	2038-12-01	0.000033	0.036	0.00084	0.0000033	0.0014	0.0000064	0.0041	0.0076	1.6
Transitional Closure	18	2039-01-01	0.000081	0.05	0.001	0.0000035	0.0015	0.0000064	0.0049	0.01	1.8
Transitional Closure	18	2039-02-01	0.000042	0.07	0.0013	0.0000034	0.0014	0.0000063	0.0067	0.013	0.35
Transitional Closure	19	2039-03-01	0.000037	0.069	0.0013	0.0000032	0.0016	0.0000056	0.0059	0.013	0.78
Transitional Closure	19	2039-04-01	0.000059	0.028	0.0011	0.0000035	0.0012	0.0000054	0.005	0.0089	1.1
Transitional Closure	19	2039-05-01	0.000047	0.011	0.00056	0.0000039	0.00043	0.0000043	0.0013	0.0032	2.2
Transitional Closure	19	2039-06-01	0.000025	0.018	0.00036	0.0000043	0.00048	0.0000036	0.0016	0.0018	1.6
Transitional Closure	19	2039-07-01	0.000015	0.018	0.00045	0.0000029	0.00045	0.0000047	0.0016	0.0022	2.1
Transitional Closure	19	2039-08-01	0.000076	0.018	0.00052	0.0000031	0.00039	0.0000044	0.002	0.002	1.9
Transitional Closure	19	2039-09-01	0.000044	0.0095	0.00049	0.000003	0.00057	0.0000042	0.0017	0.0027	1.7
Transitional Closure	19	2039-10-01	0.000061	0.024	0.00046	0.0000028	0.0012	0.0000032	0.0025	0.0052	1.2
Transitional Closure	19	2039-11-01	0.00033	0.043	0.00067	0.0000031	0.0013	0.0000049	0.0038	0.0068	0.98
Transitional Closure	19	2039-12-01	0.000032	0.032	0.00078	0.0000032	0.0014	0.0000059	0.0041	0.0076	1.6
Transitional Closure	19	2040-01-01	0.00008	0.044	0.00096	0.0000034	0.0015	0.0000058	0.0049	0.01	1.8
Transitional Closure	19	2040-02-01	0.00004	0.064	0.0013	0.0000032	0.0014	0.0000054	0.0066	0.013	0.35
Transitional Closure	20	2040-03-01	0.000036	0.062	0.0013	0.0000031	0.0016	0.0000048	0.0059	0.013	0.78
Transitional Closure	20	2040-04-01	0.000058	0.021	0.00096	0.0000033	0.0012	0.0000045	0.005	0.0089	1.1
Transitional Closure	20	2040-05-01	0.000047	0.0099	0.00055	0.0000039	0.00043	0.0000043	0.0013	0.0032	2.2
Transitional Closure	20	2040-06-01	0.000025	0.018	0.00035	0.0000043	0.00048	0.0000036	0.0016	0.0018	1.6
Transitional Closure	20	2040-07-01	0.000015	0.018	0.00045	0.0000029	0.00045	0.0000046	0.0016	0.0022	2.1

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L
Transitional Closure	17	2037-10-01	0.0031	0.00012	0.0006	0.000024	51	0.000018	0.00058	0.0059
Transitional Closure	17	2037-11-01	0.0039	0.00021	0.00062	0.000036	59	0.000035	0.00088	0.008
Transitional Closure	17	2037-12-01	0.0037	0.00023	0.00067	0.000053	63	0.000045	0.0012	0.013
Transitional Closure	17	2038-01-01	0.0048	0.00023	0.00065	0.000054	70	0.000054	0.0015	0.013
Transitional Closure	17	2038-02-01	0.0038	0.00022	0.00064	0.000073	75	0.000052	0.0017	0.015
Transitional Closure	18	2038-03-01	0.0033	0.00018	0.00061	0.000084	80	0.000059	0.002	0.02
Transitional Closure	18	2038-04-01	0.004	0.00016	0.00057	0.000055	77	0.00007	0.0024	0.023
Transitional Closure	18	2038-05-01	0.019	0.00019	0.00062	0.000016	23	0.000031	0.0012	0.023
Transitional Closure	18	2038-06-01	0.0084	0.00018	0.00059	0.000017	33	0.000026	0.00066	0.0079
Transitional Closure	18	2038-07-01	0.0057	0.00019	0.00057	0.000013	43	0.000022	0.0005	0.0054
Transitional Closure	18	2038-08-01	0.0051	0.00018	0.00066	0.000014	43	0.00021	0.00065	0.0058
Transitional Closure	18	2038-09-01	0.0054	0.00017	0.00055	0.000014	42	0.00002	0.00071	0.0075
Transitional Closure	18	2038-10-01	0.0031	0.00012	0.0006	0.000024	51	0.000014	0.00058	0.0058
Transitional Closure	18	2038-11-01	0.0039	0.00021	0.00062	0.000036	59	0.000026	0.00087	0.0079
Transitional Closure	18	2038-12-01	0.0037	0.00023	0.00067	0.000053	63	0.000033	0.0012	0.013
Transitional Closure	18	2039-01-01	0.0047	0.00023	0.00065	0.000053	70	0.000039	0.0015	0.012
Transitional Closure	18	2039-02-01	0.0037	0.00022	0.00063	0.000073	75	0.000036	0.0017	0.015
Transitional Closure	19	2039-03-01	0.0033	0.00018	0.0006	0.000084	80	0.00004	0.002	0.02
Transitional Closure	19	2039-04-01	0.0039	0.00016	0.00056	0.000055	77	0.00005	0.0024	0.022
Transitional Closure	19	2039-05-01	0.019	0.00019	0.00062	0.000016	23	0.000028	0.0012	0.023
Transitional Closure	19	2039-06-01	0.0084	0.00018	0.00059	0.000017	33	0.000025	0.00066	0.0079
Transitional Closure	19	2039-07-01	0.0057	0.00019	0.00057	0.000013	43	0.000021	0.0005	0.0053
Transitional Closure	19	2039-08-01	0.0051	0.00018	0.00066	0.000014	43	0.00021	0.00065	0.0058
Transitional Closure	19	2039-09-01	0.0054	0.00017	0.00055	0.000014	42	0.000019	0.00071	0.0074
Transitional Closure	19	2039-10-01	0.0031	0.00012	0.0006	0.000024	51	0.000012	0.00058	0.0058
Transitional Closure	19	2039-11-01	0.0039	0.00021	0.00062	0.000036	59	0.000022	0.00087	0.0078
Transitional Closure	19	2039-12-01	0.0036	0.00023	0.00067	0.000053	63	0.000028	0.0012	0.013
Transitional Closure	19	2040-01-01	0.0047	0.00023	0.00065	0.000053	70	0.000033	0.0015	0.012
Transitional Closure	19	2040-02-01	0.0035	0.0002	0.00061	0.000072	75	0.000028	0.0017	0.015
Transitional Closure	20	2040-03-01	0.0032	0.00018	0.0006	0.000084	80	0.000032	0.002	0.02
Transitional Closure	20	2040-04-01	0.0039	0.00016	0.00056	0.000055	77	0.000041	0.0024	0.022
Transitional Closure	20	2040-05-01	0.019	0.00019	0.00062	0.000016	23	0.000027	0.0012	0.023
Transitional Closure	20	2040-06-01	0.0084	0.00018	0.00059	0.000017	33	0.000024	0.00066	0.0079
Transitional Closure	20	2040-07-01	0.0057	0.00019	0.00057	0.000013	43	0.000021	0.0005	0.0053

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Transitional Closure	17	2037-10-01	0.0000074	0.011	0.00046	0.0000029	0.0011	0.0000038	0.0024	0.0032
Transitional Closure	17	2037-11-01	0.000012	0.033	0.00072	0.0000033	0.0013	0.0000062	0.0035	0.0049
Transitional Closure	17	2037-12-01	0.000012	0.037	0.00098	0.0000036	0.0015	0.0000074	0.0042	0.0069
Transitional Closure	17	2038-01-01	0.000051	0.052	0.0011	0.0000036	0.0015	0.0000077	0.0048	0.0097
Transitional Closure	17	2038-02-01	0.000015	0.061	0.0014	0.0000037	0.0015	0.0000079	0.0063	0.011
Transitional Closure	18	2038-03-01	0.000016	0.067	0.0014	0.0000036	0.0016	0.0000074	0.0058	0.013
Transitional Closure	18	2038-04-01	0.000033	0.037	0.0013	0.0000037	0.0012	0.0000073	0.005	0.0081
Transitional Closure	18	2038-05-01	0.000014	0.0098	0.00059	0.0000025	0.00045	0.0000043	0.0012	0.0025
Transitional Closure	18	2038-06-01	0.0000095	0.009	0.0005	0.0000032	0.0005	0.0000042	0.0016	0.0015
Transitional Closure	18	2038-07-01	0.0000069	0.01	0.00046	0.000003	0.0004	0.0000044	0.0015	0.0017
Transitional Closure	18	2038-08-01	0.000059	0.012	0.00053	0.0000031	0.0004	0.0000045	0.0019	0.0013
Transitional Closure	18	2038-09-01	0.000015	0.0071	0.00046	0.000003	0.00051	0.0000042	0.0016	0.0021
Transitional Closure	18	2038-10-01	0.0000065	0.0074	0.00041	0.0000028	0.0011	0.0000034	0.0024	0.0032
Transitional Closure	18	2038-11-01	0.00001	0.026	0.00064	0.0000031	0.0013	0.0000053	0.0035	0.0049
Transitional Closure	18	2038-12-01	0.0000093	0.027	0.00086	0.0000033	0.0015	0.0000063	0.0042	0.0069
Transitional Closure	18	2039-01-01	0.000048	0.04	0.00098	0.0000033	0.0015	0.0000063	0.0048	0.0097
Transitional Closure	18	2039-02-01	0.000012	0.048	0.0012	0.0000034	0.0015	0.0000063	0.0063	0.011
Transitional Closure	19	2039-03-01	0.000013	0.052	0.0012	0.0000032	0.0016	0.0000056	0.0058	0.013
Transitional Closure	19	2039-04-01	0.000029	0.02	0.0011	0.0000033	0.0012	0.0000054	0.005	0.008
Transitional Closure	19	2039-05-01	0.000013	0.0079	0.00057	0.0000024	0.00045	0.0000041	0.0012	0.0025
Transitional Closure	19	2039-06-01	0.0000093	0.0081	0.00049	0.0000031	0.0005	0.0000041	0.0016	0.0015
Transitional Closure	19	2039-07-01	0.0000066	0.0095	0.00045	0.000003	0.0004	0.0000043	0.0015	0.0017
Transitional Closure	19	2039-08-01	0.000059	0.011	0.00052	0.0000031	0.0004	0.0000044	0.0019	0.0013
Transitional Closure	19	2039-09-01	0.000015	0.0059	0.00045	0.000003	0.00051	0.0000041	0.0016	0.0021
Transitional Closure	19	2039-10-01	0.0000061	0.0059	0.0004	0.0000028	0.0011	0.0000032	0.0024	0.0032
Transitional Closure	19	2039-11-01	0.0000093	0.023	0.0006	0.0000031	0.0013	0.000005	0.0035	0.0049
Transitional Closure	19	2039-12-01	0.0000082	0.022	0.0008	0.0000032	0.0015	0.0000057	0.0042	0.0069
Transitional Closure	19	2040-01-01	0.000047	0.035	0.00091	0.0000032	0.0015	0.0000057	0.0048	0.0097
Transitional Closure	19	2040-02-01	0.00001	0.041	0.0011	0.0000032	0.0015	0.0000054	0.0063	0.011
Transitional Closure	20	2040-03-01	0.000011	0.045	0.0012	0.0000031	0.0016	0.0000049	0.0058	0.013
Transitional Closure	20	2040-04-01	0.000027	0.013	0.001	0.0000031	0.0012	0.0000045	0.005	0.0081
Transitional Closure	20	2040-05-01	0.000013	0.007	0.00055	0.0000024	0.00045	0.000004	0.0012	0.0025
Transitional Closure	20	2040-06-01	0.0000092	0.0077	0.00048	0.0000031	0.0005	0.000004	0.0016	0.0015
Transitional Closure	20	2040-07-01	0.0000065	0.0091	0.00044	0.000003	0.0004	0.0000042	0.0015	0.0017

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	20	2040-08-01	140	21	0.18	0.0066	0.031	0.0063	0.068	0.29	0.00041
Transitional Closure	20	2040-09-01	140	22	0.2	0.0048	0.029	0.0056	0.065	0.56	0.00064
Transitional Closure	20	2040-10-01	170	30	0.28	0.0045	0.03	0.0068	0.078	0.45	0.00024
Transitional Closure	20	2040-11-01	210	32	0.44	0.0072	0.055	0.0067	0.096	0.13	0.00018
Transitional Closure	20	2040-12-01	230	34	0.53	0.0089	0.075	0.008	0.1	0.51	0.00018
Transitional Closure	20	2041-01-01	250	36	0.59	0.0096	0.1	0.0074	0.099	0.79	0.00024
Transitional Closure	20	2041-02-01	270	41	0.59	0.01	0.092	0.0089	0.12	0.41	0.00024
Transitional Closure	21	2041-03-01	290	43	0.59	0.0098	0.095	0.011	0.13	0.58	0.00048
Transitional Closure	21	2041-04-01	240	33	0.57	0.0098	0.095	0.0055	0.12	0.54	0.00031
Transitional Closure	21	2041-05-01	89	15	0.26	0.0061	0.037	0.0072	0.055	0.64	0.00048
Transitional Closure	21	2041-06-01	120	20	0.18	0.0045	0.034	0.0092	0.07	0.51	0.00059
Transitional Closure	21	2041-07-01	150	24	0.17	0.0047	0.039	0.0047	0.071	0.24	0.00041
Transitional Closure	21	2041-08-01	140	21	0.18	0.0064	0.03	0.0063	0.068	0.29	0.00041
Transitional Closure	21	2041-09-01	140	22	0.19	0.0046	0.028	0.0056	0.065	0.56	0.00064
Transitional Closure	21	2041-10-01	170	30	0.27	0.0043	0.029	0.0068	0.078	0.45	0.00024
Transitional Closure	21	2041-11-01	210	32	0.43	0.0069	0.053	0.0067	0.096	0.13	0.00018
Transitional Closure	21	2041-12-01	230	34	0.51	0.0085	0.072	0.008	0.1	0.51	0.00018
Transitional Closure	21	2042-01-01	240	36	0.57	0.0092	0.098	0.0074	0.099	0.79	0.00024
Transitional Closure	21	2042-02-01	270	41	0.57	0.0096	0.089	0.0089	0.12	0.41	0.00024
Transitional Closure	22	2042-03-01	290	43	0.57	0.0094	0.091	0.011	0.13	0.58	0.00048
Transitional Closure	22	2042-04-01	240	33	0.55	0.0094	0.091	0.0054	0.12	0.54	0.00031
Transitional Closure	22	2042-05-01	89	15	0.25	0.0058	0.036	0.0072	0.055	0.64	0.00048
Transitional Closure	22	2042-06-01	120	20	0.17	0.0043	0.033	0.0091	0.07	0.51	0.00059
Transitional Closure	22	2042-07-01	150	24	0.16	0.0046	0.038	0.0047	0.071	0.24	0.00041
Transitional Closure	22	2042-08-01	140	21	0.17	0.0062	0.029	0.0063	0.068	0.29	0.00041
Transitional Closure	22	2042-09-01	140	22	0.18	0.0044	0.027	0.0056	0.065	0.56	0.00064
Transitional Closure	22	2042-10-01	170	30	0.27	0.0042	0.028	0.0068	0.078	0.44	0.00024
Transitional Closure	22	2042-11-01	210	32	0.42	0.0067	0.052	0.0067	0.096	0.13	0.00018
Transitional Closure	22	2042-12-01	230	34	0.5	0.0082	0.07	0.0079	0.1	0.51	0.00017
Transitional Closure	22	2043-01-01	240	36	0.56	0.0089	0.096	0.0074	0.099	0.79	0.00024
Transitional Closure	22	2043-02-01	270	41	0.56	0.0093	0.087	0.0089	0.12	0.41	0.00024
Transitional Closure	23	2043-03-01	290	43	0.56	0.0092	0.089	0.011	0.13	0.58	0.00047
Transitional Closure	23	2043-04-01	240	33	0.54	0.0091	0.089	0.0054	0.12	0.54	0.00031
Transitional Closure	23	2043-05-01	89	15	0.24	0.0056	0.034	0.0072	0.055	0.64	0.00048

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L
Transitional Closure	20	2040-08-01	0.0005	0.0062	0.00018	0.00068	0.000021	44	0.0002	0.00072	0.027
Transitional Closure	20	2040-09-01	0.0006	0.0076	0.00017	0.00059	0.000028	42	0.000055	0.00065	0.02
Transitional Closure	20	2040-10-01	0.00024	0.013	0.00012	0.0007	0.000045	51	0.000036	0.00069	0.032
Transitional Closure	20	2040-11-01	0.00027	0.013	0.00021	0.00081	0.000056	59	0.000057	0.00095	0.057
Transitional Closure	20	2040-12-01	0.00023	0.014	0.00024	0.00082	0.000058	65	0.000038	0.0012	0.035
Transitional Closure	20	2041-01-01	0.00024	0.0093	0.00023	0.00084	0.000076	70	0.000063	0.0016	0.079
Transitional Closure	20	2041-02-01	0.00024	0.012	0.00022	0.00079	0.000098	73	0.000041	0.0018	0.044
Transitional Closure	21	2041-03-01	0.00046	0.0091	0.00017	0.00079	0.000093	80	0.000046	0.002	0.04
Transitional Closure	21	2041-04-01	0.00031	0.0079	0.00015	0.00068	0.000059	69	0.000057	0.0024	0.043
Transitional Closure	21	2041-05-01	0.00058	0.026	0.00018	0.00062	0.000021	27	0.000023	0.0011	0.046
Transitional Closure	21	2041-06-01	0.00049	0.0082	0.00018	0.0006	0.000014	36	0.00002	0.00058	0.025
Transitional Closure	21	2041-07-01	0.00055	0.0064	0.00019	0.0006	0.000017	44	0.000031	0.00046	0.02
Transitional Closure	21	2041-08-01	0.0005	0.0062	0.00018	0.00068	0.000021	44	0.0002	0.00072	0.027
Transitional Closure	21	2041-09-01	0.0006	0.0076	0.00017	0.00059	0.000028	42	0.000054	0.00065	0.02
Transitional Closure	21	2041-10-01	0.00024	0.013	0.00012	0.0007	0.000045	51	0.000036	0.00069	0.032
Transitional Closure	21	2041-11-01	0.00027	0.013	0.00021	0.00081	0.000056	59	0.000056	0.00095	0.057
Transitional Closure	21	2041-12-01	0.00023	0.014	0.00024	0.00082	0.000058	65	0.000037	0.0012	0.035
Transitional Closure	21	2042-01-01	0.00024	0.0093	0.00023	0.00084	0.000076	70	0.000062	0.0016	0.08
Transitional Closure	21	2042-02-01	0.00024	0.012	0.00022	0.00079	0.000098	73	0.000039	0.0018	0.044
Transitional Closure	22	2042-03-01	0.00046	0.0091	0.00017	0.00079	0.000093	80	0.000044	0.002	0.041
Transitional Closure	22	2042-04-01	0.00031	0.0079	0.00015	0.00068	0.000059	69	0.000055	0.0024	0.045
Transitional Closure	22	2042-05-01	0.00058	0.026	0.00018	0.00062	0.000021	27	0.000023	0.0011	0.046
Transitional Closure	22	2042-06-01	0.00049	0.0082	0.00018	0.0006	0.000014	36	0.00002	0.00058	0.025
Transitional Closure	22	2042-07-01	0.00055	0.0064	0.00019	0.0006	0.000017	44	0.00003	0.00046	0.02
Transitional Closure	22	2042-08-01	0.0005	0.0062	0.00018	0.00068	0.000021	44	0.0002	0.00072	0.027
Transitional Closure	22	2042-09-01	0.0006	0.0076	0.00017	0.00059	0.000028	42	0.000054	0.00065	0.02
Transitional Closure	22	2042-10-01	0.00024	0.013	0.00012	0.0007	0.000045	51	0.000036	0.00069	0.032
Transitional Closure	22	2042-11-01	0.00027	0.013	0.00021	0.00081	0.000056	59	0.000056	0.00095	0.057
Transitional Closure	22	2042-12-01	0.00023	0.014	0.00024	0.00082	0.000058	65	0.000036	0.0012	0.036
Transitional Closure	22	2043-01-01	0.00024	0.0093	0.00023	0.00084	0.000076	70	0.000061	0.0016	0.081
Transitional Closure	22	2043-02-01	0.00024	0.012	0.00022	0.00079	0.000098	73	0.000038	0.0018	0.045
Transitional Closure	23	2043-03-01	0.00046	0.0091	0.00017	0.00079	0.000093	80	0.000043	0.002	0.041
Transitional Closure	23	2043-04-01	0.00031	0.0079	0.00015	0.00068	0.000059	69	0.000054	0.0024	0.046
Transitional Closure	23	2043-05-01	0.00058	0.026	0.00018	0.00062	0.000021	27	0.000023	0.0011	0.046

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	20	2040-08-01	0.000076	0.018	0.00051	0.0000031	0.00039	0.0000044	0.002	0.002	1.9
Transitional Closure	20	2040-09-01	0.000044	0.0091	0.00048	0.0000029	0.00057	0.0000041	0.0017	0.0027	1.7
Transitional Closure	20	2040-10-01	0.000061	0.023	0.00046	0.0000028	0.0012	0.0000031	0.0025	0.0052	1.2
Transitional Closure	20	2040-11-01	0.00033	0.042	0.00065	0.000003	0.0013	0.0000048	0.0038	0.0068	0.98
Transitional Closure	20	2040-12-01	0.000032	0.03	0.00076	0.0000032	0.0014	0.0000057	0.0041	0.0076	1.6
Transitional Closure	20	2041-01-01	0.00008	0.042	0.00093	0.0000033	0.0015	0.0000056	0.0049	0.01	1.8
Transitional Closure	20	2041-02-01	0.00004	0.061	0.0012	0.0000032	0.0014	0.0000053	0.0067	0.013	0.35
Transitional Closure	21	2041-03-01	0.000035	0.059	0.0012	0.000003	0.0016	0.0000045	0.0059	0.013	0.78
Transitional Closure	21	2041-04-01	0.000057	0.017	0.00092	0.0000033	0.0012	0.0000041	0.005	0.0089	1.1
Transitional Closure	21	2041-05-01	0.000047	0.0095	0.00054	0.0000038	0.00043	0.0000042	0.0013	0.0032	2.2
Transitional Closure	21	2041-06-01	0.000025	0.017	0.00035	0.0000043	0.00048	0.0000036	0.0016	0.0018	1.6
Transitional Closure	21	2041-07-01	0.000015	0.018	0.00044	0.0000029	0.00045	0.0000046	0.0016	0.0022	2.1
Transitional Closure	21	2041-08-01	0.000076	0.018	0.00051	0.0000031	0.00039	0.0000043	0.002	0.002	1.9
Transitional Closure	21	2041-09-01	0.000044	0.0089	0.00048	0.0000029	0.00057	0.0000041	0.0017	0.0027	1.7
Transitional Closure	21	2041-10-01	0.000061	0.023	0.00045	0.0000028	0.0012	0.0000031	0.0025	0.0053	1.2
Transitional Closure	21	2041-11-01	0.00033	0.042	0.00065	0.000003	0.0013	0.0000047	0.0038	0.0068	0.98
Transitional Closure	21	2041-12-01	0.000032	0.029	0.00075	0.0000031	0.0014	0.0000056	0.0041	0.0076	1.6
Transitional Closure	21	2042-01-01	0.00008	0.041	0.00092	0.0000033	0.0015	0.0000054	0.0049	0.01	1.8
Transitional Closure	21	2042-02-01	0.00004	0.06	0.0012	0.0000031	0.0014	0.0000052	0.0067	0.013	0.35
Transitional Closure	22	2042-03-01	0.000035	0.057	0.0012	0.000003	0.0016	0.0000043	0.0059	0.013	0.78
Transitional Closure	22	2042-04-01	0.000057	0.016	0.0009	0.0000032	0.0012	0.000004	0.005	0.0089	1.1
Transitional Closure	22	2042-05-01	0.000047	0.0093	0.00054	0.0000038	0.00043	0.0000042	0.0013	0.0032	2.2
Transitional Closure	22	2042-06-01	0.000025	0.017	0.00035	0.0000043	0.00048	0.0000035	0.0016	0.0018	1.6
Transitional Closure	22	2042-07-01	0.000015	0.018	0.00044	0.0000029	0.00045	0.0000046	0.0016	0.0022	2.1
Transitional Closure	22	2042-08-01	0.000076	0.018	0.00051	0.0000031	0.00039	0.0000043	0.002	0.002	1.9
Transitional Closure	22	2042-09-01	0.000044	0.0088	0.00048	0.0000029	0.00057	0.0000041	0.0017	0.0027	1.7
Transitional Closure	22	2042-10-01	0.000061	0.023	0.00045	0.0000028	0.0012	0.0000031	0.0025	0.0053	1.2
Transitional Closure	22	2042-11-01	0.00033	0.041	0.00064	0.000003	0.0013	0.0000047	0.0038	0.0068	0.98
Transitional Closure	22	2042-12-01	0.000032	0.029	0.00074	0.0000031	0.0014	0.0000055	0.0041	0.0077	1.6
Transitional Closure	22	2043-01-01	0.00008	0.041	0.00092	0.0000033	0.0015	0.0000054	0.0049	0.01	1.8
Transitional Closure	22	2043-02-01	0.00004	0.059	0.0012	0.0000031	0.0014	0.0000051	0.0067	0.013	0.35
Transitional Closure	23	2043-03-01	0.000035	0.057	0.0012	0.0000029	0.0016	0.0000043	0.0059	0.013	0.78
Transitional Closure	23	2043-04-01	0.000057	0.015	0.0009	0.0000032	0.0012	0.0000039	0.005	0.0089	1.1
Transitional Closure	23	2043-05-01	0.000047	0.0093	0.00054	0.0000038	0.00043	0.0000042	0.0013	0.0032	2.2

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L
Transitional Closure	20	2040-08-01	0.0051	0.00018	0.00066	0.000014	43	0.00021	0.00065	0.0058
Transitional Closure	20	2040-09-01	0.0054	0.00017	0.00055	0.000014	42	0.000019	0.00071	0.0074
Transitional Closure	20	2040-10-01	0.0031	0.00012	0.0006	0.000024	51	0.000011	0.00058	0.0058
Transitional Closure	20	2040-11-01	0.0039	0.00021	0.00062	0.000036	59	0.000021	0.00087	0.0078
Transitional Closure	20	2040-12-01	0.0036	0.00023	0.00067	0.000053	63	0.000025	0.0012	0.013
Transitional Closure	20	2041-01-01	0.0047	0.00022	0.00064	0.000053	70	0.00003	0.0015	0.012
Transitional Closure	20	2041-02-01	0.0037	0.00021	0.00063	0.000072	75	0.000026	0.0017	0.015
Transitional Closure	21	2041-03-01	0.0032	0.00018	0.0006	0.000084	80	0.000029	0.002	0.019
Transitional Closure	21	2041-04-01	0.0038	0.00016	0.00056	0.000055	77	0.000037	0.0024	0.022
Transitional Closure	21	2041-05-01	0.019	0.00019	0.00062	0.000016	23	0.000027	0.0012	0.023
Transitional Closure	21	2041-06-01	0.0084	0.00018	0.00059	0.000017	33	0.000024	0.00066	0.0079
Transitional Closure	21	2041-07-01	0.0057	0.00019	0.00057	0.000013	43	0.00002	0.0005	0.0053
Transitional Closure	21	2041-08-01	0.0051	0.00018	0.00066	0.000014	43	0.00021	0.00065	0.0058
Transitional Closure	21	2041-09-01	0.0054	0.00017	0.00055	0.000014	42	0.000018	0.00071	0.0074
Transitional Closure	21	2041-10-01	0.0031	0.00012	0.0006	0.000024	51	0.000011	0.00058	0.0058
Transitional Closure	21	2041-11-01	0.0039	0.00021	0.00061	0.000036	59	0.00002	0.00087	0.0078
Transitional Closure	21	2041-12-01	0.0036	0.00023	0.00067	0.000052	63	0.000024	0.0012	0.013
Transitional Closure	21	2042-01-01	0.0047	0.00022	0.00064	0.000053	70	0.000029	0.0015	0.012
Transitional Closure	21	2042-02-01	0.0037	0.00021	0.00063	0.000072	75	0.000024	0.0017	0.015
Transitional Closure	22	2042-03-01	0.0032	0.00018	0.0006	0.000084	80	0.000027	0.002	0.019
Transitional Closure	22	2042-04-01	0.0038	0.00016	0.00056	0.000055	77	0.000035	0.0024	0.022
Transitional Closure	22	2042-05-01	0.019	0.00019	0.00062	0.000017	23	0.000026	0.0012	0.024
Transitional Closure	22	2042-06-01	0.0084	0.00018	0.00059	0.000017	33	0.000024	0.00066	0.0079
Transitional Closure	22	2042-07-01	0.0057	0.00019	0.00057	0.000013	43	0.00002	0.0005	0.0054
Transitional Closure	22	2042-08-01	0.0051	0.00018	0.00066	0.000014	43	0.00021	0.00065	0.0058
Transitional Closure	22	2042-09-01	0.0054	0.00017	0.00055	0.000014	42	0.000018	0.00071	0.0075
Transitional Closure	22	2042-10-01	0.0031	0.00012	0.0006	0.000024	51	0.000011	0.00058	0.0058
Transitional Closure	22	2042-11-01	0.0039	0.00021	0.00061	0.000036	59	0.00002	0.00087	0.0078
Transitional Closure	22	2042-12-01	0.0036	0.00023	0.00066	0.000052	63	0.000024	0.0012	0.013
Transitional Closure	22	2043-01-01	0.0047	0.00022	0.00064	0.000053	70	0.000028	0.0015	0.012
Transitional Closure	22	2043-02-01	0.0036	0.00021	0.00063	0.000072	75	0.000024	0.0017	0.015
Transitional Closure	23	2043-03-01	0.0032	0.00018	0.00059	0.000084	80	0.000027	0.002	0.019
Transitional Closure	23	2043-04-01	0.0038	0.00016	0.00055	0.000054	77	0.000035	0.0023	0.022
Transitional Closure	23	2043-05-01	0.019	0.00019	0.00062	0.000017	23	0.000026	0.0012	0.024

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	20	2040-08-01	0.000058	0.01	0.00051	0.0000031	0.0004	0.0000043	0.0019	0.0013
Transitional Closure	20	2040-09-01	0.000014	0.0055	0.00044	0.0000029	0.00051	0.000004	0.0016	0.0021
Transitional Closure	20	2040-10-01	0.000006	0.0053	0.00039	0.0000028	0.0011	0.0000031	0.0024	0.0032
Transitional Closure	20	2040-11-01	0.000009	0.022	0.00058	0.000003	0.0013	0.0000048	0.0035	0.0049
Transitional Closure	20	2040-12-01	0.0000078	0.02	0.00078	0.0000032	0.0015	0.0000055	0.0042	0.0069
Transitional Closure	20	2041-01-01	0.000046	0.033	0.00089	0.0000032	0.0015	0.0000054	0.0048	0.0097
Transitional Closure	20	2041-02-01	0.0000099	0.039	0.0011	0.0000032	0.0015	0.0000053	0.0063	0.011
Transitional Closure	21	2041-03-01	0.00001	0.042	0.0011	0.000003	0.0016	0.0000045	0.0058	0.013
Transitional Closure	21	2041-04-01	0.000026	0.0097	0.00098	0.0000031	0.0012	0.0000041	0.005	0.008
Transitional Closure	21	2041-05-01	0.000013	0.0067	0.00055	0.0000024	0.00045	0.000004	0.0012	0.0025
Transitional Closure	21	2041-06-01	0.0000092	0.0075	0.00048	0.0000031	0.0005	0.000004	0.0016	0.0015
Transitional Closure	21	2041-07-01	0.0000065	0.0089	0.00044	0.000003	0.0004	0.0000042	0.0015	0.0017
Transitional Closure	21	2041-08-01	0.000058	0.01	0.00051	0.0000031	0.0004	0.0000043	0.0019	0.0013
Transitional Closure	21	2041-09-01	0.000014	0.0053	0.00044	0.0000029	0.00051	0.000004	0.0016	0.0021
Transitional Closure	21	2041-10-01	0.0000059	0.005	0.00038	0.0000028	0.0011	0.0000031	0.0024	0.0032
Transitional Closure	21	2041-11-01	0.0000088	0.021	0.00057	0.000003	0.0013	0.0000048	0.0035	0.0049
Transitional Closure	21	2041-12-01	0.0000076	0.02	0.00077	0.0000031	0.0015	0.0000054	0.0042	0.0069
Transitional Closure	21	2042-01-01	0.000046	0.032	0.00087	0.0000031	0.0015	0.0000053	0.0048	0.0097
Transitional Closure	21	2042-02-01	0.0000096	0.038	0.0011	0.0000031	0.0015	0.0000052	0.0063	0.011
Transitional Closure	22	2042-03-01	0.0000098	0.041	0.0011	0.000003	0.0016	0.0000044	0.0058	0.013
Transitional Closure	22	2042-04-01	0.000026	0.0085	0.00097	0.000003	0.0012	0.000004	0.005	0.008
Transitional Closure	22	2042-05-01	0.000013	0.0065	0.00055	0.0000024	0.00045	0.0000039	0.0012	0.0025
Transitional Closure	22	2042-06-01	0.0000091	0.0074	0.00048	0.0000031	0.0005	0.000004	0.0016	0.0015
Transitional Closure	22	2042-07-01	0.0000064	0.0088	0.00044	0.000003	0.0004	0.0000042	0.0015	0.0017
Transitional Closure	22	2042-08-01	0.000058	0.01	0.00051	0.0000031	0.0004	0.0000043	0.0019	0.0013
Transitional Closure	22	2042-09-01	0.000014	0.0052	0.00044	0.0000029	0.00051	0.000004	0.0016	0.0021
Transitional Closure	22	2042-10-01	0.0000059	0.0048	0.00038	0.0000028	0.0011	0.0000031	0.0024	0.0032
Transitional Closure	22	2042-11-01	0.0000088	0.021	0.00057	0.000003	0.0013	0.0000047	0.0035	0.0049
Transitional Closure	22	2042-12-01	0.0000075	0.019	0.00076	0.0000031	0.0015	0.0000054	0.0042	0.0069
Transitional Closure	22	2043-01-01	0.000046	0.031	0.00087	0.0000031	0.0015	0.0000053	0.0048	0.0097
Transitional Closure	22	2043-02-01	0.0000095	0.037	0.0011	0.0000031	0.0015	0.0000051	0.0063	0.011
Transitional Closure	23	2043-03-01	0.0000097	0.04	0.0011	0.0000029	0.0016	0.0000043	0.0058	0.013
Transitional Closure	23	2043-04-01	0.000025	0.008	0.00096	0.000003	0.0012	0.0000039	0.005	0.008
Transitional Closure	23	2043-05-01	0.000013	0.0065	0.00055	0.0000024	0.00045	0.0000039	0.0012	0.0025

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	23	2043-06-01	120	20	0.16	0.0041	0.032	0.0091	0.07	0.51	0.00059
Transitional Closure	23	2043-07-01	150	24	0.16	0.0044	0.037	0.0047	0.071	0.24	0.00041
Transitional Closure	23	2043-08-01	140	21	0.16	0.006	0.028	0.0063	0.068	0.29	0.00041
Transitional Closure	23	2043-09-01	140	22	0.17	0.0043	0.026	0.0056	0.065	0.56	0.00064
Transitional Closure	23	2043-10-01	170	30	0.26	0.0041	0.028	0.0068	0.078	0.44	0.00024
Transitional Closure	23	2043-11-01	210	32	0.41	0.0066	0.052	0.0067	0.096	0.13	0.00018
Transitional Closure	23	2043-12-01	230	34	0.5	0.0082	0.071	0.0079	0.1	0.51	0.00017
Transitional Closure	23	2044-01-01	240	36	0.56	0.0089	0.097	0.0074	0.099	0.79	0.00024
Transitional Closure	23	2044-02-01	270	40	0.55	0.0092	0.087	0.0087	0.12	0.41	0.00024
Transitional Closure	24	2044-03-01	290	43	0.56	0.0094	0.092	0.011	0.13	0.58	0.00047
Transitional Closure	24	2044-04-01	240	33	0.55	0.0093	0.092	0.0054	0.12	0.54	0.00031
Transitional Closure	24	2044-05-01	89	15	0.23	0.0054	0.034	0.0072	0.056	0.64	0.00048
Transitional Closure	24	2044-06-01	120	20	0.14	0.0036	0.027	0.0091	0.07	0.51	0.00059
Transitional Closure	24	2044-07-01	150	24	0.13	0.0038	0.031	0.0047	0.071	0.24	0.00041
Transitional Closure	24	2044-08-01	140	21	0.13	0.0053	0.021	0.0063	0.068	0.29	0.00041
Transitional Closure	24	2044-09-01	140	22	0.14	0.0035	0.018	0.0055	0.065	0.56	0.00064
Transitional Closure	24	2044-10-01	170	30	0.22	0.003	0.016	0.0068	0.078	0.44	0.00024
Transitional Closure	24	2044-11-01	210	32	0.31	0.0043	0.027	0.0067	0.096	0.13	0.00018
Transitional Closure	24	2044-12-01	230	34	0.35	0.0047	0.034	0.0079	0.1	0.51	0.00017
Transitional Closure	24	2045-01-01	240	36	0.37	0.0046	0.051	0.0074	0.099	0.79	0.00024
Transitional Closure	24	2045-02-01	270	41	0.35	0.0045	0.036	0.0089	0.12	0.41	0.00024
Transitional Closure	25	2045-03-01	290	43	0.33	0.0039	0.032	0.011	0.13	0.58	0.00047
Transitional Closure	25	2045-04-01	240	33	0.28	0.0033	0.026	0.0054	0.12	0.54	0.00031
Transitional Closure	25	2045-05-01	89	15	0.19	0.0044	0.024	0.0072	0.055	0.64	0.00048
Transitional Closure	25	2045-06-01	120	20	0.13	0.0034	0.026	0.0091	0.07	0.51	0.00059
Passive Closure	25	2045-07-01	170	37	0.027	0.0014	0.019	0.0034	0.078	0.29	0.00041
Passive Closure	25	2045-08-01	180	44	0.075	0.0041	0.014	0.0067	0.087	0.35	0.00041
Passive Closure	25	2045-09-01	170	42	0.088	0.0025	0.013	0.0057	0.082	0.6	0.00068
Passive Closure	25	2045-10-01	200	47	0.16	0.0019	0.0091	0.007	0.092	0.43	0.00026
Passive Closure	25	2045-11-01	240	53	0.22	0.0024	0.017	0.0061	0.11	0.15	0.00018
Passive Closure	25	2045-12-01	260	59	0.24	0.0024	0.021	0.0069	0.12	0.53	0.00017
Passive Closure	25	2046-01-01	290	65	0.25	0.0022	0.036	0.0075	0.12	0.85	0.00026
Passive Closure	25	2046-02-01	310	72	0.22	0.0021	0.018	0.0092	0.14	0.48	0.00026
Passive Closure	26	2046-03-01	330	78	0.21	0.0018	0.017	0.01	0.14	0.62	0.00043

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L
Transitional Closure	23	2043-06-01	0.00049	0.0082	0.00018	0.0006	0.000014	36	0.00002	0.00058	0.025
Transitional Closure	23	2043-07-01	0.00055	0.0064	0.00019	0.0006	0.000017	44	0.00003	0.00046	0.02
Transitional Closure	23	2043-08-01	0.0005	0.0062	0.00018	0.00068	0.000021	44	0.0002	0.00072	0.027
Transitional Closure	23	2043-09-01	0.0006	0.0076	0.00017	0.00059	0.000028	42	0.000054	0.00066	0.02
Transitional Closure	23	2043-10-01	0.00024	0.013	0.00012	0.0007	0.000045	51	0.000036	0.00069	0.032
Transitional Closure	23	2043-11-01	0.00027	0.013	0.00021	0.00081	0.000056	59	0.000056	0.00095	0.057
Transitional Closure	23	2043-12-01	0.00023	0.014	0.00024	0.00082	0.000058	65	0.000036	0.0012	0.036
Transitional Closure	23	2044-01-01	0.00024	0.0094	0.00023	0.00084	0.000076	70	0.000061	0.0016	0.082
Transitional Closure	23	2044-02-01	0.00024	0.012	0.0002	0.00077	0.000098	72	0.000038	0.0018	0.045
Transitional Closure	24	2044-03-01	0.00046	0.0091	0.00017	0.00079	0.000094	80	0.000042	0.002	0.042
Transitional Closure	24	2044-04-01	0.00031	0.008	0.00015	0.00068	0.000059	69	0.000053	0.0023	0.047
Transitional Closure	24	2044-05-01	0.00058	0.026	0.00018	0.00062	0.000022	27	0.000023	0.0011	0.047
Transitional Closure	24	2044-06-01	0.00049	0.0082	0.00018	0.0006	0.000014	36	0.00002	0.00058	0.025
Transitional Closure	24	2044-07-01	0.00055	0.0064	0.00019	0.0006	0.000017	44	0.00003	0.00046	0.021
Transitional Closure	24	2044-08-01	0.0005	0.0062	0.00018	0.00068	0.000021	44	0.0002	0.00072	0.027
Transitional Closure	24	2044-09-01	0.0006	0.0076	0.00017	0.00059	0.000028	42	0.000054	0.00066	0.021
Transitional Closure	24	2044-10-01	0.00024	0.013	0.00012	0.0007	0.000045	51	0.000036	0.00069	0.031
Transitional Closure	24	2044-11-01	0.00027	0.013	0.00021	0.00081	0.000056	59	0.000056	0.00095	0.057
Transitional Closure	24	2044-12-01	0.00023	0.014	0.00023	0.00082	0.000058	65	0.000036	0.0012	0.037
Transitional Closure	24	2045-01-01	0.00024	0.0095	0.00023	0.00084	0.000076	70	0.000061	0.0016	0.084
Transitional Closure	24	2045-02-01	0.00024	0.012	0.00022	0.00079	0.000098	72	0.000037	0.0018	0.046
Transitional Closure	25	2045-03-01	0.00046	0.009	0.00017	0.00079	0.000093	80	0.000042	0.002	0.042
Transitional Closure	25	2045-04-01	0.00031	0.008	0.00015	0.00067	0.000058	69	0.000053	0.0023	0.048
Transitional Closure	25	2045-05-01	0.00058	0.026	0.00018	0.00062	0.000022	27	0.000023	0.0011	0.047
Transitional Closure	25	2045-06-01	0.00049	0.0082	0.00018	0.0006	0.000014	36	0.00002	0.00058	0.025
Passive Closure	25	2045-07-01	0.00052	0.011	0.00075	0.0047	0.00005	52	0.00022	0.00055	0.12
Passive Closure	25	2045-08-01	0.00054	0.015	0.0013	0.0076	0.000068	55	0.00052	0.00088	0.17
Passive Closure	25	2045-09-01	0.00064	0.015	0.0011	0.0064	0.000068	52	0.00032	0.00084	0.15
Passive Closure	25	2045-10-01	0.00026	0.02	0.00095	0.006	0.00008	59	0.00027	0.00082	0.14
Passive Closure	25	2045-11-01	0.00029	0.021	0.0012	0.0072	0.000099	69	0.00035	0.0011	0.18
Passive Closure	25	2045-12-01	0.00025	0.023	0.0014	0.0085	0.00011	75	0.00038	0.0013	0.2
Passive Closure	25	2046-01-01	0.00026	0.021	0.0016	0.0096	0.00013	81	0.00045	0.0017	0.28
Passive Closure	25	2046-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	26	2046-03-01	0.00045	0.023	0.0019	0.011	0.00015	91	0.00051	0.002	0.26

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	23	2043-06-01	0.000025	0.017	0.00035	0.0000043	0.00048	0.0000035	0.0016	0.0018	1.6
Transitional Closure	23	2043-07-01	0.000015	0.017	0.00044	0.0000029	0.00045	0.0000046	0.0016	0.0022	2.1
Transitional Closure	23	2043-08-01	0.000076	0.017	0.00051	0.0000031	0.00039	0.0000043	0.002	0.002	1.9
Transitional Closure	23	2043-09-01	0.000044	0.0087	0.00048	0.0000029	0.00057	0.0000041	0.0017	0.0027	1.7
Transitional Closure	23	2043-10-01	0.000061	0.023	0.00045	0.0000028	0.0012	0.0000031	0.0025	0.0053	1.2
Transitional Closure	23	2043-11-01	0.00033	0.041	0.00064	0.000003	0.0013	0.0000047	0.0038	0.0068	0.98
Transitional Closure	23	2043-12-01	0.000032	0.028	0.00074	0.0000031	0.0014	0.0000055	0.0041	0.0077	1.6
Transitional Closure	23	2044-01-01	0.000081	0.041	0.00091	0.0000033	0.0015	0.0000054	0.0049	0.01	1.8
Transitional Closure	23	2044-02-01	0.00004	0.059	0.0012	0.0000031	0.0014	0.0000048	0.0066	0.013	0.35
Transitional Closure	24	2044-03-01	0.000036	0.056	0.0012	0.0000029	0.0016	0.0000042	0.0059	0.013	0.78
Transitional Closure	24	2044-04-01	0.000057	0.015	0.00089	0.0000032	0.0012	0.0000039	0.005	0.0089	1.2
Transitional Closure	24	2044-05-01	0.000047	0.0092	0.00054	0.0000038	0.00043	0.0000042	0.0013	0.0032	2.2
Transitional Closure	24	2044-06-01	0.000025	0.017	0.00035	0.0000043	0.00048	0.0000035	0.0016	0.0018	1.6
Transitional Closure	24	2044-07-01	0.000015	0.017	0.00044	0.0000029	0.00045	0.0000046	0.0016	0.0022	2.1
Transitional Closure	24	2044-08-01	0.000076	0.017	0.00051	0.0000031	0.00039	0.0000043	0.002	0.002	1.9
Transitional Closure	24	2044-09-01	0.000045	0.0087	0.00048	0.0000029	0.00057	0.0000041	0.0017	0.0027	1.7
Transitional Closure	24	2044-10-01	0.000061	0.023	0.00045	0.0000028	0.0012	0.0000031	0.0025	0.0053	1.2
Transitional Closure	24	2044-11-01	0.00033	0.041	0.00064	0.000003	0.0013	0.0000047	0.0038	0.0069	0.98
Transitional Closure	24	2044-12-01	0.000032	0.028	0.00074	0.0000031	0.0014	0.0000055	0.0041	0.0077	1.6
Transitional Closure	24	2045-01-01	0.000081	0.04	0.00091	0.0000033	0.0015	0.0000054	0.0049	0.01	1.8
Transitional Closure	24	2045-02-01	0.000041	0.059	0.0012	0.0000031	0.0014	0.0000051	0.0066	0.013	0.35
Transitional Closure	25	2045-03-01	0.000036	0.056	0.0012	0.0000029	0.0016	0.0000042	0.0059	0.013	0.77
Transitional Closure	25	2045-04-01	0.000057	0.014	0.00089	0.0000032	0.0012	0.0000038	0.005	0.0089	1.2
Transitional Closure	25	2045-05-01	0.000047	0.0092	0.00054	0.0000038	0.00043	0.0000042	0.0013	0.0032	2.2
Transitional Closure	25	2045-06-01	0.000025	0.017	0.00035	0.0000043	0.00048	0.0000035	0.0016	0.0018	1.6
Passive Closure	25	2045-07-01	0.0012	0.063	0.00079	0.0000043	0.00044	0.000015	0.0024	0.0059	2.1
Passive Closure	25	2045-08-01	0.0019	0.094	0.0011	0.0000057	0.0004	0.000025	0.0038	0.0073	1.9
Passive Closure	25	2045-09-01	0.0017	0.073	0.00099	0.0000051	0.00059	0.000022	0.0032	0.0079	1.8
Passive Closure	25	2045-10-01	0.0014	0.079	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	25	2045-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000023	0.0054	0.011	1
Passive Closure	25	2045-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	25	2046-01-01	0.0023	0.13	0.0017	0.0000063	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	25	2046-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	26	2046-03-01	0.0028	0.16	0.0021	0.0000067	0.0016	0.000036	0.0085	0.018	0.9

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L
Transitional Closure	23	2043-06-01	0.0084	0.00018	0.00059	0.000017	33	0.000024	0.00066	0.0079
Transitional Closure	23	2043-07-01	0.0057	0.00019	0.00057	0.000013	43	0.00002	0.0005	0.0054
Transitional Closure	23	2043-08-01	0.0051	0.00018	0.00066	0.000014	43	0.00021	0.00065	0.0058
Transitional Closure	23	2043-09-01	0.0054	0.00017	0.00054	0.000014	42	0.000018	0.00071	0.0075
Transitional Closure	23	2043-10-01	0.0031	0.00012	0.0006	0.000024	51	0.000011	0.00058	0.0058
Transitional Closure	23	2043-11-01	0.0038	0.00021	0.00061	0.000036	59	0.00002	0.00087	0.0078
Transitional Closure	23	2043-12-01	0.0036	0.00023	0.00066	0.000052	63	0.000024	0.0012	0.013
Transitional Closure	23	2044-01-01	0.0047	0.00022	0.00064	0.000053	70	0.000028	0.0015	0.012
Transitional Closure	23	2044-02-01	0.0035	0.0002	0.0006	0.000072	75	0.000023	0.0017	0.015
Transitional Closure	24	2044-03-01	0.0032	0.00018	0.00059	0.000084	80	0.000027	0.002	0.019
Transitional Closure	24	2044-04-01	0.0039	0.00016	0.00055	0.000054	77	0.000035	0.0023	0.023
Transitional Closure	24	2044-05-01	0.019	0.00019	0.00062	0.000017	23	0.000026	0.0012	0.024
Transitional Closure	24	2044-06-01	0.0084	0.00018	0.00059	0.000017	33	0.000024	0.00066	0.008
Transitional Closure	24	2044-07-01	0.0057	0.00019	0.00057	0.000013	43	0.00002	0.0005	0.0054
Transitional Closure	24	2044-08-01	0.0051	0.00018	0.00066	0.000014	43	0.00021	0.00065	0.0058
Transitional Closure	24	2044-09-01	0.0054	0.00017	0.00054	0.000014	42	0.000018	0.00071	0.0076
Transitional Closure	24	2044-10-01	0.0031	0.00012	0.0006	0.000024	51	0.00001	0.00058	0.0059
Transitional Closure	24	2044-11-01	0.0038	0.00021	0.00061	0.000036	59	0.00002	0.00087	0.0079
Transitional Closure	24	2044-12-01	0.0036	0.00023	0.00066	0.000052	63	0.000023	0.0012	0.013
Transitional Closure	24	2045-01-01	0.0047	0.00022	0.00064	0.000053	70	0.000028	0.0015	0.012
Transitional Closure	24	2045-02-01	0.0036	0.00021	0.00062	0.000072	75	0.000023	0.0017	0.015
Transitional Closure	25	2045-03-01	0.0032	0.00018	0.00059	0.000083	80	0.000026	0.002	0.019
Transitional Closure	25	2045-04-01	0.0039	0.00016	0.00055	0.000054	77	0.000034	0.0023	0.023
Transitional Closure	25	2045-05-01	0.019	0.00019	0.00062	0.000017	23	0.000026	0.0012	0.024
Transitional Closure	25	2045-06-01	0.0084	0.00018	0.00059	0.000017	33	0.000024	0.00066	0.008
Passive Closure	25	2045-07-01	0.0087	0.00075	0.0046	0.000043	51	0.00021	0.00058	0.092
Passive Closure	25	2045-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	25	2045-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.13
Passive Closure	25	2045-10-01	0.0093	0.00095	0.0059	0.000059	59	0.00025	0.0007	0.11
Passive Closure	25	2045-11-01	0.011	0.0012	0.007	0.000075	68	0.00031	0.00098	0.14
Passive Closure	25	2045-12-01	0.012	0.0014	0.0083	0.000097	73	0.00037	0.0013	0.17
Passive Closure	25	2046-01-01	0.015	0.0016	0.0094	0.0001	81	0.00042	0.0015	0.19
Passive Closure	25	2046-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.21
Passive Closure	26	2046-03-01	0.016	0.0019	0.011	0.00014	90	0.00051	0.002	0.23

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	23	2043-06-01	0.0000091	0.0074	0.00048	0.0000031	0.0005	0.000004	0.0016	0.0015
Transitional Closure	23	2043-07-01	0.0000064	0.0087	0.00044	0.000003	0.0004	0.0000042	0.0015	0.0017
Transitional Closure	23	2043-08-01	0.000058	0.0099	0.00051	0.0000031	0.0004	0.0000043	0.0019	0.0013
Transitional Closure	23	2043-09-01	0.000014	0.0051	0.00044	0.0000029	0.00051	0.000004	0.0016	0.0021
Transitional Closure	23	2043-10-01	0.0000059	0.0047	0.00038	0.0000028	0.0011	0.0000031	0.0024	0.0032
Transitional Closure	23	2043-11-01	0.0000087	0.021	0.00057	0.000003	0.0013	0.0000047	0.0035	0.0049
Transitional Closure	23	2043-12-01	0.0000074	0.019	0.00076	0.0000031	0.0015	0.0000054	0.0042	0.0069
Transitional Closure	23	2044-01-01	0.000046	0.031	0.00087	0.0000031	0.0015	0.0000052	0.0048	0.0097
Transitional Closure	23	2044-02-01	0.0000091	0.036	0.0011	0.0000031	0.0015	0.0000048	0.0063	0.011
Transitional Closure	24	2044-03-01	0.0000096	0.04	0.0011	0.0000029	0.0016	0.0000043	0.0058	0.013
Transitional Closure	24	2044-04-01	0.000025	0.0079	0.00095	0.000003	0.0012	0.0000039	0.005	0.008
Transitional Closure	24	2044-05-01	0.000013	0.0065	0.00055	0.0000024	0.00045	0.0000039	0.0012	0.0026
Transitional Closure	24	2044-06-01	0.0000091	0.0073	0.00048	0.0000031	0.0005	0.000004	0.0016	0.0015
Transitional Closure	24	2044-07-01	0.0000065	0.0087	0.00044	0.000003	0.0004	0.0000042	0.0015	0.0017
Transitional Closure	24	2044-08-01	0.000058	0.0099	0.00051	0.0000031	0.0004	0.0000043	0.0019	0.0013
Transitional Closure	24	2044-09-01	0.000014	0.0051	0.00044	0.0000029	0.00051	0.000004	0.0016	0.0022
Transitional Closure	24	2044-10-01	0.0000059	0.0046	0.00038	0.0000028	0.0011	0.0000031	0.0024	0.0033
Transitional Closure	24	2044-11-01	0.0000087	0.021	0.00057	0.000003	0.0013	0.0000047	0.0035	0.0049
Transitional Closure	24	2044-12-01	0.0000074	0.019	0.00076	0.0000031	0.0015	0.0000054	0.0042	0.007
Transitional Closure	24	2045-01-01	0.000046	0.031	0.00086	0.0000031	0.0015	0.0000052	0.0048	0.0098
Transitional Closure	24	2045-02-01	0.0000094	0.036	0.0011	0.0000031	0.0015	0.0000051	0.0063	0.011
Transitional Closure	25	2045-03-01	0.0000095	0.039	0.0011	0.0000029	0.0016	0.0000043	0.0058	0.013
Transitional Closure	25	2045-04-01	0.000025	0.0079	0.00095	0.000003	0.0012	0.0000038	0.0049	0.008
Transitional Closure	25	2045-05-01	0.000013	0.0064	0.00054	0.0000024	0.00045	0.0000039	0.0012	0.0026
Transitional Closure	25	2045-06-01	0.0000091	0.0073	0.00048	0.0000031	0.0005	0.000004	0.0016	0.0015
Passive Closure	25	2045-07-01	0.0012	0.054	0.0008	0.0000041	0.00038	0.000015	0.0023	0.0051
Passive Closure	25	2045-08-01	0.0019	0.086	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	25	2045-09-01	0.0016	0.071	0.00095	0.0000051	0.00053	0.000022	0.0031	0.0071
Passive Closure	25	2045-10-01	0.0014	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	25	2045-11-01	0.0017	0.09	0.0011	0.0000051	0.0013	0.000023	0.0051	0.0097
Passive Closure	25	2045-12-01	0.002	0.1	0.0014	0.0000057	0.0015	0.000027	0.006	0.011
Passive Closure	25	2046-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	25	2046-02-01	0.0025	0.13	0.0018	0.0000064	0.0014	0.000033	0.0087	0.016
Passive Closure	26	2046-03-01	0.0027	0.14	0.002	0.0000067	0.0016	0.000035	0.0085	0.018

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	26	2046-04-01	290	71	0.18	0.0012	0.01	0.0068	0.14	0.51	0.00028
Passive Closure	26	2046-05-01	140	40	0.13	0.0031	0.017	0.009	0.079	0.7	0.00046
Passive Closure	26	2046-06-01	170	49	0.076	0.0022	0.019	0.0091	0.093	0.53	0.00057
Passive Closure	26	2046-07-01	190	51	0.069	0.0024	0.024	0.0052	0.093	0.31	0.00039
Passive Closure	26	2046-08-01	180	44	0.072	0.004	0.014	0.0067	0.087	0.35	0.00041
Passive Closure	26	2046-09-01	170	42	0.084	0.0024	0.013	0.0057	0.082	0.6	0.00068
Passive Closure	26	2046-10-01	200	47	0.16	0.0019	0.0088	0.007	0.092	0.43	0.00026
Passive Closure	26	2046-11-01	240	53	0.22	0.0023	0.017	0.0061	0.11	0.15	0.00018
Passive Closure	26	2046-12-01	260	59	0.23	0.0023	0.021	0.0069	0.12	0.53	0.00017
Passive Closure	26	2047-01-01	290	65	0.25	0.0022	0.036	0.0075	0.12	0.85	0.00026
Passive Closure	26	2047-02-01	310	72	0.22	0.002	0.018	0.0092	0.14	0.48	0.00026
Passive Closure	27	2047-03-01	330	78	0.21	0.0017	0.016	0.01	0.14	0.62	0.00043
Passive Closure	27	2047-04-01	290	71	0.17	0.0011	0.01	0.0068	0.14	0.51	0.00028
Passive Closure	27	2047-05-01	140	40	0.12	0.003	0.017	0.009	0.079	0.7	0.00046
Passive Closure	27	2047-06-01	170	49	0.073	0.0022	0.019	0.0091	0.093	0.53	0.00057
Passive Closure	27	2047-07-01	190	51	0.065	0.0023	0.023	0.0052	0.093	0.31	0.00039
Passive Closure	27	2047-08-01	180	44	0.068	0.0039	0.013	0.0067	0.087	0.35	0.00041
Passive Closure	27	2047-09-01	170	42	0.081	0.0023	0.012	0.0057	0.081	0.6	0.00068
Passive Closure	27	2047-10-01	200	47	0.16	0.0018	0.0086	0.007	0.092	0.43	0.00026
Passive Closure	27	2047-11-01	240	53	0.22	0.0022	0.016	0.0061	0.11	0.15	0.00018
Passive Closure	27	2047-12-01	260	59	0.23	0.0022	0.02	0.0069	0.12	0.53	0.00017
Passive Closure	27	2048-01-01	290	64	0.25	0.0021	0.036	0.0075	0.12	0.85	0.00026
Passive Closure	27	2048-02-01	310	72	0.22	0.0019	0.017	0.0091	0.14	0.48	0.00026
Passive Closure	28	2048-03-01	330	77	0.21	0.0017	0.016	0.01	0.14	0.62	0.00043
Passive Closure	28	2048-04-01	290	71	0.17	0.0011	0.01	0.0068	0.14	0.51	0.00028
Passive Closure	28	2048-05-01	140	40	0.12	0.0029	0.016	0.009	0.079	0.7	0.00046
Passive Closure	28	2048-06-01	170	49	0.07	0.0021	0.018	0.0091	0.093	0.53	0.00057
Passive Closure	28	2048-07-01	190	51	0.062	0.0022	0.023	0.0052	0.093	0.31	0.00039
Passive Closure	28	2048-08-01	180	44	0.065	0.0039	0.013	0.0067	0.087	0.35	0.00041
Passive Closure	28	2048-09-01	170	42	0.078	0.0022	0.012	0.0057	0.081	0.6	0.00068
Passive Closure	28	2048-10-01	200	47	0.16	0.0018	0.0083	0.007	0.092	0.43	0.00026
Passive Closure	28	2048-11-01	240	53	0.21	0.0022	0.016	0.0061	0.11	0.15	0.00018
Passive Closure	28	2048-12-01	260	59	0.23	0.0021	0.02	0.0069	0.12	0.53	0.00017
Passive Closure	28	2049-01-01	290	64	0.24	0.002	0.035	0.0075	0.12	0.85	0.00026

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	26	2046-04-01	0.00028	0.023	0.002	0.012	0.00012	82	0.00057	0.0022	0.28
Passive Closure	26	2046-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	26	2046-06-01	0.00048	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	26	2046-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00039	0.00061	0.19
Passive Closure	26	2046-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00052	0.00088	0.17
Passive Closure	26	2046-09-01	0.00064	0.015	0.0011	0.0064	0.000068	52	0.00032	0.00084	0.15
Passive Closure	26	2046-10-01	0.00026	0.02	0.00095	0.006	0.00008	59	0.00027	0.00081	0.14
Passive Closure	26	2046-11-01	0.00029	0.02	0.0012	0.0072	0.000099	69	0.00034	0.0011	0.18
Passive Closure	26	2046-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	26	2047-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28
Passive Closure	26	2047-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	27	2047-03-01	0.00045	0.023	0.0019	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	27	2047-04-01	0.00028	0.023	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	27	2047-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	27	2047-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	27	2047-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19
Passive Closure	27	2047-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00052	0.00088	0.16
Passive Closure	27	2047-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15
Passive Closure	27	2047-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	27	2047-11-01	0.00029	0.02	0.0012	0.0071	0.000099	69	0.00034	0.0011	0.18
Passive Closure	27	2047-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	27	2048-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28
Passive Closure	27	2048-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	28	2048-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	28	2048-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	28	2048-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	28	2048-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	28	2048-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19
Passive Closure	28	2048-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00052	0.00088	0.16
Passive Closure	28	2048-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15
Passive Closure	28	2048-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	28	2048-11-01	0.00029	0.02	0.0012	0.0071	0.000098	69	0.00034	0.0011	0.17
Passive Closure	28	2048-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	28	2049-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	26	2046-04-01	0.003	0.14	0.0018	0.0000074	0.0012	0.000039	0.0079	0.014	1.1
Passive Closure	26	2046-05-01	0.0024	0.088	0.001	0.0000062	0.00058	0.00003	0.0032	0.011	2.7
Passive Closure	26	2046-06-01	0.0022	0.11	0.001	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	26	2046-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	26	2046-08-01	0.0019	0.094	0.0011	0.0000057	0.0004	0.000025	0.0038	0.0073	1.9
Passive Closure	26	2046-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	26	2046-10-01	0.0014	0.079	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	26	2046-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000023	0.0054	0.011	1
Passive Closure	26	2046-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	26	2047-01-01	0.0023	0.13	0.0017	0.0000062	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	26	2047-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	27	2047-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	27	2047-04-01	0.003	0.14	0.0018	0.0000074	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	27	2047-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7
Passive Closure	27	2047-06-01	0.0022	0.11	0.001	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	27	2047-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	27	2047-08-01	0.0019	0.094	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0073	1.9
Passive Closure	27	2047-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	27	2047-10-01	0.0014	0.079	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	27	2047-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1
Passive Closure	27	2047-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	27	2048-01-01	0.0023	0.13	0.0017	0.0000062	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	27	2048-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	28	2048-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	28	2048-04-01	0.003	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	28	2048-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7
Passive Closure	28	2048-06-01	0.0022	0.11	0.001	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	28	2048-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	28	2048-08-01	0.0019	0.093	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0073	1.9
Passive Closure	28	2048-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	28	2048-10-01	0.0014	0.078	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	28	2048-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1
Passive Closure	28	2048-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	28	2049-01-01	0.0023	0.13	0.0017	0.0000062	0.0015	0.00003	0.007	0.015	1.9

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	26	2046-04-01	0.018	0.002	0.012	0.00012	90	0.00056	0.0022	0.25
Passive Closure	26	2046-05-01	0.026	0.0013	0.0075	0.000069	37	0.00033	0.0013	0.17
Passive Closure	26	2046-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	26	2046-07-01	0.014	0.0014	0.0085	0.000068	56	0.00038	0.00066	0.16
Passive Closure	26	2046-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	26	2046-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.13
Passive Closure	26	2046-10-01	0.0092	0.00095	0.0059	0.000059	59	0.00025	0.0007	0.11
Passive Closure	26	2046-11-01	0.011	0.0012	0.007	0.000075	68	0.00031	0.00098	0.14
Passive Closure	26	2046-12-01	0.012	0.0014	0.0083	0.000097	73	0.00037	0.0013	0.17
Passive Closure	26	2047-01-01	0.015	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19
Passive Closure	26	2047-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.21
Passive Closure	27	2047-03-01	0.016	0.0019	0.011	0.00014	90	0.0005	0.002	0.23
Passive Closure	27	2047-04-01	0.018	0.002	0.012	0.00012	90	0.00055	0.0022	0.25
Passive Closure	27	2047-05-01	0.026	0.0013	0.0074	0.000069	37	0.00033	0.0013	0.17
Passive Closure	27	2047-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	27	2047-07-01	0.014	0.0014	0.0084	0.000068	56	0.00037	0.00066	0.16
Passive Closure	27	2047-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	27	2047-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.13
Passive Closure	27	2047-10-01	0.0092	0.00095	0.0059	0.000059	59	0.00025	0.0007	0.11
Passive Closure	27	2047-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14
Passive Closure	27	2047-12-01	0.012	0.0014	0.0083	0.000097	73	0.00037	0.0013	0.17
Passive Closure	27	2048-01-01	0.015	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19
Passive Closure	27	2048-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.21
Passive Closure	28	2048-03-01	0.016	0.0019	0.011	0.00014	90	0.0005	0.002	0.23
Passive Closure	28	2048-04-01	0.018	0.002	0.012	0.00012	90	0.00055	0.0022	0.25
Passive Closure	28	2048-05-01	0.026	0.0013	0.0074	0.000068	37	0.00033	0.0013	0.17
Passive Closure	28	2048-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	28	2048-07-01	0.014	0.0014	0.0084	0.000068	56	0.00038	0.00066	0.16
Passive Closure	28	2048-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	28	2048-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.12
Passive Closure	28	2048-10-01	0.0092	0.00095	0.0058	0.000059	59	0.00025	0.0007	0.11
Passive Closure	28	2048-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14
Passive Closure	28	2048-12-01	0.012	0.0014	0.0082	0.000097	73	0.00037	0.0013	0.17
Passive Closure	28	2049-01-01	0.015	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	26	2046-04-01	0.003	0.14	0.0019	0.0000071	0.0012	0.000038	0.0079	0.013
Passive Closure	26	2046-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	26	2046-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	26	2046-07-01	0.0021	0.097	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	26	2046-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	26	2046-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	26	2046-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	26	2046-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.0051	0.0097
Passive Closure	26	2046-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	26	2047-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	26	2047-02-01	0.0025	0.13	0.0018	0.0000064	0.0014	0.000033	0.0086	0.015
Passive Closure	27	2047-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	27	2047-04-01	0.003	0.14	0.0019	0.0000071	0.0012	0.000038	0.0079	0.013
Passive Closure	27	2047-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	27	2047-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	27	2047-07-01	0.0021	0.096	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	27	2047-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	27	2047-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	27	2047-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	27	2047-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097
Passive Closure	27	2047-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	27	2048-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	27	2048-02-01	0.0025	0.13	0.0018	0.0000063	0.0014	0.000032	0.0086	0.015
Passive Closure	28	2048-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	28	2048-04-01	0.003	0.14	0.0019	0.0000071	0.0012	0.000038	0.0078	0.013
Passive Closure	28	2048-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	28	2048-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	28	2048-07-01	0.0021	0.097	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	28	2048-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	28	2048-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	28	2048-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	28	2048-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097
Passive Closure	28	2048-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	28	2049-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	28	2049-02-01	310	72	0.22	0.0019	0.017	0.0091	0.14	0.48	0.00026
Passive Closure	29	2049-03-01	330	77	0.21	0.0017	0.016	0.01	0.14	0.62	0.00044
Passive Closure	29	2049-04-01	290	71	0.17	0.001	0.0098	0.0068	0.14	0.51	0.00028
Passive Closure	29	2049-05-01	140	40	0.11	0.0028	0.015	0.009	0.079	0.7	0.00046
Passive Closure	29	2049-06-01	170	49	0.067	0.002	0.018	0.0091	0.093	0.53	0.00057
Passive Closure	29	2049-07-01	190	51	0.059	0.0021	0.022	0.0052	0.093	0.31	0.00039
Passive Closure	29	2049-08-01	180	44	0.062	0.0038	0.013	0.0067	0.087	0.35	0.00041
Passive Closure	29	2049-09-01	170	42	0.075	0.0022	0.012	0.0057	0.081	0.6	0.00068
Passive Closure	29	2049-10-01	200	47	0.16	0.0017	0.008	0.007	0.092	0.43	0.00026
Passive Closure	29	2049-11-01	240	53	0.21	0.0021	0.015	0.0061	0.11	0.15	0.00018
Passive Closure	29	2049-12-01	260	59	0.22	0.0021	0.02	0.0069	0.12	0.53	0.00017
Passive Closure	29	2050-01-01	290	64	0.24	0.002	0.035	0.0075	0.12	0.85	0.00026
Passive Closure	29	2050-02-01	310	72	0.21	0.0019	0.017	0.0091	0.14	0.48	0.00026
Passive Closure	30	2050-03-01	330	77	0.21	0.0016	0.016	0.01	0.14	0.62	0.00044
Passive Closure	30	2050-04-01	290	71	0.17	0.00099	0.0096	0.0068	0.14	0.51	0.00028
Passive Closure	30	2050-05-01	140	40	0.11	0.0027	0.015	0.009	0.079	0.7	0.00046
Passive Closure	30	2050-06-01	170	49	0.065	0.002	0.018	0.0091	0.093	0.53	0.00057
Passive Closure	30	2050-07-01	190	51	0.056	0.0021	0.022	0.0052	0.093	0.31	0.00039
Passive Closure	30	2050-08-01	180	44	0.059	0.0037	0.012	0.0067	0.087	0.35	0.00041
Passive Closure	30	2050-09-01	170	42	0.072	0.0021	0.011	0.0057	0.081	0.6	0.00068
Passive Closure	30	2050-10-01	200	47	0.15	0.0017	0.0078	0.007	0.092	0.43	0.00026
Passive Closure	30	2050-11-01	240	53	0.21	0.002	0.015	0.0061	0.11	0.15	0.00018
Passive Closure	30	2050-12-01	260	59	0.22	0.002	0.019	0.0069	0.12	0.53	0.00017
Passive Closure	30	2051-01-01	290	64	0.24	0.0019	0.035	0.0075	0.12	0.85	0.00026
Passive Closure	30	2051-02-01	310	72	0.21	0.0018	0.016	0.0091	0.14	0.48	0.00026
Passive Closure	31	2051-03-01	330	77	0.2	0.0016	0.015	0.01	0.14	0.62	0.00044
Passive Closure	31	2051-04-01	290	71	0.17	0.00096	0.0095	0.0068	0.14	0.51	0.00028
Passive Closure	31	2051-05-01	140	40	0.1	0.0026	0.014	0.009	0.079	0.7	0.00046
Passive Closure	31	2051-06-01	170	49	0.062	0.0019	0.017	0.0091	0.093	0.53	0.00057
Passive Closure	31	2051-07-01	190	51	0.054	0.002	0.022	0.0052	0.093	0.31	0.00039
Passive Closure	31	2051-08-01	180	44	0.056	0.0037	0.012	0.0067	0.087	0.35	0.00041
Passive Closure	31	2051-09-01	170	42	0.07	0.002	0.011	0.0057	0.081	0.6	0.00068
Passive Closure	31	2051-10-01	200	47	0.15	0.0016	0.0076	0.007	0.092	0.43	0.00026
Passive Closure	31	2051-11-01	240	53	0.2	0.002	0.015	0.0061	0.11	0.15	0.00018

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	28	2049-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	29	2049-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	29	2049-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	29	2049-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	29	2049-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	29	2049-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19
Passive Closure	29	2049-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00051	0.00088	0.16
Passive Closure	29	2049-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15
Passive Closure	29	2049-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	29	2049-11-01	0.00029	0.02	0.0012	0.0071	0.000098	69	0.00034	0.0011	0.17
Passive Closure	29	2049-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	29	2050-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28
Passive Closure	29	2050-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	30	2050-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	30	2050-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	30	2050-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	30	2050-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	30	2050-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19
Passive Closure	30	2050-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00051	0.00088	0.16
Passive Closure	30	2050-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15
Passive Closure	30	2050-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	30	2050-11-01	0.00029	0.02	0.0012	0.0071	0.000098	69	0.00034	0.0011	0.17
Passive Closure	30	2050-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	30	2051-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28
Passive Closure	30	2051-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	31	2051-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	31	2051-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	31	2051-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	31	2051-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	31	2051-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19
Passive Closure	31	2051-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00051	0.00088	0.16
Passive Closure	31	2051-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15
Passive Closure	31	2051-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	31	2051-11-01	0.00029	0.02	0.0012	0.0071	0.000098	69	0.00034	0.0011	0.17

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	28	2049-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	29	2049-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	29	2049-04-01	0.003	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	29	2049-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7
Passive Closure	29	2049-06-01	0.0022	0.11	0.00099	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	29	2049-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	29	2049-08-01	0.0019	0.093	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0072	1.9
Passive Closure	29	2049-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	29	2049-10-01	0.0014	0.078	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	29	2049-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1
Passive Closure	29	2049-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	29	2050-01-01	0.0023	0.13	0.0017	0.0000062	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	29	2050-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	30	2050-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	30	2050-04-01	0.003	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	30	2050-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7
Passive Closure	30	2050-06-01	0.0022	0.11	0.00099	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	30	2050-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	30	2050-08-01	0.0019	0.093	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0072	1.9
Passive Closure	30	2050-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	30	2050-10-01	0.0014	0.078	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	30	2050-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1
Passive Closure	30	2050-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	30	2051-01-01	0.0023	0.13	0.0016	0.0000062	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	30	2051-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	31	2051-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	31	2051-04-01	0.003	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	31	2051-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7
Passive Closure	31	2051-06-01	0.0022	0.11	0.00099	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	31	2051-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	31	2051-08-01	0.0019	0.093	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0072	1.9
Passive Closure	31	2051-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	31	2051-10-01	0.0014	0.078	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	31	2051-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	28	2049-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.2
Passive Closure	29	2049-03-01	0.016	0.0019	0.011	0.00014	90	0.0005	0.002	0.23
Passive Closure	29	2049-04-01	0.018	0.002	0.012	0.00012	90	0.00055	0.0022	0.25
Passive Closure	29	2049-05-01	0.026	0.0013	0.0074	0.000068	37	0.00033	0.0013	0.17
Passive Closure	29	2049-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	29	2049-07-01	0.014	0.0014	0.0084	0.000068	56	0.00037	0.00066	0.16
Passive Closure	29	2049-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	29	2049-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.12
Passive Closure	29	2049-10-01	0.0092	0.00095	0.0058	0.000059	59	0.00025	0.0007	0.11
Passive Closure	29	2049-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14
Passive Closure	29	2049-12-01	0.012	0.0014	0.0082	0.000097	73	0.00037	0.0013	0.17
Passive Closure	29	2050-01-01	0.014	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19
Passive Closure	29	2050-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.2
Passive Closure	30	2050-03-01	0.016	0.0018	0.011	0.00014	90	0.0005	0.002	0.22
Passive Closure	30	2050-04-01	0.018	0.002	0.012	0.00012	89	0.00055	0.0022	0.25
Passive Closure	30	2050-05-01	0.026	0.0013	0.0074	0.000068	37	0.00033	0.0013	0.17
Passive Closure	30	2050-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	30	2050-07-01	0.014	0.0014	0.0084	0.000068	56	0.00037	0.00066	0.16
Passive Closure	30	2050-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	30	2050-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.12
Passive Closure	30	2050-10-01	0.0092	0.00095	0.0058	0.000059	59	0.00025	0.0007	0.11
Passive Closure	30	2050-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14
Passive Closure	30	2050-12-01	0.012	0.0014	0.0082	0.000097	73	0.00037	0.0013	0.17
Passive Closure	30	2051-01-01	0.014	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19
Passive Closure	30	2051-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.2
Passive Closure	31	2051-03-01	0.016	0.0018	0.011	0.00014	90	0.0005	0.002	0.22
Passive Closure	31	2051-04-01	0.018	0.002	0.012	0.00012	89	0.00055	0.0022	0.25
Passive Closure	31	2051-05-01	0.026	0.0013	0.0074	0.000068	37	0.00033	0.0013	0.17
Passive Closure	31	2051-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	31	2051-07-01	0.014	0.0014	0.0084	0.000068	56	0.00037	0.00066	0.16
Passive Closure	31	2051-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	31	2051-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.12
Passive Closure	31	2051-10-01	0.0092	0.00095	0.0058	0.000059	59	0.00025	0.0007	0.11
Passive Closure	31	2051-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	28	2049-02-01	0.0025	0.13	0.0018	0.0000063	0.0014	0.000033	0.0086	0.015
Passive Closure	29	2049-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	29	2049-04-01	0.0029	0.14	0.0019	0.000007	0.0012	0.000038	0.0078	0.013
Passive Closure	29	2049-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	29	2049-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	29	2049-07-01	0.0021	0.096	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	29	2049-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	29	2049-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	29	2049-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	29	2049-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097
Passive Closure	29	2049-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	29	2050-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	29	2050-02-01	0.0025	0.13	0.0018	0.0000063	0.0014	0.000032	0.0086	0.015
Passive Closure	30	2050-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	30	2050-04-01	0.0029	0.14	0.0019	0.000007	0.0012	0.000038	0.0078	0.013
Passive Closure	30	2050-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	30	2050-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	30	2050-07-01	0.0021	0.096	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	30	2050-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	30	2050-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	30	2050-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	30	2050-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097
Passive Closure	30	2050-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	30	2051-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	30	2051-02-01	0.0025	0.13	0.0018	0.0000063	0.0014	0.000032	0.0086	0.015
Passive Closure	31	2051-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	31	2051-04-01	0.0029	0.14	0.0019	0.000007	0.0012	0.000038	0.0078	0.013
Passive Closure	31	2051-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	31	2051-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	31	2051-07-01	0.0021	0.096	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	31	2051-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	31	2051-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	31	2051-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	31	2051-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	31	2051-12-01	260	59	0.22	0.002	0.019	0.0069	0.12	0.53	0.00017
Passive Closure	31	2052-01-01	290	64	0.24	0.0018	0.034	0.0075	0.12	0.85	0.00026
Passive Closure	31	2052-02-01	310	72	0.21	0.0017	0.016	0.0091	0.14	0.48	0.00026
Passive Closure	32	2052-03-01	330	77	0.2	0.0015	0.015	0.01	0.14	0.62	0.00044
Passive Closure	32	2052-04-01	290	71	0.17	0.00093	0.0093	0.0068	0.14	0.51	0.00028
Passive Closure	32	2052-05-01	140	40	0.099	0.0025	0.014	0.009	0.079	0.7	0.00046
Passive Closure	32	2052-06-01	170	49	0.06	0.0019	0.017	0.0091	0.093	0.53	0.00057
Passive Closure	32	2052-07-01	190	51	0.051	0.002	0.021	0.0052	0.093	0.31	0.00039
Passive Closure	32	2052-08-01	180	44	0.054	0.0036	0.012	0.0067	0.087	0.35	0.00041
Passive Closure	32	2052-09-01	170	42	0.067	0.002	0.011	0.0057	0.081	0.6	0.00068
Passive Closure	32	2052-10-01	200	47	0.15	0.0016	0.0074	0.007	0.092	0.43	0.00026
Passive Closure	32	2052-11-01	240	53	0.2	0.0019	0.014	0.0061	0.11	0.15	0.00018
Passive Closure	32	2052-12-01	260	59	0.22	0.0019	0.019	0.0069	0.12	0.53	0.00017
Passive Closure	32	2053-01-01	290	64	0.23	0.0018	0.034	0.0075	0.12	0.85	0.00026
Passive Closure	32	2053-02-01	310	72	0.21	0.0017	0.016	0.0091	0.14	0.48	0.00026
Passive Closure	33	2053-03-01	330	77	0.2	0.0015	0.015	0.01	0.14	0.62	0.00044
Passive Closure	33	2053-04-01	290	71	0.17	0.00089	0.0091	0.0068	0.14	0.51	0.00028
Passive Closure	33	2053-05-01	140	40	0.095	0.0024	0.013	0.009	0.079	0.7	0.00046
Passive Closure	33	2053-06-01	170	49	0.058	0.0018	0.017	0.0091	0.093	0.53	0.00057
Passive Closure	33	2053-07-01	190	51	0.048	0.0019	0.021	0.0052	0.093	0.31	0.00039
Passive Closure	33	2053-08-01	180	44	0.051	0.0035	0.011	0.0067	0.087	0.35	0.00041
Passive Closure	33	2053-09-01	170	42	0.065	0.0019	0.01	0.0057	0.081	0.6	0.00068
Passive Closure	33	2053-10-01	200	47	0.15	0.0016	0.0072	0.007	0.092	0.43	0.00026
Passive Closure	33	2053-11-01	240	53	0.2	0.0019	0.014	0.0061	0.11	0.15	0.00018
Passive Closure	33	2053-12-01	260	59	0.21	0.0018	0.018	0.0069	0.12	0.53	0.00017
Passive Closure	33	2054-01-01	290	64	0.23	0.0017	0.034	0.0075	0.12	0.85	0.00026
Passive Closure	33	2054-02-01	310	72	0.21	0.0017	0.016	0.0091	0.14	0.48	0.00026
Passive Closure	34	2054-03-01	330	77	0.2	0.0015	0.015	0.01	0.14	0.62	0.00044
Passive Closure	34	2054-04-01	290	71	0.16	0.00086	0.0089	0.0068	0.14	0.51	0.00028
Passive Closure	34	2054-05-01	140	40	0.091	0.0023	0.013	0.009	0.079	0.7	0.00046
Passive Closure	34	2054-06-01	170	49	0.056	0.0018	0.017	0.0091	0.093	0.53	0.00057
Passive Closure	34	2054-07-01	190	51	0.046	0.0018	0.021	0.0052	0.093	0.31	0.00039
Passive Closure	34	2054-08-01	180	44	0.049	0.0035	0.011	0.0067	0.087	0.35	0.00041
Passive Closure	34	2054-09-01	170	42	0.063	0.0019	0.01	0.0057	0.081	0.6	0.00068

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	31	2051-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	31	2052-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28
Passive Closure	31	2052-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	32	2052-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	32	2052-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	32	2052-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	32	2052-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	32	2052-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19
Passive Closure	32	2052-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00051	0.00088	0.16
Passive Closure	32	2052-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15
Passive Closure	32	2052-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	32	2052-11-01	0.00029	0.02	0.0012	0.0071	0.000098	69	0.00034	0.0011	0.17
Passive Closure	32	2052-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	32	2053-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28
Passive Closure	32	2053-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	33	2053-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	33	2053-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	33	2053-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	33	2053-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	33	2053-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19
Passive Closure	33	2053-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00051	0.00088	0.16
Passive Closure	33	2053-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15
Passive Closure	33	2053-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	33	2053-11-01	0.00029	0.02	0.0012	0.0071	0.000098	69	0.00034	0.0011	0.17
Passive Closure	33	2053-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	33	2054-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28
Passive Closure	33	2054-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	34	2054-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	34	2054-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	34	2054-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	34	2054-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	34	2054-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19
Passive Closure	34	2054-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00051	0.00088	0.16
Passive Closure	34	2054-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	31	2051-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	31	2052-01-01	0.0023	0.13	0.0016	0.0000062	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	31	2052-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	32	2052-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	32	2052-04-01	0.003	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	32	2052-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7
Passive Closure	32	2052-06-01	0.0022	0.11	0.001	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	32	2052-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	32	2052-08-01	0.0019	0.093	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0072	1.9
Passive Closure	32	2052-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	32	2052-10-01	0.0014	0.078	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	32	2052-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1
Passive Closure	32	2052-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	32	2053-01-01	0.0023	0.13	0.0017	0.0000062	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	32	2053-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	33	2053-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	33	2053-04-01	0.003	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	33	2053-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7
Passive Closure	33	2053-06-01	0.0022	0.11	0.00099	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	33	2053-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	33	2053-08-01	0.0019	0.093	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0072	1.9
Passive Closure	33	2053-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	33	2053-10-01	0.0014	0.078	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	33	2053-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1
Passive Closure	33	2053-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	33	2054-01-01	0.0023	0.13	0.0016	0.0000062	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	33	2054-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	34	2054-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	34	2054-04-01	0.003	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	34	2054-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7
Passive Closure	34	2054-06-01	0.0022	0.11	0.00099	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	34	2054-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	34	2054-08-01	0.0019	0.093	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0072	1.9
Passive Closure	34	2054-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	31	2051-12-01	0.012	0.0014	0.0082	0.000097	73	0.00037	0.0013	0.17
Passive Closure	31	2052-01-01	0.015	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19
Passive Closure	31	2052-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.2
Passive Closure	32	2052-03-01	0.016	0.0019	0.011	0.00014	90	0.0005	0.002	0.22
Passive Closure	32	2052-04-01	0.018	0.002	0.012	0.00012	90	0.00055	0.0023	0.25
Passive Closure	32	2052-05-01	0.026	0.0013	0.0074	0.000068	37	0.00033	0.0013	0.17
Passive Closure	32	2052-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	32	2052-07-01	0.014	0.0014	0.0084	0.000068	56	0.00038	0.00066	0.16
Passive Closure	32	2052-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	32	2052-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.12
Passive Closure	32	2052-10-01	0.0092	0.00095	0.0058	0.000059	59	0.00025	0.0007	0.11
Passive Closure	32	2052-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14
Passive Closure	32	2052-12-01	0.012	0.0014	0.0082	0.000097	73	0.00037	0.0013	0.17
Passive Closure	32	2053-01-01	0.015	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19
Passive Closure	32	2053-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.2
Passive Closure	33	2053-03-01	0.016	0.0018	0.011	0.00014	90	0.0005	0.002	0.22
Passive Closure	33	2053-04-01	0.018	0.002	0.012	0.00012	89	0.00055	0.0022	0.25
Passive Closure	33	2053-05-01	0.026	0.0013	0.0074	0.000068	37	0.00033	0.0013	0.17
Passive Closure	33	2053-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	33	2053-07-01	0.014	0.0014	0.0084	0.000068	56	0.00037	0.00066	0.16
Passive Closure	33	2053-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	33	2053-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.12
Passive Closure	33	2053-10-01	0.0092	0.00095	0.0058	0.000059	59	0.00025	0.0007	0.11
Passive Closure	33	2053-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14
Passive Closure	33	2053-12-01	0.012	0.0014	0.0082	0.000097	73	0.00037	0.0013	0.17
Passive Closure	33	2054-01-01	0.015	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19
Passive Closure	33	2054-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.2
Passive Closure	34	2054-03-01	0.016	0.0018	0.011	0.00014	90	0.0005	0.002	0.22
Passive Closure	34	2054-04-01	0.018	0.002	0.012	0.00012	89	0.00055	0.0022	0.25
Passive Closure	34	2054-05-01	0.026	0.0013	0.0074	0.000068	37	0.00033	0.0013	0.17
Passive Closure	34	2054-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	34	2054-07-01	0.014	0.0014	0.0084	0.000068	56	0.00037	0.00066	0.16
Passive Closure	34	2054-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	34	2054-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.12

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Passive Closure	31	2051-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	31	2052-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	31	2052-02-01	0.0025	0.13	0.0018	0.0000063	0.0014	0.000032	0.0086	0.015
Passive Closure	32	2052-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	32	2052-04-01	0.0029	0.14	0.0019	0.000007	0.0012	0.000038	0.0078	0.013
Passive Closure	32	2052-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	32	2052-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	32	2052-07-01	0.0021	0.097	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	32	2052-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	32	2052-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	32	2052-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	32	2052-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097
Passive Closure	32	2052-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	32	2053-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	32	2053-02-01	0.0025	0.13	0.0018	0.0000063	0.0014	0.000032	0.0086	0.015
Passive Closure	33	2053-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	33	2053-04-01	0.0029	0.14	0.0019	0.000007	0.0012	0.000038	0.0078	0.013
Passive Closure	33	2053-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	33	2053-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	33	2053-07-01	0.0021	0.096	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	33	2053-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	33	2053-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	33	2053-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	33	2053-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097
Passive Closure	33	2053-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	33	2054-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	33	2054-02-01	0.0025	0.13	0.0018	0.0000063	0.0014	0.000032	0.0086	0.015
Passive Closure	34	2054-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	34	2054-04-01	0.0029	0.14	0.0019	0.000007	0.0012	0.000038	0.0078	0.013
Passive Closure	34	2054-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	34	2054-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	34	2054-07-01	0.0021	0.096	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	34	2054-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	34	2054-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	34	2054-10-01	200	47	0.15	0.0015	0.007	0.007	0.092	0.43	0.00026
Passive Closure	34	2054-11-01	240	53	0.2	0.0018	0.014	0.0061	0.11	0.15	0.00018
Passive Closure	34	2054-12-01	260	59	0.21	0.0018	0.018	0.0069	0.12	0.53	0.00017
Passive Closure	34	2055-01-01	290	64	0.23	0.0017	0.033	0.0075	0.12	0.85	0.00026
Passive Closure	34	2055-02-01	310	72	0.2	0.0016	0.015	0.0091	0.14	0.48	0.00026
Passive Closure	35	2055-03-01	330	77	0.2	0.0014	0.015	0.01	0.14	0.62	0.00044
Passive Closure	35	2055-04-01	290	71	0.16	0.00083	0.0088	0.0068	0.14	0.51	0.00028
Passive Closure	35	2055-05-01	140	40	0.088	0.0022	0.012	0.009	0.079	0.7	0.00046
Passive Closure	35	2055-06-01	170	49	0.053	0.0017	0.016	0.0091	0.093	0.53	0.00057
Passive Closure	35	2055-07-01	190	51	0.044	0.0018	0.02	0.0052	0.093	0.31	0.00039
Passive Closure	35	2055-08-01	180	44	0.046	0.0034	0.011	0.0067	0.087	0.35	0.00041
Passive Closure	35	2055-09-01	170	42	0.061	0.0018	0.0098	0.0057	0.081	0.6	0.00068
Passive Closure	35	2055-10-01	200	47	0.15	0.0015	0.0068	0.007	0.092	0.43	0.00026
Passive Closure	35	2055-11-01	240	53	0.2	0.0018	0.014	0.0061	0.11	0.15	0.00018
Passive Closure	35	2055-12-01	260	59	0.21	0.0017	0.018	0.0069	0.12	0.53	0.00017
Passive Closure	35	2056-01-01	290	64	0.23	0.0016	0.033	0.0075	0.12	0.85	0.00026
Passive Closure	35	2056-02-01	310	72	0.2	0.0015	0.015	0.0091	0.14	0.48	0.00026
Passive Closure	36	2056-03-01	330	77	0.19	0.0012	0.013	0.01	0.14	0.62	0.00044
Passive Closure	36	2056-04-01	290	71	0.15	0.0006	0.0075	0.0068	0.14	0.51	0.00028
Passive Closure	36	2056-05-01	140	40	0.052	0.0014	0.0078	0.009	0.079	0.7	0.00046
Passive Closure	36	2056-06-01	170	49	0.042	0.0014	0.015	0.0091	0.093	0.53	0.00057
Passive Closure	36	2056-07-01	190	51	0.03	0.0015	0.019	0.0052	0.093	0.31	0.00039
Passive Closure	36	2056-08-01	180	44	0.031	0.0031	0.0087	0.0067	0.087	0.35	0.00041
Passive Closure	36	2056-09-01	170	42	0.046	0.0015	0.0079	0.0057	0.081	0.6	0.00068
Passive Closure	36	2056-10-01	200	47	0.13	0.0011	0.0049	0.007	0.092	0.43	0.00026
Passive Closure	36	2056-11-01	240	53	0.18	0.0014	0.011	0.0061	0.11	0.15	0.00018
Passive Closure	36	2056-12-01	260	59	0.19	0.0013	0.016	0.0069	0.12	0.53	0.00017
Passive Closure	36	2057-01-01	290	64	0.21	0.0013	0.031	0.0075	0.12	0.85	0.00026
Passive Closure	36	2057-02-01	310	72	0.19	0.0013	0.013	0.0091	0.14	0.48	0.00026
Passive Closure	37	2057-03-01	330	77	0.18	0.0011	0.013	0.01	0.14	0.62	0.00044
Passive Closure	37	2057-04-01	290	71	0.15	0.00059	0.0074	0.0068	0.14	0.51	0.00028
Passive Closure	37	2057-05-01	140	40	0.05	0.0013	0.0076	0.009	0.079	0.7	0.00046
Passive Closure	37	2057-06-01	170	49	0.041	0.0014	0.015	0.0091	0.093	0.53	0.00057
Passive Closure	37	2057-07-01	190	51	0.029	0.0015	0.019	0.0052	0.093	0.31	0.00039

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	34	2054-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	34	2054-11-01	0.00029	0.02	0.0012	0.0071	0.000098	69	0.00034	0.0011	0.17
Passive Closure	34	2054-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	34	2055-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28
Passive Closure	34	2055-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	35	2055-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	35	2055-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	35	2055-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	35	2055-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	35	2055-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19
Passive Closure	35	2055-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00051	0.00088	0.16
Passive Closure	35	2055-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15
Passive Closure	35	2055-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	35	2055-11-01	0.00029	0.02	0.0012	0.0071	0.000098	69	0.00034	0.0011	0.17
Passive Closure	35	2055-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	35	2056-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28
Passive Closure	35	2056-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	36	2056-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	36	2056-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	36	2056-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	36	2056-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	36	2056-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19
Passive Closure	36	2056-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00051	0.00088	0.16
Passive Closure	36	2056-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15
Passive Closure	36	2056-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	36	2056-11-01	0.00029	0.02	0.0012	0.0071	0.000098	69	0.00034	0.0011	0.17
Passive Closure	36	2056-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	36	2057-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28
Passive Closure	36	2057-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	37	2057-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	37	2057-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	37	2057-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	37	2057-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	37	2057-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	34	2054-10-01	0.0014	0.078	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	34	2054-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1
Passive Closure	34	2054-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	34	2055-01-01	0.0023	0.13	0.0016	0.0000062	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	34	2055-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	35	2055-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	35	2055-04-01	0.003	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	35	2055-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7
Passive Closure	35	2055-06-01	0.0022	0.11	0.00099	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	35	2055-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	35	2055-08-01	0.0019	0.093	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0072	1.9
Passive Closure	35	2055-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	35	2055-10-01	0.0014	0.078	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	35	2055-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1
Passive Closure	35	2055-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	35	2056-01-01	0.0023	0.13	0.0016	0.0000062	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	35	2056-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	36	2056-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	36	2056-04-01	0.003	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	36	2056-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7
Passive Closure	36	2056-06-01	0.0022	0.11	0.001	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	36	2056-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	36	2056-08-01	0.0019	0.093	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0072	1.9
Passive Closure	36	2056-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	36	2056-10-01	0.0014	0.078	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	36	2056-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1
Passive Closure	36	2056-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	36	2057-01-01	0.0023	0.13	0.0017	0.0000062	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	36	2057-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	37	2057-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	37	2057-04-01	0.003	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	37	2057-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7
Passive Closure	37	2057-06-01	0.0022	0.11	0.00099	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	37	2057-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	34	2054-10-01	0.0092	0.00095	0.0058	0.000059	59	0.00025	0.0007	0.11
Passive Closure	34	2054-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14
Passive Closure	34	2054-12-01	0.012	0.0014	0.0082	0.000097	73	0.00037	0.0013	0.17
Passive Closure	34	2055-01-01	0.015	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19
Passive Closure	34	2055-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.2
Passive Closure	35	2055-03-01	0.016	0.0018	0.011	0.00014	90	0.0005	0.002	0.22
Passive Closure	35	2055-04-01	0.018	0.002	0.012	0.00012	89	0.00055	0.0022	0.25
Passive Closure	35	2055-05-01	0.026	0.0013	0.0074	0.000068	37	0.00033	0.0013	0.17
Passive Closure	35	2055-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	35	2055-07-01	0.014	0.0014	0.0084	0.000068	56	0.00037	0.00066	0.16
Passive Closure	35	2055-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	35	2055-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.12
Passive Closure	35	2055-10-01	0.0092	0.00095	0.0058	0.000059	59	0.00025	0.0007	0.11
Passive Closure	35	2055-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14
Passive Closure	35	2055-12-01	0.012	0.0014	0.0082	0.000097	73	0.00037	0.0013	0.17
Passive Closure	35	2056-01-01	0.015	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19
Passive Closure	35	2056-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.2
Passive Closure	36	2056-03-01	0.016	0.0018	0.011	0.00014	90	0.0005	0.002	0.22
Passive Closure	36	2056-04-01	0.018	0.002	0.012	0.00012	90	0.00055	0.0023	0.25
Passive Closure	36	2056-05-01	0.026	0.0013	0.0074	0.000068	37	0.00033	0.0013	0.17
Passive Closure	36	2056-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	36	2056-07-01	0.014	0.0014	0.0084	0.000068	56	0.00038	0.00066	0.16
Passive Closure	36	2056-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	36	2056-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.12
Passive Closure	36	2056-10-01	0.0092	0.00095	0.0058	0.000059	59	0.00025	0.0007	0.11
Passive Closure	36	2056-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14
Passive Closure	36	2056-12-01	0.012	0.0014	0.0082	0.000097	73	0.00037	0.0013	0.17
Passive Closure	36	2057-01-01	0.015	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19
Passive Closure	36	2057-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.2
Passive Closure	37	2057-03-01	0.016	0.0018	0.011	0.00014	90	0.0005	0.002	0.22
Passive Closure	37	2057-04-01	0.018	0.002	0.012	0.00012	89	0.00055	0.0022	0.25
Passive Closure	37	2057-05-01	0.026	0.0013	0.0074	0.000068	37	0.00033	0.0013	0.17
Passive Closure	37	2057-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	37	2057-07-01	0.014	0.0014	0.0084	0.000068	56	0.00037	0.00066	0.16

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	34	2054-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	34	2054-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097
Passive Closure	34	2054-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	34	2055-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	34	2055-02-01	0.0025	0.13	0.0018	0.0000063	0.0014	0.000032	0.0086	0.015
Passive Closure	35	2055-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	35	2055-04-01	0.0029	0.14	0.0019	0.000007	0.0012	0.000038	0.0078	0.013
Passive Closure	35	2055-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	35	2055-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	35	2055-07-01	0.0021	0.096	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	35	2055-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	35	2055-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	35	2055-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	35	2055-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097
Passive Closure	35	2055-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	35	2056-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	35	2056-02-01	0.0025	0.13	0.0018	0.0000063	0.0014	0.000032	0.0086	0.015
Passive Closure	36	2056-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	36	2056-04-01	0.0029	0.14	0.0019	0.000007	0.0012	0.000038	0.0078	0.013
Passive Closure	36	2056-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	36	2056-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	36	2056-07-01	0.0021	0.097	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	36	2056-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	36	2056-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	36	2056-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	36	2056-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097
Passive Closure	36	2056-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	36	2057-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	36	2057-02-01	0.0025	0.13	0.0018	0.0000063	0.0014	0.000032	0.0086	0.015
Passive Closure	37	2057-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	37	2057-04-01	0.0029	0.14	0.0019	0.000007	0.0012	0.000038	0.0078	0.013
Passive Closure	37	2057-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	37	2057-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	37	2057-07-01	0.0021	0.096	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	37	2057-08-01	180	44	0.03	0.0031	0.0085	0.0067	0.087	0.35	0.00041
Passive Closure	37	2057-09-01	170	42	0.045	0.0015	0.0078	0.0057	0.081	0.6	0.00068
Passive Closure	37	2057-10-01	200	47	0.13	0.0011	0.0048	0.007	0.092	0.43	0.00026
Passive Closure	37	2057-11-01	240	53	0.18	0.0014	0.011	0.0061	0.11	0.15	0.00018
Passive Closure	37	2057-12-01	260	59	0.19	0.0013	0.015	0.0069	0.12	0.53	0.00017
Passive Closure	37	2058-01-01	290	64	0.21	0.0013	0.031	0.0075	0.12	0.85	0.00026
Passive Closure	37	2058-02-01	310	72	0.19	0.0012	0.013	0.0091	0.14	0.48	0.00026
Passive Closure	38	2058-03-01	330	77	0.18	0.0011	0.013	0.01	0.14	0.62	0.00044
Passive Closure	38	2058-04-01	290	71	0.15	0.00057	0.0074	0.0068	0.14	0.51	0.00028
Passive Closure	38	2058-05-01	140	40	0.049	0.0013	0.0074	0.009	0.079	0.7	0.00046
Passive Closure	38	2058-06-01	170	49	0.039	0.0014	0.015	0.0091	0.093	0.53	0.00057
Passive Closure	38	2058-07-01	190	51	0.028	0.0014	0.018	0.0052	0.093	0.31	0.00039
Passive Closure	38	2058-08-01	180	44	0.029	0.003	0.0084	0.0067	0.087	0.35	0.00041
Passive Closure	38	2058-09-01	170	42	0.044	0.0014	0.0076	0.0057	0.081	0.6	0.00068
Passive Closure	38	2058-10-01	200	47	0.13	0.0011	0.0047	0.007	0.092	0.43	0.00026
Passive Closure	38	2058-11-01	240	53	0.18	0.0013	0.011	0.0061	0.11	0.15	0.00018
Passive Closure	38	2058-12-01	260	59	0.19	0.0013	0.015	0.0069	0.12	0.53	0.00017
Passive Closure	38	2059-01-01	290	64	0.21	0.0012	0.031	0.0075	0.12	0.85	0.00026
Passive Closure	38	2059-02-01	310	72	0.19	0.0012	0.013	0.0091	0.14	0.48	0.00026
Passive Closure	39	2059-03-01	330	77	0.18	0.0011	0.013	0.01	0.14	0.62	0.00044
Passive Closure	39	2059-04-01	290	71	0.15	0.00056	0.0073	0.0068	0.14	0.51	0.00028
Passive Closure	39	2059-05-01	140	40	0.047	0.0013	0.0073	0.009	0.079	0.7	0.00046
Passive Closure	39	2059-06-01	170	49	0.038	0.0014	0.014	0.0091	0.093	0.53	0.00057
Passive Closure	39	2059-07-01	190	51	0.026	0.0014	0.018	0.0052	0.093	0.31	0.00039
Passive Closure	39	2059-08-01	180	44	0.027	0.003	0.0082	0.0067	0.087	0.35	0.00041
Passive Closure	39	2059-09-01	170	42	0.042	0.0014	0.0075	0.0057	0.081	0.6	0.00068
Passive Closure	39	2059-10-01	200	47	0.13	0.0011	0.0047	0.007	0.092	0.43	0.00026
Passive Closure	39	2059-11-01	240	53	0.18	0.0013	0.011	0.0061	0.11	0.15	0.00018
Passive Closure	39	2059-12-01	260	59	0.19	0.0013	0.015	0.0069	0.12	0.53	0.00017
Passive Closure	39	2060-01-01	290	64	0.21	0.0012	0.031	0.0075	0.12	0.85	0.00026
Passive Closure	39	2060-02-01	310	72	0.18	0.0012	0.013	0.0091	0.14	0.48	0.00026
Passive Closure	40	2060-03-01	330	77	0.18	0.0011	0.013	0.01	0.14	0.62	0.00044
Passive Closure	40	2060-04-01	290	71	0.15	0.00055	0.0072	0.0068	0.14	0.51	0.00028
Passive Closure	40	2060-05-01	140	40	0.046	0.0012	0.0071	0.009	0.079	0.7	0.00046

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Cyanide, Weak Acid Dissociable	Aluminum (Al), total	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	37	2057-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00051	0.00088	0.16
Passive Closure	37	2057-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15
Passive Closure	37	2057-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	37	2057-11-01	0.00029	0.02	0.0012	0.0071	0.000098	69	0.00034	0.0011	0.17
Passive Closure	37	2057-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	37	2058-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28
Passive Closure	37	2058-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	38	2058-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	38	2058-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	38	2058-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	38	2058-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	38	2058-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19
Passive Closure	38	2058-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00051	0.00088	0.16
Passive Closure	38	2058-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15
Passive Closure	38	2058-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	38	2058-11-01	0.00029	0.02	0.0012	0.0071	0.000098	69	0.00034	0.0011	0.17
Passive Closure	38	2058-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	38	2059-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28
Passive Closure	38	2059-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	39	2059-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	39	2059-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	39	2059-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	39	2059-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	39	2059-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19
Passive Closure	39	2059-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00051	0.00088	0.16
Passive Closure	39	2059-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15
Passive Closure	39	2059-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	39	2059-11-01	0.00029	0.02	0.0012	0.0071	0.000098	69	0.00034	0.0011	0.17
Passive Closure	39	2059-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	39	2060-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28
Passive Closure	39	2060-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	40	2060-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	40	2060-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	40	2060-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	37	2057-08-01	0.0019	0.093	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0072	1.9
Passive Closure	37	2057-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	37	2057-10-01	0.0014	0.078	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	37	2057-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1
Passive Closure	37	2057-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	37	2058-01-01	0.0023	0.13	0.0016	0.0000062	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	37	2058-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	38	2058-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	38	2058-04-01	0.003	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	38	2058-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7
Passive Closure	38	2058-06-01	0.0022	0.11	0.00099	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	38	2058-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	38	2058-08-01	0.0019	0.093	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0072	1.9
Passive Closure	38	2058-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	38	2058-10-01	0.0014	0.078	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	38	2058-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1
Passive Closure	38	2058-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	38	2059-01-01	0.0023	0.13	0.0016	0.0000062	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	38	2059-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	39	2059-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	39	2059-04-01	0.003	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	39	2059-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7
Passive Closure	39	2059-06-01	0.0022	0.11	0.00099	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	39	2059-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	39	2059-08-01	0.0019	0.093	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0072	1.9
Passive Closure	39	2059-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	39	2059-10-01	0.0014	0.078	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	39	2059-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1
Passive Closure	39	2059-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	39	2060-01-01	0.0023	0.13	0.0016	0.0000062	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	39	2060-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	40	2060-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	40	2060-04-01	0.003	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	40	2060-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	37	2057-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	37	2057-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.12
Passive Closure	37	2057-10-01	0.0092	0.00095	0.0058	0.000059	59	0.00025	0.0007	0.11
Passive Closure	37	2057-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14
Passive Closure	37	2057-12-01	0.012	0.0014	0.0082	0.000097	73	0.00037	0.0013	0.17
Passive Closure	37	2058-01-01	0.015	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19
Passive Closure	37	2058-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.2
Passive Closure	38	2058-03-01	0.016	0.0018	0.011	0.00014	90	0.0005	0.002	0.22
Passive Closure	38	2058-04-01	0.018	0.002	0.012	0.00012	89	0.00055	0.0022	0.25
Passive Closure	38	2058-05-01	0.026	0.0013	0.0074	0.000068	37	0.00033	0.0013	0.17
Passive Closure	38	2058-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	38	2058-07-01	0.014	0.0014	0.0084	0.000068	56	0.00037	0.00066	0.16
Passive Closure	38	2058-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	38	2058-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.12
Passive Closure	38	2058-10-01	0.0092	0.00095	0.0058	0.000059	59	0.00025	0.0007	0.11
Passive Closure	38	2058-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14
Passive Closure	38	2058-12-01	0.012	0.0014	0.0082	0.000097	73	0.00037	0.0013	0.17
Passive Closure	38	2059-01-01	0.015	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19
Passive Closure	38	2059-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.2
Passive Closure	39	2059-03-01	0.016	0.0018	0.011	0.00014	90	0.0005	0.002	0.22
Passive Closure	39	2059-04-01	0.018	0.002	0.012	0.00012	89	0.00055	0.0022	0.25
Passive Closure	39	2059-05-01	0.026	0.0013	0.0074	0.000068	37	0.00033	0.0013	0.17
Passive Closure	39	2059-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	39	2059-07-01	0.014	0.0014	0.0084	0.000068	56	0.00037	0.00066	0.16
Passive Closure	39	2059-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	39	2059-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.12
Passive Closure	39	2059-10-01	0.0092	0.00095	0.0058	0.000059	59	0.00025	0.0007	0.11
Passive Closure	39	2059-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14
Passive Closure	39	2059-12-01	0.012	0.0014	0.0082	0.000097	73	0.00037	0.0013	0.17
Passive Closure	39	2060-01-01	0.015	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19
Passive Closure	39	2060-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.2
Passive Closure	40	2060-03-01	0.016	0.0018	0.011	0.00014	90	0.0005	0.002	0.22
Passive Closure	40	2060-04-01	0.018	0.002	0.012	0.00012	90	0.00055	0.0023	0.25
Passive Closure	40	2060-05-01	0.026	0.0013	0.0074	0.000068	37	0.00033	0.0013	0.17

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Passive Closure	37	2057-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	37	2057-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	37	2057-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	37	2057-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097
Passive Closure	37	2057-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	37	2058-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	37	2058-02-01	0.0025	0.13	0.0018	0.0000063	0.0014	0.000032	0.0086	0.015
Passive Closure	38	2058-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	38	2058-04-01	0.0029	0.14	0.0019	0.000007	0.0012	0.000038	0.0078	0.013
Passive Closure	38	2058-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	38	2058-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	38	2058-07-01	0.0021	0.096	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	38	2058-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	38	2058-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	38	2058-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	38	2058-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097
Passive Closure	38	2058-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	38	2059-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	38	2059-02-01	0.0025	0.13	0.0018	0.0000063	0.0014	0.000032	0.0086	0.015
Passive Closure	39	2059-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	39	2059-04-01	0.0029	0.14	0.0019	0.000007	0.0012	0.000038	0.0078	0.013
Passive Closure	39	2059-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	39	2059-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	39	2059-07-01	0.0021	0.096	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	39	2059-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	39	2059-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	39	2059-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	39	2059-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097
Passive Closure	39	2059-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	39	2060-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	39	2060-02-01	0.0025	0.13	0.0018	0.0000063	0.0014	0.000032	0.0086	0.015
Passive Closure	40	2060-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	40	2060-04-01	0.0029	0.14	0.0019	0.000007	0.0012	0.000038	0.0078	0.013
Passive Closure	40	2060-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L
Passive Closure	40	2060-06-01	170	49	0.037	0.0013	0.014	0.0091	0.093	0.53	0.00057
Passive Closure	40	2060-07-01	190	51	0.025	0.0014	0.018	0.0052	0.093	0.31	0.00039
Passive Closure	40	2060-08-01	180	44	0.026	0.003	0.0081	0.0067	0.087	0.35	0.00041
Passive Closure	40	2060-09-01	170	42	0.041	0.0014	0.0074	0.0057	0.081	0.6	0.00068
Passive Closure	40	2060-10-01	200	47	0.13	0.0011	0.0046	0.007	0.092	0.43	0.00026
Passive Closure	40	2060-11-01	240	53	0.17	0.0013	0.011	0.0061	0.11	0.15	0.00018
Passive Closure	40	2060-12-01	260	59	0.19	0.0012	0.015	0.0069	0.12	0.53	0.00017
Passive Closure	40	2061-01-01	290	64	0.21	0.0012	0.031	0.0075	0.12	0.85	0.00026
Passive Closure	40	2061-02-01	310	72	0.18	0.0012	0.013	0.0091	0.14	0.48	0.00026
Passive Closure	41	2061-03-01	330	77	0.18	0.0011	0.013	0.01	0.14	0.62	0.00044
Passive Closure	41	2061-04-01	290	71	0.15	0.00054	0.0071	0.0068	0.14	0.51	0.00028
Passive Closure	41	2061-05-01	140	40	0.045	0.0012	0.007	0.009	0.079	0.7	0.00046
Passive Closure	41	2061-06-01	170	49	0.036	0.0013	0.014	0.0091	0.093	0.53	0.00057
Passive Closure	41	2061-07-01	190	51	0.024	0.0013	0.018	0.0052	0.093	0.31	0.00039
Passive Closure	41	2061-08-01	180	44	0.025	0.0029	0.0079	0.0067	0.087	0.35	0.00041
Passive Closure	41	2061-09-01	170	42	0.04	0.0014	0.0072	0.0057	0.081	0.6	0.00068
Passive Closure	41	2061-10-01	200	47	0.13	0.0011	0.0045	0.007	0.092	0.43	0.00026
Passive Closure	41	2061-11-01	240	53	0.17	0.0013	0.011	0.0061	0.11	0.15	0.00018
Receiving Environment Water Quality Model - KZ-15 - Dry Year -1 Model											
Construction	-1	2020-03-01	310	59	0.21	0.0023	0.037	0.0065	0.11	0.7	0.00031
Construction	-1	2020-04-01	270	51	0.18	0.0019	0.035	0.004	0.11	0.54	0.00014
Construction	-1	2020-05-01	100	20	0.17	0.0041	0.029	0.0048	0.052	0.63	0.00041
Construction	-1	2020-06-01	120	21	0.12	0.0032	0.028	0.007	0.063	0.49	0.00052
Construction	-1	2020-07-01	150	26	0.14	0.004	0.036	0.0027	0.065	0.26	0.00035
Construction	-1	2020-08-01	150	26	0.18	0.0064	0.032	0.0045	0.066	0.3	0.00034
Construction	-1	2020-09-01	150	30	0.22	0.0053	0.034	0.0045	0.068	0.57	0.00061
Construction	-1	2020-10-01	180	39	0.3	0.0052	0.034	0.0061	0.083	0.43	0.00021
Construction	-1	2020-11-01	240	49	0.39	0.0064	0.05	0.0052	0.11	0.2	0.00013
Construction	-1	2020-12-01	270	55	0.41	0.0064	0.058	0.0059	0.11	0.61	0.00012
Construction	-1	2021-01-01	290	59	0.41	0.0061	0.075	0.0063	0.11	0.96	0.0002
Construction	-1	2021-02-01	320	67	0.37	0.0058	0.058	0.0076	0.13	0.6	0.00019

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L
Passive Closure	40	2060-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	40	2060-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19
Passive Closure	40	2060-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00051	0.00088	0.16
Passive Closure	40	2060-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15
Passive Closure	40	2060-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	40	2060-11-01	0.00029	0.02	0.0012	0.0071	0.000098	69	0.00034	0.0011	0.17
Passive Closure	40	2060-12-01	0.00025	0.023	0.0014	0.0084	0.00011	75	0.00038	0.0013	0.2
Passive Closure	40	2061-01-01	0.00026	0.021	0.0016	0.0095	0.00013	81	0.00045	0.0017	0.28
Passive Closure	40	2061-02-01	0.00027	0.024	0.0017	0.01	0.00015	83	0.00047	0.0018	0.25
Passive Closure	41	2061-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	41	2061-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00056	0.0022	0.28
Passive Closure	41	2061-05-01	0.00056	0.038	0.0013	0.0074	0.000077	41	0.00034	0.0011	0.21
Passive Closure	41	2061-06-01	0.00049	0.02	0.0015	0.0089	0.000071	50	0.0004	0.00062	0.2
Passive Closure	41	2061-07-01	0.00047	0.018	0.0014	0.0085	0.000074	57	0.00038	0.00061	0.19
Passive Closure	41	2061-08-01	0.00054	0.015	0.0013	0.0075	0.000068	55	0.00051	0.00088	0.16
Passive Closure	41	2061-09-01	0.00064	0.015	0.0011	0.0063	0.000068	52	0.00032	0.00084	0.15
Passive Closure	41	2061-10-01	0.00026	0.02	0.00095	0.0059	0.00008	59	0.00027	0.00081	0.14
Passive Closure	41	2061-11-01	0.00029	0.02	0.0012	0.0071	0.000098	69	0.00034	0.0011	0.17
Receiving Environment Water Quality Model - KZ-15 - Dry Year -1 Model											
Construction	-1	2020-03-01	0.00034	0.0064	0.00011	0.0013	0.00011	80	0.0001	0.00034	0.041
Construction	-1	2020-04-01	0.00016	0.0043	0.00011	0.0013	0.000076	72	0.00012	0.00033	0.047
Construction	-1	2020-05-01	0.00052	0.022	0.000076	0.00063	0.000032	30	0.000052	0.00071	0.033
Construction	-1	2020-06-01	0.00043	0.0059	0.000085	0.00054	0.000021	36	0.00004	0.00034	0.016
Construction	-1	2020-07-01	0.00045	0.0052	0.00012	0.0006	0.000027	44	0.000065	0.00023	0.013
Construction	-1	2020-08-01	0.00046	0.0047	0.00016	0.00083	0.000041	44	0.00026	0.00051	0.014
Construction	-1	2020-09-01	0.00056	0.0074	0.00019	0.00084	0.000052	44	0.00013	0.00046	0.016
Construction	-1	2020-10-01	0.00021	0.014	0.00021	0.0011	0.000072	54	0.00014	0.00043	0.02
Construction	-1	2020-11-01	0.00023	0.013	0.0003	0.0014	0.00011	68	0.00022	0.00042	0.034
Construction	-1	2020-12-01	0.00019	0.014	0.00032	0.0015	0.00012	75	0.00022	0.0004	0.039
Construction	-1	2021-01-01	0.0002	0.0093	0.00031	0.0016	0.00014	81	0.00024	0.00048	0.08
Construction	-1	2021-02-01	0.0002	0.012	0.0003	0.0016	0.00016	83	0.00023	0.00042	0.049

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L
Passive Closure	40	2060-06-01	0.0022	0.11	0.001	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	40	2060-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	40	2060-08-01	0.0019	0.093	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0072	1.9
Passive Closure	40	2060-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	40	2060-10-01	0.0014	0.078	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	40	2060-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1
Passive Closure	40	2060-12-01	0.002	0.11	0.0014	0.0000057	0.0014	0.000027	0.006	0.012	1.7
Passive Closure	40	2061-01-01	0.0023	0.13	0.0017	0.0000062	0.0015	0.00003	0.007	0.015	1.9
Passive Closure	40	2061-02-01	0.0025	0.15	0.002	0.0000064	0.0014	0.000033	0.009	0.018	0.41
Passive Closure	41	2061-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	41	2061-04-01	0.003	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	41	2061-05-01	0.0024	0.087	0.001	0.0000062	0.00058	0.00003	0.0031	0.011	2.7
Passive Closure	41	2061-06-01	0.0022	0.11	0.00099	0.0000069	0.00053	0.000028	0.0039	0.0075	1.4
Passive Closure	41	2061-07-01	0.0021	0.11	0.0011	0.0000058	0.0005	0.000028	0.0037	0.0082	2
Passive Closure	41	2061-08-01	0.0019	0.093	0.0011	0.0000056	0.0004	0.000025	0.0038	0.0072	1.9
Passive Closure	41	2061-09-01	0.0017	0.072	0.00098	0.0000051	0.00059	0.000022	0.0031	0.0079	1.8
Passive Closure	41	2061-10-01	0.0014	0.078	0.0009	0.0000046	0.0012	0.000018	0.0039	0.0087	1.2
Passive Closure	41	2061-11-01	0.002	0.11	0.0012	0.0000052	0.0013	0.000022	0.0053	0.011	1
Receiving Environment Water Quality Model - KZ-15 - Dry Year -1 Model			**Receiving Environment Water Quality Model - KZ-15 - Dry Year -1 Model**								
Construction	-1	2020-03-01	0.000056	0.08	0.0014	0.0000026	0.0014	0.000043	0.0062	0.018	0.94
Construction	-1	2020-04-01	0.000072	0.072	0.0011	0.0000029	0.00097	0.000052	0.0054	0.015	0.99
Construction	-1	2020-05-01	0.000035	0.025	0.00062	0.0000031	0.00039	0.000025	0.0013	0.0058	2
Construction	-1	2020-06-01	0.000019	0.028	0.00043	0.0000036	0.00044	0.000027	0.0016	0.0039	1.3
Construction	-1	2020-07-01	0.000016	0.034	0.00063	0.0000019	0.00043	0.000043	0.0016	0.0052	1.9
Construction	-1	2020-08-01	0.000074	0.045	0.00091	0.0000026	0.00043	0.000079	0.0021	0.0079	1.7
Construction	-1	2020-09-01	0.000049	0.042	0.001	0.0000027	0.00069	0.0001	0.0019	0.0095	1.6
Construction	-1	2020-10-01	0.000072	0.064	0.0011	0.0000028	0.0013	0.00012	0.0029	0.013	1.1
Construction	-1	2020-11-01	0.00035	0.11	0.0018	0.0000031	0.0015	0.0002	0.0044	0.02	1
Construction	-1	2020-12-01	0.000064	0.11	0.002	0.0000032	0.0017	0.00022	0.0048	0.023	1.7
Construction	-1	2021-01-01	0.00011	0.12	0.0021	0.0000034	0.0017	0.00021	0.0056	0.026	2
Construction	-1	2021-02-01	0.000079	0.14	0.0024	0.0000033	0.0016	0.00022	0.0074	0.03	0.51

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	40	2060-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	40	2060-07-01	0.014	0.0014	0.0084	0.000068	56	0.00038	0.00066	0.16
Passive Closure	40	2060-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	40	2060-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.12
Passive Closure	40	2060-10-01	0.0092	0.00095	0.0058	0.000059	59	0.00025	0.0007	0.11
Passive Closure	40	2060-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14
Passive Closure	40	2060-12-01	0.012	0.0014	0.0082	0.000097	73	0.00037	0.0013	0.17
Passive Closure	40	2061-01-01	0.015	0.0016	0.0093	0.0001	81	0.00042	0.0015	0.19
Passive Closure	40	2061-02-01	0.015	0.0017	0.01	0.00012	86	0.00046	0.0017	0.2
Passive Closure	41	2061-03-01	0.016	0.0018	0.011	0.00014	90	0.0005	0.002	0.22
Passive Closure	41	2061-04-01	0.018	0.002	0.012	0.00012	89	0.00055	0.0022	0.25
Passive Closure	41	2061-05-01	0.026	0.0013	0.0074	0.000068	37	0.00033	0.0013	0.17
Passive Closure	41	2061-06-01	0.018	0.0015	0.0089	0.00007	47	0.0004	0.00077	0.17
Passive Closure	41	2061-07-01	0.014	0.0014	0.0084	0.000068	56	0.00037	0.00066	0.16
Passive Closure	41	2061-08-01	0.013	0.0013	0.0075	0.000059	54	0.00052	0.00082	0.14
Passive Closure	41	2061-09-01	0.012	0.0011	0.0063	0.000055	52	0.00028	0.00087	0.12
Passive Closure	41	2061-10-01	0.0092	0.00095	0.0058	0.000059	59	0.00025	0.0007	0.11
Passive Closure	41	2061-11-01	0.011	0.0012	0.0069	0.000074	68	0.00031	0.00098	0.14
Receiving Environment Water Quality Model - KZ-15 - Dry Year -1 Model										
Construction	-1	2020-03-01	0.0018	0.00012	0.0011	0.000098	79	0.0001	0.00033	0.023
Construction	-1	2020-04-01	0.0026	0.00013	0.0012	0.000073	79	0.00012	0.00034	0.026
Construction	-1	2020-05-01	0.017	0.000083	0.00065	0.000029	26	0.000055	0.0009	0.02
Construction	-1	2020-06-01	0.0069	0.000088	0.00055	0.000024	32	0.000048	0.00045	0.0075
Construction	-1	2020-07-01	0.0048	0.00012	0.00058	0.000025	42	0.000059	0.00031	0.006
Construction	-1	2020-08-01	0.0048	0.00016	0.00082	0.000035	43	0.00027	0.00045	0.0076
Construction	-1	2020-09-01	0.0063	0.00019	0.00081	0.000041	45	0.000099	0.00054	0.0088
Construction	-1	2020-10-01	0.0043	0.00021	0.001	0.000055	55	0.00011	0.00033	0.009
Construction	-1	2020-11-01	0.0053	0.00029	0.0012	0.00009	67	0.00018	0.00035	0.013
Construction	-1	2020-12-01	0.0049	0.00031	0.0014	0.00011	73	0.00021	0.00034	0.019
Construction	-1	2021-01-01	0.0058	0.0003	0.0014	0.00011	81	0.00021	0.00034	0.019
Construction	-1	2021-02-01	0.0047	0.0003	0.0015	0.00013	86	0.00023	0.00038	0.022

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Passive Closure	40	2060-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	40	2060-07-01	0.0021	0.097	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	40	2060-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	40	2060-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	40	2060-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	40	2060-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097
Passive Closure	40	2060-12-01	0.002	0.099	0.0014	0.0000056	0.0015	0.000027	0.006	0.011
Passive Closure	40	2061-01-01	0.0023	0.12	0.0016	0.000006	0.0015	0.00003	0.0069	0.014
Passive Closure	40	2061-02-01	0.0025	0.13	0.0018	0.0000063	0.0014	0.000032	0.0086	0.015
Passive Closure	41	2061-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	41	2061-04-01	0.0029	0.14	0.0019	0.000007	0.0012	0.000038	0.0078	0.013
Passive Closure	41	2061-05-01	0.0024	0.085	0.0011	0.0000049	0.0006	0.00003	0.0031	0.01
Passive Closure	41	2061-06-01	0.0021	0.099	0.0012	0.0000061	0.00055	0.000028	0.0038	0.0072
Passive Closure	41	2061-07-01	0.0021	0.096	0.0011	0.0000058	0.00043	0.000028	0.0036	0.0075
Passive Closure	41	2061-08-01	0.0019	0.085	0.0011	0.0000056	0.00041	0.000025	0.0037	0.0063
Passive Closure	41	2061-09-01	0.0016	0.071	0.00094	0.0000051	0.00053	0.000022	0.0031	0.007
Passive Closure	41	2061-10-01	0.0013	0.063	0.00083	0.0000046	0.0011	0.000018	0.0038	0.0072
Passive Closure	41	2061-11-01	0.0016	0.089	0.0011	0.0000051	0.0013	0.000022	0.005	0.0097
Receiving Environment Water Quality Model - KZ-15 - Dry Year -1 Model										
Construction	-1	2020-03-01	0.000032	0.067	0.0013	0.0000026	0.0013	0.000043	0.0061	0.018
Construction	-1	2020-04-01	0.000048	0.071	0.0012	0.0000028	0.00097	0.000052	0.0053	0.015
Construction	-1	2020-05-01	0.000015	0.024	0.00065	0.0000018	0.00042	0.000025	0.0013	0.0055
Construction	-1	2020-06-01	0.00001	0.019	0.00058	0.0000024	0.00046	0.000027	0.0015	0.0038
Construction	-1	2020-07-01	0.000012	0.026	0.00064	0.0000025	0.00036	0.000042	0.0015	0.005
Construction	-1	2020-08-01	0.000068	0.038	0.00092	0.0000026	0.00043	0.000079	0.002	0.0074
Construction	-1	2020-09-01	0.000027	0.04	0.00098	0.0000027	0.00063	0.0001	0.0019	0.0092
Construction	-1	2020-10-01	0.000025	0.049	0.0011	0.0000028	0.0012	0.00012	0.0028	0.012
Construction	-1	2020-11-01	0.000039	0.089	0.0017	0.0000031	0.0015	0.0002	0.0041	0.019
Construction	-1	2020-12-01	0.000043	0.098	0.002	0.0000032	0.0018	0.00022	0.0048	0.022
Construction	-1	2021-01-01	0.000077	0.11	0.0021	0.0000033	0.0017	0.00021	0.0055	0.026
Construction	-1	2021-02-01	0.000051	0.12	0.0023	0.0000033	0.0017	0.00022	0.0071	0.028

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L
Receiving Environment Water Quality Model - KZ-15 - Wet Year -1 Model											
Construction	-1	2020-03-01	310	58	0.21	0.0023	0.037	0.0066	0.11	0.7	0.00031
Construction	-1	2020-04-01	270	51	0.18	0.0019	0.035	0.004	0.11	0.54	0.00014
Construction	-1	2020-05-01	92	16	0.099	0.0024	0.016	0.0044	0.048	0.62	0.00044
Construction	-1	2020-06-01	110	18	0.051	0.0016	0.017	0.0069	0.059	0.48	0.00054
Construction	-1	2020-07-01	140	21	0.047	0.0018	0.021	0.0023	0.06	0.23	0.00037
Construction	-1	2020-08-01	130	19	0.055	0.0035	0.012	0.0039	0.059	0.27	0.00037
Construction	-1	2020-09-01	130	22	0.084	0.0022	0.013	0.0037	0.058	0.53	0.00061
Construction	-1	2020-10-01	160	31	0.19	0.0025	0.015	0.0054	0.073	0.39	0.00022
Construction	-1	2020-11-01	220	38	0.28	0.0039	0.031	0.0042	0.093	0.15	0.00013
Construction	-1	2020-12-01	240	45	0.32	0.0046	0.044	0.005	0.1	0.54	0.000096
Construction	-1	2021-01-01	270	51	0.35	0.0047	0.062	0.0055	0.097	0.9	0.00019
Construction	-1	2021-02-01	290	58	0.32	0.0046	0.045	0.007	0.12	0.56	0.0002
Receiving Environment Water Quality Model - KZ-15 - Dry Year 2 Model											
Production	2	2022-03-01	310	52	0.3	0.0034	0.026	0.0079	0.13	0.58	0.00045
Production	2	2022-04-01	270	43	0.26	0.0027	0.02	0.0037	0.12	0.5	0.00029
Production	2	2022-05-01	120	30	0.42	0.0097	0.05	0.0078	0.085	0.65	0.00053
Production	2	2022-06-01	130	29	0.31	0.0075	0.045	0.0088	0.086	0.48	0.00056
Production	2	2022-07-01	170	36	0.35	0.0089	0.054	0.0046	0.094	0.23	0.0004
Production	2	2022-08-01	170	36	0.38	0.011	0.046	0.0063	0.099	0.27	0.0004
Production	2	2022-09-01	160	38	0.38	0.009	0.042	0.0057	0.096	0.53	0.00063
Production	2	2022-10-01	190	42	0.38	0.0069	0.031	0.0065	0.1	0.39	0.00023
Production	2	2022-11-01	240	48	0.46	0.0079	0.041	0.0056	0.13	0.11	0.00017
Production	2	2022-12-01	260	51	0.46	0.0075	0.044	0.0063	0.13	0.49	0.00016
Production	2	2023-01-01	280	53	0.46	0.0068	0.057	0.0059	0.13	0.79	0.00023
Production	2	2023-02-01	300	59	0.43	0.0064	0.04	0.0071	0.14	0.4	0.00023
Receiving Environment Water Quality Model - KZ-15 - Wet Year 2 Model											
Production	2	2022-03-01	310	52	0.3	0.0033	0.026	0.0079	0.13	0.58	0.00045
Production	2	2022-04-01	270	43	0.25	0.0027	0.02	0.0037	0.12	0.5	0.00029
Production	2	2022-05-01	110	24	0.22	0.0051	0.026	0.0067	0.072	0.65	0.00053
Production	2	2022-06-01	120	21	0.11	0.0029	0.022	0.0076	0.069	0.49	0.00057

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L
Receiving Environment Water Quality Model - KZ-15 - Wet Year -1 Model											
Construction	-1	2020-03-01	0.00034	0.0064	0.00011	0.0013	0.00011	80	0.0001	0.00033	0.041
Construction	-1	2020-04-01	0.00016	0.0043	0.00011	0.0013	0.000076	72	0.00012	0.00033	0.047
Construction	-1	2020-05-01	0.00055	0.021	0.000046	0.00049	0.000021	27	0.000033	0.00075	0.03
Construction	-1	2020-06-01	0.00044	0.0049	0.00004	0.0004	0.000011	33	0.000019	0.00036	0.013
Construction	-1	2020-07-01	0.00049	0.0037	0.000053	0.0004	0.000013	41	0.000035	0.00023	0.012
Construction	-1	2020-08-01	0.00047	0.0033	0.000065	0.00053	0.000019	41	0.00021	0.00048	0.016
Construction	-1	2020-09-01	0.00056	0.0054	0.000074	0.0005	0.000028	40	0.000072	0.00041	0.012
Construction	-1	2020-10-01	0.00022	0.012	0.000092	0.00075	0.000045	49	0.000067	0.00038	0.016
Construction	-1	2020-11-01	0.00024	0.012	0.00017	0.001	0.000076	60	0.00014	0.00036	0.032
Construction	-1	2020-12-01	0.00019	0.013	0.00022	0.0012	0.000091	67	0.00015	0.00033	0.043
Construction	-1	2021-01-01	0.0002	0.0095	0.00024	0.0013	0.00012	74	0.00018	0.00044	0.11
Construction	-1	2021-02-01	0.0002	0.011	0.00024	0.0013	0.00014	76	0.00018	0.00037	0.058
Receiving Environment Water Quality Model - KZ-15 - Dry Year 2 Model											
Production	2	2022-03-01	0.00044	0.01	0.00014	0.00096	0.00011	77	0.000025	0.00033	0.094
Production	2	2022-04-01	0.00028	0.0087	0.00014	0.0009	0.000071	66	0.000033	0.00036	0.11
Production	2	2022-05-01	0.00063	0.03	0.00021	0.00092	0.000048	27	0.000034	0.001	0.076
Production	2	2022-06-01	0.00047	0.014	0.00021	0.00069	0.000029	35	0.000029	0.00049	0.04
Production	2	2022-07-01	0.00053	0.014	0.00025	0.00077	0.000035	43	0.000044	0.00038	0.042
Production	2	2022-08-01	0.0005	0.015	0.00027	0.00096	0.000045	43	0.00021	0.00064	0.054
Production	2	2022-09-01	0.00059	0.016	0.00025	0.00088	0.00005	40	0.000068	0.00056	0.047
Production	2	2022-10-01	0.00023	0.019	0.00018	0.00099	0.000059	48	0.000043	0.00049	0.048
Production	2	2022-11-01	0.00026	0.019	0.00025	0.0011	0.00008	57	0.000066	0.00046	0.084
Production	2	2022-12-01	0.00022	0.019	0.00026	0.0011	0.000083	62	0.000042	0.00041	0.077
Production	2	2023-01-01	0.00023	0.014	0.00025	0.0012	0.0001	68	0.000064	0.00048	0.12
Production	2	2023-02-01	0.00024	0.016	0.00025	0.0011	0.00013	70	0.000034	0.0004	0.093
Receiving Environment Water Quality Model - KZ-15 - Wet Year 2 Model											
Production	2	2022-03-01	0.00044	0.01	0.00014	0.00095	0.00011	77	0.000025	0.00033	0.093
Production	2	2022-04-01	0.00028	0.0086	0.00014	0.00089	0.00007	66	0.000033	0.00036	0.1
Production	2	2022-05-01	0.00063	0.026	0.00012	0.00092	0.000048	26	0.000024	0.00099	0.068
Production	2	2022-06-01	0.00047	0.0082	0.000082	0.00055	0.000021	34	0.000018	0.00044	0.028

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L
Receiving Environment Water Quality Model - KZ-15 - Wet Year -1 Model			**Receiving Environment Water Quality Model - KZ-15 - Wet Year -1 Model**								
Construction	-1	2020-03-01	0.000056	0.08	0.0014	0.0000026	0.0014	0.000042	0.0061	0.018	0.94
Construction	-1	2020-04-01	0.000071	0.071	0.0011	0.0000029	0.00097	0.000051	0.0054	0.015	0.99
Construction	-1	2020-05-01	0.000029	0.015	0.00057	0.0000031	0.00036	0.000013	0.0011	0.0037	1.9
Construction	-1	2020-06-01	0.000012	0.017	0.00034	0.0000035	0.00039	0.0000081	0.0013	0.0016	1.4
Construction	-1	2020-07-01	0.0000091	0.019	0.00047	0.0000018	0.00036	0.000014	0.0013	0.0022	1.9
Construction	-1	2020-08-01	0.000067	0.022	0.00059	0.0000023	0.00033	0.000023	0.0017	0.0029	1.7
Construction	-1	2020-09-01	0.000037	0.016	0.00061	0.0000024	0.00053	0.000031	0.0014	0.0037	1.6
Construction	-1	2020-10-01	0.000058	0.035	0.00068	0.0000024	0.0011	0.000048	0.0024	0.0065	1.1
Construction	-1	2020-11-01	0.00034	0.073	0.0012	0.0000026	0.0013	0.00011	0.0038	0.013	0.94
Construction	-1	2020-12-01	0.000052	0.076	0.0015	0.0000028	0.0015	0.00015	0.0043	0.018	1.6
Construction	-1	2021-01-01	0.00011	0.095	0.0018	0.000003	0.0016	0.00016	0.0051	0.022	1.9
Construction	-1	2021-02-01	0.000073	0.11	0.0021	0.000003	0.0015	0.00017	0.007	0.025	0.39
Receiving Environment Water Quality Model - KZ-15 - Dry Year 2 Model			**Receiving Environment Water Quality Model - KZ-15 - Dry Year 2 Model**								
Production	2	2022-03-01	0.0011	0.066	0.0013	0.0000038	0.002	0.000058	0.0057	0.016	0.91
Production	2	2022-04-01	0.0013	0.025	0.00094	0.0000042	0.0017	0.000055	0.0048	0.012	1.3
Production	2	2022-05-01	0.00059	0.049	0.0009	0.0000055	0.00082	0.000091	0.0016	0.0064	2.7
Production	2	2022-06-01	0.00033	0.039	0.00049	0.000005	0.00068	0.000053	0.002	0.0035	1.5
Production	2	2022-07-01	0.0004	0.047	0.00065	0.0000037	0.00071	0.000069	0.0021	0.0043	2.1
Production	2	2022-08-01	0.00057	0.056	0.00079	0.0000045	0.00071	0.000089	0.0025	0.0051	1.9
Production	2	2022-09-01	0.00055	0.048	0.00077	0.0000044	0.00088	0.000093	0.0021	0.0054	1.7
Production	2	2022-10-01	0.00063	0.056	0.0007	0.000004	0.0014	0.000087	0.0027	0.007	1.2
Production	2	2022-11-01	0.0012	0.082	0.00096	0.0000044	0.0016	0.00011	0.0041	0.0098	1.1
Production	2	2022-12-01	0.001	0.069	0.001	0.0000045	0.0018	0.00011	0.0044	0.011	1.7
Production	2	2023-01-01	0.0012	0.079	0.0012	0.0000047	0.002	0.00011	0.0051	0.014	1.9
Production	2	2023-02-01	0.0013	0.095	0.0015	0.0000046	0.0019	0.00011	0.0068	0.017	0.47
Receiving Environment Water Quality Model - KZ-15 - Wet Year 2 Model			**Receiving Environment Water Quality Model - KZ-15 - Wet Year 2 Model**								
Production	2	2022-03-01	0.0011	0.065	0.0013	0.0000038	0.002	0.000058	0.0057	0.016	0.91
Production	2	2022-04-01	0.0013	0.025	0.00094	0.0000041	0.0017	0.000055	0.0048	0.012	1.2
Production	2	2022-05-01	0.00042	0.035	0.00079	0.0000049	0.00077	0.000064	0.0012	0.006	2.6
Production	2	2022-06-01	0.00014	0.022	0.00038	0.0000042	0.00054	0.000019	0.0014	0.0023	1.5

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L
Receiving Environment Water Quality Model - KZ-15 - Wet Year -1 Model										
Construction	-1	2020-03-01	0.0018	0.00012	0.0011	0.000097	79	0.0001	0.00033	0.023
Construction	-1	2020-04-01	0.0026	0.00013	0.0012	0.000072	79	0.00012	0.00034	0.026
Construction	-1	2020-05-01	0.016	0.000052	0.0005	0.000018	24	0.000037	0.00091	0.017
Construction	-1	2020-06-01	0.0061	0.000043	0.0004	0.000014	30	0.000027	0.00046	0.0051
Construction	-1	2020-07-01	0.0035	0.000054	0.00038	0.000011	40	0.000027	0.0003	0.0036
Construction	-1	2020-08-01	0.0032	0.000058	0.00051	0.000015	40	0.00022	0.00042	0.0041
Construction	-1	2020-09-01	0.0042	0.000075	0.00046	0.000017	40	0.000037	0.00049	0.0051
Construction	-1	2020-10-01	0.0026	0.000091	0.00066	0.000027	49	0.000044	0.00028	0.0049
Construction	-1	2020-11-01	0.0034	0.00017	0.00081	0.000057	59	0.0001	0.00028	0.0089
Construction	-1	2020-12-01	0.0034	0.00022	0.001	0.000084	65	0.00015	0.00027	0.016
Construction	-1	2021-01-01	0.0047	0.00023	0.0011	0.000089	74	0.00016	0.00028	0.015
Construction	-1	2021-02-01	0.0038	0.00024	0.0012	0.00011	79	0.00018	0.00033	0.018
Receiving Environment Water Quality Model - KZ-15 - Dry Year 2 Model										
Production	2	2022-03-01	0.0041	0.00015	0.00076	0.000095	77	0.000019	0.00032	0.057
Production	2	2022-04-01	0.0046	0.00015	0.00078	0.000064	74	0.000022	0.00035	0.068
Production	2	2022-05-01	0.024	0.00021	0.0009	0.000044	24	0.000043	0.0011	0.055
Production	2	2022-06-01	0.014	0.00021	0.00069	0.000032	31	0.000036	0.00057	0.026
Production	2	2022-07-01	0.014	0.00025	0.00074	0.000032	42	0.000035	0.00043	0.029
Production	2	2022-08-01	0.014	0.00026	0.00093	0.000039	42	0.00022	0.00057	0.035
Production	2	2022-09-01	0.014	0.00025	0.00084	0.000038	41	0.000033	0.00063	0.036
Production	2	2022-10-01	0.0089	0.00018	0.0009	0.00004	48	0.00002	0.00038	0.033
Production	2	2022-11-01	0.01	0.00025	0.00095	0.00006	56	0.000029	0.00037	0.044
Production	2	2022-12-01	0.0094	0.00026	0.00098	0.000077	61	0.00003	0.00034	0.053
Production	2	2023-01-01	0.0097	0.00025	0.00096	0.000079	68	0.000031	0.00034	0.056
Production	2	2023-02-01	0.0082	0.00024	0.00097	0.0001	72	0.000026	0.00035	0.063
Receiving Environment Water Quality Model - KZ-15 - Wet Year 2 Model										
Production	2	2022-03-01	0.0041	0.00015	0.00075	0.000094	77	0.000019	0.00032	0.056
Production	2	2022-04-01	0.0045	0.00015	0.00078	0.000064	74	0.000021	0.00035	0.067
Production	2	2022-05-01	0.02	0.00013	0.0009	0.000044	23	0.000033	0.0011	0.043
Production	2	2022-06-01	0.0089	0.000084	0.00055	0.000024	30	0.000024	0.00052	0.013

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Receiving Environment Water Quality Model - KZ-15 - Wet Year -1 Model										
Construction	-1	2020-03-01	0.000032	0.066	0.0013	0.0000026	0.0014	0.000042	0.0061	0.018
Construction	-1	2020-04-01	0.000048	0.07	0.0012	0.0000028	0.00098	0.000051	0.0053	0.015
Construction	-1	2020-05-01	0.000011	0.013	0.00058	0.0000017	0.00038	0.000013	0.0011	0.0033
Construction	-1	2020-06-01	0.0000054	0.0082	0.00048	0.0000023	0.00041	0.0000085	0.0013	0.0015
Construction	-1	2020-07-01	0.0000044	0.011	0.00047	0.0000023	0.0003	0.000013	0.0012	0.002
Construction	-1	2020-08-01	0.000057	0.015	0.00059	0.0000023	0.00033	0.000023	0.0016	0.0024
Construction	-1	2020-09-01	0.000014	0.013	0.00058	0.0000024	0.00047	0.000031	0.0014	0.0034
Construction	-1	2020-10-01	0.000011	0.019	0.00062	0.0000024	0.001	0.000048	0.0024	0.0055
Construction	-1	2020-11-01	0.000023	0.053	0.0012	0.0000026	0.0013	0.00011	0.0035	0.012
Construction	-1	2020-12-01	0.00003	0.07	0.0016	0.0000028	0.0016	0.00015	0.0043	0.017
Construction	-1	2021-01-01	0.000062	0.086	0.0017	0.0000029	0.0015	0.00016	0.005	0.021
Construction	-1	2021-02-01	0.000041	0.089	0.002	0.000003	0.0015	0.00017	0.0067	0.023
Receiving Environment Water Quality Model - KZ-15 - Dry Year 2 Model										
Production	2	2022-03-01	0.0011	0.048	0.0012	0.0000038	0.002	0.000058	0.0057	0.016
Production	2	2022-04-01	0.0012	0.023	0.001	0.0000039	0.0017	0.000055	0.0048	0.01
Production	2	2022-05-01	0.00058	0.043	0.00087	0.0000038	0.00084	0.000091	0.0016	0.0058
Production	2	2022-06-01	0.00032	0.03	0.00063	0.0000038	0.0007	0.000053	0.002	0.0033
Production	2	2022-07-01	0.00039	0.039	0.00065	0.0000041	0.00065	0.000069	0.002	0.004
Production	2	2022-08-01	0.00055	0.048	0.00079	0.0000044	0.00072	0.000089	0.0024	0.0045
Production	2	2022-09-01	0.00053	0.045	0.00073	0.0000043	0.00082	0.000093	0.0021	0.005
Production	2	2022-10-01	0.00058	0.039	0.00064	0.000004	0.0013	0.000087	0.0027	0.0056
Production	2	2022-11-01	0.00085	0.062	0.00089	0.0000044	0.0016	0.00011	0.0038	0.0079
Production	2	2022-12-01	0.001	0.059	0.0011	0.0000045	0.0019	0.00011	0.0044	0.01
Production	2	2023-01-01	0.0012	0.07	0.0012	0.0000045	0.0019	0.00011	0.005	0.013
Production	2	2023-02-01	0.0012	0.073	0.0013	0.0000046	0.002	0.00011	0.0065	0.014
Receiving Environment Water Quality Model - KZ-15 - Wet Year 2 Model										
Production	2	2022-03-01	0.0011	0.048	0.0012	0.0000038	0.002	0.000058	0.0057	0.016
Production	2	2022-04-01	0.0012	0.023	0.001	0.0000039	0.0017	0.000055	0.0048	0.01
Production	2	2022-05-01	0.0004	0.029	0.00076	0.0000032	0.00079	0.000064	0.0012	0.0056
Production	2	2022-06-01	0.00013	0.013	0.00051	0.0000029	0.00056	0.00002	0.0014	0.0021

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	2	2022-07-01	150	26	0.12	0.0034	0.026	0.003	0.072	0.23	0.0004
Production	2	2022-08-01	150	24	0.12	0.005	0.017	0.0046	0.072	0.27	0.0004
Production	2	2022-09-01	140	26	0.14	0.0035	0.016	0.0042	0.071	0.53	0.00064
Production	2	2022-10-01	170	33	0.22	0.0032	0.014	0.0056	0.083	0.38	0.00024
Production	2	2022-11-01	220	40	0.33	0.0048	0.026	0.0047	0.11	0.1	0.00017
Production	2	2022-12-01	240	45	0.37	0.0054	0.034	0.005	0.12	0.47	0.00014
Production	2	2023-01-01	260	48	0.38	0.0052	0.049	0.0051	0.11	0.79	0.00023
Production	2	2023-02-01	290	53	0.35	0.005	0.031	0.0065	0.13	0.42	0.00023
Receiving Environment Water Quality Model - KZ-15 - Dry Year 9 Model											
Production	9	2029-03-01	440	130	0.43	0.0066	0.039	0.0095	0.16	0.56	0.00043
Production	9	2029-04-01	370	110	0.36	0.0052	0.031	0.005	0.15	0.48	0.00027
Production	9	2029-05-01	350	89	0.81	0.019	0.083	0.011	0.13	0.66	0.00055
Production	9	2029-06-01	250	61	0.64	0.015	0.074	0.012	0.11	0.49	0.00057
Production	9	2029-07-01	320	76	0.73	0.018	0.085	0.0076	0.13	0.23	0.00041
Production	9	2029-08-01	360	87	0.75	0.02	0.076	0.0092	0.13	0.26	0.0004
Production	9	2029-09-01	350	88	0.69	0.016	0.067	0.0082	0.13	0.52	0.00063
Production	9	2029-10-01	350	88	0.59	0.012	0.046	0.008	0.12	0.37	0.00022
Production	9	2029-11-01	440	110	0.68	0.013	0.058	0.0074	0.15	0.085	0.00015
Production	9	2029-12-01	460	130	0.65	0.012	0.059	0.0081	0.16	0.47	0.00015
Production	9	2030-01-01	470	140	0.61	0.01	0.07	0.0075	0.15	0.77	0.00022
Production	9	2030-02-01	500	160	0.55	0.0093	0.051	0.0084	0.17	0.39	0.00022
Receiving Environment Water Quality Model - KZ-15 - Wet Year 9 Model											
Production	9	2029-03-01	430	130	0.43	0.0065	0.039	0.0095	0.16	0.56	0.00043
Production	9	2029-04-01	370	110	0.35	0.0051	0.03	0.0049	0.15	0.48	0.00027
Production	9	2029-05-01	260	93	0.42	0.0097	0.041	0.0078	0.095	0.62	0.00052
Production	9	2029-06-01	150	41	0.21	0.0053	0.03	0.0083	0.077	0.48	0.00056
Production	9	2029-07-01	200	52	0.23	0.0061	0.036	0.0039	0.083	0.24	0.00041
Production	9	2029-08-01	210	55	0.23	0.0075	0.025	0.0054	0.083	0.27	0.0004
Production	9	2029-09-01	210	58	0.25	0.006	0.024	0.0051	0.082	0.54	0.00064
Production	9	2029-10-01	240	63	0.31	0.0053	0.021	0.0065	0.094	0.4	0.00024
Production	9	2029-11-01	340	93	0.46	0.0079	0.037	0.0059	0.12	0.091	0.00016
Production	9	2029-12-01	390	110	0.5	0.0084	0.045	0.0066	0.13	0.46	0.00014

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L
Production	2	2022-07-01	0.00052	0.0076	0.000098	0.00059	0.000026	42	0.000029	0.00031	0.03
Production	2	2022-08-01	0.0005	0.0073	0.0001	0.00073	0.000032	41	0.0002	0.00055	0.037
Production	2	2022-09-01	0.00059	0.009	0.0001	0.00066	0.000039	39	0.000054	0.00048	0.033
Production	2	2022-10-01	0.00024	0.015	0.000091	0.00082	0.00005	47	0.000033	0.00043	0.038
Production	2	2022-11-01	0.00027	0.016	0.00016	0.00099	0.000075	56	0.000056	0.00041	0.07
Production	2	2022-12-01	0.00022	0.017	0.00019	0.00099	0.00008	60	0.000032	0.00037	0.083
Production	2	2023-01-01	0.00023	0.013	0.0002	0.001	0.0001	65	0.000056	0.00046	0.15
Production	2	2023-02-01	0.00024	0.014	0.0002	0.00098	0.00012	67	0.000029	0.00037	0.1
Receiving Environment Water Quality Model - KZ-15 - Dry Year 9 Model											
Production	9	2029-03-01	0.00043	0.039	0.00028	0.0018	0.00015	76	0.00034	0.0023	0.12
Production	9	2029-04-01	0.00028	0.038	0.00025	0.0018	0.00012	65	0.00026	0.0026	0.13
Production	9	2029-05-01	0.00065	0.051	0.00045	0.0014	0.000072	30	0.00077	0.0022	0.093
Production	9	2029-06-01	0.00047	0.027	0.00044	0.0009	0.000041	37	0.00041	0.0011	0.047
Production	9	2029-07-01	0.00054	0.029	0.0005	0.001	0.000048	46	0.00053	0.0011	0.052
Production	9	2029-08-01	0.0005	0.031	0.00052	0.0012	0.000061	45	0.00085	0.0015	0.07
Production	9	2029-09-01	0.00058	0.031	0.00047	0.0012	0.000066	42	0.0007	0.0014	0.061
Production	9	2029-10-01	0.00022	0.031	0.00033	0.0012	0.000071	48	0.0006	0.0013	0.059
Production	9	2029-11-01	0.00024	0.037	0.00044	0.0015	0.000097	57	0.00073	0.0017	0.094
Production	9	2029-12-01	0.00021	0.041	0.00044	0.0016	0.00011	62	0.0007	0.0019	0.095
Production	9	2030-01-01	0.00022	0.037	0.0004	0.0017	0.00013	67	0.00068	0.0022	0.13
Production	9	2030-02-01	0.00022	0.043	0.00037	0.0018	0.00016	70	0.00062	0.0024	0.12
Receiving Environment Water Quality Model - KZ-15 - Wet Year 9 Model											
Production	9	2029-03-01	0.00043	0.038	0.00027	0.0018	0.00015	76	0.00033	0.0023	0.12
Production	9	2029-04-01	0.00028	0.038	0.00025	0.0017	0.00012	65	0.00026	0.0025	0.13
Production	9	2029-05-01	0.00062	0.043	0.00024	0.0013	0.000069	27	0.0005	0.0021	0.093
Production	9	2029-06-01	0.00047	0.014	0.00015	0.00062	0.000025	34	0.00014	0.00073	0.034
Production	9	2029-07-01	0.00053	0.015	0.00018	0.00069	0.000031	43	0.00019	0.00071	0.039
Production	9	2029-08-01	0.0005	0.016	0.00017	0.00085	0.000039	42	0.0004	0.001	0.05
Production	9	2029-09-01	0.00059	0.017	0.00017	0.00079	0.000046	40	0.00028	0.00096	0.043
Production	9	2029-10-01	0.00024	0.022	0.00015	0.00094	0.000057	48	0.00027	0.00092	0.045
Production	9	2029-11-01	0.00026	0.03	0.00027	0.0012	0.000086	56	0.00046	0.0013	0.082
Production	9	2029-12-01	0.00021	0.035	0.00032	0.0014	0.000098	60	0.00051	0.0016	0.095

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L
Production	2	2022-07-01	0.00018	0.025	0.00049	0.0000027	0.00053	0.000026	0.0014	0.0032	2.1
Production	2	2022-08-01	0.00027	0.028	0.00058	0.0000032	0.0005	0.000033	0.0018	0.0035	1.8
Production	2	2022-09-01	0.00026	0.02	0.00057	0.0000032	0.00068	0.000037	0.0015	0.0039	1.7
Production	2	2022-10-01	0.00035	0.034	0.00054	0.0000031	0.0012	0.000041	0.0024	0.0056	1.2
Production	2	2022-11-01	0.00091	0.063	0.00082	0.0000037	0.0015	0.000069	0.0037	0.0092	1
Production	2	2022-12-01	0.00084	0.053	0.00093	0.0000039	0.0017	0.000083	0.004	0.011	1.7
Production	2	2023-01-01	0.001	0.067	0.0011	0.0000041	0.0018	0.000087	0.0048	0.014	1.9
Production	2	2023-02-01	0.0011	0.077	0.0014	0.0000041	0.0018	0.000089	0.0065	0.017	0.41
Receiving Environment Water Quality Model - KZ-15 - Dry Year 9 Model			**Receiving Environment Water Quality Model - KZ-15 - Dry Year 9 Model**								
Production	9	2029-03-01	0.0015	0.25	0.0035	0.000013	0.0024	0.00018	0.0062	0.019	0.95
Production	9	2029-04-01	0.0016	0.16	0.0026	0.000012	0.002	0.00014	0.0053	0.016	1.2
Production	9	2029-05-01	0.00079	0.48	0.0062	0.000026	0.0011	0.00034	0.0026	0.0086	2.8
Production	9	2029-06-01	0.00044	0.26	0.0031	0.000016	0.00088	0.00017	0.003	0.0046	1.6
Production	9	2029-07-01	0.00054	0.32	0.004	0.000018	0.00093	0.00022	0.0031	0.0057	2.2
Production	9	2029-08-01	0.00076	0.42	0.0052	0.000022	0.00095	0.00028	0.0035	0.0069	1.9
Production	9	2029-09-01	0.00074	0.41	0.0052	0.000022	0.0011	0.00028	0.003	0.007	1.7
Production	9	2029-10-01	0.00081	0.37	0.0046	0.00002	0.0015	0.00025	0.0032	0.0081	1.1
Production	9	2029-11-01	0.0014	0.45	0.0056	0.000023	0.0018	0.0003	0.0047	0.011	1
Production	9	2029-12-01	0.0013	0.44	0.0057	0.000023	0.002	0.0003	0.005	0.013	1.7
Production	9	2030-01-01	0.0015	0.42	0.0055	0.000022	0.0022	0.00029	0.0056	0.016	1.9
Production	9	2030-02-01	0.0015	0.42	0.0055	0.000021	0.0022	0.00028	0.0073	0.02	0.51
Receiving Environment Water Quality Model - KZ-15 - Wet Year 9 Model			**Receiving Environment Water Quality Model - KZ-15 - Wet Year 9 Model**								
Production	9	2029-03-01	0.0015	0.25	0.0034	0.000013	0.0024	0.00017	0.0062	0.019	0.94
Production	9	2029-04-01	0.0016	0.16	0.0025	0.000012	0.002	0.00014	0.0052	0.016	1.2
Production	9	2029-05-01	0.00053	0.31	0.0041	0.000018	0.00099	0.00022	0.0017	0.0081	2.4
Production	9	2029-06-01	0.00018	0.092	0.0012	0.0000077	0.0006	0.000057	0.0017	0.0027	1.5
Production	9	2029-07-01	0.00023	0.12	0.0016	0.0000074	0.00062	0.000075	0.0017	0.0038	2.1
Production	9	2029-08-01	0.00033	0.14	0.002	0.0000091	0.0006	0.000094	0.0021	0.0042	1.9
Production	9	2029-09-01	0.00033	0.15	0.0021	0.0000096	0.00078	0.0001	0.0018	0.0046	1.7
Production	9	2029-10-01	0.00043	0.17	0.0022	0.0000099	0.0013	0.00011	0.0026	0.0064	1.2
Production	9	2029-11-01	0.0011	0.29	0.0036	0.000015	0.0016	0.00019	0.0041	0.01	1
Production	9	2029-12-01	0.0011	0.32	0.0042	0.000017	0.0019	0.00022	0.0045	0.012	1.6

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	2	2022-07-01	0.0067	0.000099	0.00056	0.000022	41	0.000021	0.00036	0.013
Production	2	2022-08-01	0.0063	0.000093	0.00071	0.000026	41	0.00021	0.00048	0.016
Production	2	2022-09-01	0.007	0.0001	0.00062	0.000026	40	0.000018	0.00054	0.017
Production	2	2022-10-01	0.0047	0.00009	0.00073	0.000031	47	0.00001	0.00032	0.019
Production	2	2022-11-01	0.0066	0.00016	0.00079	0.000053	56	0.000021	0.00032	0.033
Production	2	2022-12-01	0.0066	0.00019	0.00084	0.00007	58	0.000025	0.00029	0.046
Production	2	2023-01-01	0.0075	0.00019	0.00083	0.000072	66	0.000024	0.0003	0.049
Production	2	2023-02-01	0.0062	0.00019	0.00082	0.00009	70	0.000024	0.00032	0.055
Receiving Environment Water Quality Model - KZ-15 - Dry Year 9 Model										
Production	9	2029-03-01	0.033	0.00029	0.0016	0.00014	75	0.00033	0.0023	0.1
Production	9	2029-04-01	0.035	0.00026	0.0017	0.00012	73	0.00025	0.0026	0.11
Production	9	2029-05-01	0.046	0.00045	0.0014	0.000069	26	0.00078	0.0023	0.08
Production	9	2029-06-01	0.028	0.00044	0.0009	0.000044	34	0.00042	0.0012	0.036
Production	9	2029-07-01	0.029	0.0005	0.00098	0.000046	45	0.00052	0.0011	0.042
Production	9	2029-08-01	0.031	0.00051	0.0012	0.000056	44	0.00086	0.0014	0.052
Production	9	2029-09-01	0.03	0.00047	0.0011	0.000054	42	0.00067	0.0015	0.052
Production	9	2029-10-01	0.022	0.00033	0.0011	0.000053	48	0.00058	0.0012	0.048
Production	9	2029-11-01	0.029	0.00044	0.0013	0.000081	56	0.00069	0.0016	0.066
Production	9	2029-12-01	0.031	0.00043	0.0014	0.0001	60	0.00069	0.0019	0.079
Production	9	2030-01-01	0.034	0.00039	0.0015	0.00011	68	0.00065	0.0021	0.087
Production	9	2030-02-01	0.035	0.00037	0.0017	0.00013	72	0.00061	0.0023	0.098
Receiving Environment Water Quality Model - KZ-15 - Wet Year 9 Model										
Production	9	2029-03-01	0.033	0.00028	0.0016	0.00014	75	0.00032	0.0023	0.1
Production	9	2029-04-01	0.034	0.00026	0.0016	0.00012	73	0.00025	0.0025	0.11
Production	9	2029-05-01	0.039	0.00024	0.0013	0.000066	24	0.00051	0.0022	0.08
Production	9	2029-06-01	0.015	0.00015	0.00062	0.000028	31	0.00015	0.00082	0.023
Production	9	2029-07-01	0.014	0.00018	0.00066	0.000029	42	0.00018	0.00076	0.027
Production	9	2029-08-01	0.015	0.00017	0.00082	0.000034	42	0.00041	0.00096	0.031
Production	9	2029-09-01	0.016	0.00017	0.00074	0.000034	41	0.00024	0.001	0.033
Production	9	2029-10-01	0.013	0.00015	0.00084	0.000038	49	0.00025	0.00081	0.031
Production	9	2029-11-01	0.021	0.00027	0.0011	0.000067	55	0.00042	0.0012	0.053
Production	9	2029-12-01	0.026	0.00032	0.0013	0.000091	58	0.0005	0.0016	0.071

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Production	2	2022-07-01	0.00017	0.017	0.00049	0.000003	0.00048	0.000026	0.0013	0.0028
Production	2	2022-08-01	0.00026	0.02	0.00058	0.0000031	0.00051	0.000033	0.0018	0.0028
Production	2	2022-09-01	0.00024	0.018	0.00053	0.0000031	0.00063	0.000037	0.0015	0.0034
Production	2	2022-10-01	0.0003	0.018	0.00048	0.0000031	0.0011	0.000041	0.0023	0.0043
Production	2	2022-11-01	0.00059	0.042	0.00075	0.0000036	0.0015	0.000069	0.0034	0.0076
Production	2	2022-12-01	0.00082	0.043	0.00095	0.0000039	0.0018	0.000083	0.0041	0.0095
Production	2	2023-01-01	0.00099	0.056	0.0011	0.000004	0.0018	0.000087	0.0047	0.013
Production	2	2023-02-01	0.0011	0.054	0.0012	0.000004	0.0019	0.000089	0.0062	0.014
Receiving Environment Water Quality Model - KZ-15 - Dry Year 9 Model										
Production	9	2029-03-01	0.0015	0.23	0.0034	0.000013	0.0024	0.00018	0.0061	0.019
Production	9	2029-04-01	0.0016	0.16	0.0026	0.000011	0.0021	0.00014	0.0052	0.015
Production	9	2029-05-01	0.00078	0.47	0.0061	0.000025	0.0011	0.00034	0.0025	0.0082
Production	9	2029-06-01	0.00043	0.25	0.0033	0.000015	0.0009	0.00017	0.0029	0.0044
Production	9	2029-07-01	0.00053	0.31	0.004	0.000018	0.00087	0.00022	0.003	0.0054
Production	9	2029-08-01	0.00074	0.41	0.0052	0.000022	0.00096	0.00028	0.0034	0.0063
Production	9	2029-09-01	0.00072	0.41	0.0052	0.000022	0.001	0.00028	0.003	0.0067
Production	9	2029-10-01	0.00077	0.36	0.0046	0.00002	0.0014	0.00025	0.0032	0.007
Production	9	2029-11-01	0.0011	0.43	0.0055	0.000023	0.0018	0.0003	0.0044	0.0097
Production	9	2029-12-01	0.0013	0.43	0.0057	0.000023	0.0022	0.0003	0.005	0.013
Production	9	2030-01-01	0.0014	0.41	0.0055	0.000022	0.0022	0.00029	0.0055	0.016
Production	9	2030-02-01	0.0015	0.4	0.0054	0.000021	0.0023	0.00028	0.0069	0.018
Receiving Environment Water Quality Model - KZ-15 - Wet Year 9 Model										
Production	9	2029-03-01	0.0015	0.23	0.0033	0.000013	0.0024	0.00017	0.0061	0.019
Production	9	2029-04-01	0.0016	0.15	0.0026	0.000011	0.0021	0.00014	0.0052	0.015
Production	9	2029-05-01	0.00052	0.3	0.0041	0.000017	0.001	0.00022	0.0016	0.0077
Production	9	2029-06-01	0.00017	0.082	0.0014	0.0000065	0.00062	0.000057	0.0017	0.0026
Production	9	2029-07-01	0.00022	0.11	0.0016	0.0000077	0.00056	0.000075	0.0017	0.0034
Production	9	2029-08-01	0.00032	0.14	0.002	0.000009	0.00061	0.000094	0.0021	0.0036
Production	9	2029-09-01	0.0003	0.14	0.0021	0.0000096	0.00073	0.0001	0.0018	0.0042
Production	9	2029-10-01	0.00038	0.15	0.0021	0.0000099	0.0012	0.00011	0.0026	0.0049
Production	9	2029-11-01	0.00076	0.27	0.0036	0.000015	0.0016	0.00019	0.0038	0.0086
Production	9	2029-12-01	0.001	0.31	0.0043	0.000017	0.002	0.00022	0.0045	0.011

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	9	2030-01-01	410	130	0.5	0.0078	0.059	0.0065	0.13	0.77	0.00022
Production	9	2030-02-01	430	150	0.45	0.0073	0.041	0.0075	0.15	0.39	0.00022
Receiving Environment Water Quality Model - KZ-15 - Dry Year 12 Model											
Active Closure	12	2032-03-01	500	66	0.77	0.014	0.16	0.011	0.14	0.56	0.00043
Active Closure	12	2032-04-01	460	55	0.67	0.012	0.14	0.0065	0.14	0.49	0.00028
Active Closure	12	2032-05-01	180	36	0.88	0.02	0.16	0.011	0.08	0.69	0.00055
Active Closure	12	2032-06-01	180	31	0.57	0.013	0.11	0.012	0.087	0.52	0.00061
Active Closure	12	2032-07-01	240	38	0.69	0.017	0.14	0.0077	0.093	0.25	0.00042
Active Closure	12	2032-08-01	280	40	0.8	0.021	0.16	0.0095	0.096	0.28	0.00041
Active Closure	12	2032-09-01	290	43	0.8	0.019	0.16	0.0086	0.093	0.55	0.00064
Active Closure	12	2032-10-01	340	50	0.81	0.017	0.16	0.0088	0.1	0.39	0.00023
Active Closure	12	2032-11-01	460	57	1	0.021	0.21	0.0086	0.13	0.094	0.00016
Active Closure	12	2032-12-01	500	60	1	0.02	0.21	0.0096	0.13	0.48	0.00015
Active Closure	12	2033-01-01	530	60	0.97	0.019	0.21	0.0092	0.12	0.78	0.00022
Active Closure	12	2033-02-01	550	63	0.89	0.017	0.18	0.01	0.14	0.39	0.00023
Receiving Environment Water Quality Model - KZ-15 - Wet Year 12 Model											
Active Closure	12	2032-03-01	510	66	0.67	0.012	0.13	0.011	0.14	0.56	0.00043
Active Closure	12	2032-04-01	460	55	0.58	0.01	0.12	0.0064	0.13	0.49	0.00028
Active Closure	12	2032-05-01	140	54	0.75	0.017	0.16	0.0081	0.077	0.62	0.00046
Active Closure	12	2032-06-01	140	26	0.28	0.007	0.067	0.0088	0.074	0.51	0.0006
Active Closure	12	2032-07-01	190	33	0.29	0.0074	0.073	0.0042	0.076	0.25	0.00041
Active Closure	12	2032-08-01	200	32	0.32	0.0097	0.074	0.0059	0.075	0.29	0.00042
Active Closure	12	2032-09-01	210	34	0.34	0.008	0.073	0.0055	0.074	0.57	0.00065
Active Closure	12	2032-10-01	270	41	0.4	0.0074	0.072	0.007	0.087	0.43	0.00024
Active Closure	12	2032-11-01	410	53	0.67	0.013	0.13	0.007	0.11	0.1	0.00016
Active Closure	12	2032-12-01	500	61	0.81	0.015	0.17	0.0083	0.12	0.47	0.00014
Active Closure	12	2033-01-01	550	64	0.83	0.015	0.19	0.0083	0.12	0.77	0.00021
Active Closure	12	2033-02-01	590	67	0.77	0.015	0.17	0.0097	0.14	0.39	0.00022
Receiving Environment Water Quality Model - KZ-15 - Dry Year 20 Model											
Transitional Closure	20	2040-03-01	290	43	0.61	0.01	0.1	0.011	0.13	0.58	0.00048
Transitional Closure	20	2040-04-01	240	33	0.59	0.01	0.1	0.0055	0.12	0.54	0.00031

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L
Production	9	2030-01-01	0.00022	0.033	0.00032	0.0016	0.00012	65	0.00052	0.002	0.14
Production	9	2030-02-01	0.00022	0.038	0.0003	0.0016	0.00015	67	0.00047	0.0021	0.12
Receiving Environment Water Quality Model - KZ-15 - Dry Year 12 Model											
Active Closure	12	2032-03-01	0.00043	0.014	0.00024	0.001	0.000096	77	0.00056	0.0017	0.055
Active Closure	12	2032-04-01	0.00028	0.012	0.00021	0.00089	0.000059	67	0.00059	0.0019	0.057
Active Closure	12	2032-05-01	0.00065	0.033	0.00034	0.001	0.000036	29	0.0002	0.0015	0.061
Active Closure	12	2032-06-01	0.0005	0.012	0.00033	0.00089	0.000024	38	0.00016	0.00078	0.031
Active Closure	12	2032-07-01	0.00057	0.011	0.00038	0.00096	0.000027	46	0.00022	0.0007	0.028
Active Closure	12	2032-08-01	0.0005	0.012	0.00039	0.0011	0.000034	45	0.0005	0.001	0.039
Active Closure	12	2032-09-01	0.00059	0.013	0.00036	0.00098	0.000042	43	0.00039	0.00097	0.033
Active Closure	12	2032-10-01	0.00023	0.018	0.00026	0.00099	0.000054	50	0.00045	0.00099	0.038
Active Closure	12	2032-11-01	0.00025	0.018	0.00035	0.0011	0.000068	58	0.00064	0.0012	0.062
Active Closure	12	2032-12-01	0.00021	0.019	0.00036	0.0011	0.000069	63	0.00069	0.0014	0.052
Active Closure	12	2033-01-01	0.00022	0.014	0.00034	0.0011	0.000084	68	0.00074	0.0016	0.09
Active Closure	12	2033-02-01	0.00023	0.016	0.00031	0.001	0.0001	71	0.00072	0.0017	0.055
Receiving Environment Water Quality Model - KZ-15 - Wet Year 12 Model											
Active Closure	12	2032-03-01	0.00043	0.014	0.00023	0.001	0.000096	77	0.00057	0.0016	0.055
Active Closure	12	2032-04-01	0.00028	0.012	0.0002	0.00088	0.000059	67	0.0006	0.0018	0.057
Active Closure	12	2032-05-01	0.00056	0.033	0.00022	0.00097	0.000045	26	0.00011	0.0014	0.075
Active Closure	12	2032-06-01	0.0005	0.0087	0.00013	0.00056	0.000017	36	0.000072	0.00058	0.029
Active Closure	12	2032-07-01	0.00055	0.0078	0.00014	0.00059	0.000023	45	0.00011	0.0005	0.031
Active Closure	12	2032-08-01	0.00051	0.008	0.00015	0.00069	0.000027	44	0.00032	0.00076	0.038
Active Closure	12	2032-09-01	0.0006	0.0096	0.00014	0.00062	0.000035	42	0.00021	0.0007	0.03
Active Closure	12	2032-10-01	0.00024	0.015	0.00012	0.00077	0.00005	51	0.00027	0.00069	0.037
Active Closure	12	2032-11-01	0.00026	0.017	0.00023	0.00096	0.000064	58	0.00054	0.00093	0.061
Active Closure	12	2032-12-01	0.00021	0.019	0.00028	0.001	0.000066	62	0.00071	0.0012	0.055
Active Closure	12	2033-01-01	0.00022	0.014	0.00029	0.0011	0.000083	66	0.00083	0.0015	0.097
Active Closure	12	2033-02-01	0.00022	0.017	0.00028	0.001	0.0001	69	0.00083	0.0016	0.059
Receiving Environment Water Quality Model - KZ-15 - Dry Year 20 Model											
Transitional Closure	20	2040-03-01	0.00046	0.0091	0.00017	0.0008	0.000093	80	0.00005	0.0021	0.04
Transitional Closure	20	2040-04-01	0.00031	0.008	0.00015	0.00069	0.00006	69	0.000061	0.0024	0.043

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	9	2030-01-01	0.0013	0.32	0.0044	0.000017	0.0021	0.00022	0.0052	0.016	1.8
Production	9	2030-02-01	0.0013	0.33	0.0045	0.000017	0.0021	0.00021	0.0069	0.019	0.43
Receiving Environment Water Quality Model - KZ-15 - Dry Year 12 Model			**Receiving Environment Water Quality Model - KZ-15 - Dry Year 12 Model**								
Active Closure	12	2032-03-01	0.00016	0.5	0.0068	0.000014	0.0017	0.000063	0.0059	0.012	0.73
Active Closure	12	2032-04-01	0.00018	0.47	0.0067	0.000014	0.0013	0.000064	0.005	0.0082	1
Active Closure	12	2032-05-01	0.00011	0.16	0.0025	0.0000088	0.00063	0.000026	0.0017	0.0048	2.9
Active Closure	12	2032-06-01	0.000081	0.14	0.0018	0.000008	0.00061	0.000021	0.002	0.0026	1.6
Active Closure	12	2032-07-01	0.000088	0.18	0.0025	0.0000077	0.0006	0.000029	0.002	0.0032	2.2
Active Closure	12	2032-08-01	0.00018	0.27	0.0036	0.00001	0.00057	0.00004	0.0024	0.0035	1.8
Active Closure	12	2032-09-01	0.00016	0.29	0.004	0.000011	0.00074	0.000044	0.0021	0.0042	1.7
Active Closure	12	2032-10-01	0.00019	0.37	0.0048	0.000012	0.0013	0.00005	0.0027	0.0061	1.1
Active Closure	12	2032-11-01	0.0005	0.53	0.0068	0.000016	0.0014	0.00007	0.004	0.0078	0.91
Active Closure	12	2032-12-01	0.00021	0.58	0.0077	0.000017	0.0015	0.000077	0.0043	0.0083	1.5
Active Closure	12	2033-01-01	0.00024	0.61	0.0081	0.000018	0.0016	0.000079	0.005	0.01	1.7
Active Closure	12	2033-02-01	0.0002	0.64	0.0085	0.000017	0.0015	0.000079	0.0068	0.013	0.3
Receiving Environment Water Quality Model - KZ-15 - Wet Year 12 Model			**Receiving Environment Water Quality Model - KZ-15 - Wet Year 12 Model**								
Active Closure	12	2032-03-01	0.00017	0.51	0.0069	0.000014	0.0017	0.000064	0.0059	0.012	0.73
Active Closure	12	2032-04-01	0.00018	0.48	0.0068	0.000015	0.0013	0.000065	0.005	0.0082	1
Active Closure	12	2032-05-01	0.00014	0.088	0.0015	0.0000065	0.00066	0.000015	0.0013	0.0057	2.1
Active Closure	12	2032-06-01	0.000045	0.062	0.00091	0.0000054	0.00049	0.0000081	0.0015	0.0019	1.6
Active Closure	12	2032-07-01	0.000054	0.087	0.0013	0.0000047	0.00048	0.000012	0.0014	0.0029	2.2
Active Closure	12	2032-08-01	0.00013	0.12	0.0018	0.0000056	0.00044	0.000016	0.0019	0.0027	1.9
Active Closure	12	2032-09-01	0.00011	0.14	0.0021	0.0000062	0.00063	0.00002	0.0016	0.0034	1.7
Active Closure	12	2032-10-01	0.00015	0.22	0.003	0.0000076	0.0012	0.000028	0.0025	0.0058	1.2
Active Closure	12	2032-11-01	0.00048	0.45	0.0058	0.000013	0.0014	0.000057	0.0038	0.0073	0.93
Active Closure	12	2032-12-01	0.00022	0.6	0.0079	0.000017	0.0015	0.000079	0.0041	0.0078	1.5
Active Closure	12	2033-01-01	0.00028	0.69	0.0091	0.000019	0.0016	0.000088	0.0048	0.01	1.7
Active Closure	12	2033-02-01	0.00023	0.72	0.0097	0.000019	0.0015	0.000091	0.0066	0.013	0.26
Receiving Environment Water Quality Model - KZ-15 - Dry Year 20 Model			**Receiving Environment Water Quality Model - KZ-15 - Dry Year 20 Model**								
Transitional Closure	20	2040-03-01	0.000036	0.062	0.0013	0.0000031	0.0016	0.0000049	0.0059	0.013	0.78
Transitional Closure	20	2040-04-01	0.000058	0.021	0.00096	0.0000033	0.0012	0.0000046	0.005	0.0089	1.1

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L
Production	9	2030-01-01	0.029	0.00031	0.0014	0.000098	65	0.00049	0.0018	0.078
Production	9	2030-02-01	0.03	0.0003	0.0015	0.00012	69	0.00047	0.002	0.087
Receiving Environment Water Quality Model - KZ-15 - Dry Year 12 Model										
Active Closure	12	2032-03-01	0.0083	0.00025	0.00082	0.000086	76	0.00056	0.0017	0.033
Active Closure	12	2032-04-01	0.0085	0.00022	0.00077	0.000055	74	0.00058	0.0019	0.034
Active Closure	12	2032-05-01	0.026	0.00035	0.001	0.000031	26	0.00021	0.0016	0.039
Active Closure	12	2032-06-01	0.012	0.00033	0.00088	0.000025	35	0.00017	0.00085	0.015
Active Closure	12	2032-07-01	0.01	0.00038	0.00093	0.000024	45	0.00021	0.00073	0.014
Active Closure	12	2032-08-01	0.011	0.00039	0.0011	0.000028	45	0.00051	0.00096	0.019
Active Closure	12	2032-09-01	0.011	0.00036	0.00094	0.000028	43	0.00036	0.001	0.022
Active Closure	12	2032-10-01	0.0082	0.00026	0.0009	0.000035	50	0.00043	0.00089	0.021
Active Closure	12	2032-11-01	0.01	0.00035	0.00095	0.000049	57	0.00061	0.0012	0.027
Active Closure	12	2032-12-01	0.0095	0.00035	0.00096	0.000064	62	0.00068	0.0013	0.031
Active Closure	12	2033-01-01	0.01	0.00033	0.00091	0.000063	69	0.00071	0.0015	0.029
Active Closure	12	2033-02-01	0.0085	0.00031	0.00087	0.00008	73	0.00071	0.0017	0.03
Receiving Environment Water Quality Model - KZ-15 - Wet Year 12 Model										
Active Closure	12	2032-03-01	0.0083	0.00024	0.00082	0.000086	76	0.00057	0.0016	0.033
Active Closure	12	2032-04-01	0.0084	0.00022	0.00076	0.000055	74	0.00059	0.0018	0.034
Active Closure	12	2032-05-01	0.026	0.00022	0.00097	0.00004	23	0.00011	0.0016	0.052
Active Closure	12	2032-06-01	0.009	0.00013	0.00055	0.00002	32	0.000075	0.00066	0.013
Active Closure	12	2032-07-01	0.0068	0.00014	0.00055	0.000018	44	0.0001	0.00053	0.013
Active Closure	12	2032-08-01	0.0067	0.00014	0.00067	0.00002	43	0.00033	0.00068	0.015
Active Closure	12	2032-09-01	0.0072	0.00014	0.00058	0.000021	43	0.00017	0.00075	0.016
Active Closure	12	2032-10-01	0.0052	0.00012	0.00067	0.000029	51	0.00025	0.00057	0.014
Active Closure	12	2032-11-01	0.008	0.00023	0.00077	0.000043	57	0.0005	0.00085	0.023
Active Closure	12	2032-12-01	0.0091	0.00028	0.00088	0.00006	60	0.0007	0.0011	0.032
Active Closure	12	2033-01-01	0.01	0.00029	0.00088	0.000061	67	0.00079	0.0014	0.031
Active Closure	12	2033-02-01	0.0092	0.00028	0.00085	0.000077	71	0.00083	0.0015	0.033
Receiving Environment Water Quality Model - KZ-15 - Dry Year 20 Model										
Transitional Closure	20	2040-03-01	0.0033	0.00018	0.0006	0.000084	80	0.000032	0.0021	0.02
Transitional Closure	20	2040-04-01	0.0039	0.00016	0.00057	0.000055	77	0.000041	0.0024	0.022

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Production	9	2030-01-01	0.0012	0.32	0.0043	0.000017	0.002	0.00022	0.0051	0.015
Production	9	2030-02-01	0.0013	0.3	0.0043	0.000017	0.0021	0.00021	0.0066	0.017
Receiving Environment Water Quality Model - KZ-15 - Dry Year 12 Model										
Active Closure	12	2032-03-01	0.00014	0.48	0.0067	0.000014	0.0017	0.000063	0.0058	0.013
Active Closure	12	2032-04-01	0.00015	0.47	0.0067	0.000014	0.0013	0.000064	0.005	0.0073
Active Closure	12	2032-05-01	0.000082	0.16	0.0025	0.0000072	0.00065	0.000026	0.0016	0.0041
Active Closure	12	2032-06-01	0.000067	0.13	0.002	0.0000067	0.00063	0.000022	0.002	0.0023
Active Closure	12	2032-07-01	0.00008	0.17	0.0024	0.0000078	0.00055	0.000028	0.0019	0.0028
Active Closure	12	2032-08-01	0.00017	0.26	0.0036	0.00001	0.00058	0.00004	0.0024	0.0028
Active Closure	12	2032-09-01	0.00013	0.29	0.004	0.000011	0.00068	0.000044	0.002	0.0037
Active Closure	12	2032-10-01	0.00014	0.36	0.0048	0.000012	0.0012	0.00005	0.0027	0.0046
Active Closure	12	2032-11-01	0.00018	0.51	0.0068	0.000016	0.0014	0.00007	0.0037	0.0061
Active Closure	12	2032-12-01	0.00018	0.57	0.0077	0.000017	0.0017	0.000077	0.0043	0.0077
Active Closure	12	2033-01-01	0.00021	0.6	0.0081	0.000017	0.0016	0.000079	0.0049	0.01
Active Closure	12	2033-02-01	0.00017	0.61	0.0083	0.000017	0.0016	0.000079	0.0064	0.011
Receiving Environment Water Quality Model - KZ-15 - Wet Year 12 Model										
Active Closure	12	2032-03-01	0.00014	0.49	0.0068	0.000014	0.0017	0.000064	0.0058	0.013
Active Closure	12	2032-04-01	0.00015	0.48	0.0069	0.000014	0.0013	0.000065	0.005	0.0073
Active Closure	12	2032-05-01	0.00011	0.086	0.0015	0.0000051	0.00068	0.000015	0.0012	0.005
Active Closure	12	2032-06-01	0.00003	0.052	0.001	0.0000042	0.00051	0.0000086	0.0015	0.0017
Active Closure	12	2032-07-01	0.000044	0.078	0.0013	0.0000047	0.00043	0.000012	0.0014	0.0023
Active Closure	12	2032-08-01	0.00011	0.11	0.0018	0.0000056	0.00044	0.000016	0.0018	0.0019
Active Closure	12	2032-09-01	0.000074	0.13	0.0021	0.0000062	0.00057	0.00002	0.0015	0.0028
Active Closure	12	2032-10-01	0.000092	0.2	0.0029	0.0000076	0.0011	0.000029	0.0024	0.0038
Active Closure	12	2032-11-01	0.00016	0.43	0.0057	0.000013	0.0014	0.000057	0.0035	0.0055
Active Closure	12	2032-12-01	0.0002	0.59	0.008	0.000017	0.0016	0.000078	0.0041	0.0071
Active Closure	12	2033-01-01	0.00024	0.68	0.009	0.000019	0.0016	0.000088	0.0047	0.0099
Active Closure	12	2033-02-01	0.00021	0.7	0.0095	0.000019	0.0016	0.000091	0.0063	0.011
Receiving Environment Water Quality Model - KZ-15 - Dry Year 20 Model										
Transitional Closure	20	2040-03-01	0.000011	0.045	0.0012	0.0000031	0.0016	0.0000049	0.0058	0.013
Transitional Closure	20	2040-04-01	0.000027	0.013	0.001	0.0000031	0.0012	0.0000046	0.005	0.0081

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L
Transitional Closure	20	2040-05-01	95	16	0.42	0.0097	0.06	0.0093	0.062	0.66	0.00051
Transitional Closure	20	2040-06-01	120	22	0.3	0.0074	0.052	0.011	0.077	0.51	0.0006
Transitional Closure	20	2040-07-01	150	26	0.34	0.0085	0.062	0.0068	0.08	0.24	0.00042
Transitional Closure	20	2040-08-01	150	23	0.36	0.011	0.056	0.0084	0.077	0.28	0.00041
Transitional Closure	20	2040-09-01	140	25	0.35	0.0082	0.051	0.0075	0.073	0.56	0.00064
Transitional Closure	20	2040-10-01	170	30	0.38	0.0068	0.046	0.0076	0.08	0.43	0.00024
Transitional Closure	20	2040-11-01	210	32	0.52	0.0091	0.07	0.0074	0.099	0.13	0.00018
Transitional Closure	20	2040-12-01	230	35	0.59	0.01	0.085	0.0085	0.1	0.52	0.00018
Transitional Closure	20	2041-01-01	250	37	0.63	0.01	0.11	0.0077	0.1	0.8	0.00024
Transitional Closure	20	2041-02-01	270	41	0.63	0.011	0.099	0.0092	0.12	0.41	0.00024
Receiving Environment Water Quality Model - KZ-15 - Wet Year 20 Model											
Transitional Closure	20	2040-03-01	290	43	0.6	0.01	0.098	0.011	0.13	0.58	0.00048
Transitional Closure	20	2040-04-01	240	33	0.59	0.01	0.099	0.0055	0.12	0.54	0.00031
Transitional Closure	20	2040-05-01	87	14	0.21	0.0049	0.03	0.0065	0.053	0.63	0.00047
Transitional Closure	20	2040-06-01	110	18	0.099	0.0027	0.023	0.0079	0.064	0.49	0.00057
Transitional Closure	20	2040-07-01	140	22	0.099	0.0031	0.028	0.0036	0.067	0.25	0.00041
Transitional Closure	20	2040-08-01	140	19	0.097	0.0046	0.018	0.0051	0.064	0.29	0.00041
Transitional Closure	20	2040-09-01	130	21	0.12	0.0031	0.018	0.0046	0.062	0.56	0.00065
Transitional Closure	20	2040-10-01	170	29	0.22	0.0031	0.02	0.0064	0.077	0.45	0.00024
Transitional Closure	20	2040-11-01	210	31	0.37	0.0056	0.043	0.0062	0.094	0.13	0.00019
Transitional Closure	20	2040-12-01	230	33	0.47	0.0076	0.065	0.0075	0.099	0.51	0.00017
Transitional Closure	20	2041-01-01	240	35	0.54	0.0086	0.093	0.007	0.097	0.79	0.00023
Transitional Closure	20	2041-02-01	270	40	0.55	0.0091	0.084	0.0086	0.12	0.41	0.00024
Receiving Environment Water Quality Model - KZ-15 - Dry Year 38 Model											
Passive Closure	38	2058-03-01	330	77	0.18	0.0011	0.013	0.01	0.14	0.62	0.00044
Passive Closure	38	2058-04-01	290	71	0.15	0.00057	0.0073	0.0068	0.14	0.51	0.00028
Passive Closure	38	2058-05-01	150	44	0.062	0.0016	0.0093	0.0097	0.084	0.7	0.00046
Passive Closure	38	2058-06-01	170	50	0.057	0.0018	0.017	0.01	0.096	0.53	0.00057
Passive Closure	38	2058-07-01	210	57	0.047	0.0018	0.021	0.0065	0.1	0.31	0.00038
Passive Closure	38	2058-08-01	190	48	0.05	0.0035	0.011	0.0079	0.094	0.35	0.0004
Passive Closure	38	2058-09-01	180	46	0.061	0.0018	0.01	0.0069	0.087	0.59	0.00068
Passive Closure	38	2058-10-01	200	51	0.13	0.0012	0.0051	0.0073	0.095	0.41	0.00026

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L
Transitional Closure	20	2040-05-01	0.00061	0.028	0.00028	0.00079	0.000024	28	0.000028	0.0013	0.046
Transitional Closure	20	2040-06-01	0.00049	0.0097	0.00029	0.00079	0.000018	37	0.000027	0.00072	0.025
Transitional Closure	20	2040-07-01	0.00057	0.0083	0.00034	0.00083	0.00002	46	0.000037	0.00062	0.019
Transitional Closure	20	2040-08-01	0.0005	0.0086	0.00033	0.00092	0.000026	45	0.00021	0.00093	0.03
Transitional Closure	20	2040-09-01	0.00059	0.0094	0.00029	0.0008	0.000032	43	0.00006	0.00085	0.02
Transitional Closure	20	2040-10-01	0.00024	0.014	0.00019	0.00079	0.000045	50	0.000039	0.00088	0.028
Transitional Closure	20	2040-11-01	0.00026	0.013	0.00026	0.0009	0.000059	59	0.000061	0.0012	0.058
Transitional Closure	20	2040-12-01	0.00023	0.014	0.00027	0.00088	0.000061	66	0.000041	0.0014	0.036
Transitional Closure	20	2041-01-01	0.00024	0.0096	0.00025	0.00088	0.000079	71	0.000066	0.0017	0.079
Transitional Closure	20	2041-02-01	0.00025	0.012	0.00023	0.00083	0.0001	74	0.000045	0.0019	0.044
Receiving Environment Water Quality Model - KZ-15 - Wet Year 20 Model											
Transitional Closure	20	2040-03-01	0.00046	0.0091	0.00017	0.00079	0.000093	80	0.000049	0.002	0.04
Transitional Closure	20	2040-04-01	0.00031	0.0079	0.00015	0.00068	0.000059	69	0.000061	0.0024	0.043
Transitional Closure	20	2040-05-01	0.00057	0.025	0.00014	0.00055	0.00002	26	0.000021	0.00099	0.046
Transitional Closure	20	2040-06-01	0.00048	0.0069	0.000097	0.00046	0.00001	35	0.000014	0.00046	0.023
Transitional Closure	20	2040-07-01	0.00054	0.0055	0.00012	0.00047	0.000016	44	0.000027	0.00038	0.023
Transitional Closure	20	2040-08-01	0.00051	0.005	0.00011	0.00056	0.000018	43	0.0002	0.00062	0.027
Transitional Closure	20	2040-09-01	0.0006	0.0067	0.0001	0.00048	0.000027	41	0.000052	0.00056	0.021
Transitional Closure	20	2040-10-01	0.00025	0.013	0.000086	0.00064	0.000044	51	0.000034	0.00058	0.032
Transitional Closure	20	2040-11-01	0.00027	0.012	0.00016	0.00074	0.000054	59	0.000055	0.00079	0.058
Transitional Closure	20	2040-12-01	0.00022	0.013	0.0002	0.00076	0.000055	64	0.000035	0.0011	0.035
Transitional Closure	20	2041-01-01	0.00024	0.0089	0.00021	0.0008	0.000073	69	0.00006	0.0015	0.08
Transitional Closure	20	2041-02-01	0.00024	0.012	0.0002	0.00076	0.000095	72	0.000037	0.0016	0.043
Receiving Environment Water Quality Model - KZ-15 - Dry Year 38 Model											
Passive Closure	38	2058-03-01	0.00045	0.023	0.0018	0.011	0.00015	91	0.00051	0.002	0.26
Passive Closure	38	2058-04-01	0.00028	0.023	0.002	0.012	0.00012	82	0.00056	0.0023	0.28
Passive Closure	38	2058-05-01	0.00056	0.039	0.0015	0.0084	0.000083	42	0.00038	0.0013	0.23
Passive Closure	38	2058-06-01	0.00048	0.021	0.0015	0.0089	0.000071	51	0.0004	0.00073	0.2
Passive Closure	38	2058-07-01	0.00046	0.021	0.0018	0.01	0.000085	60	0.00046	0.00075	0.22
Passive Closure	38	2058-08-01	0.00054	0.017	0.0015	0.0084	0.000075	56	0.00055	0.0011	0.18
Passive Closure	38	2058-09-01	0.00063	0.017	0.0013	0.0074	0.000074	53	0.00036	0.001	0.16
Passive Closure	38	2058-10-01	0.00026	0.022	0.0011	0.0069	0.000088	60	0.00032	0.001	0.16

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L
Transitional Closure	20	2040-05-01	0.000048	0.014	0.00061	0.0000044	0.00049	0.0000065	0.0015	0.0036	2.5
Transitional Closure	20	2040-06-01	0.000027	0.021	0.00038	0.0000049	0.00054	0.000006	0.0019	0.0021	1.6
Transitional Closure	20	2040-07-01	0.000019	0.021	0.00048	0.0000035	0.00053	0.0000077	0.0019	0.0025	2.2
Transitional Closure	20	2040-08-01	0.000081	0.022	0.00054	0.0000037	0.00048	0.0000076	0.0024	0.0026	1.9
Transitional Closure	20	2040-09-01	0.000047	0.013	0.00051	0.0000035	0.00064	0.0000068	0.002	0.003	1.7
Transitional Closure	20	2040-10-01	0.000061	0.024	0.00046	0.000003	0.0012	0.0000045	0.0026	0.0052	1.1
Transitional Closure	20	2040-11-01	0.00033	0.044	0.00066	0.0000033	0.0013	0.000006	0.0039	0.0071	0.98
Transitional Closure	20	2040-12-01	0.000033	0.031	0.00077	0.0000033	0.0014	0.0000064	0.0042	0.0081	1.6
Transitional Closure	20	2041-01-01	0.00008	0.044	0.00095	0.0000034	0.0016	0.000006	0.005	0.01	1.8
Transitional Closure	20	2041-02-01	0.000041	0.064	0.0013	0.0000033	0.0015	0.0000057	0.0067	0.013	0.36
Receiving Environment Water Quality Model - KZ-15 - Wet Year 20 Model			**Receiving Environment Water Quality Model - KZ-15 - Wet Year 20 Model**								
Transitional Closure	20	2040-03-01	0.000036	0.062	0.0013	0.0000031	0.0016	0.0000048	0.0059	0.013	0.78
Transitional Closure	20	2040-04-01	0.000058	0.021	0.00096	0.0000033	0.0012	0.0000045	0.005	0.0088	1.1
Transitional Closure	20	2040-05-01	0.000046	0.0082	0.00052	0.0000036	0.00041	0.0000033	0.0012	0.003	2.2
Transitional Closure	20	2040-06-01	0.000021	0.015	0.00032	0.0000039	0.00043	0.0000018	0.0014	0.0014	1.5
Transitional Closure	20	2040-07-01	0.000014	0.016	0.00043	0.0000027	0.00041	0.000003	0.0014	0.0022	2.1
Transitional Closure	20	2040-08-01	0.000073	0.016	0.0005	0.0000028	0.00035	0.0000027	0.0018	0.0018	1.9
Transitional Closure	20	2040-09-01	0.000043	0.0075	0.00047	0.0000027	0.00054	0.0000028	0.0015	0.0025	1.7
Transitional Closure	20	2040-10-01	0.000061	0.022	0.00045	0.0000026	0.0011	0.0000023	0.0024	0.0051	1.2
Transitional Closure	20	2040-11-01	0.00032	0.041	0.00065	0.0000029	0.0013	0.0000038	0.0037	0.0066	1
Transitional Closure	20	2040-12-01	0.000031	0.028	0.00075	0.000003	0.0014	0.0000049	0.0041	0.0073	1.6
Transitional Closure	20	2041-01-01	0.000079	0.041	0.00092	0.0000032	0.0015	0.000005	0.0048	0.0097	1.7
Transitional Closure	20	2041-02-01	0.00004	0.059	0.0012	0.000003	0.0014	0.0000049	0.0066	0.013	0.34
Receiving Environment Water Quality Model - KZ-15 - Dry Year 38 Model			**Receiving Environment Water Quality Model - KZ-15 - Dry Year 38 Model**								
Passive Closure	38	2058-03-01	0.0027	0.16	0.0021	0.0000067	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	38	2058-04-01	0.003	0.14	0.0018	0.0000074	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	38	2058-05-01	0.0025	0.098	0.0011	0.0000067	0.00059	0.000032	0.0035	0.011	2.6
Passive Closure	38	2058-06-01	0.0021	0.11	0.001	0.0000071	0.00056	0.000029	0.004	0.0076	1.4
Passive Closure	38	2058-07-01	0.0024	0.12	0.0012	0.0000065	0.00054	0.000034	0.0043	0.009	1.9
Passive Closure	38	2058-08-01	0.002	0.1	0.0012	0.0000062	0.00044	0.000029	0.0042	0.0078	1.9
Passive Closure	38	2058-09-01	0.0018	0.084	0.0011	0.0000057	0.00062	0.000025	0.0036	0.0082	1.8
Passive Closure	38	2058-10-01	0.0016	0.089	0.00098	0.0000051	0.0012	0.000022	0.0042	0.0095	1.2

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	20	2040-05-01	0.021	0.00028	0.00078	0.00002	24	0.000034	0.0014	0.024
Transitional Closure	20	2040-06-01	0.01	0.0003	0.00078	0.00002	34	0.000029	0.00079	0.0085
Transitional Closure	20	2040-07-01	0.0079	0.00034	0.0008	0.000017	45	0.000026	0.00066	0.0061
Transitional Closure	20	2040-08-01	0.0073	0.00033	0.0009	0.000019	45	0.00021	0.00086	0.0069
Transitional Closure	20	2040-09-01	0.0073	0.0003	0.00075	0.000019	43	0.000024	0.00091	0.0083
Transitional Closure	20	2040-10-01	0.004	0.00018	0.0007	0.000025	51	0.000014	0.00077	0.0068
Transitional Closure	20	2040-11-01	0.0046	0.00026	0.0007	0.000039	59	0.000024	0.0011	0.0091
Transitional Closure	20	2040-12-01	0.0041	0.00027	0.00072	0.000056	64	0.000029	0.0013	0.013
Transitional Closure	20	2041-01-01	0.005	0.00025	0.00068	0.000056	71	0.000033	0.0016	0.013
Transitional Closure	20	2041-02-01	0.0039	0.00023	0.00066	0.000075	76	0.000027	0.0019	0.016
Receiving Environment Water Quality Model - KZ-15 - Wet Year 20 Model										
Transitional Closure	20	2040-03-01	0.0032	0.00018	0.0006	0.000084	80	0.000032	0.002	0.019
Transitional Closure	20	2040-04-01	0.0038	0.00016	0.00056	0.000055	77	0.000041	0.0024	0.022
Transitional Closure	20	2040-05-01	0.018	0.00014	0.00055	0.000015	23	0.000024	0.0011	0.023
Transitional Closure	20	2040-06-01	0.007	0.0001	0.00046	0.000014	31	0.000021	0.00055	0.0071
Transitional Closure	20	2040-07-01	0.0045	0.00012	0.00044	0.000011	43	0.000017	0.00041	0.0054
Transitional Closure	20	2040-08-01	0.0039	0.0001	0.00053	0.000011	42	0.00021	0.00054	0.0053
Transitional Closure	20	2040-09-01	0.0045	0.00011	0.00044	0.000012	42	0.000016	0.00062	0.0071
Transitional Closure	20	2040-10-01	0.0026	0.000085	0.00054	0.000023	51	0.0000091	0.00046	0.0052
Transitional Closure	20	2040-11-01	0.0032	0.00016	0.00054	0.000033	59	0.000018	0.0007	0.0068
Transitional Closure	20	2040-12-01	0.0031	0.0002	0.00061	0.00005	63	0.000022	0.001	0.012
Transitional Closure	20	2041-01-01	0.0043	0.0002	0.0006	0.00005	69	0.000027	0.0013	0.011
Transitional Closure	20	2041-02-01	0.0034	0.0002	0.00059	0.000069	74	0.000024	0.0016	0.014
Receiving Environment Water Quality Model - KZ-15 - Dry Year 38 Model										
Passive Closure	38	2058-03-01	0.016	0.0019	0.011	0.00014	90	0.0005	0.002	0.23
Passive Closure	38	2058-04-01	0.018	0.002	0.012	0.00012	90	0.00055	0.0023	0.25
Passive Closure	38	2058-05-01	0.028	0.0015	0.0084	0.000075	39	0.00037	0.0015	0.19
Passive Closure	38	2058-06-01	0.018	0.0015	0.0089	0.000071	47	0.0004	0.00087	0.17
Passive Closure	38	2058-07-01	0.017	0.0018	0.01	0.00008	59	0.00045	0.00081	0.19
Passive Closure	38	2058-08-01	0.015	0.0015	0.0084	0.000066	55	0.00056	0.001	0.16
Passive Closure	38	2058-09-01	0.014	0.0013	0.0073	0.000063	53	0.00032	0.0011	0.14
Passive Closure	38	2058-10-01	0.011	0.0011	0.0068	0.000068	60	0.00029	0.00089	0.13

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Transitional Closure	20	2040-05-01	0.000018	0.0096	0.0006	0.0000029	0.00051	0.0000061	0.0015	0.0029
Transitional Closure	20	2040-06-01	0.000013	0.011	0.00051	0.0000036	0.00056	0.0000065	0.0019	0.0018
Transitional Closure	20	2040-07-01	0.000011	0.013	0.00047	0.0000036	0.00048	0.0000073	0.0019	0.0021
Transitional Closure	20	2040-08-01	0.000063	0.014	0.00054	0.0000037	0.00048	0.0000075	0.0023	0.0019
Transitional Closure	20	2040-09-01	0.000018	0.0086	0.00047	0.0000035	0.00058	0.0000068	0.0019	0.0026
Transitional Closure	20	2040-10-01	0.0000078	0.0066	0.00039	0.000003	0.0011	0.0000045	0.0026	0.0034
Transitional Closure	20	2040-11-01	0.000011	0.023	0.00059	0.0000033	0.0013	0.0000061	0.0036	0.0053
Transitional Closure	20	2040-12-01	0.0000089	0.022	0.00079	0.0000033	0.0016	0.0000063	0.0043	0.0074
Transitional Closure	20	2041-01-01	0.000048	0.034	0.0009	0.0000033	0.0015	0.0000059	0.0049	0.01
Transitional Closure	20	2041-02-01	0.00001	0.041	0.0011	0.0000033	0.0015	0.0000057	0.0064	0.011
Receiving Environment Water Quality Model - KZ-15 - Wet Year 20 Model										
Transitional Closure	20	2040-03-01	0.000011	0.045	0.0012	0.0000031	0.0016	0.0000048	0.0058	0.013
Transitional Closure	20	2040-04-01	0.000027	0.013	0.001	0.0000031	0.0012	0.0000045	0.005	0.008
Transitional Closure	20	2040-05-01	0.000011	0.0059	0.00053	0.0000022	0.00043	0.0000031	0.0011	0.0023
Transitional Closure	20	2040-06-01	0.0000058	0.0053	0.00046	0.0000027	0.00045	0.0000023	0.0014	0.0012
Transitional Closure	20	2040-07-01	0.0000043	0.0071	0.00043	0.0000027	0.00036	0.0000026	0.0013	0.0017
Transitional Closure	20	2040-08-01	0.000056	0.0082	0.0005	0.0000028	0.00036	0.0000027	0.0017	0.0011
Transitional Closure	20	2040-09-01	0.000013	0.0039	0.00043	0.0000027	0.00048	0.0000027	0.0015	0.002
Transitional Closure	20	2040-10-01	0.0000049	0.0042	0.00038	0.0000026	0.001	0.0000024	0.0024	0.0031
Transitional Closure	20	2040-11-01	0.0000075	0.021	0.00057	0.0000029	0.0013	0.0000039	0.0034	0.0047
Transitional Closure	20	2040-12-01	0.0000066	0.019	0.00077	0.000003	0.0015	0.0000048	0.0041	0.0065
Transitional Closure	20	2041-01-01	0.000045	0.031	0.00088	0.000003	0.0015	0.0000049	0.0047	0.0093
Transitional Closure	20	2041-02-01	0.0000092	0.037	0.0011	0.000003	0.0015	0.0000049	0.0063	0.01
Receiving Environment Water Quality Model - KZ-15 - Dry Year 38 Model										
Passive Closure	38	2058-03-01	0.0027	0.14	0.002	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	38	2058-04-01	0.003	0.14	0.0019	0.0000071	0.0012	0.000038	0.0079	0.013
Passive Closure	38	2058-05-01	0.0024	0.096	0.0012	0.0000054	0.00061	0.000032	0.0035	0.01
Passive Closure	38	2058-06-01	0.0021	0.1	0.0012	0.0000063	0.00058	0.000029	0.004	0.0073
Passive Closure	38	2058-07-01	0.0024	0.12	0.0012	0.0000067	0.00047	0.000033	0.0042	0.0084
Passive Closure	38	2058-08-01	0.002	0.096	0.0012	0.0000062	0.00044	0.000028	0.0041	0.0069
Passive Closure	38	2058-09-01	0.0017	0.082	0.001	0.0000057	0.00056	0.000025	0.0035	0.0074
Passive Closure	38	2058-10-01	0.0016	0.074	0.00091	0.000005	0.0011	0.000022	0.0041	0.0082

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	38	2058-11-01	250	56	0.18	0.0014	0.012	0.0063	0.11	0.16	0.00018
Passive Closure	38	2058-12-01	270	61	0.19	0.0013	0.016	0.0072	0.12	0.53	0.00017
Passive Closure	38	2059-01-01	290	66	0.21	0.0013	0.031	0.0077	0.12	0.85	0.00026
Passive Closure	38	2059-02-01	310	73	0.19	0.0012	0.013	0.0093	0.14	0.48	0.00026
Receiving Environment Water Quality Model - KZ-15 - Wet Year 38 Model											
Passive Closure	38	2058-03-01	330	77	0.18	0.0011	0.013	0.01	0.14	0.62	0.00044
Passive Closure	38	2058-04-01	290	70	0.15	0.00057	0.0074	0.0068	0.14	0.51	0.00028
Passive Closure	38	2058-05-01	140	41	0.042	0.0012	0.0066	0.0088	0.078	0.7	0.00046
Passive Closure	38	2058-06-01	160	45	0.028	0.0011	0.013	0.0084	0.088	0.53	0.00058
Passive Closure	38	2058-07-01	190	46	0.017	0.0012	0.017	0.0044	0.087	0.3	0.00039
Passive Closure	38	2058-08-01	180	41	0.017	0.0028	0.007	0.006	0.083	0.35	0.00041
Passive Closure	38	2058-09-01	170	41	0.035	0.0012	0.0064	0.0052	0.079	0.6	0.00068
Passive Closure	38	2058-10-01	190	46	0.13	0.0011	0.0048	0.0069	0.091	0.43	0.00026
Passive Closure	38	2058-11-01	240	51	0.17	0.0013	0.011	0.0059	0.11	0.15	0.00019
Passive Closure	38	2058-12-01	260	57	0.19	0.0012	0.015	0.0067	0.12	0.53	0.00017
Passive Closure	38	2059-01-01	280	63	0.21	0.0012	0.031	0.0072	0.11	0.85	0.00026
Passive Closure	38	2059-02-01	310	70	0.19	0.0012	0.013	0.009	0.14	0.48	0.00026

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L
Passive Closure	38	2058-11-01	0.00029	0.022	0.0013	0.008	0.00011	70	0.00038	0.0013	0.19
Passive Closure	38	2058-12-01	0.00025	0.024	0.0015	0.009	0.00011	76	0.00041	0.0015	0.21
Passive Closure	38	2059-01-01	0.00026	0.021	0.0017	0.01	0.00013	82	0.00047	0.0018	0.28
Passive Closure	38	2059-02-01	0.00027	0.024	0.0018	0.011	0.00016	84	0.00048	0.0019	0.25
Receiving Environment Water Quality Model - KZ-15 - Wet Year 38 Model											
Passive Closure	38	2058-03-01	0.00045	0.022	0.0018	0.011	0.00015	91	0.0005	0.002	0.25
Passive Closure	38	2058-04-01	0.00028	0.022	0.002	0.012	0.00012	82	0.00055	0.0022	0.28
Passive Closure	38	2058-05-01	0.00055	0.038	0.0013	0.0075	0.000077	41	0.00035	0.0011	0.22
Passive Closure	38	2058-06-01	0.00049	0.018	0.0013	0.0077	0.000063	48	0.00035	0.00053	0.18
Passive Closure	38	2058-07-01	0.00048	0.016	0.0012	0.0071	0.000066	55	0.00033	0.00052	0.17
Passive Closure	38	2058-08-01	0.00054	0.013	0.0011	0.0068	0.000063	54	0.00049	0.00078	0.15
Passive Closure	38	2058-09-01	0.00064	0.014	0.00099	0.006	0.000065	51	0.0003	0.00075	0.14
Passive Closure	38	2058-10-01	0.00026	0.019	0.00087	0.0055	0.000077	58	0.00025	0.00071	0.13
Passive Closure	38	2058-11-01	0.00029	0.019	0.0011	0.0065	0.000093	68	0.00032	0.00091	0.16
Passive Closure	38	2058-12-01	0.00025	0.022	0.0013	0.0078	0.0001	74	0.00035	0.0012	0.19
Passive Closure	38	2059-01-01	0.00026	0.02	0.0015	0.009	0.00013	80	0.00043	0.0015	0.28
Passive Closure	38	2059-02-01	0.00027	0.023	0.0016	0.0099	0.00015	82	0.00045	0.0017	0.24

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

			Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon
Phase	**Year**	**Date**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Passive Closure	38	2058-11-01	0.0022	0.12	0.0013	0.0000055	0.0013	0.000025	0.0056	0.012	1
Passive Closure	38	2058-12-01	0.0021	0.12	0.0014	0.000006	0.0014	0.000029	0.0062	0.013	1.7
Passive Closure	38	2059-01-01	0.0024	0.14	0.0017	0.0000064	0.0015	0.000032	0.0071	0.015	1.9
Passive Closure	38	2059-02-01	0.0026	0.15	0.002	0.0000066	0.0014	0.000034	0.0091	0.018	0.42
Receiving Environment Water Quality Model - KZ-15 - Wet Year 38 Model			**Receiving Environment Water Quality Model - KZ-15 - Wet Year 38 Model**								
Passive Closure	38	2058-03-01	0.0027	0.15	0.002	0.0000066	0.0016	0.000035	0.0085	0.018	0.9
Passive Closure	38	2058-04-01	0.0029	0.14	0.0018	0.0000073	0.0012	0.000038	0.0079	0.014	1.1
Passive Closure	38	2058-05-01	0.0025	0.089	0.001	0.0000061	0.00057	0.00003	0.0031	0.011	2.7
Passive Closure	38	2058-06-01	0.002	0.096	0.0009	0.0000063	0.00052	0.000025	0.0034	0.0072	1.4
Passive Closure	38	2058-07-01	0.0018	0.091	0.00098	0.0000053	0.00048	0.000024	0.0032	0.0077	2
Passive Closure	38	2058-08-01	0.0018	0.086	0.001	0.0000053	0.00038	0.000023	0.0035	0.0069	1.9
Passive Closure	38	2058-09-01	0.0016	0.068	0.00095	0.0000049	0.00058	0.000021	0.003	0.0076	1.8
Passive Closure	38	2058-10-01	0.0013	0.074	0.00086	0.0000045	0.0012	0.000017	0.0037	0.0084	1.3
Passive Closure	38	2058-11-01	0.0018	0.1	0.0011	0.0000049	0.0013	0.00002	0.0052	0.011	1
Passive Closure	38	2058-12-01	0.0018	0.1	0.0013	0.0000054	0.0014	0.000025	0.0058	0.012	1.7
Passive Closure	38	2059-01-01	0.0022	0.13	0.0016	0.000006	0.0015	0.000028	0.0068	0.015	1.9
Passive Closure	38	2059-02-01	0.0024	0.14	0.002	0.0000062	0.0014	0.000031	0.0088	0.017	0.4

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L
Passive Closure	38	2058-11-01	0.012	0.0013	0.0078	0.000082	69	0.00035	0.0012	0.15
Passive Closure	38	2058-12-01	0.013	0.0015	0.0089	0.0001	74	0.0004	0.0014	0.18
Passive Closure	38	2059-01-01	0.015	0.0016	0.0098	0.00011	82	0.00044	0.0016	0.19
Passive Closure	38	2059-02-01	0.015	0.0018	0.011	0.00013	86	0.00047	0.0018	0.21
Receiving Environment Water Quality Model - KZ-15 - Wet Year 38 Model										
Passive Closure	38	2058-03-01	0.016	0.0018	0.011	0.00014	90	0.00049	0.002	0.22
Passive Closure	38	2058-04-01	0.018	0.002	0.012	0.00012	89	0.00054	0.0022	0.24
Passive Closure	38	2058-05-01	0.026	0.0013	0.0076	0.000069	37	0.00034	0.0013	0.17
Passive Closure	38	2058-06-01	0.016	0.0013	0.0077	0.000062	45	0.00035	0.00068	0.15
Passive Closure	38	2058-07-01	0.012	0.0012	0.0071	0.000059	54	0.00032	0.00056	0.14
Passive Closure	38	2058-08-01	0.012	0.0011	0.0068	0.000053	53	0.00049	0.00072	0.13
Passive Closure	38	2058-09-01	0.011	0.00099	0.0059	0.000051	51	0.00026	0.00078	0.12
Passive Closure	38	2058-10-01	0.0086	0.00087	0.0054	0.000055	58	0.00023	0.00059	0.1
Passive Closure	38	2058-11-01	0.0099	0.0011	0.0064	0.000069	67	0.00028	0.00082	0.12
Passive Closure	38	2058-12-01	0.011	0.0013	0.0077	0.000092	72	0.00034	0.0011	0.15
Passive Closure	38	2059-01-01	0.014	0.0015	0.0088	0.000098	80	0.00039	0.0014	0.17
Passive Closure	38	2059-02-01	0.014	0.0016	0.0097	0.00012	85	0.00044	0.0016	0.19

Appendix F2: Receiving Environment Water Quality Model Results - Upper Finlayson Creek KZ-15

Phase	Year	Date	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Passive Closure	38	2058-11-01	0.0018	0.098	0.0012	0.0000055	0.0013	0.000025	0.0053	0.01
Passive Closure	38	2058-12-01	0.0021	0.11	0.0015	0.0000059	0.0015	0.000029	0.0062	0.012
Passive Closure	38	2059-01-01	0.0024	0.13	0.0016	0.0000062	0.0015	0.000031	0.007	0.015
Passive Closure	38	2059-02-01	0.0025	0.13	0.0019	0.0000065	0.0015	0.000034	0.0087	0.016
Receiving Environment Water Quality Model - KZ-15 - Wet Year 38 Model										
Passive Closure	38	2058-03-01	0.0026	0.14	0.0019	0.0000066	0.0016	0.000035	0.0084	0.018
Passive Closure	38	2058-04-01	0.0029	0.14	0.0019	0.000007	0.0012	0.000037	0.0078	0.013
Passive Closure	38	2058-05-01	0.0025	0.087	0.0011	0.0000048	0.00059	0.00003	0.0031	0.01
Passive Closure	38	2058-06-01	0.002	0.086	0.0011	0.0000056	0.00053	0.000025	0.0034	0.0069
Passive Closure	38	2058-07-01	0.0018	0.081	0.001	0.0000052	0.00041	0.000023	0.0031	0.0069
Passive Closure	38	2058-08-01	0.0018	0.077	0.001	0.0000052	0.00039	0.000023	0.0034	0.0059
Passive Closure	38	2058-09-01	0.0016	0.066	0.00091	0.0000048	0.00051	0.00002	0.0029	0.0068
Passive Closure	38	2058-10-01	0.0012	0.058	0.00079	0.0000044	0.0011	0.000017	0.0037	0.0068
Passive Closure	38	2058-11-01	0.0015	0.083	0.0011	0.0000048	0.0013	0.00002	0.0049	0.009
Passive Closure	38	2058-12-01	0.0018	0.093	0.0014	0.0000054	0.0015	0.000025	0.0058	0.011
Passive Closure	38	2059-01-01	0.0021	0.12	0.0016	0.0000058	0.0014	0.000028	0.0067	0.014
Passive Closure	38	2059-02-01	0.0023	0.12	0.0018	0.0000061	0.0014	0.000031	0.0085	0.015

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Receiving Environment Water Quality Model - KZ-26 - Mean Model													
Baseline	-3	2018-03-01	360	54	0.24	0.00099	0.021	0.0046	0.14	0.81	0.00062	0.00023	0.0021
Baseline	-3	2018-04-01	290	44	0.23	0.00088	0.0052	0.0053	0.13	0.55	0.00053	0.00035	0.0095
Baseline	-3	2018-05-01	130	21	0.029	0.00094	0.0092	0.017	0.085	1	0.00064	0.00055	0.039
Baseline	-3	2018-06-01	160	22	0.0095	0.00096	0.017	0.01	0.096	0.82	0.00064	0.00048	0.11
Baseline	-3	2018-07-01	210	31	0.0083	0.0017	0.012	0.019	0.11	0.55	0.00049	0.0005	0.043
Baseline	-3	2018-08-01	210	28	0.0028	0.0025	0.0049	0.013	0.09	0.28	0.00046	0.00051	0.028
Baseline	-3	2018-09-01	200	30	0.02	0.001	0.0092	0.0061	0.097	0.87	0.00054	0.00056	0.028
Baseline	-3	2018-10-01	220	35	0.073	0.00098	0.051	0.0069	0.11	0.6	0.0005	0.00025	0.01
Baseline	-3	2018-11-01	250	40	0.14	0.001	0.0072	0.0025	0.12	0.5	0.00054	0.00058	0.0054
Baseline	-3	2018-12-01	290	42	0.2	0.00098	0.011	0.0046	0.11	0.66	0.00051	0.00025	0.027
Baseline	-3	2019-01-01	290	44	0.25	0.00098	0.034	0.0079	0.12	0.64	0.00025	0.00025	0.0092
Baseline	-3	2019-02-01	300	47	0.28	0.00099	0.037	0.0064	0.12	0.77	0.00025	0.00026	0.017
Construction	-2	2019-03-01	370	55	0.24	0.001	0.021	0.0047	0.14	0.81	0.00062	0.00024	0.0021
Construction	-2	2019-04-01	290	44	0.23	0.0009	0.0055	0.0053	0.13	0.56	0.00054	0.00035	0.0095
Construction	-2	2019-05-01	130	21	0.029	0.00094	0.0093	0.018	0.085	1	0.00065	0.00056	0.039
Construction	-2	2019-06-01	160	23	0.011	0.00099	0.018	0.011	0.098	0.84	0.00066	0.0005	0.11
Construction	-2	2019-07-01	210	32	0.0096	0.0017	0.013	0.019	0.11	0.56	0.00051	0.00055	0.043
Construction	-2	2019-08-01	210	28	0.0032	0.0025	0.0052	0.013	0.091	0.28	0.00048	0.00052	0.028
Construction	-2	2019-09-01	200	32	0.022	0.0011	0.012	0.0062	0.099	0.89	0.00053	0.00055	0.028
Construction	-2	2019-10-01	220	38	0.074	0.001	0.055	0.007	0.11	0.62	0.00049	0.00025	0.01
Construction	-2	2019-11-01	270	47	0.14	0.0011	0.015	0.0026	0.12	0.56	0.00051	0.00056	0.0054
Construction	-2	2019-12-01	310	52	0.19	0.0011	0.023	0.0048	0.11	0.73	0.00047	0.00022	0.027
Construction	-2	2020-01-01	320	56	0.24	0.0012	0.047	0.0082	0.12	0.74	0.00022	0.00023	0.0087
Construction	-2	2020-02-01	330	60	0.27	0.0012	0.049	0.0067	0.12	0.89	0.00022	0.00022	0.017
Construction	-1	2020-03-01	370	60	0.24	0.0014	0.029	0.0044	0.13	0.85	0.00057	0.0002	0.0022
Construction	-1	2020-04-01	300	51	0.23	0.0013	0.015	0.0055	0.13	0.55	0.00047	0.0003	0.0087
Construction	-1	2020-05-01	130	22	0.058	0.0016	0.014	0.017	0.085	1	0.00061	0.00053	0.037
Construction	-1	2020-06-01	160	23	0.034	0.0015	0.021	0.011	0.097	0.82	0.00063	0.00047	0.11
Construction	-1	2020-07-01	210	32	0.043	0.0025	0.017	0.019	0.11	0.55	0.00049	0.00052	0.042
Construction	-1	2020-08-01	210	29	0.04	0.0033	0.011	0.013	0.091	0.26	0.00044	0.00049	0.028
Construction	-1	2020-09-01	200	31	0.059	0.0018	0.015	0.0064	0.098	0.86	0.00051	0.00053	0.028
Construction	-1	2020-10-01	220	37	0.11	0.0019	0.058	0.007	0.11	0.61	0.00049	0.00024	0.01

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Receiving Environment Water Quality Model - KZ-26 - Mean Model												**Receiving Envir**
Baseline	-3	2018-03-01	0.00006	0.00049	0.000022	95	0.0000053	0.00034	0.018	0.000024	0.013	0.00066
Baseline	-3	2018-04-01	0.000066	0.00067	0.000012	77	0.00003	0.00033	0.13	0.000031	0.004	0.00082
Baseline	-3	2018-05-01	0.000071	0.0013	0.000017	35	0.000075	0.0011	0.28	0.000077	0.015	0.0018
Baseline	-3	2018-06-01	0.00012	0.0011	0.000035	43	0.00019	0.0014	0.29	0.00027	0.015	0.0019
Baseline	-3	2018-07-01	0.00016	0.0012	0.000021	54	0.00015	0.00094	0.21	0.00016	0.016	0.0017
Baseline	-3	2018-08-01	0.00012	0.00058	0.000013	56	0.00021	0.00087	0.16	0.00022	0.0068	0.0017
Baseline	-3	2018-09-01	0.0001	0.0011	0.000017	52	0.00018	0.001	0.17	0.000066	0.02	0.0016
Baseline	-3	2018-10-01	0.00005	0.0014	0.000025	58	0.000072	0.00042	0.23	0.000027	0.045	0.0012
Baseline	-3	2018-11-01	0.000068	0.0005	0.00002	66	0.000017	0.00047	0.025	0.00012	0.014	0.00082
Baseline	-3	2018-12-01	0.00007	0.00065	0.000023	78	0.000093	0.00058	0.087	0.000099	0.019	0.0011
Baseline	-3	2019-01-01	0.000085	0.00047	0.000032	76	0.000021	0.00065	0.077	0.00077	0.013	0.0008
Baseline	-3	2019-02-01	0.000071	0.00052	0.000026	80	0.000028	0.00054	0.15	0.00022	0.014	0.00086
Construction	-2	2019-03-01	0.00006	0.0005	0.000022	96	0.0000057	0.00034	0.017	0.000024	0.013	0.00067
Construction	-2	2019-04-01	0.000067	0.00067	0.000012	78	0.000031	0.00034	0.13	0.000031	0.0041	0.00083
Construction	-2	2019-05-01	0.000072	0.0013	0.000017	35	0.000076	0.0012	0.28	0.000075	0.016	0.0018
Construction	-2	2019-06-01	0.00012	0.0012	0.000035	44	0.00019	0.0014	0.29	0.00027	0.016	0.0019
Construction	-2	2019-07-01	0.00016	0.0012	0.00002	56	0.00015	0.00098	0.21	0.00016	0.016	0.0018
Construction	-2	2019-08-01	0.00012	0.00058	0.000012	57	0.00021	0.00088	0.16	0.00022	0.0073	0.0017
Construction	-2	2019-09-01	0.00011	0.0012	0.000022	54	0.00018	0.001	0.17	0.000067	0.026	0.0017
Construction	-2	2019-10-01	0.000059	0.0016	0.00003	60	0.000083	0.00043	0.22	0.000029	0.053	0.0012
Construction	-2	2019-11-01	0.000087	0.00077	0.000034	69	0.000038	0.0005	0.024	0.00013	0.03	0.00085
Construction	-2	2019-12-01	0.000097	0.001	0.000042	82	0.00012	0.00063	0.088	0.00011	0.038	0.0011
Construction	-2	2020-01-01	0.00012	0.00091	0.000055	81	0.000055	0.00071	0.07	0.00078	0.039	0.00088
Construction	-2	2020-02-01	0.00011	0.001	0.000058	85	0.000074	0.0006	0.15	0.00023	0.041	0.00094
Construction	-1	2020-03-01	0.000089	0.00076	0.000037	95	0.000035	0.00037	0.014	0.00003	0.027	0.00075
Construction	-1	2020-04-01	0.000096	0.00095	0.000028	78	0.000062	0.00035	0.12	0.000037	0.024	0.00092
Construction	-1	2020-05-01	0.000082	0.0013	0.000016	35	0.000081	0.0011	0.27	0.000061	0.019	0.0018
Construction	-1	2020-06-01	0.00013	0.0012	0.000036	43	0.00019	0.0014	0.28	0.00026	0.019	0.002
Construction	-1	2020-07-01	0.00018	0.0013	0.000018	54	0.00016	0.00094	0.2	0.00016	0.02	0.0018
Construction	-1	2020-08-01	0.00015	0.00066	0.000015	56	0.00022	0.00086	0.15	0.00022	0.013	0.0018
Construction	-1	2020-09-01	0.00013	0.0012	0.00002	52	0.00019	0.001	0.16	0.00006	0.027	0.0017
Construction	-1	2020-10-01	0.000089	0.0015	0.000025	58	0.000095	0.00042	0.22	0.000022	0.055	0.0014

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L
Receiving Environment Water Quality Model - KZ-26 - Mean Model			onment Water Quality Model - KZ-26 - Mean Model									
Baseline	-3	2018-03-01	0.0000025	0.0011	0.000001	0.0037	0.0034	1.9	0.0012	0.00007	0.00042	0.000017
Baseline	-3	2018-04-01	0.0000026	0.00084	0.000001	0.0036	0.0016	1.8	0.0016	0.000056	0.00046	0.000011
Baseline	-3	2018-05-01	0.0000045	0.00039	0.0000016	0.0013	0.002	5.2	0.0096	0.000064	0.00076	0.0000095
Baseline	-3	2018-06-01	0.000013	0.0004	0.0000034	0.0017	0.003	4.1	0.0061	0.000088	0.00074	0.0000087
Baseline	-3	2018-07-01	0.000005	0.00045	0.0000021	0.0019	0.0016	6.2	0.0052	0.00012	0.00087	0.0000077
Baseline	-3	2018-08-01	0.000005	0.00038	0.0000029	0.0019	0.0021	5	0.0039	0.000093	0.00061	0.0000046
Baseline	-3	2018-09-01	0.000005	0.0005	0.0000011	0.002	0.0024	5.5	0.0059	0.000091	0.00078	0.0000082
Baseline	-3	2018-10-01	0.0000025	0.00098	0.000001	0.0029	0.0027	2.9	0.0014	0.000054	0.00098	0.000013
Baseline	-3	2018-11-01	0.0000025	0.00089	0.000001	0.003	0.0029	2.4	0.0026	0.000073	0.00041	0.0000093
Baseline	-3	2018-12-01	0.0000025	0.0011	0.0000011	0.0032	0.0029	2.3	0.00079	0.000062	0.0004	0.000015
Baseline	-3	2019-01-01	0.0000043	0.00095	0.0000011	0.0035	0.0056	1.7	0.0024	0.000066	0.00032	0.000013
Baseline	-3	2019-02-01	0.0000025	0.00093	0.00000099	0.0035	0.0038	1.5	0.0011	0.000064	0.00039	0.000015
Construction	-2	2019-03-01	0.0000025	0.0011	0.000001	0.0037	0.0034	1.9	0.0012	0.00007	0.00043	0.000017
Construction	-2	2019-04-01	0.0000026	0.00085	0.000001	0.0036	0.0016	1.8	0.0017	0.000056	0.00046	0.000011
Construction	-2	2019-05-01	0.0000046	0.00039	0.0000017	0.0013	0.0019	5.2	0.0097	0.000065	0.00077	0.0000092
Construction	-2	2019-06-01	0.000013	0.00042	0.0000034	0.0017	0.003	4.3	0.0065	0.00009	0.00075	0.00001
Construction	-2	2019-07-01	0.0000051	0.00047	0.0000021	0.0019	0.0013	6.4	0.0056	0.00012	0.00088	0.0000074
Construction	-2	2019-08-01	0.0000051	0.00041	0.0000029	0.0019	0.0021	5.1	0.004	0.000094	0.00061	0.0000051
Construction	-2	2019-09-01	0.0000051	0.0005	0.0000012	0.0021	0.0034	5.6	0.006	0.000098	0.00088	0.000014
Construction	-2	2019-10-01	0.0000026	0.00097	0.0000012	0.0031	0.0039	2.9	0.0015	0.000063	0.0011	0.00002
Construction	-2	2019-11-01	0.0000026	0.00084	0.0000017	0.0033	0.0057	2.4	0.0028	0.000091	0.00068	0.000025
Construction	-2	2019-12-01	0.0000027	0.001	0.0000035	0.0036	0.0071	2.4	0.0012	0.000089	0.00078	0.000035
Construction	-2	2020-01-01	0.0000046	0.00088	0.0000088	0.004	0.01	1.8	0.0028	0.0001	0.00078	0.000038
Construction	-2	2020-02-01	0.0000028	0.00085	0.000012	0.004	0.0099	1.7	0.0017	0.00011	0.00089	0.000046
Construction	-1	2020-03-01	0.0000025	0.001	0.000015	0.0039	0.006	1.9	0.0014	0.000099	0.00069	0.000033
Construction	-1	2020-04-01	0.0000026	0.00079	0.000018	0.0038	0.0052	1.7	0.0018	0.000087	0.00075	0.000027
Construction	-1	2020-05-01	0.0000045	0.00038	0.0000065	0.0014	0.0019	4.9	0.0093	0.000076	0.00082	0.000011
Construction	-1	2020-06-01	0.000013	0.00042	0.0000091	0.0018	0.0032	4.2	0.0066	0.0001	0.00079	0.000011
Construction	-1	2020-07-01	0.0000047	0.00047	0.000012	0.002	0.0014	6.2	0.0059	0.00014	0.00094	0.0000086
Construction	-1	2020-08-01	0.000005	0.00043	0.000019	0.002	0.003	4.9	0.0043	0.00012	0.00069	0.0000094
Construction	-1	2020-09-01	0.000005	0.00055	0.000021	0.0021	0.003	5.5	0.0064	0.00012	0.00088	0.000012
Construction	-1	2020-10-01	0.0000025	0.001	0.000027	0.003	0.0033	2.9	0.0019	0.000093	0.0011	0.000016

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Receiving Environment Water Quality Model - KZ-26 - Mean Model											
Baseline	-3	2018-03-01	88	0.0000057	0.00033	0.003	0.000017	0.0086	0.00059	0.0000025	0.00098
Baseline	-3	2018-04-01	81	0.000021	0.00037	0.013	0.0000071	0.0024	0.0008	0.0000025	0.00083
Baseline	-3	2018-05-01	35	0.000029	0.0009	0.094	0.0000071	0.0029	0.0012	0.0000023	0.00039
Baseline	-3	2018-06-01	38	0.000028	0.00071	0.044	0.000019	0.00086	0.0012	0.0000025	0.00037
Baseline	-3	2018-07-01	54	0.000047	0.00063	0.038	0.000021	0.0044	0.0013	0.0000024	0.00041
Baseline	-3	2018-08-01	53	0.0002	0.00061	0.03	0.000052	0.0021	0.00085	0.0000025	0.00036
Baseline	-3	2018-09-01	52	0.000043	0.00077	0.033	0.000012	0.002	0.0011	0.0000025	0.00047
Baseline	-3	2018-10-01	58	0.000038	0.00033	0.051	0.000003	0.022	0.00097	0.0000025	0.00091
Baseline	-3	2018-11-01	68	0.0000088	0.0004	0.0062	0.0000077	0.0065	0.00078	0.0000025	0.00089
Baseline	-3	2018-12-01	77	0.0000053	0.0004	0.008	0.0000088	0.0051	0.00072	0.0000025	0.00099
Baseline	-3	2019-01-01	80	0.0000048	0.00041	0.0067	0.000072	0.0081	0.0007	0.0000025	0.00098
Baseline	-3	2019-02-01	82	0.0000058	0.00041	0.0043	0.000021	0.0069	0.00069	0.0000025	0.00089
Construction	-2	2019-03-01	88	0.000006	0.00033	0.0031	0.000017	0.0094	0.0006	0.0000025	0.00099
Construction	-2	2019-04-01	81	0.000021	0.00038	0.013	0.0000072	0.0024	0.0008	0.0000025	0.00084
Construction	-2	2019-05-01	35	0.00003	0.00092	0.093	0.0000079	0.0028	0.0012	0.0000024	0.00039
Construction	-2	2019-06-01	39	0.000029	0.00076	0.044	0.000019	0.0013	0.0012	0.0000026	0.00039
Construction	-2	2019-07-01	56	0.000048	0.00066	0.038	0.000021	0.0047	0.0013	0.0000025	0.00044
Construction	-2	2019-08-01	54	0.0002	0.00062	0.03	0.000052	0.0025	0.00086	0.0000026	0.00038
Construction	-2	2019-09-01	53	0.000051	0.00078	0.035	0.000015	0.0085	0.0011	0.0000026	0.00047
Construction	-2	2019-10-01	60	0.00005	0.00034	0.054	0.0000075	0.031	0.00099	0.0000026	0.0009
Construction	-2	2019-11-01	71	0.000031	0.00044	0.012	0.000017	0.022	0.00081	0.0000026	0.00085
Construction	-2	2019-12-01	80	0.000039	0.00045	0.016	0.000022	0.029	0.00077	0.0000027	0.00093
Construction	-2	2020-01-01	85	0.000048	0.00046	0.017	0.000085	0.036	0.00079	0.0000027	0.00091
Construction	-2	2020-02-01	87	0.000055	0.00048	0.015	0.000039	0.039	0.00077	0.0000028	0.00081
Construction	-1	2020-03-01	87	0.000035	0.00036	0.0081	0.000026	0.023	0.00067	0.0000025	0.00093
Construction	-1	2020-04-01	81	0.000055	0.0004	0.017	0.000018	0.024	0.00089	0.0000026	0.00077
Construction	-1	2020-05-01	35	0.000035	0.00088	0.088	0.000008	0.0065	0.0012	0.0000023	0.00038
Construction	-1	2020-06-01	38	0.000036	0.00074	0.043	0.000021	0.0047	0.0012	0.0000024	0.00039
Construction	-1	2020-07-01	54	0.000059	0.00064	0.037	0.000023	0.0099	0.0014	0.0000024	0.00043
Construction	-1	2020-08-01	53	0.00021	0.00061	0.029	0.000054	0.0092	0.00094	0.0000025	0.0004
Construction	-1	2020-09-01	51	0.000058	0.00077	0.031	0.000013	0.0092	0.0012	0.0000025	0.00052
Construction	-1	2020-10-01	58	0.000061	0.00033	0.051	0.0000072	0.032	0.0011	0.0000025	0.00094

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Receiving Environment Water Quality Model - KZ-26 - Mean Model					
Baseline	-3	2018-03-01	0.0000011	0.0038	0.0041
Baseline	-3	2018-04-01	0.000001	0.0036	0.0012
Baseline	-3	2018-05-01	0.0000009	0.0013	0.0012
Baseline	-3	2018-06-01	0.00000084	0.0017	0.0007
Baseline	-3	2018-07-01	0.00000085	0.0018	0.0011
Baseline	-3	2018-08-01	0.000001	0.0018	0.0015
Baseline	-3	2018-09-01	0.000001	0.0019	0.0012
Baseline	-3	2018-10-01	0.000001	0.0028	0.0018
Baseline	-3	2018-11-01	0.000001	0.003	0.0022
Baseline	-3	2018-12-01	0.000001	0.0032	0.0022
Baseline	-3	2019-01-01	0.00000098	0.0035	0.0047
Baseline	-3	2019-02-01	0.00000099	0.0036	0.0028
Construction	-2	2019-03-01	0.0000011	0.0039	0.0041
Construction	-2	2019-04-01	0.000001	0.0036	0.0013
Construction	-2	2019-05-01	0.00000091	0.0013	0.0011
Construction	-2	2019-06-01	0.00000091	0.0017	0.00061
Construction	-2	2019-07-01	0.00000091	0.0018	0.00093
Construction	-2	2019-08-01	0.000001	0.0019	0.0015
Construction	-2	2019-09-01	0.0000011	0.0021	0.0022
Construction	-2	2019-10-01	0.0000012	0.003	0.0032
Construction	-2	2019-11-01	0.0000017	0.0033	0.0053
Construction	-2	2019-12-01	0.0000035	0.0036	0.0066
Construction	-2	2020-01-01	0.0000087	0.0039	0.0095
Construction	-2	2020-02-01	0.000012	0.0041	0.0089
Construction	-1	2020-03-01	0.000015	0.0041	0.006
Construction	-1	2020-04-01	0.000018	0.0039	0.0051
Construction	-1	2020-05-01	0.0000058	0.0014	0.0014
Construction	-1	2020-06-01	0.0000066	0.0018	0.0009
Construction	-1	2020-07-01	0.000011	0.0019	0.0013
Construction	-1	2020-08-01	0.000018	0.002	0.0027
Construction	-1	2020-09-01	0.000021	0.0021	0.002
Construction	-1	2020-10-01	0.000027	0.0029	0.0028

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-11-01	260	45	0.2	0.0024	0.018	0.0027	0.12	0.51	0.00052	0.00055	0.0061
Construction	-1	2020-12-01	300	49	0.26	0.0026	0.024	0.005	0.11	0.69	0.00049	0.00023	0.028
Construction	-1	2021-01-01	310	52	0.31	0.0025	0.047	0.0084	0.12	0.68	0.00023	0.00023	0.0087
Construction	-1	2021-02-01	320	56	0.34	0.0024	0.05	0.0067	0.12	0.81	0.00023	0.00023	0.018
Production	1	2021-03-01	360	55	0.26	0.0015	0.024	0.0048	0.14	0.81	0.00062	0.00023	0.0023
Production	1	2021-04-01	290	45	0.24	0.0013	0.008	0.0054	0.13	0.54	0.00053	0.00035	0.0096
Production	1	2021-05-01	130	22	0.08	0.0021	0.016	0.018	0.087	1	0.00064	0.00056	0.038
Production	1	2021-06-01	160	24	0.049	0.0018	0.023	0.011	0.1	0.83	0.00064	0.00048	0.11
Production	1	2021-07-01	210	33	0.058	0.0028	0.018	0.02	0.11	0.54	0.00051	0.00054	0.044
Production	1	2021-08-01	210	30	0.049	0.0035	0.011	0.013	0.094	0.26	0.00046	0.0005	0.03
Production	1	2021-09-01	200	31	0.062	0.0019	0.014	0.0064	0.1	0.85	0.00052	0.00054	0.029
Production	1	2021-10-01	220	36	0.1	0.0017	0.056	0.007	0.11	0.6	0.00049	0.00024	0.011
Production	1	2021-11-01	250	42	0.19	0.0021	0.013	0.0026	0.12	0.49	0.00053	0.00057	0.0067
Production	1	2021-12-01	290	45	0.24	0.0021	0.017	0.0048	0.11	0.65	0.00051	0.00024	0.028
Production	1	2022-01-01	290	47	0.29	0.002	0.039	0.008	0.12	0.63	0.00025	0.00025	0.0093
Production	1	2022-02-01	310	50	0.32	0.002	0.042	0.0064	0.12	0.76	0.00025	0.00025	0.019
Production	2	2022-03-01	370	58	0.27	0.0018	0.025	0.0048	0.14	0.81	0.00062	0.00023	0.0033
Production	2	2022-04-01	300	48	0.25	0.0015	0.0092	0.0053	0.13	0.54	0.00052	0.00035	0.01
Production	2	2022-05-01	130	25	0.11	0.0027	0.018	0.018	0.093	1	0.00064	0.00056	0.039
Production	2	2022-06-01	160	25	0.074	0.0024	0.025	0.011	0.1	0.83	0.00064	0.00048	0.11
Production	2	2022-07-01	210	35	0.094	0.0036	0.022	0.02	0.12	0.54	0.00051	0.00054	0.045
Production	2	2022-08-01	210	32	0.083	0.0043	0.014	0.014	0.098	0.26	0.00046	0.0005	0.031
Production	2	2022-09-01	200	33	0.093	0.0026	0.017	0.0066	0.11	0.85	0.00052	0.00054	0.03
Production	2	2022-10-01	220	38	0.13	0.0023	0.058	0.0071	0.11	0.6	0.00049	0.00024	0.012
Production	2	2022-11-01	260	45	0.22	0.0028	0.015	0.0029	0.13	0.49	0.00053	0.00056	0.0078
Production	2	2022-12-01	300	48	0.28	0.0029	0.02	0.0051	0.12	0.65	0.00051	0.00024	0.029
Production	2	2023-01-01	300	50	0.32	0.0027	0.042	0.0082	0.13	0.63	0.00024	0.00024	0.01
Production	2	2023-02-01	310	53	0.35	0.0026	0.044	0.0065	0.13	0.75	0.00024	0.00025	0.019
Production	3	2023-03-01	390	66	0.28	0.0021	0.027	0.0051	0.15	0.8	0.00061	0.00023	0.0038
Production	3	2023-04-01	330	61	0.27	0.0019	0.011	0.0056	0.14	0.53	0.00052	0.00034	0.011
Production	3	2023-05-01	170	39	0.14	0.0035	0.021	0.018	0.11	1	0.00065	0.00056	0.039
Production	3	2023-06-01	170	27	0.096	0.0029	0.027	0.011	0.11	0.82	0.00064	0.00048	0.11
Production	3	2023-07-01	230	39	0.12	0.0044	0.024	0.02	0.12	0.54	0.00051	0.00054	0.046
Production	3	2023-08-01	230	38	0.11	0.0049	0.016	0.014	0.11	0.26	0.00046	0.0005	0.032

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-11-01	0.00014	0.00074	0.000032	67	0.000062	0.00049	0.015	0.00012	0.032	0.0011
Construction	-1	2020-12-01	0.00015	0.00096	0.000042	80	0.00015	0.00062	0.08	0.00011	0.042	0.0015
Construction	-1	2021-01-01	0.00017	0.00079	0.000051	78	0.000076	0.00068	0.053	0.00077	0.037	0.0012
Construction	-1	2021-02-01	0.00015	0.00087	0.00005	83	0.000091	0.00058	0.14	0.00022	0.042	0.0012
Production	1	2021-03-01	0.000072	0.00052	0.000021	94	0.0000064	0.00034	0.014	0.000071	0.013	0.00067
Production	1	2021-04-01	0.000079	0.00069	0.000014	77	0.000031	0.00033	0.13	0.0001	0.004	0.00082
Production	1	2021-05-01	0.000093	0.0013	0.000018	34	0.000076	0.0012	0.28	0.00014	0.019	0.0018
Production	1	2021-06-01	0.00014	0.0012	0.000038	43	0.00019	0.0015	0.29	0.00032	0.018	0.002
Production	1	2021-07-01	0.00019	0.0013	0.000021	54	0.00016	0.00097	0.21	0.00024	0.019	0.0018
Production	1	2021-08-01	0.00015	0.00069	0.000016	55	0.00021	0.00088	0.16	0.00031	0.011	0.0017
Production	1	2021-09-01	0.00013	0.0012	0.00002	51	0.00018	0.001	0.17	0.00016	0.024	0.0017
Production	1	2021-10-01	0.000071	0.0015	0.000023	57	0.000074	0.00042	0.22	0.00013	0.049	0.0013
Production	1	2021-11-01	0.0001	0.00061	0.000023	64	0.000019	0.00049	0.025	0.00031	0.018	0.00086
Production	1	2021-12-01	0.00011	0.00077	0.000029	77	0.000094	0.0006	0.089	0.00034	0.023	0.0011
Production	1	2022-01-01	0.00013	0.00057	0.000038	75	0.000021	0.00066	0.066	0.001	0.017	0.00084
Production	1	2022-02-01	0.00011	0.00063	0.000035	79	0.000029	0.00056	0.15	0.00051	0.021	0.0009
Production	2	2022-03-01	0.000097	0.00063	0.000035	94	0.0000079	0.00037	0.03	0.00038	0.021	0.0007
Production	2	2022-04-01	0.0001	0.00081	0.000025	76	0.000033	0.00036	0.14	0.00041	0.0077	0.00085
Production	2	2022-05-01	0.00011	0.0014	0.000023	34	0.000077	0.0012	0.28	0.00019	0.025	0.0018
Production	2	2022-06-01	0.00016	0.0013	0.000039	43	0.00019	0.0015	0.29	0.00034	0.022	0.002
Production	2	2022-07-01	0.00021	0.0013	0.000023	54	0.00016	0.00099	0.21	0.00026	0.024	0.0018
Production	2	2022-08-01	0.00017	0.00073	0.000019	56	0.00021	0.0009	0.17	0.00034	0.016	0.0018
Production	2	2022-09-01	0.00015	0.0013	0.000022	52	0.00018	0.001	0.17	0.00018	0.029	0.0017
Production	2	2022-10-01	0.000085	0.0015	0.000024	57	0.000076	0.00043	0.22	0.00016	0.054	0.0013
Production	2	2022-11-01	0.00013	0.00069	0.000027	64	0.000022	0.00051	0.03	0.00037	0.025	0.00091
Production	2	2022-12-01	0.00014	0.00086	0.000034	77	0.000098	0.00063	0.093	0.00042	0.031	0.0012
Production	2	2023-01-01	0.00015	0.00066	0.000043	75	0.000024	0.00068	0.068	0.0011	0.025	0.00089
Production	2	2023-02-01	0.00013	0.00072	0.000041	79	0.000031	0.00058	0.16	0.0006	0.029	0.00095
Production	3	2023-03-01	0.00012	0.00074	0.00004	94	0.000011	0.00039	0.041	0.00043	0.027	0.00073
Production	3	2023-04-01	0.00012	0.00097	0.000031	76	0.000034	0.00039	0.16	0.00048	0.013	0.00087
Production	3	2023-05-01	0.00014	0.0017	0.000038	35	0.000079	0.0013	0.3	0.0003	0.042	0.002
Production	3	2023-06-01	0.00018	0.0013	0.00004	43	0.00019	0.0015	0.29	0.00033	0.023	0.002
Production	3	2023-07-01	0.00024	0.0014	0.000028	55	0.00016	0.001	0.22	0.00027	0.028	0.0018
Production	3	2023-08-01	0.0002	0.00084	0.000026	56	0.00021	0.00092	0.17	0.00035	0.023	0.0018

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-11-01	0.0000026	0.00095	0.000053	0.0032	0.0057	2.4	0.0036	0.00014	0.00065	0.000026
Construction	-1	2020-12-01	0.0000027	0.0011	0.000065	0.0035	0.007	2.3	0.002	0.00015	0.00071	0.000036
Construction	-1	2021-01-01	0.0000045	0.001	0.000064	0.0038	0.0099	1.7	0.0036	0.00015	0.00066	0.000037
Construction	-1	2021-02-01	0.0000027	0.001	0.000068	0.0039	0.0092	1.6	0.0023	0.00015	0.00074	0.000041
Production	1	2021-03-01	0.0000025	0.0011	0.0000031	0.0038	0.0029	1.9	0.0016	0.000083	0.00045	0.000017
Production	1	2021-04-01	0.0000027	0.00087	0.0000039	0.0036	0.0016	1.8	0.0019	0.000068	0.00049	0.000013
Production	1	2021-05-01	0.0000048	0.00044	0.0000086	0.0014	0.0018	5.1	0.01	0.000086	0.00083	0.000012
Production	1	2021-06-01	0.000013	0.00046	0.0000089	0.0018	0.0032	4.2	0.0075	0.00011	0.00082	0.000013
Production	1	2021-07-01	0.000005	0.00053	0.00001	0.002	0.0013	6.3	0.007	0.00015	0.00098	0.000011
Production	1	2021-08-01	0.0000052	0.00048	0.000012	0.002	0.0025	5	0.0052	0.00012	0.00071	0.00001
Production	1	2021-09-01	0.0000052	0.00058	0.000011	0.0021	0.0022	5.5	0.0071	0.00012	0.00088	0.000012
Production	1	2021-10-01	0.0000027	0.001	0.000011	0.003	0.0021	2.9	0.0022	0.000075	0.0011	0.000013
Production	1	2021-11-01	0.0000028	0.00095	0.000016	0.0031	0.0029	2.4	0.0039	0.00011	0.00052	0.000016
Production	1	2021-12-01	0.0000028	0.0011	0.000018	0.0033	0.0033	2.3	0.0022	0.0001	0.00051	0.000022
Production	1	2022-01-01	0.0000046	0.001	0.000018	0.0036	0.006	1.7	0.0036	0.00011	0.00043	0.000022
Production	1	2022-02-01	0.0000028	0.001	0.000018	0.0036	0.0049	1.6	0.0023	0.0001	0.0005	0.000025
Production	2	2022-03-01	0.0000029	0.0012	0.000019	0.0038	0.005	1.9	0.0021	0.00011	0.00056	0.00003
Production	2	2022-04-01	0.000003	0.001	0.000018	0.0037	0.0036	1.8	0.0023	0.000091	0.0006	0.000023
Production	2	2022-05-01	0.000005	0.0005	0.000024	0.0014	0.0024	5.1	0.011	0.0001	0.00092	0.000017
Production	2	2022-06-01	0.000013	0.00048	0.000016	0.0019	0.0033	4.2	0.0083	0.00013	0.00084	0.000015
Production	2	2022-07-01	0.0000052	0.00056	0.00002	0.0021	0.0015	6.3	0.0082	0.00017	0.001	0.000013
Production	2	2022-08-01	0.0000055	0.00051	0.000023	0.0021	0.0027	5	0.0063	0.00014	0.00076	0.000013
Production	2	2022-09-01	0.0000054	0.00061	0.000022	0.0021	0.0024	5.5	0.0081	0.00014	0.00092	0.000014
Production	2	2022-10-01	0.0000028	0.001	0.000021	0.003	0.0023	2.9	0.003	0.000089	0.0011	0.000015
Production	2	2022-11-01	0.000003	0.001	0.000032	0.0032	0.0033	2.4	0.005	0.00013	0.0006	0.00002
Production	2	2022-12-01	0.0000031	0.0012	0.000035	0.0034	0.0038	2.3	0.0034	0.00013	0.00061	0.000027
Production	2	2023-01-01	0.0000049	0.0011	0.000035	0.0037	0.0065	1.7	0.0047	0.00013	0.00053	0.000028
Production	2	2023-02-01	0.0000031	0.0011	0.000034	0.0037	0.0054	1.6	0.0032	0.00013	0.00059	0.000031
Production	3	2023-03-01	0.0000034	0.0013	0.000026	0.0039	0.0064	2	0.0027	0.00013	0.00067	0.000036
Production	3	2023-04-01	0.0000037	0.0011	0.000024	0.0037	0.0057	1.9	0.0029	0.00011	0.00076	0.00003
Production	3	2023-05-01	0.000006	0.0007	0.000058	0.0016	0.0046	5.2	0.012	0.00014	0.0012	0.000033
Production	3	2023-06-01	0.000013	0.0005	0.000017	0.002	0.0034	4.2	0.0092	0.00015	0.00087	0.000016
Production	3	2023-07-01	0.0000056	0.00061	0.000028	0.0022	0.002	6.3	0.0095	0.0002	0.0011	0.000018
Production	3	2023-08-01	0.0000059	0.00059	0.000036	0.0022	0.0034	5	0.0076	0.00017	0.00087	0.00002

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-11-01	69	0.000054	0.00043	0.008	0.000017	0.024	0.0011	0.0000026	0.00096
Construction	-1	2020-12-01	78	0.000063	0.00044	0.01	0.000021	0.029	0.0011	0.0000027	0.0011
Construction	-1	2021-01-01	82	0.000065	0.00045	0.011	0.000084	0.034	0.0011	0.0000027	0.0011
Construction	-1	2021-02-01	85	0.000071	0.00046	0.0095	0.000035	0.035	0.0011	0.0000027	0.00096
Production	1	2021-03-01	87	0.0000058	0.00033	0.0058	0.000066	0.009	0.0006	0.0000025	0.001
Production	1	2021-04-01	80	0.000021	0.00037	0.016	0.000078	0.0025	0.0008	0.0000026	0.00086
Production	1	2021-05-01	35	0.000031	0.00092	0.093	0.000081	0.0051	0.0012	0.0000025	0.00044
Production	1	2021-06-01	38	0.000032	0.00077	0.046	0.000078	0.0039	0.0012	0.0000026	0.00044
Production	1	2021-07-01	54	0.000051	0.00066	0.041	0.0001	0.0084	0.0014	0.0000027	0.0005
Production	1	2021-08-01	52	0.0002	0.00063	0.033	0.00015	0.0065	0.00088	0.0000027	0.00045
Production	1	2021-09-01	51	0.000043	0.00078	0.035	0.00011	0.0058	0.0011	0.0000027	0.00055
Production	1	2021-10-01	57	0.00004	0.00034	0.054	0.00012	0.026	0.00099	0.0000026	0.00095
Production	1	2021-11-01	66	0.00001	0.00042	0.013	0.0002	0.01	0.00081	0.0000028	0.00096
Production	1	2021-12-01	75	0.0000073	0.00042	0.016	0.00025	0.0097	0.00076	0.0000028	0.0011
Production	1	2022-01-01	79	0.0000069	0.00043	0.016	0.00034	0.014	0.00074	0.0000028	0.0011
Production	1	2022-02-01	81	0.0000077	0.00043	0.015	0.00032	0.013	0.00072	0.0000028	0.00098
Production	2	2022-03-01	87	0.0000063	0.00036	0.018	0.00037	0.015	0.00063	0.0000029	0.0011
Production	2	2022-04-01	80	0.000022	0.0004	0.029	0.00039	0.0071	0.00082	0.0000029	0.001
Production	2	2022-05-01	35	0.000033	0.00094	0.097	0.00014	0.012	0.0013	0.0000028	0.0005
Production	2	2022-06-01	38	0.000033	0.00078	0.048	0.000096	0.0074	0.0013	0.0000028	0.00046
Production	2	2022-07-01	54	0.000053	0.00068	0.044	0.00013	0.013	0.0014	0.0000029	0.00053
Production	2	2022-08-01	53	0.0002	0.00064	0.036	0.00017	0.012	0.00092	0.0000029	0.00048
Production	2	2022-09-01	51	0.000046	0.00079	0.038	0.00013	0.011	0.0012	0.0000029	0.00058
Production	2	2022-10-01	57	0.000041	0.00035	0.057	0.00014	0.031	0.001	0.0000028	0.00098
Production	2	2022-11-01	67	0.000013	0.00045	0.018	0.00026	0.018	0.00087	0.000003	0.001
Production	2	2022-12-01	75	0.0000099	0.00045	0.022	0.00033	0.018	0.00082	0.0000031	0.0011
Production	2	2023-01-01	79	0.0000099	0.00045	0.023	0.00044	0.022	0.0008	0.0000031	0.0011
Production	2	2023-02-01	81	0.0000098	0.00045	0.022	0.00041	0.021	0.00078	0.0000031	0.0011
Production	3	2023-03-01	86	0.000007	0.00038	0.033	0.00043	0.021	0.00065	0.0000034	0.0012
Production	3	2023-04-01	80	0.000023	0.00042	0.052	0.00046	0.011	0.00085	0.0000036	0.0011
Production	3	2023-05-01	35	0.000038	0.001	0.12	0.00025	0.028	0.0014	0.0000038	0.0007
Production	3	2023-06-01	38	0.000035	0.00078	0.049	0.000085	0.009	0.0013	0.0000029	0.00048
Production	3	2023-07-01	55	0.000056	0.0007	0.051	0.00013	0.018	0.0014	0.0000032	0.00059
Production	3	2023-08-01	53	0.00021	0.00067	0.045	0.00019	0.019	0.00097	0.0000033	0.00056

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Construction	-1	2020-11-01	0.000053	0.0032	0.0054
Construction	-1	2020-12-01	0.000065	0.0035	0.0067
Construction	-1	2021-01-01	0.000064	0.0038	0.0096
Construction	-1	2021-02-01	0.000068	0.0039	0.0085
Production	1	2021-03-01	0.0000031	0.0039	0.0034
Production	1	2021-04-01	0.0000039	0.0036	0.0013
Production	1	2021-05-01	0.0000078	0.0014	0.0012
Production	1	2021-06-01	0.0000064	0.0018	0.00079
Production	1	2021-07-01	0.0000088	0.0019	0.0011
Production	1	2021-08-01	0.000011	0.002	0.0021
Production	1	2021-09-01	0.000011	0.002	0.0012
Production	1	2021-10-01	0.000011	0.0029	0.0015
Production	1	2021-11-01	0.000016	0.0031	0.0023
Production	1	2021-12-01	0.000018	0.0033	0.0028
Production	1	2022-01-01	0.000018	0.0035	0.0055
Production	1	2022-02-01	0.000018	0.0036	0.004
Production	2	2022-03-01	0.000019	0.0039	0.0052
Production	2	2022-04-01	0.000018	0.0037	0.0032
Production	2	2022-05-01	0.000023	0.0014	0.0018
Production	2	2022-06-01	0.000013	0.0019	0.00095
Production	2	2022-07-01	0.000019	0.002	0.0014
Production	2	2022-08-01	0.000022	0.002	0.0023
Production	2	2022-09-01	0.000022	0.0021	0.0014
Production	2	2022-10-01	0.000021	0.0029	0.0017
Production	2	2022-11-01	0.000032	0.0032	0.0027
Production	2	2022-12-01	0.000035	0.0034	0.0034
Production	2	2023-01-01	0.000035	0.0036	0.0061
Production	2	2023-02-01	0.000034	0.0037	0.0047
Production	3	2023-03-01	0.000026	0.004	0.0065
Production	3	2023-04-01	0.000024	0.0038	0.0054
Production	3	2023-05-01	0.000058	0.0016	0.0041
Production	3	2023-06-01	0.000014	0.0019	0.0011
Production	3	2023-07-01	0.000026	0.0021	0.0019
Production	3	2023-08-01	0.000034	0.0022	0.003

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-09-01	210	39	0.12	0.0032	0.019	0.0069	0.11	0.86	0.00052	0.00054	0.031
Production	3	2023-10-01	240	45	0.15	0.0027	0.059	0.0074	0.12	0.61	0.0005	0.00025	0.013
Production	3	2023-11-01	290	58	0.24	0.0034	0.018	0.0034	0.14	0.49	0.00053	0.00056	0.009
Production	3	2023-12-01	340	65	0.3	0.0034	0.022	0.0057	0.14	0.66	0.00051	0.00024	0.03
Production	3	2024-01-01	330	63	0.33	0.003	0.044	0.0085	0.14	0.62	0.00024	0.00024	0.01
Production	3	2024-02-01	350	68	0.36	0.0028	0.046	0.0067	0.14	0.75	0.00024	0.00024	0.02
Production	4	2024-03-01	410	76	0.29	0.0024	0.028	0.0055	0.16	0.8	0.00062	0.00023	0.0042
Production	4	2024-04-01	340	65	0.27	0.0021	0.012	0.0058	0.15	0.53	0.00052	0.00035	0.011
Production	4	2024-05-01	170	41	0.18	0.0043	0.023	0.018	0.12	1	0.00065	0.00056	0.039
Production	4	2024-06-01	170	27	0.12	0.0033	0.029	0.011	0.11	0.82	0.00064	0.00048	0.11
Production	4	2024-07-01	220	39	0.15	0.005	0.027	0.02	0.12	0.54	0.00051	0.00054	0.047
Production	4	2024-08-01	220	38	0.14	0.0056	0.018	0.014	0.11	0.26	0.00046	0.0005	0.033
Production	4	2024-09-01	210	39	0.14	0.0038	0.021	0.007	0.11	0.86	0.00052	0.00054	0.032
Production	4	2024-10-01	230	44	0.17	0.0032	0.061	0.0075	0.12	0.61	0.0005	0.00025	0.013
Production	4	2024-11-01	280	57	0.27	0.004	0.02	0.0034	0.14	0.49	0.00053	0.00056	0.0095
Production	4	2024-12-01	330	62	0.32	0.004	0.024	0.0058	0.14	0.66	0.00051	0.00024	0.031
Production	4	2025-01-01	330	64	0.36	0.0036	0.045	0.0086	0.14	0.62	0.00024	0.00024	0.011
Production	4	2025-02-01	350	68	0.38	0.0033	0.048	0.0068	0.14	0.75	0.00024	0.00024	0.02
Production	5	2025-03-01	400	73	0.31	0.0027	0.029	0.0055	0.16	0.8	0.00062	0.00023	0.0045
Production	5	2025-04-01	330	60	0.28	0.0023	0.013	0.0058	0.14	0.53	0.00052	0.00035	0.011
Production	5	2025-05-01	150	33	0.19	0.0047	0.025	0.018	0.11	1	0.00064	0.00056	0.04
Production	5	2025-06-01	170	29	0.14	0.004	0.031	0.011	0.11	0.83	0.00064	0.00048	0.11
Production	5	2025-07-01	220	40	0.19	0.0058	0.03	0.02	0.13	0.54	0.00051	0.00054	0.047
Production	5	2025-08-01	220	38	0.17	0.0063	0.021	0.014	0.11	0.26	0.00046	0.0005	0.033
Production	5	2025-09-01	210	39	0.17	0.0044	0.023	0.0071	0.12	0.86	0.00052	0.00054	0.032
Production	5	2025-10-01	230	43	0.19	0.0036	0.062	0.0075	0.12	0.6	0.0005	0.00025	0.013
Production	5	2025-11-01	270	54	0.3	0.0046	0.021	0.0034	0.14	0.49	0.00053	0.00056	0.0098
Production	5	2025-12-01	320	58	0.35	0.0046	0.026	0.0057	0.13	0.65	0.00051	0.00024	0.031
Production	5	2026-01-01	320	60	0.38	0.0041	0.047	0.0087	0.14	0.62	0.00024	0.00024	0.011
Production	5	2026-02-01	340	64	0.4	0.0037	0.049	0.0068	0.14	0.75	0.00024	0.00024	0.021
Production	6	2026-03-01	390	69	0.32	0.0029	0.03	0.0054	0.15	0.8	0.00061	0.00023	0.0049
Production	6	2026-04-01	320	59	0.29	0.0024	0.013	0.0057	0.14	0.53	0.00052	0.00035	0.011
Production	6	2026-05-01	150	36	0.21	0.005	0.026	0.018	0.11	1	0.00064	0.00056	0.042
Production	6	2026-06-01	170	32	0.16	0.0043	0.032	0.011	0.11	0.83	0.00064	0.00048	0.11

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-09-01	0.00017	0.0014	0.000029	52	0.00018	0.0011	0.18	0.0002	0.036	0.0018
Production	3	2023-10-01	0.0001	0.0017	0.000033	58	0.000078	0.00046	0.23	0.00019	0.061	0.0013
Production	3	2023-11-01	0.00015	0.00092	0.000045	65	0.000026	0.00055	0.052	0.00044	0.038	0.001
Production	3	2023-12-01	0.00017	0.0011	0.000057	77	0.0001	0.00067	0.11	0.0005	0.044	0.0013
Production	3	2024-01-01	0.00017	0.0008	0.000058	75	0.000026	0.00071	0.076	0.0011	0.032	0.00093
Production	3	2024-02-01	0.00015	0.0009	0.000062	79	0.000034	0.00061	0.17	0.00064	0.037	0.00099
Production	4	2024-03-01	0.00013	0.00086	0.000054	94	0.000013	0.00041	0.055	0.00051	0.033	0.00077
Production	4	2024-04-01	0.00013	0.001	0.000039	76	0.000035	0.00039	0.16	0.00053	0.016	0.00089
Production	4	2024-05-01	0.00016	0.0017	0.000038	35	0.000081	0.0013	0.3	0.0003	0.049	0.002
Production	4	2024-06-01	0.00019	0.0013	0.000039	43	0.00019	0.0015	0.29	0.00032	0.024	0.002
Production	4	2024-07-01	0.00025	0.0014	0.000026	55	0.00016	0.001	0.21	0.00027	0.031	0.0019
Production	4	2024-08-01	0.00021	0.00082	0.000024	56	0.00021	0.00093	0.17	0.00035	0.026	0.0018
Production	4	2024-09-01	0.00018	0.0014	0.000027	52	0.00018	0.0011	0.18	0.0002	0.039	0.0018
Production	4	2024-10-01	0.00011	0.0017	0.000031	58	0.000079	0.00047	0.23	0.00019	0.063	0.0014
Production	4	2024-11-01	0.00016	0.00088	0.000039	65	0.000027	0.00055	0.045	0.00043	0.04	0.001
Production	4	2024-12-01	0.00018	0.0011	0.00005	77	0.0001	0.00068	0.11	0.0005	0.047	0.0013
Production	4	2025-01-01	0.00018	0.00083	0.000058	75	0.000027	0.00072	0.076	0.0012	0.038	0.00099
Production	4	2025-02-01	0.00016	0.00088	0.000058	79	0.000035	0.00061	0.17	0.00067	0.042	0.001
Production	5	2025-03-01	0.00014	0.00081	0.000051	94	0.000014	0.00041	0.048	0.00053	0.034	0.00079
Production	5	2025-04-01	0.00013	0.00092	0.000034	76	0.000036	0.00038	0.15	0.00053	0.015	0.0009
Production	5	2025-05-01	0.00015	0.0015	0.000028	35	0.000081	0.0012	0.28	0.00022	0.042	0.002
Production	5	2025-06-01	0.0002	0.0013	0.000041	43	0.00019	0.0015	0.29	0.00035	0.029	0.002
Production	5	2025-07-01	0.00026	0.0014	0.000026	55	0.00016	0.001	0.21	0.00028	0.034	0.0019
Production	5	2025-08-01	0.00022	0.00079	0.000023	56	0.00022	0.00094	0.17	0.00036	0.028	0.0018
Production	5	2025-09-01	0.00019	0.0013	0.000025	52	0.00018	0.0011	0.18	0.0002	0.04	0.0018
Production	5	2025-10-01	0.00011	0.0016	0.000028	58	0.00008	0.00047	0.23	0.00018	0.064	0.0014
Production	5	2025-11-01	0.00017	0.00082	0.000033	65	0.000027	0.00056	0.037	0.00041	0.04	0.001
Production	5	2025-12-01	0.00018	0.001	0.000042	77	0.0001	0.00068	0.1	0.00048	0.047	0.0013
Production	5	2026-01-01	0.00019	0.00079	0.000052	75	0.000028	0.00073	0.07	0.0012	0.04	0.001
Production	5	2026-02-01	0.00017	0.00085	0.000052	79	0.000036	0.00062	0.16	0.00068	0.044	0.0011
Production	6	2026-03-01	0.00014	0.00077	0.00005	94	0.000014	0.00065	0.041	0.00051	0.035	0.0008
Production	6	2026-04-01	0.00014	0.00093	0.000042	76	0.000037	0.00078	0.15	0.00054	0.017	0.00092
Production	6	2026-05-01	0.00016	0.0015	0.000029	35	0.000094	0.0015	0.28	0.00022	0.047	0.0021
Production	6	2026-06-01	0.00021	0.0013	0.000042	43	0.0002	0.0016	0.29	0.00035	0.034	0.0021

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-09-01	0.0000058	0.00068	0.000034	0.0022	0.0031	5.5	0.0092	0.00016	0.001	0.000021
Production	3	2023-10-01	0.0000033	0.0011	0.000036	0.0031	0.0033	2.9	0.0039	0.00011	0.0013	0.000024
Production	3	2023-11-01	0.0000039	0.0012	0.000056	0.0033	0.0053	2.5	0.0062	0.00016	0.00083	0.000038
Production	3	2023-12-01	0.0000041	0.0014	0.00006	0.0035	0.0064	2.4	0.0044	0.00016	0.00086	0.000051
Production	3	2024-01-01	0.0000056	0.0013	0.000044	0.0038	0.0079	1.7	0.0053	0.00015	0.00067	0.000045
Production	3	2024-02-01	0.0000039	0.0013	0.000044	0.0038	0.0076	1.7	0.0037	0.00015	0.00077	0.000054
Production	4	2024-03-01	0.000004	0.0015	0.000038	0.004	0.0077	2	0.0032	0.00014	0.00079	0.000051
Production	4	2024-04-01	0.000004	0.0013	0.000031	0.0038	0.0063	1.9	0.0032	0.00012	0.0008	0.000038
Production	4	2024-05-01	0.0000062	0.00072	0.000075	0.0016	0.0045	5.2	0.012	0.00015	0.0012	0.000034
Production	4	2024-06-01	0.000013	0.00049	0.000018	0.002	0.0032	4.2	0.0097	0.00016	0.00085	0.000015
Production	4	2024-07-01	0.0000056	0.0006	0.000032	0.0023	0.0018	6.3	0.01	0.00021	0.0011	0.000016
Production	4	2024-08-01	0.0000059	0.00058	0.000042	0.0022	0.0032	5	0.0082	0.00018	0.00084	0.000018
Production	4	2024-09-01	0.0000059	0.00067	0.000041	0.0023	0.003	5.5	0.0097	0.00017	0.001	0.000019
Production	4	2024-10-01	0.0000033	0.0011	0.000041	0.0031	0.003	2.9	0.0042	0.00011	0.0012	0.000022
Production	4	2024-11-01	0.0000039	0.0011	0.000063	0.0033	0.0046	2.4	0.0067	0.00017	0.00078	0.000033
Production	4	2024-12-01	0.0000041	0.0014	0.000069	0.0036	0.0055	2.4	0.0049	0.00017	0.00081	0.000044
Production	4	2025-01-01	0.0000058	0.0013	0.000062	0.0038	0.0079	1.7	0.0058	0.00016	0.0007	0.000045
Production	4	2025-02-01	0.000004	0.0013	0.000056	0.0038	0.0073	1.7	0.0042	0.00016	0.00075	0.00005
Production	5	2025-03-01	0.0000039	0.0015	0.000045	0.004	0.0071	2	0.0034	0.00015	0.00074	0.000048
Production	5	2025-04-01	0.0000037	0.0012	0.000033	0.0038	0.0053	1.9	0.0033	0.00012	0.00072	0.000033
Production	5	2025-05-01	0.0000057	0.00059	0.000059	0.0016	0.003	5.1	0.013	0.00015	0.001	0.000023
Production	5	2025-06-01	0.000013	0.00052	0.000029	0.002	0.0035	4.2	0.01	0.00017	0.00088	0.000016
Production	5	2025-07-01	0.0000057	0.00061	0.00004	0.0023	0.0018	6.3	0.011	0.00022	0.0011	0.000016
Production	5	2025-08-01	0.000006	0.00057	0.000047	0.0023	0.0031	5	0.0086	0.00019	0.00082	0.000017
Production	5	2025-09-01	0.0000059	0.00066	0.000045	0.0023	0.0028	5.5	0.01	0.00018	0.00098	0.000018
Production	5	2025-10-01	0.0000033	0.0011	0.000043	0.0031	0.0027	2.9	0.0044	0.00012	0.0012	0.000019
Production	5	2025-11-01	0.0000037	0.0011	0.000065	0.0033	0.0039	2.4	0.007	0.00017	0.00072	0.000027
Production	5	2025-12-01	0.0000039	0.0013	0.000071	0.0036	0.0045	2.3	0.0053	0.00017	0.00075	0.000036
Production	5	2026-01-01	0.0000057	0.0012	0.000069	0.0038	0.0072	1.7	0.0062	0.00017	0.00066	0.000038
Production	5	2026-02-01	0.0000039	0.0012	0.000066	0.0038	0.0066	1.6	0.0045	0.00016	0.00072	0.000044
Production	6	2026-03-01	0.0000037	0.0014	0.000047	0.004	0.0064	2	0.0039	0.00015	0.0007	0.000047
Production	6	2026-04-01	0.0000037	0.0012	0.000037	0.0038	0.0052	1.8	0.0038	0.00013	0.00073	0.000041
Production	6	2026-05-01	0.000006	0.00058	0.00006	0.0016	0.0029	5.1	0.015	0.00015	0.001	0.000023
Production	6	2026-06-01	0.000014	0.00053	0.000032	0.0021	0.0036	4.2	0.011	0.00018	0.00089	0.000017

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-09-01	51	0.000048	0.00081	0.047	0.00015	0.017	0.0012	0.0000033	0.00066
Production	3	2023-10-01	58	0.000044	0.00037	0.068	0.00017	0.038	0.0011	0.0000033	0.0011
Production	3	2023-11-01	67	0.000016	0.00049	0.038	0.00032	0.031	0.00096	0.0000039	0.0012
Production	3	2023-12-01	76	0.000014	0.0005	0.048	0.00041	0.032	0.00091	0.0000041	0.0014
Production	3	2024-01-01	79	0.000012	0.00048	0.042	0.00046	0.029	0.00083	0.0000038	0.0013
Production	3	2024-02-01	81	0.00001	0.00048	0.046	0.00045	0.03	0.00082	0.0000039	0.0013
Production	4	2024-03-01	87	0.0000081	0.0004	0.05	0.0005	0.027	0.00069	0.000004	0.0014
Production	4	2024-04-01	80	0.000024	0.00043	0.058	0.00051	0.014	0.00087	0.0000039	0.0012
Production	4	2024-05-01	35	0.00004	0.001	0.12	0.00025	0.035	0.0015	0.000004	0.00072
Production	4	2024-06-01	38	0.000036	0.00079	0.048	0.000081	0.0096	0.0013	0.000003	0.00047
Production	4	2024-07-01	55	0.000057	0.0007	0.048	0.00013	0.02	0.0015	0.0000033	0.00057
Production	4	2024-08-01	53	0.00021	0.00067	0.042	0.00019	0.021	0.00099	0.0000034	0.00055
Production	4	2024-09-01	51	0.000049	0.00082	0.045	0.00015	0.02	0.0012	0.0000034	0.00064
Production	4	2024-10-01	58	0.000045	0.00038	0.065	0.00017	0.04	0.0011	0.0000033	0.0011
Production	4	2024-11-01	67	0.000017	0.0005	0.032	0.00032	0.033	0.00099	0.0000039	0.0011
Production	4	2024-12-01	75	0.000014	0.0005	0.041	0.00041	0.034	0.00095	0.0000041	0.0013
Production	4	2025-01-01	79	0.000014	0.0005	0.043	0.00051	0.035	0.0009	0.000004	0.0013
Production	4	2025-02-01	81	0.000012	0.00049	0.043	0.00048	0.034	0.00086	0.000004	0.0012
Production	5	2025-03-01	87	0.000009	0.0004	0.043	0.00052	0.029	0.00072	0.0000039	0.0014
Production	5	2025-04-01	80	0.000024	0.00042	0.048	0.00051	0.014	0.00087	0.0000037	0.0012
Production	5	2025-05-01	35	0.000039	0.00098	0.1	0.00017	0.028	0.0014	0.0000035	0.00059
Production	5	2025-06-01	38	0.000038	0.0008	0.049	0.0001	0.014	0.0013	0.0000031	0.00049
Production	5	2025-07-01	55	0.000059	0.00071	0.046	0.00014	0.024	0.0015	0.0000034	0.00058
Production	5	2025-08-01	53	0.00021	0.00068	0.039	0.00019	0.024	0.001	0.0000035	0.00054
Production	5	2025-09-01	51	0.00005	0.00083	0.041	0.00015	0.022	0.0013	0.0000034	0.00063
Production	5	2025-10-01	58	0.000045	0.00038	0.061	0.00017	0.041	0.0011	0.0000033	0.001
Production	5	2025-11-01	67	0.000018	0.0005	0.025	0.00031	0.033	0.001	0.0000037	0.0011
Production	5	2025-12-01	75	0.000015	0.00051	0.031	0.0004	0.034	0.00095	0.0000039	0.0012
Production	5	2026-01-01	79	0.000015	0.0005	0.035	0.00051	0.037	0.00092	0.0000039	0.0013
Production	5	2026-02-01	81	0.000013	0.00049	0.036	0.00049	0.036	0.00089	0.0000039	0.0012
Production	6	2026-03-01	86	0.00001	0.00064	0.036	0.0005	0.029	0.00073	0.0000037	0.0013
Production	6	2026-04-01	80	0.000025	0.00082	0.046	0.00052	0.016	0.00089	0.0000037	0.0012
Production	6	2026-05-01	35	0.000051	0.0012	0.11	0.00017	0.034	0.0015	0.0000037	0.00058
Production	6	2026-06-01	38	0.000046	0.00091	0.051	0.00011	0.019	0.0014	0.0000034	0.0005

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Production	3	2023-09-01	0.000034	0.0022	0.0022
Production	3	2023-10-01	0.000036	0.003	0.0026
Production	3	2023-11-01	0.000056	0.0033	0.0046
Production	3	2023-12-01	0.00006	0.0035	0.0062
Production	3	2024-01-01	0.000044	0.0038	0.0078
Production	3	2024-02-01	0.000044	0.0038	0.007
Production	4	2024-03-01	0.000038	0.0041	0.0078
Production	4	2024-04-01	0.000031	0.0038	0.006
Production	4	2024-05-01	0.000074	0.0016	0.004
Production	4	2024-06-01	0.000015	0.002	0.00089
Production	4	2024-07-01	0.000031	0.0022	0.0017
Production	4	2024-08-01	0.00004	0.0022	0.0028
Production	4	2024-09-01	0.000041	0.0023	0.002
Production	4	2024-10-01	0.000041	0.003	0.0023
Production	4	2024-11-01	0.000063	0.0033	0.0039
Production	4	2024-12-01	0.000069	0.0035	0.0053
Production	4	2025-01-01	0.000062	0.0038	0.0079
Production	4	2025-02-01	0.000056	0.0039	0.0066
Production	5	2025-03-01	0.000045	0.0041	0.0071
Production	5	2025-04-01	0.000033	0.0038	0.005
Production	5	2025-05-01	0.000058	0.0016	0.0026
Production	5	2025-06-01	0.000026	0.002	0.0011
Production	5	2025-07-01	0.000038	0.0022	0.0017
Production	5	2025-08-01	0.000045	0.0022	0.0027
Production	5	2025-09-01	0.000045	0.0023	0.0018
Production	5	2025-10-01	0.000043	0.003	0.002
Production	5	2025-11-01	0.000065	0.0033	0.0032
Production	5	2025-12-01	0.000071	0.0035	0.0043
Production	5	2026-01-01	0.000069	0.0038	0.0071
Production	5	2026-02-01	0.000066	0.0039	0.0059
Production	6	2026-03-01	0.000047	0.0041	0.0064
Production	6	2026-04-01	0.000037	0.0038	0.0049
Production	6	2026-05-01	0.000059	0.0016	0.0024
Production	6	2026-06-01	0.00003	0.0021	0.0012

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-07-01	230	45	0.2	0.0061	0.03	0.021	0.13	0.54	0.00051	0.00054	0.049
Production	6	2026-08-01	230	46	0.18	0.0065	0.021	0.014	0.11	0.26	0.00046	0.0005	0.035
Production	6	2026-09-01	220	47	0.18	0.0045	0.023	0.0071	0.11	0.85	0.00052	0.00054	0.034
Production	6	2026-10-01	240	51	0.19	0.0037	0.062	0.0075	0.12	0.6	0.0005	0.00025	0.015
Production	6	2026-11-01	280	68	0.3	0.0047	0.022	0.0034	0.14	0.49	0.00053	0.00056	0.014
Production	6	2026-12-01	330	76	0.35	0.0046	0.026	0.0057	0.13	0.65	0.0005	0.00024	0.037
Production	6	2027-01-01	340	79	0.38	0.0041	0.047	0.0087	0.14	0.62	0.00024	0.00024	0.019
Production	6	2027-02-01	350	82	0.4	0.0038	0.049	0.0069	0.14	0.75	0.00024	0.00024	0.029
Production	7	2027-03-01	400	79	0.32	0.0029	0.03	0.0054	0.15	0.8	0.00061	0.00023	0.011
Production	7	2027-04-01	320	66	0.29	0.0024	0.013	0.0058	0.14	0.53	0.00052	0.00034	0.017
Production	7	2027-05-01	170	42	0.21	0.005	0.026	0.018	0.1	1	0.00064	0.00056	0.043
Production	7	2027-06-01	180	34	0.16	0.0043	0.032	0.012	0.11	0.83	0.00064	0.00048	0.11
Production	7	2027-07-01	240	48	0.2	0.0062	0.031	0.021	0.13	0.54	0.00051	0.00054	0.049
Production	7	2027-08-01	240	47	0.18	0.0066	0.021	0.014	0.11	0.26	0.00046	0.0005	0.035
Production	7	2027-09-01	230	47	0.18	0.0045	0.023	0.0072	0.11	0.85	0.00052	0.00054	0.034
Production	7	2027-10-01	250	50	0.19	0.0037	0.062	0.0075	0.12	0.6	0.00049	0.00024	0.015
Production	7	2027-11-01	300	66	0.3	0.0047	0.022	0.0034	0.14	0.48	0.00053	0.00056	0.014
Production	7	2027-12-01	350	74	0.35	0.0046	0.026	0.0058	0.13	0.65	0.0005	0.00024	0.037
Production	7	2028-01-01	350	80	0.38	0.0041	0.047	0.0087	0.14	0.62	0.00024	0.00024	0.018
Production	7	2028-02-01	360	86	0.39	0.0036	0.048	0.0069	0.14	0.75	0.00024	0.00024	0.028
Production	8	2028-03-01	410	85	0.32	0.0029	0.03	0.0054	0.15	0.8	0.00061	0.00023	0.013
Production	8	2028-04-01	330	70	0.29	0.0024	0.013	0.0058	0.14	0.53	0.00052	0.00034	0.019
Production	8	2028-05-01	180	43	0.21	0.0049	0.026	0.018	0.1	1	0.00064	0.00056	0.044
Production	8	2028-06-01	190	34	0.15	0.0042	0.032	0.012	0.11	0.82	0.00064	0.00048	0.11
Production	8	2028-07-01	250	48	0.2	0.006	0.03	0.021	0.13	0.54	0.00051	0.00054	0.049
Production	8	2028-08-01	250	47	0.18	0.0064	0.021	0.014	0.11	0.26	0.00046	0.0005	0.035
Production	8	2028-09-01	240	47	0.17	0.0044	0.023	0.0072	0.11	0.85	0.00052	0.00054	0.034
Production	8	2028-10-01	260	51	0.18	0.0036	0.062	0.0075	0.12	0.6	0.00049	0.00024	0.015
Production	8	2028-11-01	310	67	0.29	0.0045	0.021	0.0034	0.14	0.48	0.00053	0.00056	0.014
Production	8	2028-12-01	360	75	0.34	0.0044	0.026	0.0057	0.13	0.65	0.0005	0.00024	0.037
Production	8	2029-01-01	360	81	0.37	0.004	0.047	0.0087	0.14	0.62	0.00024	0.00024	0.018
Production	8	2029-02-01	370	87	0.39	0.0036	0.048	0.0069	0.13	0.75	0.00024	0.00024	0.028
Production	9	2029-03-01	410	84	0.31	0.0028	0.029	0.0054	0.15	0.8	0.00061	0.00023	0.013
Production	9	2029-04-01	330	70	0.29	0.0023	0.013	0.0058	0.14	0.53	0.00052	0.00034	0.02

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Production	6	2026-07-01	0.00027	0.0014	0.000027	55	0.00018	0.0012	0.22	0.00028	0.043	0.002
Production	6	2026-08-01	0.00022	0.0008	0.000023	56	0.00024	0.0011	0.17	0.00036	0.041	0.002
Production	6	2026-09-01	0.00019	0.0013	0.000026	52	0.00021	0.0012	0.18	0.0002	0.054	0.002
Production	6	2026-10-01	0.00012	0.0016	0.000028	57	0.00011	0.00063	0.23	0.00019	0.08	0.0016
Production	6	2026-11-01	0.00017	0.00082	0.000033	65	0.000076	0.00084	0.036	0.00042	0.066	0.0014
Production	6	2026-12-01	0.00019	0.001	0.000042	77	0.00016	0.0011	0.1	0.00049	0.076	0.0017
Production	6	2027-01-01	0.00019	0.00089	0.000052	75	0.000086	0.0012	0.07	0.0012	0.069	0.0014
Production	6	2027-02-01	0.00017	0.001	0.000052	79	0.000091	0.0011	0.16	0.00069	0.072	0.0014
Production	7	2027-03-01	0.00014	0.00086	0.000048	94	0.000047	0.00091	0.038	0.00049	0.05	0.001
Production	7	2027-04-01	0.00014	0.001	0.00004	76	0.000061	0.00095	0.15	0.00053	0.029	0.0011
Production	7	2027-05-01	0.00016	0.0015	0.000029	35	0.00016	0.0015	0.28	0.00023	0.081	0.0025
Production	7	2027-06-01	0.00021	0.0013	0.000042	43	0.00024	0.0016	0.29	0.00036	0.051	0.0023
Production	7	2027-07-01	0.00027	0.0014	0.000026	55	0.00023	0.0012	0.22	0.00029	0.068	0.0023
Production	7	2027-08-01	0.00023	0.0008	0.000023	56	0.00029	0.0011	0.17	0.00037	0.068	0.0024
Production	7	2027-09-01	0.00019	0.0013	0.000025	52	0.00026	0.0012	0.18	0.00021	0.081	0.0023
Production	7	2027-10-01	0.00012	0.0016	0.000028	57	0.00016	0.00063	0.23	0.0002	0.1	0.0019
Production	7	2027-11-01	0.00018	0.0008	0.000032	64	0.00015	0.00084	0.034	0.00043	0.1	0.0018
Production	7	2027-12-01	0.00019	0.001	0.000041	77	0.00023	0.0011	0.098	0.0005	0.11	0.0022
Production	7	2028-01-01	0.0002	0.00086	0.00005	75	0.00015	0.0012	0.068	0.0012	0.099	0.0018
Production	7	2028-02-01	0.00017	0.00096	0.00005	79	0.00015	0.0011	0.16	0.00068	0.098	0.0018
Production	8	2028-03-01	0.00014	0.00091	0.000049	94	0.000087	0.00097	0.04	0.00051	0.071	0.0013
Production	8	2028-04-01	0.00014	0.0011	0.000042	76	0.000089	0.001	0.15	0.00055	0.043	0.0013
Production	8	2028-05-01	0.00016	0.0015	0.000029	35	0.00023	0.0015	0.28	0.00024	0.11	0.0029
Production	8	2028-06-01	0.00021	0.0013	0.000042	43	0.00026	0.0016	0.29	0.00036	0.065	0.0025
Production	8	2028-07-01	0.00027	0.0014	0.000027	55	0.00026	0.0012	0.22	0.0003	0.085	0.0025
Production	8	2028-08-01	0.00023	0.0008	0.000023	56	0.00033	0.0011	0.17	0.00038	0.089	0.0026
Production	8	2028-09-01	0.00019	0.0013	0.000026	52	0.0003	0.0012	0.18	0.00022	0.1	0.0026
Production	8	2028-10-01	0.00012	0.0016	0.000028	57	0.00019	0.00065	0.23	0.0002	0.12	0.0021
Production	8	2028-11-01	0.00018	0.0008	0.000033	64	0.00019	0.00087	0.034	0.00044	0.12	0.0021
Production	8	2028-12-01	0.00019	0.001	0.000042	77	0.00028	0.0011	0.099	0.00051	0.14	0.0025
Production	8	2029-01-01	0.0002	0.00087	0.000051	75	0.00019	0.0012	0.069	0.0012	0.12	0.0021
Production	8	2029-02-01	0.00017	0.00097	0.000052	79	0.00019	0.0012	0.16	0.00069	0.12	0.0021
Production	9	2029-03-01	0.00014	0.00092	0.000049	94	0.00011	0.001	0.039	0.00051	0.082	0.0014
Production	9	2029-04-01	0.00014	0.0011	0.000042	76	0.00011	0.0011	0.15	0.00054	0.051	0.0014

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-07-01	0.0000062	0.00062	0.000044	0.0023	0.0019	6.3	0.013	0.00023	0.0011	0.000016
Production	6	2026-08-01	0.0000066	0.00057	0.000052	0.0023	0.0031	5	0.011	0.00019	0.00083	0.000017
Production	6	2026-09-01	0.0000066	0.00066	0.000049	0.0023	0.0028	5.5	0.012	0.00018	0.00098	0.000018
Production	6	2026-10-01	0.0000041	0.0011	0.000049	0.0031	0.0027	2.9	0.0067	0.00012	0.0012	0.000019
Production	6	2026-11-01	0.000005	0.0011	0.000073	0.0033	0.0039	2.4	0.011	0.00018	0.00073	0.000027
Production	6	2026-12-01	0.0000053	0.0013	0.00008	0.0036	0.0045	2.3	0.011	0.00018	0.0008	0.000036
Production	6	2027-01-01	0.0000071	0.0012	0.000077	0.0038	0.0072	1.7	0.014	0.00017	0.00077	0.000039
Production	6	2027-02-01	0.0000053	0.0012	0.000073	0.0038	0.0066	1.6	0.013	0.00017	0.00087	0.000044
Production	7	2027-03-01	0.0000045	0.0014	0.000049	0.004	0.0061	1.9	0.0099	0.00015	0.0008	0.000044
Production	7	2027-04-01	0.0000043	0.0011	0.00004	0.0038	0.005	1.8	0.0092	0.00013	0.00081	0.000039
Production	7	2027-05-01	0.0000077	0.00058	0.000071	0.0016	0.0029	5.1	0.016	0.00015	0.001	0.000023
Production	7	2027-06-01	0.000015	0.00053	0.000038	0.0021	0.0036	4.2	0.012	0.00018	0.00089	0.000017
Production	7	2027-07-01	0.0000074	0.00061	0.000051	0.0023	0.0019	6.3	0.013	0.00023	0.0011	0.000016
Production	7	2027-08-01	0.000008	0.00057	0.00006	0.0023	0.0031	5	0.011	0.0002	0.00082	0.000017
Production	7	2027-09-01	0.0000079	0.00066	0.000058	0.0023	0.0028	5.5	0.012	0.00018	0.00098	0.000017
Production	7	2027-10-01	0.0000053	0.0011	0.000056	0.0031	0.0026	2.9	0.0065	0.00012	0.0012	0.000019
Production	7	2027-11-01	0.0000068	0.0011	0.000082	0.0033	0.0038	2.4	0.011	0.00018	0.00071	0.000026
Production	7	2027-12-01	0.0000071	0.0013	0.000089	0.0036	0.0044	2.3	0.011	0.00018	0.00077	0.000035
Production	7	2028-01-01	0.0000087	0.0012	0.000085	0.0038	0.0071	1.7	0.013	0.00018	0.00073	0.000037
Production	7	2028-02-01	0.0000066	0.0012	0.000078	0.0038	0.0064	1.6	0.012	0.00016	0.00083	0.000042
Production	8	2028-03-01	0.0000055	0.0014	0.000057	0.004	0.0063	1.9	0.012	0.00015	0.00084	0.000046
Production	8	2028-04-01	0.000005	0.0011	0.000046	0.0038	0.0052	1.8	0.011	0.00013	0.00087	0.000041
Production	8	2028-05-01	0.0000093	0.00058	0.000081	0.0016	0.003	5.1	0.017	0.00016	0.001	0.000024
Production	8	2028-06-01	0.000015	0.00053	0.000041	0.0021	0.0036	4.2	0.012	0.00018	0.00089	0.000017
Production	8	2028-07-01	0.0000083	0.00061	0.000056	0.0023	0.0019	6.3	0.013	0.00023	0.0011	0.000016
Production	8	2028-08-01	0.0000091	0.00057	0.000066	0.0023	0.0032	5	0.011	0.0002	0.00083	0.000017
Production	8	2028-09-01	0.0000089	0.00066	0.000062	0.0023	0.0028	5.5	0.012	0.00018	0.00098	0.000018
Production	8	2028-10-01	0.0000062	0.0011	0.00006	0.0031	0.0027	2.9	0.0066	0.00012	0.0012	0.000019
Production	8	2028-11-01	0.000008	0.0011	0.000088	0.0033	0.0038	2.4	0.011	0.00018	0.00071	0.000027
Production	8	2028-12-01	0.0000084	0.0013	0.000095	0.0036	0.0045	2.3	0.011	0.00018	0.00078	0.000036
Production	8	2029-01-01	0.0000099	0.0012	0.00009	0.0038	0.0072	1.7	0.013	0.00018	0.00074	0.000038
Production	8	2029-02-01	0.0000078	0.0012	0.000085	0.0038	0.0066	1.6	0.012	0.00017	0.00084	0.000043
Production	9	2029-03-01	0.0000061	0.0014	0.000058	0.0039	0.0063	1.9	0.012	0.00015	0.00085	0.000046
Production	9	2029-04-01	0.0000054	0.0011	0.000047	0.0038	0.0052	1.8	0.012	0.00013	0.00089	0.000041

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-07-01	55	0.000074	0.00087	0.049	0.00015	0.032	0.0016	0.0000038	0.00059
Production	6	2026-08-01	53	0.00024	0.00086	0.042	0.0002	0.037	0.0012	0.0000041	0.00055
Production	6	2026-09-01	51	0.000077	0.00099	0.043	0.00015	0.036	0.0014	0.0000041	0.00063
Production	6	2026-10-01	58	0.000077	0.00055	0.062	0.00017	0.057	0.0013	0.0000041	0.001
Production	6	2026-11-01	67	0.000067	0.00078	0.026	0.00032	0.058	0.0013	0.000005	0.0011
Production	6	2026-12-01	75	0.000072	0.00088	0.032	0.0004	0.063	0.0013	0.0000053	0.0012
Production	6	2027-01-01	79	0.000073	0.00095	0.035	0.00051	0.066	0.0013	0.0000053	0.0013
Production	6	2027-02-01	81	0.00007	0.001	0.036	0.0005	0.065	0.0013	0.0000053	0.0012
Production	7	2027-03-01	86	0.000044	0.0009	0.033	0.00049	0.044	0.00094	0.0000045	0.0013
Production	7	2027-04-01	80	0.00005	0.00099	0.044	0.00051	0.028	0.0011	0.0000042	0.0011
Production	7	2027-05-01	35	0.00012	0.0012	0.11	0.00018	0.068	0.0019	0.0000054	0.00057
Production	7	2027-06-01	38	0.00008	0.00092	0.051	0.00011	0.037	0.0016	0.0000042	0.0005
Production	7	2027-07-01	55	0.00012	0.00088	0.049	0.00015	0.057	0.0019	0.000005	0.00058
Production	7	2027-08-01	53	0.00029	0.00086	0.041	0.00021	0.063	0.0015	0.0000054	0.00054
Production	7	2027-09-01	51	0.00013	0.00099	0.043	0.00016	0.062	0.0018	0.0000054	0.00063
Production	7	2027-10-01	58	0.00012	0.00055	0.062	0.00018	0.081	0.0016	0.0000053	0.001
Production	7	2027-11-01	66	0.00014	0.00078	0.025	0.00032	0.093	0.0018	0.0000067	0.0011
Production	7	2027-12-01	75	0.00014	0.00088	0.03	0.00041	0.098	0.0018	0.0000071	0.0012
Production	7	2028-01-01	79	0.00013	0.00094	0.033	0.00052	0.097	0.0017	0.0000069	0.0012
Production	7	2028-02-01	81	0.00012	0.001	0.034	0.00049	0.09	0.0016	0.0000066	0.0012
Production	8	2028-03-01	86	0.000084	0.00097	0.034	0.00051	0.065	0.0012	0.0000055	0.0013
Production	8	2028-04-01	80	0.000078	0.0011	0.045	0.00053	0.042	0.0012	0.000005	0.0011
Production	8	2028-05-01	35	0.00018	0.0013	0.11	0.00019	0.1	0.0024	0.0000071	0.00058
Production	8	2028-06-01	38	0.00011	0.00092	0.051	0.00012	0.05	0.0018	0.0000049	0.0005
Production	8	2028-07-01	55	0.00016	0.00089	0.049	0.00016	0.075	0.0021	0.000006	0.00058
Production	8	2028-08-01	53	0.00033	0.00088	0.042	0.00021	0.085	0.0018	0.0000065	0.00054
Production	8	2028-09-01	51	0.00017	0.001	0.043	0.00017	0.082	0.002	0.0000064	0.00063
Production	8	2028-10-01	58	0.00016	0.00057	0.062	0.00019	0.098	0.0019	0.0000062	0.001
Production	8	2028-11-01	66	0.00018	0.00082	0.026	0.00033	0.12	0.0021	0.000008	0.0011
Production	8	2028-12-01	75	0.00019	0.00093	0.031	0.00042	0.12	0.0021	0.0000084	0.0012
Production	8	2029-01-01	79	0.00018	0.001	0.034	0.00052	0.12	0.002	0.0000081	0.0012
Production	8	2029-02-01	81	0.00017	0.0011	0.035	0.0005	0.11	0.0019	0.0000078	0.0012
Production	9	2029-03-01	86	0.00011	0.001	0.034	0.0005	0.076	0.0014	0.0000061	0.0013
Production	9	2029-04-01	79	0.000095	0.0011	0.044	0.00052	0.05	0.0013	0.0000054	0.0011

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Production	6	2026-07-01	0.000042	0.0023	0.0017
Production	6	2026-08-01	0.00005	0.0023	0.0028
Production	6	2026-09-01	0.000049	0.0023	0.0018
Production	6	2026-10-01	0.000049	0.003	0.002
Production	6	2026-11-01	0.000073	0.0033	0.0033
Production	6	2026-12-01	0.000079	0.0035	0.0043
Production	6	2027-01-01	0.000077	0.0038	0.0071
Production	6	2027-02-01	0.000073	0.0039	0.006
Production	7	2027-03-01	0.000049	0.0041	0.0061
Production	7	2027-04-01	0.00004	0.0038	0.0047
Production	7	2027-05-01	0.00007	0.0016	0.0024
Production	7	2027-06-01	0.000035	0.0021	0.0012
Production	7	2027-07-01	0.00005	0.0023	0.0017
Production	7	2027-08-01	0.000059	0.0023	0.0027
Production	7	2027-09-01	0.000058	0.0023	0.0018
Production	7	2027-10-01	0.000056	0.003	0.002
Production	7	2027-11-01	0.000082	0.0033	0.0032
Production	7	2027-12-01	0.000089	0.0035	0.0041
Production	7	2028-01-01	0.000085	0.0038	0.007
Production	7	2028-02-01	0.000078	0.0038	0.0057
Production	8	2028-03-01	0.000057	0.0041	0.0064
Production	8	2028-04-01	0.000046	0.0038	0.0049
Production	8	2028-05-01	0.000081	0.0016	0.0025
Production	8	2028-06-01	0.000039	0.0021	0.0012
Production	8	2028-07-01	0.000055	0.0023	0.0017
Production	8	2028-08-01	0.000065	0.0023	0.0028
Production	8	2028-09-01	0.000062	0.0023	0.0018
Production	8	2028-10-01	0.00006	0.003	0.002
Production	8	2028-11-01	0.000088	0.0033	0.0033
Production	8	2028-12-01	0.000095	0.0035	0.0043
Production	8	2029-01-01	0.00009	0.0038	0.0071
Production	8	2029-02-01	0.000085	0.0039	0.0059
Production	9	2029-03-01	0.000058	0.0041	0.0064
Production	9	2029-04-01	0.000047	0.0038	0.0049

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	9	2029-05-01	190	44	0.2	0.0047	0.025	0.018	0.1	1	0.00064	0.00056	0.044
Production	9	2029-06-01	190	34	0.15	0.0041	0.031	0.012	0.11	0.82	0.00064	0.00048	0.11
Production	9	2029-07-01	250	48	0.19	0.0058	0.029	0.021	0.12	0.54	0.00051	0.00054	0.049
Production	9	2029-08-01	260	47	0.16	0.0062	0.02	0.014	0.11	0.26	0.00046	0.0005	0.035
Production	9	2029-09-01	240	47	0.16	0.0042	0.022	0.0072	0.11	0.85	0.00052	0.00054	0.034
Production	9	2029-10-01	260	51	0.18	0.0034	0.061	0.0075	0.12	0.6	0.00049	0.00024	0.015
Production	9	2029-11-01	310	66	0.28	0.0043	0.02	0.0034	0.14	0.48	0.00052	0.00056	0.014
Production	9	2029-12-01	360	75	0.33	0.0042	0.025	0.0057	0.13	0.65	0.0005	0.00024	0.037
Production	9	2030-01-01	360	80	0.36	0.0038	0.046	0.0087	0.13	0.62	0.00024	0.00024	0.018
Production	9	2030-02-01	370	87	0.39	0.0035	0.048	0.0069	0.13	0.75	0.00024	0.00024	0.028
Production	10	2030-03-01	420	84	0.31	0.0027	0.029	0.0054	0.15	0.8	0.00061	0.00023	0.011
Production	10	2030-04-01	340	70	0.28	0.0023	0.012	0.0058	0.14	0.53	0.00052	0.00034	0.019
Production	10	2030-05-01	190	44	0.19	0.0045	0.025	0.018	0.1	1	0.00064	0.00055	0.042
Production	10	2030-06-01	190	34	0.14	0.0039	0.031	0.012	0.11	0.82	0.00064	0.00048	0.11
Production	10	2030-07-01	260	48	0.18	0.0055	0.028	0.021	0.12	0.54	0.00051	0.00054	0.047
Production	10	2030-08-01	260	47	0.15	0.0059	0.019	0.014	0.1	0.26	0.00046	0.0005	0.033
Production	10	2030-09-01	250	47	0.15	0.004	0.021	0.0072	0.11	0.85	0.00052	0.00054	0.032
Active Closure	10	2030-10-01	220	40	0.21	0.0042	0.08	0.0075	0.11	0.61	0.0005	0.00025	0.012
Active Closure	10	2030-11-01	260	49	0.35	0.0058	0.049	0.0034	0.12	0.48	0.00053	0.00056	0.0079
Active Closure	10	2030-12-01	300	52	0.41	0.0061	0.056	0.0057	0.11	0.65	0.0005	0.00024	0.03
Active Closure	10	2031-01-01	310	53	0.44	0.0056	0.075	0.0089	0.12	0.62	0.00024	0.00024	0.011
Active Closure	10	2031-02-01	320	55	0.45	0.005	0.073	0.0071	0.12	0.75	0.00024	0.00024	0.02
Active Closure	11	2031-03-01	380	61	0.37	0.0042	0.051	0.0054	0.14	0.8	0.00061	0.00023	0.0039
Active Closure	11	2031-04-01	310	50	0.34	0.0035	0.031	0.0059	0.13	0.53	0.00052	0.00034	0.011
Active Closure	11	2031-05-01	140	30	0.24	0.0057	0.05	0.018	0.092	1	0.00063	0.00055	0.04
Active Closure	11	2031-06-01	170	26	0.14	0.004	0.041	0.012	0.1	0.84	0.00066	0.00049	0.11
Active Closure	11	2031-07-01	220	36	0.18	0.0056	0.043	0.021	0.12	0.55	0.00051	0.00056	0.044
Active Closure	11	2031-08-01	230	34	0.18	0.0065	0.039	0.014	0.098	0.26	0.00047	0.0005	0.03
Active Closure	11	2031-09-01	220	35	0.18	0.0046	0.04	0.0072	0.1	0.87	0.00052	0.00054	0.03
Active Closure	11	2031-10-01	240	41	0.22	0.0044	0.085	0.0076	0.11	0.61	0.0005	0.00025	0.012
Active Closure	11	2031-11-01	300	49	0.36	0.0062	0.057	0.0036	0.13	0.49	0.00053	0.00056	0.0079
Active Closure	11	2031-12-01	350	52	0.43	0.0065	0.065	0.006	0.12	0.65	0.0005	0.00024	0.03
Active Closure	11	2032-01-01	360	53	0.46	0.0059	0.084	0.0091	0.13	0.62	0.00024	0.00024	0.01
Active Closure	11	2032-02-01	370	56	0.46	0.0052	0.08	0.0072	0.12	0.75	0.00024	0.00024	0.02

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Production	9	2029-05-01	0.00016	0.0015	0.00003	35	0.00026	0.0015	0.28	0.00024	0.13	0.0031
Production	9	2029-06-01	0.00021	0.0013	0.000042	43	0.00027	0.0016	0.29	0.00036	0.07	0.0026
Production	9	2029-07-01	0.00027	0.0014	0.000027	55	0.00028	0.0012	0.22	0.0003	0.093	0.0027
Production	9	2029-08-01	0.00023	0.0008	0.000023	56	0.00035	0.0011	0.17	0.00038	0.098	0.0028
Production	9	2029-09-01	0.00019	0.0013	0.000026	52	0.00032	0.0013	0.18	0.00022	0.11	0.0027
Production	9	2029-10-01	0.00012	0.0016	0.000028	57	0.0002	0.00066	0.23	0.00021	0.13	0.0022
Production	9	2029-11-01	0.00018	0.0008	0.000033	64	0.00021	0.00089	0.034	0.00045	0.13	0.0022
Production	9	2029-12-01	0.00019	0.001	0.000041	76	0.0003	0.0011	0.099	0.00051	0.14	0.0026
Production	9	2030-01-01	0.0002	0.00086	0.000051	74	0.00021	0.0013	0.068	0.0012	0.13	0.0022
Production	9	2030-02-01	0.00017	0.00096	0.000051	79	0.0002	0.0012	0.16	0.00069	0.13	0.0021
Production	10	2030-03-01	0.00013	0.00097	0.00005	94	0.00012	0.0011	0.04	0.00051	0.086	0.0015
Production	10	2030-04-01	0.00013	0.0011	0.000042	76	0.00011	0.0011	0.15	0.00054	0.053	0.0014
Production	10	2030-05-01	0.00015	0.0016	0.00003	34	0.00027	0.0015	0.28	0.00025	0.14	0.0032
Production	10	2030-06-01	0.0002	0.0014	0.000042	43	0.00028	0.0016	0.29	0.00036	0.073	0.0026
Production	10	2030-07-01	0.00026	0.0015	0.000026	54	0.00029	0.0012	0.22	0.0003	0.098	0.0027
Production	10	2030-08-01	0.00022	0.00087	0.000023	55	0.00037	0.0011	0.17	0.00039	0.11	0.0029
Production	10	2030-09-01	0.00019	0.0014	0.000025	51	0.00033	0.0013	0.18	0.00023	0.12	0.0028
Active Closure	10	2030-10-01	0.000093	0.0015	0.000024	58	0.000079	0.00054	0.22	0.000037	0.051	0.0013
Active Closure	10	2030-11-01	0.00014	0.00068	0.000023	64	0.000034	0.00068	0.024	0.00013	0.028	0.001
Active Closure	10	2030-12-01	0.00015	0.00085	0.000028	77	0.00012	0.00086	0.087	0.00012	0.043	0.0014
Active Closure	10	2031-01-01	0.00016	0.00063	0.000036	74	0.000059	0.00095	0.061	0.00078	0.045	0.0012
Active Closure	10	2031-02-01	0.00014	0.00068	0.00003	79	0.000075	0.00086	0.15	0.00023	0.053	0.0013
Active Closure	11	2031-03-01	0.00011	0.00062	0.000027	94	0.000058	0.00068	0.017	0.000038	0.056	0.0012
Active Closure	11	2031-04-01	0.00011	0.00078	0.000019	76	0.000088	0.00069	0.13	0.000044	0.05	0.0014
Active Closure	11	2031-05-01	0.00014	0.0014	0.000021	35	0.00009	0.0013	0.28	0.000086	0.029	0.0019
Active Closure	11	2031-06-01	0.00018	0.0013	0.000037	44	0.0002	0.0015	0.29	0.00028	0.03	0.0021
Active Closure	11	2031-07-01	0.00024	0.0014	0.00002	56	0.00018	0.0011	0.21	0.00018	0.039	0.002
Active Closure	11	2031-08-01	0.00019	0.00073	0.000016	57	0.00025	0.00099	0.16	0.00024	0.042	0.0021
Active Closure	11	2031-09-01	0.00017	0.0013	0.00002	53	0.00022	0.0011	0.17	0.000084	0.061	0.0021
Active Closure	11	2031-10-01	0.000099	0.0015	0.000024	58	0.00014	0.00055	0.22	0.000049	0.1	0.0019
Active Closure	11	2031-11-01	0.00015	0.00068	0.000023	65	0.00013	0.00071	0.025	0.00015	0.11	0.002
Active Closure	11	2031-12-01	0.00016	0.00085	0.000028	77	0.00024	0.00089	0.086	0.00014	0.14	0.0026
Active Closure	11	2032-01-01	0.00017	0.00064	0.000035	75	0.00017	0.00099	0.056	0.0008	0.14	0.0024
Active Closure	11	2032-02-01	0.00014	0.00068	0.00003	79	0.00018	0.0009	0.15	0.00025	0.14	0.0025

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	9	2029-05-01	0.00001	0.00058	0.000084	0.0016	0.003	5.1	0.017	0.00015	0.001	0.000024
Production	9	2029-06-01	0.000016	0.00053	0.000042	0.0021	0.0036	4.2	0.012	0.00018	0.00089	0.000017
Production	9	2029-07-01	0.0000087	0.00061	0.000057	0.0023	0.0019	6.3	0.013	0.00023	0.0011	0.000017
Production	9	2029-08-01	0.0000095	0.00057	0.000067	0.0023	0.0032	5	0.011	0.0002	0.00083	0.000017
Production	9	2029-09-01	0.0000093	0.00066	0.000063	0.0023	0.0028	5.5	0.012	0.00018	0.00098	0.000018
Production	9	2029-10-01	0.0000065	0.0011	0.00006	0.0031	0.0027	2.9	0.0066	0.00012	0.0012	0.000019
Production	9	2029-11-01	0.0000084	0.0011	0.000088	0.0033	0.0038	2.4	0.011	0.00019	0.00071	0.000027
Production	9	2029-12-01	0.0000089	0.0013	0.000094	0.0036	0.0045	2.3	0.011	0.00019	0.00077	0.000036
Production	9	2030-01-01	0.00001	0.0012	0.000089	0.0038	0.0072	1.7	0.013	0.00018	0.00073	0.000038
Production	9	2030-02-01	0.0000081	0.0012	0.000083	0.0038	0.0066	1.6	0.012	0.00017	0.00083	0.000043
Production	10	2030-03-01	0.0000064	0.0013	0.000059	0.0038	0.0064	1.9	0.01	0.00014	0.0009	0.000047
Production	10	2030-04-01	0.0000056	0.0011	0.000047	0.0037	0.0053	1.8	0.011	0.00012	0.00093	0.000041
Production	10	2030-05-01	0.000011	0.00057	0.000084	0.0015	0.003	5.1	0.015	0.00014	0.0011	0.000024
Production	10	2030-06-01	0.000016	0.00051	0.000042	0.0019	0.0036	4.2	0.0097	0.00017	0.00096	0.000017
Production	10	2030-07-01	0.0000091	0.00059	0.000058	0.0021	0.0019	6.3	0.01	0.00022	0.0012	0.000016
Production	10	2030-08-01	0.00001	0.00055	0.000068	0.0021	0.0032	5	0.0088	0.00019	0.0009	0.000017
Production	10	2030-09-01	0.0000098	0.00064	0.000064	0.0022	0.0028	5.5	0.01	0.00018	0.001	0.000018
Active Closure	10	2030-10-01	0.0000028	0.001	0.0000025	0.003	0.0022	2.9	0.0031	0.000097	0.0011	0.000014
Active Closure	10	2030-11-01	0.0000032	0.00094	0.0000044	0.0031	0.0026	2.4	0.0052	0.00014	0.00059	0.000015
Active Closure	10	2030-12-01	0.0000035	0.0011	0.000006	0.0033	0.0027	2.3	0.0037	0.00014	0.00059	0.000022
Active Closure	10	2031-01-01	0.0000054	0.00099	0.0000069	0.0036	0.0053	1.6	0.005	0.00014	0.0005	0.000021
Active Closure	10	2031-02-01	0.0000037	0.00097	0.0000075	0.0036	0.0039	1.5	0.0035	0.00013	0.00055	0.000022
Active Closure	11	2031-03-01	0.0000037	0.0011	0.0000077	0.0038	0.0036	1.9	0.0032	0.00012	0.00055	0.000023
Active Closure	11	2031-04-01	0.0000039	0.00088	0.000008	0.0037	0.0021	1.8	0.0032	0.000097	0.00057	0.000018
Active Closure	11	2031-05-01	0.0000052	0.00046	0.0000046	0.0014	0.0022	5	0.012	0.00013	0.00093	0.000014
Active Closure	11	2031-06-01	0.000013	0.00046	0.0000063	0.0019	0.0031	4.3	0.0079	0.00015	0.00087	0.000013
Active Closure	11	2031-07-01	0.0000058	0.00052	0.0000066	0.0021	0.0012	6.3	0.0076	0.0002	0.001	0.00001
Active Closure	11	2031-08-01	0.0000062	0.00047	0.0000086	0.0021	0.0023	5	0.0059	0.00017	0.00076	0.0000095
Active Closure	11	2031-09-01	0.0000062	0.00057	0.0000075	0.0021	0.0022	5.5	0.0077	0.00016	0.00091	0.000011
Active Closure	11	2031-10-01	0.000004	0.001	0.0000091	0.003	0.0023	2.9	0.0031	0.0001	0.0011	0.000014
Active Closure	11	2031-11-01	0.0000052	0.00094	0.000015	0.0031	0.0026	2.4	0.0053	0.00015	0.00059	0.000016
Active Closure	11	2031-12-01	0.0000058	0.0011	0.000019	0.0034	0.0027	2.3	0.0037	0.00015	0.0006	0.000022
Active Closure	11	2032-01-01	0.0000077	0.001	0.000019	0.0036	0.0052	1.6	0.0051	0.00015	0.00051	0.000022
Active Closure	11	2032-02-01	0.0000058	0.00097	0.000019	0.0036	0.0038	1.5	0.0035	0.00014	0.00055	0.000022

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	9	2029-05-01	35	0.00021	0.0013	0.11	0.00019	0.12	0.0026	0.0000079	0.00058
Production	9	2029-06-01	38	0.00012	0.00093	0.051	0.00012	0.055	0.0018	0.0000052	0.0005
Production	9	2029-07-01	55	0.00017	0.0009	0.049	0.00016	0.083	0.0023	0.0000064	0.00058
Production	9	2029-08-01	53	0.00035	0.00088	0.042	0.00022	0.094	0.0019	0.000007	0.00054
Production	9	2029-09-01	51	0.00018	0.001	0.043	0.00017	0.089	0.0021	0.0000068	0.00063
Production	9	2029-10-01	57	0.00017	0.00058	0.062	0.00019	0.1	0.0019	0.0000065	0.001
Production	9	2029-11-01	66	0.0002	0.00083	0.026	0.00034	0.12	0.0022	0.0000084	0.0011
Production	9	2029-12-01	75	0.00021	0.00095	0.031	0.00043	0.13	0.0022	0.0000089	0.0012
Production	9	2030-01-01	78	0.0002	0.001	0.034	0.00053	0.13	0.0021	0.0000085	0.0012
Production	9	2030-02-01	81	0.00018	0.0011	0.034	0.0005	0.12	0.002	0.0000081	0.0012
Production	10	2030-03-01	86	0.00012	0.001	0.034	0.00051	0.08	0.0014	0.0000064	0.0013
Production	10	2030-04-01	79	0.0001	0.0011	0.045	0.00052	0.052	0.0014	0.0000056	0.0011
Production	10	2030-05-01	35	0.00023	0.0013	0.11	0.0002	0.12	0.0027	0.0000083	0.00057
Production	10	2030-06-01	38	0.00012	0.00093	0.051	0.00012	0.059	0.0019	0.0000055	0.00048
Production	10	2030-07-01	55	0.00018	0.0009	0.049	0.00017	0.088	0.0023	0.0000068	0.00056
Production	10	2030-08-01	53	0.00036	0.00089	0.042	0.00022	0.1	0.002	0.0000075	0.00053
Production	10	2030-09-01	51	0.0002	0.001	0.044	0.00018	0.097	0.0022	0.0000073	0.00061
Active Closure	10	2030-10-01	58	0.000044	0.00045	0.055	0.000019	0.028	0.001	0.0000028	0.00095
Active Closure	10	2030-11-01	66	0.000026	0.00063	0.013	0.000031	0.021	0.00095	0.0000032	0.00094
Active Closure	10	2030-12-01	75	0.000036	0.00068	0.015	0.000032	0.03	0.001	0.0000035	0.001
Active Closure	10	2031-01-01	78	0.000046	0.00072	0.014	0.000093	0.042	0.0011	0.0000036	0.001
Active Closure	10	2031-02-01	81	0.000054	0.00074	0.012	0.000039	0.047	0.0012	0.0000037	0.00093
Active Closure	11	2031-03-01	86	0.000059	0.00067	0.0096	0.000034	0.052	0.0011	0.0000037	0.001
Active Closure	11	2031-04-01	80	0.000078	0.00073	0.018	0.000023	0.049	0.0014	0.0000038	0.00087
Active Closure	11	2031-05-01	35	0.000044	0.0011	0.097	0.000027	0.016	0.0014	0.000003	0.00046
Active Closure	11	2031-06-01	39	0.000046	0.00084	0.046	0.000031	0.015	0.0014	0.0000031	0.00043
Active Closure	11	2031-07-01	56	0.000076	0.00076	0.041	0.000038	0.028	0.0016	0.0000034	0.00049
Active Closure	11	2031-08-01	54	0.00024	0.00073	0.033	0.000074	0.037	0.0013	0.0000037	0.00045
Active Closure	11	2031-09-01	52	0.00009	0.00088	0.035	0.000035	0.042	0.0016	0.0000037	0.00054
Active Closure	11	2031-10-01	58	0.0001	0.00046	0.055	0.000032	0.078	0.0017	0.000004	0.00095
Active Closure	11	2031-11-01	67	0.00013	0.00065	0.013	0.000051	0.1	0.002	0.0000052	0.00095
Active Closure	11	2031-12-01	75	0.00015	0.00072	0.015	0.000056	0.13	0.0023	0.0000058	0.001
Active Closure	11	2032-01-01	79	0.00016	0.00076	0.015	0.00012	0.14	0.0023	0.0000059	0.001
Active Closure	11	2032-02-01	81	0.00016	0.00078	0.012	0.000061	0.14	0.0023	0.0000058	0.00093

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Production	9	2029-05-01	0.000083	0.0016	0.0025
Production	9	2029-06-01	0.000039	0.0021	0.0012
Production	9	2029-07-01	0.000056	0.0023	0.0018
Production	9	2029-08-01	0.000065	0.0023	0.0028
Production	9	2029-09-01	0.000063	0.0023	0.0018
Production	9	2029-10-01	0.00006	0.003	0.002
Production	9	2029-11-01	0.000088	0.0033	0.0033
Production	9	2029-12-01	0.000094	0.0035	0.0042
Production	9	2030-01-01	0.000089	0.0038	0.0071
Production	9	2030-02-01	0.000083	0.0039	0.0059
Production	10	2030-03-01	0.000059	0.0039	0.0065
Production	10	2030-04-01	0.000047	0.0037	0.005
Production	10	2030-05-01	0.000083	0.0015	0.0026
Production	10	2030-06-01	0.00004	0.0019	0.0012
Production	10	2030-07-01	0.000057	0.002	0.0018
Production	10	2030-08-01	0.000066	0.0021	0.0028
Production	10	2030-09-01	0.000064	0.0021	0.0019
Active Closure	10	2030-10-01	0.0000026	0.0029	0.0015
Active Closure	10	2030-11-01	0.0000045	0.0031	0.0021
Active Closure	10	2030-12-01	0.000006	0.0033	0.0024
Active Closure	10	2031-01-01	0.0000069	0.0036	0.005
Active Closure	10	2031-02-01	0.0000075	0.0037	0.0032
Active Closure	11	2031-03-01	0.0000078	0.0039	0.0039
Active Closure	11	2031-04-01	0.000008	0.0037	0.0019
Active Closure	11	2031-05-01	0.0000038	0.0014	0.0015
Active Closure	11	2031-06-01	0.0000039	0.0018	0.0007
Active Closure	11	2031-07-01	0.0000054	0.002	0.00098
Active Closure	11	2031-08-01	0.0000068	0.002	0.0019
Active Closure	11	2031-09-01	0.0000074	0.0021	0.0011
Active Closure	11	2031-10-01	0.0000091	0.0029	0.0015
Active Closure	11	2031-11-01	0.000015	0.0031	0.002
Active Closure	11	2031-12-01	0.000019	0.0033	0.0024
Active Closure	11	2032-01-01	0.000019	0.0036	0.005
Active Closure	11	2032-02-01	0.000019	0.0037	0.0032

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	12	2032-03-01	430	61	0.38	0.0044	0.058	0.0056	0.14	0.8	0.00062	0.00023	0.0039
Active Closure	12	2032-04-01	350	51	0.35	0.0038	0.037	0.0061	0.13	0.54	0.00052	0.00035	0.011
Active Closure	12	2032-05-01	140	30	0.25	0.006	0.054	0.018	0.093	1	0.00063	0.00055	0.04
Active Closure	12	2032-06-01	180	26	0.15	0.004	0.043	0.012	0.1	0.84	0.00066	0.00049	0.11
Active Closure	12	2032-07-01	240	36	0.18	0.0057	0.046	0.021	0.12	0.55	0.00051	0.00056	0.044
Active Closure	12	2032-08-01	240	34	0.19	0.0067	0.044	0.014	0.099	0.26	0.00047	0.0005	0.03
Active Closure	12	2032-09-01	240	35	0.19	0.0048	0.045	0.0073	0.11	0.87	0.00052	0.00054	0.03
Active Closure	12	2032-10-01	270	41	0.24	0.0047	0.091	0.0077	0.12	0.61	0.0005	0.00025	0.012
Active Closure	12	2032-11-01	330	49	0.38	0.0066	0.066	0.0038	0.13	0.49	0.00053	0.00056	0.0079
Active Closure	12	2032-12-01	390	52	0.45	0.007	0.075	0.0062	0.12	0.65	0.00051	0.00024	0.03
Active Closure	12	2033-01-01	390	53	0.48	0.0064	0.093	0.0092	0.13	0.62	0.00024	0.00024	0.01
Active Closure	12	2033-02-01	400	56	0.48	0.0057	0.089	0.0073	0.13	0.75	0.00024	0.00024	0.02
Active Closure	13	2033-03-01	460	61	0.4	0.0048	0.065	0.0058	0.14	0.8	0.00062	0.00023	0.0039
Active Closure	13	2033-04-01	380	51	0.36	0.004	0.043	0.0062	0.14	0.54	0.00052	0.00035	0.011
Active Closure	13	2033-05-01	150	30	0.28	0.0066	0.062	0.018	0.094	1	0.00064	0.00055	0.04
Active Closure	13	2033-06-01	180	26	0.15	0.0042	0.046	0.012	0.1	0.84	0.00066	0.00049	0.11
Active Closure	13	2033-07-01	240	36	0.2	0.006	0.051	0.021	0.12	0.55	0.00051	0.00056	0.044
Active Closure	13	2033-08-01	250	34	0.21	0.0073	0.051	0.014	0.1	0.26	0.00047	0.0005	0.03
Active Closure	13	2033-09-01	240	35	0.21	0.0054	0.052	0.0073	0.11	0.87	0.00052	0.00054	0.03
Transitional Closure	13	2033-10-01	230	36	0.15	0.0028	0.068	0.0074	0.11	0.61	0.00049	0.00024	0.011
Transitional Closure	13	2033-11-01	290	43	0.28	0.0042	0.035	0.0034	0.12	0.49	0.00053	0.00056	0.0066
Transitional Closure	13	2033-12-01	340	46	0.36	0.0048	0.048	0.0059	0.11	0.66	0.00051	0.00024	0.028
Transitional Closure	13	2034-01-01	350	49	0.42	0.005	0.074	0.0089	0.12	0.62	0.00024	0.00024	0.0091
Transitional Closure	13	2034-02-01	370	52	0.46	0.005	0.079	0.0071	0.12	0.75	0.00024	0.00024	0.019
Transitional Closure	14	2034-03-01	440	59	0.4	0.0048	0.064	0.0057	0.14	0.8	0.00062	0.00023	0.0034
Transitional Closure	14	2034-04-01	370	50	0.39	0.0047	0.05	0.0061	0.13	0.54	0.00053	0.00035	0.011
Transitional Closure	14	2034-05-01	140	22	0.13	0.0033	0.026	0.018	0.087	1	0.00062	0.00054	0.038
Transitional Closure	14	2034-06-01	170	24	0.093	0.0028	0.03	0.011	0.1	0.83	0.00065	0.00049	0.11
Transitional Closure	14	2034-07-01	220	33	0.11	0.0041	0.028	0.02	0.11	0.55	0.00051	0.00055	0.043
Transitional Closure	14	2034-08-01	220	30	0.1	0.0047	0.02	0.014	0.094	0.26	0.00047	0.0005	0.029
Transitional Closure	14	2034-09-01	200	31	0.11	0.0029	0.023	0.0069	0.1	0.86	0.00052	0.00054	0.029
Transitional Closure	14	2034-10-01	230	36	0.15	0.0027	0.066	0.0074	0.11	0.62	0.0005	0.00025	0.011
Transitional Closure	14	2034-11-01	270	42	0.27	0.0039	0.031	0.0034	0.12	0.5	0.00054	0.00056	0.0063
Transitional Closure	14	2034-12-01	320	45	0.35	0.0045	0.042	0.0059	0.11	0.66	0.00052	0.00024	0.028

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	12	2032-03-01	0.00012	0.00063	0.000027	94	0.00016	0.00074	0.015	0.000058	0.14	0.0023
Active Closure	12	2032-04-01	0.00012	0.00079	0.00002	77	0.00018	0.00076	0.12	0.000063	0.13	0.0024
Active Closure	12	2032-05-01	0.00014	0.0014	0.000021	35	0.00011	0.0013	0.28	0.000089	0.046	0.0021
Active Closure	12	2032-06-01	0.00019	0.0013	0.000037	44	0.00022	0.0015	0.29	0.00028	0.045	0.0023
Active Closure	12	2032-07-01	0.00024	0.0014	0.000021	56	0.00021	0.0011	0.21	0.00018	0.063	0.0023
Active Closure	12	2032-08-01	0.0002	0.00073	0.000016	57	0.00029	0.001	0.16	0.00025	0.074	0.0025
Active Closure	12	2032-09-01	0.00017	0.0013	0.00002	53	0.00026	0.0011	0.17	0.000093	0.096	0.0026
Active Closure	12	2032-10-01	0.0001	0.0015	0.000024	58	0.00019	0.00056	0.22	0.000059	0.14	0.0025
Active Closure	12	2032-11-01	0.00016	0.00068	0.000023	65	0.00022	0.00073	0.025	0.00017	0.18	0.0029
Active Closure	12	2032-12-01	0.00017	0.00085	0.000028	77	0.00033	0.00093	0.085	0.00016	0.22	0.0036
Active Closure	12	2033-01-01	0.00017	0.00064	0.000036	75	0.00027	0.001	0.053	0.00081	0.22	0.0034
Active Closure	12	2033-02-01	0.00015	0.00069	0.00003	80	0.00027	0.00095	0.14	0.00027	0.21	0.0034
Active Closure	13	2033-03-01	0.00012	0.00063	0.000027	95	0.00024	0.00079	0.015	0.000073	0.2	0.0031
Active Closure	13	2033-04-01	0.00012	0.00079	0.000021	77	0.00025	0.00082	0.12	0.000077	0.18	0.0031
Active Closure	13	2033-05-01	0.00014	0.0014	0.000021	35	0.00012	0.0013	0.28	0.000092	0.058	0.0023
Active Closure	13	2033-06-01	0.00019	0.0013	0.000038	44	0.00023	0.0015	0.29	0.00028	0.056	0.0024
Active Closure	13	2033-07-01	0.00024	0.0014	0.000021	56	0.00023	0.0011	0.21	0.00019	0.078	0.0025
Active Closure	13	2033-08-01	0.0002	0.00073	0.000016	57	0.00031	0.001	0.16	0.00025	0.092	0.0027
Active Closure	13	2033-09-01	0.00017	0.0013	0.00002	53	0.00028	0.0011	0.17	0.000096	0.11	0.0027
Transitional Closure	13	2033-10-01	0.000088	0.0015	0.000021	58	0.00012	0.00051	0.22	0.00003	0.086	0.0017
Transitional Closure	13	2033-11-01	0.00013	0.00062	0.000019	65	0.00011	0.00067	0.021	0.00013	0.09	0.0018
Transitional Closure	13	2033-12-01	0.00015	0.00079	0.000025	77	0.00022	0.00088	0.08	0.00012	0.12	0.0024
Transitional Closure	13	2034-01-01	0.00016	0.00059	0.000033	75	0.00017	0.001	0.048	0.00078	0.13	0.0024
Transitional Closure	13	2034-02-01	0.00014	0.00066	0.000029	80	0.00019	0.00096	0.14	0.00024	0.15	0.0026
Transitional Closure	14	2034-03-01	0.00012	0.00061	0.000026	95	0.00019	0.00082	0.013	0.000057	0.16	0.0025
Transitional Closure	14	2034-04-01	0.00012	0.00078	0.000021	77	0.00022	0.00087	0.12	0.000067	0.16	0.0028
Transitional Closure	14	2034-05-01	0.00012	0.0013	0.000016	34	0.0001	0.0012	0.27	0.000071	0.038	0.002
Transitional Closure	14	2034-06-01	0.00018	0.0013	0.000036	43	0.0002	0.0015	0.28	0.00027	0.03	0.0021
Transitional Closure	14	2034-07-01	0.00023	0.0013	0.000018	55	0.00017	0.001	0.21	0.00016	0.033	0.002
Transitional Closure	14	2034-08-01	0.00018	0.00068	0.000013	56	0.00023	0.00095	0.16	0.00022	0.026	0.0019
Transitional Closure	14	2034-09-01	0.00015	0.0012	0.000017	52	0.0002	0.0011	0.17	0.000065	0.037	0.0018
Transitional Closure	14	2034-10-01	0.000086	0.0015	0.000022	58	0.0001	0.00052	0.22	0.000026	0.068	0.0015
Transitional Closure	14	2034-11-01	0.00013	0.00061	0.000019	65	0.000069	0.00068	0.025	0.00012	0.054	0.0013
Transitional Closure	14	2034-12-01	0.00014	0.00077	0.000025	78	0.00016	0.0009	0.08	0.00011	0.075	0.0018

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	12	2032-03-01	0.0000057	0.0011	0.000019	0.0038	0.0034	1.9	0.0032	0.00013	0.00056	0.000024
Active Closure	12	2032-04-01	0.0000057	0.00088	0.000018	0.0037	0.0022	1.8	0.0032	0.0001	0.00058	0.000019
Active Closure	12	2032-05-01	0.0000056	0.00046	0.0000067	0.0014	0.0021	5.1	0.012	0.00013	0.00093	0.000014
Active Closure	12	2032-06-01	0.000014	0.00046	0.0000083	0.0019	0.0031	4.3	0.0079	0.00016	0.00087	0.000013
Active Closure	12	2032-07-01	0.0000064	0.00052	0.0000097	0.0021	0.0012	6.3	0.0076	0.0002	0.001	0.00001
Active Closure	12	2032-08-01	0.000007	0.00048	0.000013	0.0021	0.0023	5	0.0059	0.00017	0.00076	0.0000096
Active Closure	12	2032-09-01	0.0000071	0.00057	0.000012	0.0021	0.0022	5.5	0.0077	0.00016	0.00092	0.000011
Active Closure	12	2032-10-01	0.0000051	0.001	0.000014	0.003	0.0023	2.9	0.0031	0.00011	0.0011	0.000014
Active Closure	12	2032-11-01	0.0000068	0.00094	0.000024	0.0031	0.0026	2.4	0.0053	0.00016	0.00059	0.000016
Active Closure	12	2032-12-01	0.0000077	0.0011	0.000028	0.0034	0.0026	2.3	0.0038	0.00016	0.0006	0.000023
Active Closure	12	2033-01-01	0.0000095	0.001	0.000028	0.0037	0.0052	1.6	0.0051	0.00016	0.00051	0.000023
Active Closure	12	2033-02-01	0.0000075	0.00097	0.000027	0.0037	0.0038	1.5	0.0036	0.00015	0.00056	0.000023
Active Closure	13	2033-03-01	0.0000072	0.0011	0.000026	0.0039	0.0034	1.9	0.0032	0.00013	0.00056	0.000025
Active Closure	13	2033-04-01	0.000007	0.00089	0.000025	0.0037	0.0023	1.8	0.0032	0.00011	0.00058	0.00002
Active Closure	13	2033-05-01	0.000006	0.00046	0.0000082	0.0015	0.0022	5.1	0.012	0.00014	0.00093	0.000015
Active Closure	13	2033-06-01	0.000014	0.00046	0.0000095	0.0019	0.0031	4.3	0.0079	0.00016	0.00087	0.000013
Active Closure	13	2033-07-01	0.0000068	0.00052	0.000011	0.0021	0.0012	6.3	0.0076	0.0002	0.001	0.00001
Active Closure	13	2033-08-01	0.0000074	0.00048	0.000015	0.0021	0.0023	5	0.0059	0.00017	0.00076	0.0000098
Active Closure	13	2033-09-01	0.0000074	0.00057	0.000013	0.0022	0.0022	5.5	0.0077	0.00016	0.00092	0.000011
Transitional Closure	13	2033-10-01	0.0000035	0.00099	0.0000066	0.003	0.0019	2.9	0.0021	0.000092	0.001	0.000011
Transitional Closure	13	2033-11-01	0.0000045	0.0009	0.000012	0.0031	0.0021	2.4	0.0039	0.00014	0.00053	0.000012
Transitional Closure	13	2033-12-01	0.0000053	0.0011	0.000016	0.0034	0.0023	2.3	0.0025	0.00014	0.00054	0.00002
Transitional Closure	13	2034-01-01	0.0000075	0.00098	0.000018	0.0037	0.0049	1.6	0.0041	0.00014	0.00046	0.000021
Transitional Closure	13	2034-02-01	0.0000059	0.00096	0.000019	0.0037	0.0036	1.6	0.0028	0.00013	0.00053	0.000022
Transitional Closure	14	2034-03-01	0.0000061	0.0011	0.00002	0.0039	0.0034	1.9	0.0028	0.00013	0.00054	0.000024
Transitional Closure	14	2034-04-01	0.0000064	0.00088	0.000021	0.0037	0.0023	1.8	0.003	0.00011	0.00057	0.000021
Transitional Closure	14	2034-05-01	0.0000052	0.0004	0.0000053	0.0014	0.0016	5	0.01	0.00012	0.00084	0.0000094
Transitional Closure	14	2034-06-01	0.000013	0.00044	0.0000062	0.0018	0.0029	4.3	0.0074	0.00015	0.00084	0.000011
Transitional Closure	14	2034-07-01	0.0000056	0.0005	0.0000055	0.0021	0.00095	6.3	0.0068	0.00019	0.00099	0.0000077
Transitional Closure	14	2034-08-01	0.0000056	0.00044	0.0000062	0.0021	0.002	5	0.0049	0.00016	0.00071	0.0000067
Transitional Closure	14	2034-09-01	0.0000055	0.00054	0.000004	0.0021	0.0019	5.5	0.0067	0.00014	0.00087	0.0000084
Transitional Closure	14	2034-10-01	0.0000031	0.001	0.0000042	0.003	0.002	2.9	0.002	0.00009	0.001	0.000012
Transitional Closure	14	2034-11-01	0.0000037	0.00091	0.0000071	0.0031	0.0022	2.4	0.0036	0.00013	0.00051	0.000012
Transitional Closure	14	2034-12-01	0.000004	0.0011	0.0000091	0.0034	0.0024	2.3	0.0021	0.00013	0.00052	0.00002

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	12	2032-03-01	87	0.00016	0.00073	0.01	0.000055	0.14	0.0022	0.0000057	0.001
Active Closure	12	2032-04-01	80	0.00017	0.00079	0.018	0.000042	0.13	0.0024	0.0000056	0.00088
Active Closure	12	2032-05-01	35	0.000065	0.0011	0.097	0.000031	0.033	0.0016	0.0000034	0.00046
Active Closure	12	2032-06-01	39	0.000065	0.00084	0.046	0.000035	0.031	0.0016	0.0000035	0.00044
Active Closure	12	2032-07-01	56	0.00011	0.00076	0.041	0.000044	0.053	0.0019	0.000004	0.0005
Active Closure	12	2032-08-01	54	0.00028	0.00074	0.033	0.000082	0.07	0.0017	0.0000045	0.00045
Active Closure	12	2032-09-01	52	0.00013	0.00089	0.035	0.000043	0.077	0.002	0.0000046	0.00055
Active Closure	12	2032-10-01	58	0.00016	0.00047	0.055	0.000042	0.12	0.0022	0.0000051	0.00096
Active Closure	12	2032-11-01	67	0.00021	0.00067	0.013	0.000068	0.17	0.0029	0.0000068	0.00095
Active Closure	12	2032-12-01	76	0.00025	0.00075	0.015	0.000075	0.21	0.0032	0.0000077	0.0011
Active Closure	12	2033-01-01	79	0.00025	0.0008	0.015	0.00014	0.21	0.0033	0.0000077	0.001
Active Closure	12	2033-02-01	82	0.00025	0.00083	0.013	0.000078	0.21	0.0032	0.0000075	0.00094
Active Closure	13	2033-03-01	87	0.00024	0.00078	0.01	0.00007	0.2	0.003	0.0000072	0.001
Active Closure	13	2033-04-01	80	0.00024	0.00085	0.019	0.000056	0.18	0.0031	0.000007	0.00088
Active Closure	13	2033-05-01	35	0.000079	0.0011	0.097	0.000034	0.045	0.0017	0.0000038	0.00046
Active Closure	13	2033-06-01	39	0.000077	0.00085	0.046	0.000038	0.041	0.0017	0.0000038	0.00044
Active Closure	13	2033-07-01	56	0.00012	0.00077	0.041	0.000047	0.068	0.0021	0.0000043	0.0005
Active Closure	13	2033-08-01	54	0.0003	0.00075	0.033	0.000087	0.087	0.0019	0.0000049	0.00045
Active Closure	13	2033-09-01	52	0.00015	0.00089	0.036	0.000047	0.091	0.0022	0.0000049	0.00055
Transitional Closure	13	2033-10-01	58	0.000087	0.00043	0.052	0.000013	0.062	0.0015	0.0000035	0.00092
Transitional Closure	13	2033-11-01	67	0.0001	0.00062	0.0087	0.000028	0.083	0.0018	0.0000045	0.00091
Transitional Closure	13	2033-12-01	76	0.00013	0.00071	0.011	0.000037	0.11	0.0021	0.0000053	0.001
Transitional Closure	13	2034-01-01	79	0.00016	0.00078	0.012	0.0001	0.13	0.0023	0.0000057	0.001
Transitional Closure	13	2034-02-01	82	0.00017	0.00084	0.01	0.000055	0.14	0.0024	0.0000059	0.00092
Transitional Closure	14	2034-03-01	87	0.00018	0.00081	0.0092	0.000054	0.15	0.0024	0.0000061	0.001
Transitional Closure	14	2034-04-01	81	0.00021	0.0009	0.018	0.000046	0.16	0.0027	0.0000064	0.00087
Transitional Closure	14	2034-05-01	35	0.000057	0.00098	0.09	0.000013	0.026	0.0015	0.000003	0.0004
Transitional Closure	14	2034-06-01	38	0.000047	0.00082	0.044	0.000024	0.016	0.0014	0.000003	0.00042
Transitional Closure	14	2034-07-01	55	0.00007	0.00073	0.038	0.000027	0.023	0.0016	0.0000031	0.00047
Transitional Closure	14	2034-08-01	54	0.00022	0.0007	0.029	0.000057	0.021	0.0011	0.0000031	0.00042
Transitional Closure	14	2034-09-01	52	0.000063	0.00084	0.032	0.000016	0.019	0.0013	0.000003	0.00051
Transitional Closure	14	2034-10-01	58	0.000066	0.00043	0.051	0.0000088	0.044	0.0012	0.0000031	0.00093
Transitional Closure	14	2034-11-01	68	0.00006	0.00062	0.0077	0.000019	0.047	0.0013	0.0000037	0.00092
Transitional Closure	14	2034-12-01	77	0.000076	0.00072	0.0097	0.000024	0.061	0.0014	0.000004	0.001

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Active Closure	12	2032-03-01	0.000019	0.004	0.0038
Active Closure	12	2032-04-01	0.000018	0.0037	0.0019
Active Closure	12	2032-05-01	0.000006	0.0015	0.0015
Active Closure	12	2032-06-01	0.0000058	0.0019	0.0007
Active Closure	12	2032-07-01	0.0000085	0.002	0.00098
Active Closure	12	2032-08-01	0.000011	0.002	0.0019
Active Closure	12	2032-09-01	0.000012	0.0021	0.0011
Active Closure	12	2032-10-01	0.000014	0.0029	0.0015
Active Closure	12	2032-11-01	0.000024	0.0032	0.002
Active Closure	12	2032-12-01	0.000028	0.0034	0.0024
Active Closure	12	2033-01-01	0.000028	0.0036	0.005
Active Closure	12	2033-02-01	0.000027	0.0037	0.0032
Active Closure	13	2033-03-01	0.000026	0.004	0.0037
Active Closure	13	2033-04-01	0.000025	0.0037	0.0021
Active Closure	13	2033-05-01	0.0000074	0.0015	0.0015
Active Closure	13	2033-06-01	0.000007	0.0019	0.00071
Active Closure	13	2033-07-01	0.00001	0.002	0.00099
Active Closure	13	2033-08-01	0.000013	0.0021	0.0019
Active Closure	13	2033-09-01	0.000013	0.0021	0.0011
Transitional Closure	13	2033-10-01	0.0000066	0.0029	0.0011
Transitional Closure	13	2033-11-01	0.000012	0.0031	0.0015
Transitional Closure	13	2033-12-01	0.000016	0.0033	0.0021
Transitional Closure	13	2034-01-01	0.000018	0.0036	0.0048
Transitional Closure	13	2034-02-01	0.000019	0.0037	0.0031
Transitional Closure	14	2034-03-01	0.00002	0.004	0.0037
Transitional Closure	14	2034-04-01	0.000021	0.0037	0.0021
Transitional Closure	14	2034-05-01	0.0000046	0.0014	0.00098
Transitional Closure	14	2034-06-01	0.0000037	0.0018	0.00056
Transitional Closure	14	2034-07-01	0.0000043	0.002	0.00075
Transitional Closure	14	2034-08-01	0.0000044	0.002	0.0016
Transitional Closure	14	2034-09-01	0.000004	0.0021	0.00079
Transitional Closure	14	2034-10-01	0.0000042	0.0029	0.0011
Transitional Closure	14	2034-11-01	0.0000071	0.0031	0.0016
Transitional Closure	14	2034-12-01	0.000009	0.0033	0.0021

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	14	2035-01-01	320	47	0.41	0.0046	0.067	0.0088	0.12	0.63	0.00024	0.00025	0.0087
Transitional Closure	14	2035-02-01	340	50	0.44	0.0046	0.072	0.007	0.12	0.75	0.00025	0.00025	0.019
Transitional Closure	15	2035-03-01	400	57	0.38	0.0044	0.056	0.0056	0.14	0.81	0.00063	0.00024	0.0028
Transitional Closure	15	2035-04-01	330	47	0.37	0.0042	0.042	0.0059	0.13	0.55	0.00053	0.00036	0.01
Transitional Closure	15	2035-05-01	130	21	0.13	0.0031	0.024	0.018	0.087	1	0.00063	0.00054	0.038
Transitional Closure	15	2035-06-01	160	24	0.088	0.0027	0.029	0.011	0.1	0.83	0.00065	0.00049	0.11
Transitional Closure	15	2035-07-01	220	32	0.11	0.004	0.027	0.02	0.11	0.55	0.00051	0.00055	0.043
Transitional Closure	15	2035-08-01	210	29	0.093	0.0046	0.019	0.014	0.093	0.26	0.00047	0.0005	0.029
Transitional Closure	15	2035-09-01	200	30	0.1	0.0028	0.021	0.0069	0.1	0.86	0.00052	0.00054	0.029
Transitional Closure	15	2035-10-01	220	36	0.14	0.0026	0.064	0.0074	0.11	0.62	0.0005	0.00025	0.011
Transitional Closure	15	2035-11-01	260	41	0.26	0.0037	0.028	0.0034	0.12	0.5	0.00054	0.00056	0.0062
Transitional Closure	15	2035-12-01	310	44	0.34	0.0042	0.038	0.0058	0.11	0.67	0.00052	0.00024	0.028
Transitional Closure	15	2036-01-01	310	46	0.39	0.0043	0.063	0.0087	0.12	0.63	0.00025	0.00025	0.0085
Transitional Closure	15	2036-02-01	320	49	0.42	0.0042	0.067	0.0069	0.12	0.75	0.00025	0.00025	0.018
Transitional Closure	16	2036-03-01	380	56	0.37	0.0041	0.051	0.0055	0.14	0.81	0.00063	0.00024	0.0026
Transitional Closure	16	2036-04-01	310	46	0.36	0.004	0.037	0.0059	0.13	0.55	0.00053	0.00036	0.01
Transitional Closure	16	2036-05-01	130	21	0.12	0.003	0.023	0.018	0.086	1	0.00063	0.00054	0.038
Transitional Closure	16	2036-06-01	160	24	0.084	0.0026	0.028	0.011	0.1	0.83	0.00065	0.00049	0.11
Transitional Closure	16	2036-07-01	210	32	0.1	0.0038	0.026	0.02	0.11	0.55	0.00051	0.00055	0.043
Transitional Closure	16	2036-08-01	210	29	0.088	0.0044	0.018	0.014	0.093	0.26	0.00047	0.0005	0.029
Transitional Closure	16	2036-09-01	200	30	0.097	0.0027	0.02	0.0069	0.1	0.86	0.00052	0.00054	0.029
Transitional Closure	16	2036-10-01	220	35	0.14	0.0025	0.063	0.0074	0.11	0.62	0.0005	0.00025	0.011
Transitional Closure	16	2036-11-01	250	41	0.25	0.0035	0.026	0.0034	0.12	0.5	0.00054	0.00057	0.0061
Transitional Closure	16	2036-12-01	300	43	0.33	0.004	0.035	0.0058	0.11	0.67	0.00052	0.00024	0.028
Transitional Closure	16	2037-01-01	300	45	0.38	0.0041	0.06	0.0087	0.12	0.63	0.00025	0.00025	0.0084
Transitional Closure	16	2037-02-01	310	48	0.42	0.0041	0.065	0.0069	0.12	0.75	0.00025	0.00025	0.018
Transitional Closure	17	2037-03-01	370	55	0.36	0.0039	0.048	0.0055	0.14	0.81	0.00063	0.00024	0.0024
Transitional Closure	17	2037-04-01	300	45	0.35	0.0038	0.034	0.0058	0.13	0.55	0.00053	0.00036	0.0099
Transitional Closure	17	2037-05-01	130	21	0.11	0.0029	0.022	0.018	0.086	1	0.00063	0.00054	0.038
Transitional Closure	17	2037-06-01	160	24	0.08	0.0025	0.028	0.011	0.1	0.83	0.00065	0.00049	0.11
Transitional Closure	17	2037-07-01	210	32	0.097	0.0037	0.025	0.02	0.11	0.55	0.00051	0.00055	0.043
Transitional Closure	17	2037-08-01	210	29	0.084	0.0043	0.017	0.014	0.093	0.26	0.00047	0.0005	0.029
Transitional Closure	17	2037-09-01	200	30	0.093	0.0026	0.02	0.0069	0.1	0.86	0.00052	0.00054	0.029
Transitional Closure	17	2037-10-01	220	35	0.14	0.0024	0.062	0.0074	0.11	0.62	0.0005	0.00025	0.011

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Transitional Closure	14	2035-01-01	0.00015	0.00057	0.000033	76	0.0001	0.001	0.048	0.00077	0.075	0.0016
Transitional Closure	14	2035-02-01	0.00013	0.00064	0.000029	81	0.00012	0.00097	0.14	0.00023	0.085	0.0018
Transitional Closure	15	2035-03-01	0.00011	0.00059	0.000025	95	0.0001	0.00083	0.011	0.00004	0.089	0.0016
Transitional Closure	15	2035-04-01	0.00011	0.00075	0.000021	77	0.00013	0.00088	0.12	0.000048	0.084	0.0018
Transitional Closure	15	2035-05-01	0.00012	0.0013	0.000016	34	0.000089	0.0012	0.27	0.000069	0.027	0.0019
Transitional Closure	15	2035-06-01	0.00018	0.0013	0.000036	43	0.0002	0.0015	0.28	0.00027	0.024	0.002
Transitional Closure	15	2035-07-01	0.00023	0.0013	0.000018	55	0.00017	0.001	0.21	0.00016	0.025	0.0019
Transitional Closure	15	2035-08-01	0.00018	0.00068	0.000013	56	0.00022	0.00095	0.16	0.00022	0.017	0.0018
Transitional Closure	15	2035-09-01	0.00015	0.0012	0.000017	52	0.00019	0.0011	0.17	0.000063	0.029	0.0017
Transitional Closure	15	2035-10-01	0.000084	0.0015	0.000021	58	0.000088	0.00052	0.22	0.000023	0.057	0.0014
Transitional Closure	15	2035-11-01	0.00013	0.0006	0.000018	65	0.000044	0.00068	0.025	0.00011	0.033	0.0011
Transitional Closure	15	2035-12-01	0.00014	0.00076	0.000025	78	0.00013	0.00089	0.079	0.0001	0.046	0.0014
Transitional Closure	15	2036-01-01	0.00015	0.00056	0.000033	76	0.000061	0.001	0.048	0.00076	0.042	0.0012
Transitional Closure	15	2036-02-01	0.00012	0.00062	0.000028	81	0.000075	0.00096	0.14	0.00022	0.049	0.0013
Transitional Closure	16	2036-03-01	0.0001	0.00057	0.000025	96	0.000057	0.00082	0.011	0.00003	0.05	0.0011
Transitional Closure	16	2036-04-01	0.0001	0.00074	0.00002	77	0.000084	0.00087	0.12	0.000038	0.042	0.0013
Transitional Closure	16	2036-05-01	0.00012	0.0013	0.000016	34	0.000082	0.0012	0.27	0.000067	0.021	0.0018
Transitional Closure	16	2036-06-01	0.00018	0.0013	0.000036	43	0.00019	0.0015	0.28	0.00027	0.02	0.002
Transitional Closure	16	2036-07-01	0.00023	0.0013	0.000018	55	0.00016	0.001	0.21	0.00016	0.021	0.0018
Transitional Closure	16	2036-08-01	0.00018	0.00068	0.000013	56	0.00021	0.00095	0.16	0.00022	0.012	0.0017
Transitional Closure	16	2036-09-01	0.00015	0.0012	0.000017	52	0.00018	0.0011	0.17	0.000062	0.025	0.0017
Transitional Closure	16	2036-10-01	0.000083	0.0015	0.000021	58	0.000081	0.00052	0.22	0.000022	0.051	0.0013
Transitional Closure	16	2036-11-01	0.00013	0.0006	0.000018	66	0.000031	0.00067	0.025	0.00011	0.022	0.00094
Transitional Closure	16	2036-12-01	0.00013	0.00076	0.000025	78	0.00011	0.00088	0.079	0.0001	0.032	0.0013
Transitional Closure	16	2037-01-01	0.00014	0.00056	0.000033	76	0.000041	0.001	0.048	0.00076	0.025	0.00098
Transitional Closure	16	2037-02-01	0.00012	0.00062	0.000028	81	0.000054	0.00096	0.14	0.00022	0.031	0.0011
Transitional Closure	17	2037-03-01	0.000099	0.00057	0.000024	96	0.000033	0.00081	0.01	0.000026	0.031	0.00088
Transitional Closure	17	2037-04-01	0.0001	0.00073	0.00002	78	0.000059	0.00086	0.12	0.000033	0.022	0.001
Transitional Closure	17	2037-05-01	0.00012	0.0013	0.000015	34	0.000079	0.0012	0.27	0.000067	0.018	0.0018
Transitional Closure	17	2037-06-01	0.00018	0.0013	0.000036	43	0.00019	0.0015	0.28	0.00027	0.019	0.002
Transitional Closure	17	2037-07-01	0.00023	0.0013	0.000018	55	0.00016	0.001	0.21	0.00016	0.019	0.0018
Transitional Closure	17	2037-08-01	0.00018	0.00068	0.000013	56	0.00021	0.00095	0.16	0.00022	0.01	0.0017
Transitional Closure	17	2037-09-01	0.00015	0.0012	0.000017	52	0.00018	0.0011	0.17	0.000061	0.023	0.0017
Transitional Closure	17	2037-10-01	0.000083	0.0015	0.000021	58	0.000078	0.00052	0.22	0.000021	0.049	0.0013

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	14	2035-01-01	0.000006	0.00098	0.00001	0.0037	0.005	1.6	0.0036	0.00013	0.00044	0.00002
Transitional Closure	14	2035-02-01	0.0000044	0.00096	0.00001	0.0037	0.0036	1.6	0.0023	0.00013	0.00051	0.000022
Transitional Closure	15	2035-03-01	0.0000044	0.0011	0.000011	0.0038	0.0034	1.9	0.0022	0.00012	0.00052	0.000023
Transitional Closure	15	2035-04-01	0.0000046	0.00087	0.000011	0.0037	0.0023	1.8	0.0024	0.000096	0.00055	0.00002
Transitional Closure	15	2035-05-01	0.0000049	0.0004	0.0000039	0.0014	0.0016	5	0.01	0.00011	0.00084	0.0000092
Transitional Closure	15	2035-06-01	0.000013	0.00044	0.0000053	0.0018	0.0029	4.3	0.0073	0.00015	0.00084	0.000011
Transitional Closure	15	2035-07-01	0.0000054	0.0005	0.0000045	0.0021	0.00094	6.3	0.0067	0.00019	0.00099	0.0000076
Transitional Closure	15	2035-08-01	0.0000054	0.00044	0.0000051	0.0021	0.002	5	0.0048	0.00015	0.00071	0.0000066
Transitional Closure	15	2035-09-01	0.0000053	0.00054	0.000003	0.0021	0.0018	5.5	0.0067	0.00014	0.00086	0.0000083
Transitional Closure	15	2035-10-01	0.0000028	0.001	0.0000029	0.003	0.002	2.9	0.0019	0.000088	0.001	0.000012
Transitional Closure	15	2035-11-01	0.0000031	0.00091	0.0000045	0.0031	0.0022	2.4	0.0035	0.00013	0.00051	0.000012
Transitional Closure	15	2035-12-01	0.0000033	0.0011	0.0000055	0.0034	0.0023	2.3	0.0019	0.00013	0.00051	0.00002
Transitional Closure	15	2036-01-01	0.0000052	0.00097	0.0000059	0.0037	0.005	1.6	0.0034	0.00013	0.00043	0.00002
Transitional Closure	15	2036-02-01	0.0000035	0.00095	0.0000059	0.0036	0.0035	1.6	0.002	0.00012	0.00049	0.000021
Transitional Closure	16	2036-03-01	0.0000035	0.0011	0.000006	0.0038	0.0033	1.9	0.0019	0.00011	0.0005	0.000023
Transitional Closure	16	2036-04-01	0.0000036	0.00087	0.0000061	0.0037	0.0023	1.8	0.0021	0.000091	0.00053	0.00002
Transitional Closure	16	2036-05-01	0.0000048	0.0004	0.0000032	0.0014	0.0016	5	0.01	0.00011	0.00084	0.0000091
Transitional Closure	16	2036-06-01	0.000013	0.00044	0.0000049	0.0018	0.0029	4.3	0.0073	0.00015	0.00084	0.000011
Transitional Closure	16	2036-07-01	0.0000053	0.00049	0.000004	0.0021	0.00093	6.3	0.0067	0.00019	0.00099	0.0000075
Transitional Closure	16	2036-08-01	0.0000053	0.00044	0.0000045	0.0021	0.002	5	0.0048	0.00015	0.0007	0.0000065
Transitional Closure	16	2036-09-01	0.0000052	0.00054	0.0000025	0.0021	0.0018	5.5	0.0066	0.00014	0.00086	0.0000083
Transitional Closure	16	2036-10-01	0.0000027	0.001	0.0000022	0.003	0.002	2.9	0.0019	0.000087	0.001	0.000012
Transitional Closure	16	2036-11-01	0.0000029	0.00091	0.0000032	0.0031	0.0022	2.4	0.0034	0.00013	0.0005	0.000012
Transitional Closure	16	2036-12-01	0.000003	0.0011	0.0000038	0.0034	0.0023	2.3	0.0018	0.00013	0.00051	0.00002
Transitional Closure	16	2037-01-01	0.0000048	0.00097	0.0000039	0.0037	0.005	1.6	0.0033	0.00013	0.00043	0.00002
Transitional Closure	16	2037-02-01	0.000003	0.00095	0.0000039	0.0036	0.0035	1.6	0.002	0.00012	0.00049	0.000021
Transitional Closure	17	2037-03-01	0.000003	0.0011	0.0000037	0.0038	0.0033	1.9	0.0018	0.00011	0.0005	0.000022
Transitional Closure	17	2037-04-01	0.0000031	0.00087	0.0000037	0.0037	0.0022	1.8	0.002	0.000088	0.00053	0.000019
Transitional Closure	17	2037-05-01	0.0000047	0.0004	0.0000029	0.0014	0.0016	5	0.01	0.00011	0.00084	0.0000091
Transitional Closure	17	2037-06-01	0.000013	0.00044	0.0000047	0.0018	0.0029	4.3	0.0073	0.00015	0.00084	0.000011
Transitional Closure	17	2037-07-01	0.0000052	0.00049	0.0000037	0.0021	0.00093	6.3	0.0067	0.00019	0.00099	0.0000075
Transitional Closure	17	2037-08-01	0.0000053	0.00044	0.0000043	0.0021	0.002	5	0.0048	0.00015	0.0007	0.0000065
Transitional Closure	17	2037-09-01	0.0000052	0.00054	0.0000023	0.0021	0.0018	5.5	0.0066	0.00014	0.00086	0.0000083
Transitional Closure	17	2037-10-01	0.0000026	0.001	0.0000019	0.003	0.002	2.9	0.0019	0.000087	0.001	0.000012

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	14	2035-01-01	80	0.000087	0.0008	0.01	0.000091	0.073	0.0015	0.0000042	0.001
Transitional Closure	14	2035-02-01	82	0.000094	0.00085	0.0088	0.000039	0.079	0.0016	0.0000044	0.00092
Transitional Closure	15	2035-03-01	88	0.000099	0.00083	0.0075	0.000037	0.085	0.0015	0.0000044	0.001
Transitional Closure	15	2035-04-01	81	0.00012	0.00092	0.017	0.000028	0.081	0.0018	0.0000045	0.00087
Transitional Closure	15	2035-05-01	35	0.000044	0.00098	0.09	0.000011	0.015	0.0014	0.0000027	0.0004
Transitional Closure	15	2035-06-01	38	0.00004	0.00082	0.044	0.000023	0.0092	0.0013	0.0000029	0.00042
Transitional Closure	15	2035-07-01	55	0.00006	0.00073	0.038	0.000025	0.014	0.0015	0.0000029	0.00047
Transitional Closure	15	2035-08-01	54	0.00021	0.0007	0.029	0.000055	0.012	0.00097	0.0000029	0.00042
Transitional Closure	15	2035-09-01	52	0.000053	0.00084	0.032	0.000014	0.011	0.0012	0.0000028	0.00051
Transitional Closure	15	2035-10-01	58	0.000053	0.00043	0.051	0.0000061	0.033	0.0011	0.0000028	0.00093
Transitional Closure	15	2035-11-01	68	0.000035	0.00062	0.0072	0.000014	0.026	0.001	0.0000031	0.00092
Transitional Closure	15	2035-12-01	77	0.000041	0.00072	0.0091	0.000017	0.033	0.0011	0.0000033	0.001
Transitional Closure	15	2036-01-01	80	0.000048	0.00079	0.0095	0.000083	0.04	0.0011	0.0000034	0.001
Transitional Closure	15	2036-02-01	82	0.00005	0.00084	0.0079	0.00003	0.043	0.0011	0.0000035	0.00091
Transitional Closure	16	2036-03-01	88	0.000052	0.00081	0.0066	0.000027	0.046	0.0011	0.0000035	0.001
Transitional Closure	16	2036-04-01	81	0.00007	0.00091	0.016	0.000017	0.039	0.0013	0.0000035	0.00086
Transitional Closure	16	2036-05-01	35	0.000037	0.00098	0.09	0.0000094	0.0086	0.0013	0.0000026	0.0004
Transitional Closure	16	2036-06-01	38	0.000035	0.00082	0.044	0.000022	0.0057	0.0013	0.0000028	0.00042
Transitional Closure	16	2036-07-01	55	0.000055	0.00073	0.038	0.000024	0.01	0.0014	0.0000028	0.00047
Transitional Closure	16	2036-08-01	54	0.00021	0.0007	0.029	0.000054	0.0078	0.00091	0.0000028	0.00041
Transitional Closure	16	2036-09-01	52	0.000048	0.00084	0.032	0.000013	0.0064	0.0011	0.0000027	0.00051
Transitional Closure	16	2036-10-01	58	0.000046	0.00043	0.051	0.0000048	0.028	0.001	0.0000027	0.00093
Transitional Closure	16	2036-11-01	68	0.000022	0.00062	0.007	0.000011	0.016	0.0009	0.0000029	0.00091
Transitional Closure	16	2036-12-01	77	0.000024	0.00071	0.0088	0.000014	0.018	0.00089	0.000003	0.001
Transitional Closure	16	2037-01-01	80	0.000027	0.00079	0.0092	0.000079	0.023	0.00089	0.000003	0.001
Transitional Closure	16	2037-02-01	82	0.000028	0.00083	0.0075	0.000026	0.025	0.0009	0.000003	0.00091
Transitional Closure	17	2037-03-01	88	0.000029	0.0008	0.0063	0.000022	0.026	0.00081	0.000003	0.001
Transitional Closure	17	2037-04-01	81	0.000046	0.0009	0.015	0.000012	0.019	0.001	0.000003	0.00086
Transitional Closure	17	2037-05-01	35	0.000033	0.00098	0.09	0.0000087	0.0057	0.0012	0.0000025	0.0004
Transitional Closure	17	2037-06-01	38	0.000033	0.00082	0.044	0.000022	0.004	0.0012	0.0000028	0.00042
Transitional Closure	17	2037-07-01	55	0.000053	0.00073	0.038	0.000023	0.0081	0.0014	0.0000028	0.00047
Transitional Closure	17	2037-08-01	54	0.00021	0.00069	0.029	0.000054	0.0056	0.00088	0.0000028	0.00041
Transitional Closure	17	2037-09-01	52	0.000046	0.00084	0.032	0.000012	0.0044	0.0011	0.0000027	0.00051
Transitional Closure	17	2037-10-01	58	0.000043	0.00043	0.051	0.0000041	0.025	0.001	0.0000026	0.00093

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Transitional Closure	14	2035-01-01	0.0000099	0.0036	0.0049
Transitional Closure	14	2035-02-01	0.00001	0.0037	0.0031
Transitional Closure	15	2035-03-01	0.000011	0.004	0.0038
Transitional Closure	15	2035-04-01	0.000011	0.0037	0.0021
Transitional Closure	15	2035-05-01	0.0000032	0.0014	0.00097
Transitional Closure	15	2035-06-01	0.0000028	0.0018	0.00055
Transitional Closure	15	2035-07-01	0.0000033	0.002	0.00074
Transitional Closure	15	2035-08-01	0.0000033	0.002	0.0016
Transitional Closure	15	2035-09-01	0.000003	0.0021	0.00078
Transitional Closure	15	2035-10-01	0.0000029	0.0029	0.0011
Transitional Closure	15	2035-11-01	0.0000045	0.0031	0.0016
Transitional Closure	15	2035-12-01	0.0000055	0.0033	0.0021
Transitional Closure	15	2036-01-01	0.0000058	0.0036	0.0049
Transitional Closure	15	2036-02-01	0.0000059	0.0037	0.003
Transitional Closure	16	2036-03-01	0.000006	0.004	0.0037
Transitional Closure	16	2036-04-01	0.0000061	0.0037	0.002
Transitional Closure	16	2036-05-01	0.0000025	0.0014	0.00095
Transitional Closure	16	2036-06-01	0.0000024	0.0018	0.00054
Transitional Closure	16	2036-07-01	0.0000028	0.002	0.00073
Transitional Closure	16	2036-08-01	0.0000027	0.002	0.0016
Transitional Closure	16	2036-09-01	0.0000025	0.0021	0.00078
Transitional Closure	16	2036-10-01	0.0000022	0.0029	0.0011
Transitional Closure	16	2036-11-01	0.0000032	0.0031	0.0016
Transitional Closure	16	2036-12-01	0.0000038	0.0033	0.0021
Transitional Closure	16	2037-01-01	0.0000038	0.0036	0.0048
Transitional Closure	16	2037-02-01	0.0000039	0.0037	0.003
Transitional Closure	17	2037-03-01	0.0000037	0.004	0.0037
Transitional Closure	17	2037-04-01	0.0000037	0.0037	0.002
Transitional Closure	17	2037-05-01	0.0000021	0.0014	0.00095
Transitional Closure	17	2037-06-01	0.0000022	0.0018	0.00054
Transitional Closure	17	2037-07-01	0.0000025	0.002	0.00073
Transitional Closure	17	2037-08-01	0.0000025	0.002	0.0015
Transitional Closure	17	2037-09-01	0.0000023	0.0021	0.00077
Transitional Closure	17	2037-10-01	0.0000019	0.0029	0.0011

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	17	2037-11-01	250	41	0.24	0.0033	0.025	0.0033	0.12	0.5	0.00054	0.00057	0.0061
Transitional Closure	17	2037-12-01	300	43	0.32	0.0038	0.033	0.0057	0.11	0.67	0.00052	0.00024	0.028
Transitional Closure	17	2038-01-01	300	45	0.38	0.0039	0.058	0.0087	0.12	0.63	0.00025	0.00025	0.0084
Transitional Closure	17	2038-02-01	310	48	0.41	0.0039	0.063	0.0069	0.12	0.75	0.00025	0.00025	0.018
Transitional Closure	18	2038-03-01	370	55	0.36	0.0037	0.046	0.0055	0.14	0.81	0.00063	0.00024	0.0024
Transitional Closure	18	2038-04-01	300	45	0.34	0.0036	0.032	0.0058	0.13	0.55	0.00053	0.00036	0.0098
Transitional Closure	18	2038-05-01	130	21	0.11	0.0028	0.021	0.018	0.086	1	0.00063	0.00054	0.038
Transitional Closure	18	2038-06-01	160	24	0.076	0.0024	0.027	0.011	0.1	0.83	0.00065	0.00049	0.11
Transitional Closure	18	2038-07-01	210	32	0.092	0.0036	0.024	0.02	0.11	0.55	0.00051	0.00055	0.043
Transitional Closure	18	2038-08-01	210	29	0.079	0.0042	0.016	0.014	0.093	0.26	0.00047	0.0005	0.029
Transitional Closure	18	2038-09-01	200	30	0.089	0.0025	0.019	0.0069	0.1	0.86	0.00052	0.00054	0.029
Transitional Closure	18	2038-10-01	220	35	0.13	0.0023	0.062	0.0074	0.11	0.62	0.0005	0.00025	0.011
Transitional Closure	18	2038-11-01	250	41	0.24	0.0032	0.024	0.0033	0.12	0.5	0.00054	0.00057	0.0061
Transitional Closure	18	2038-12-01	290	43	0.31	0.0037	0.032	0.0057	0.11	0.67	0.00052	0.00024	0.028
Transitional Closure	18	2039-01-01	290	45	0.37	0.0037	0.057	0.0087	0.12	0.63	0.00025	0.00025	0.0084
Transitional Closure	18	2039-02-01	310	48	0.4	0.0037	0.061	0.0069	0.12	0.75	0.00025	0.00025	0.018
Transitional Closure	19	2039-03-01	370	55	0.35	0.0036	0.045	0.0054	0.14	0.81	0.00063	0.00024	0.0024
Transitional Closure	19	2039-04-01	290	45	0.34	0.0034	0.03	0.0058	0.13	0.55	0.00053	0.00036	0.0098
Transitional Closure	19	2039-05-01	130	21	0.11	0.0027	0.02	0.018	0.086	1	0.00063	0.00054	0.038
Transitional Closure	19	2039-06-01	160	24	0.073	0.0024	0.027	0.011	0.1	0.83	0.00065	0.00049	0.11
Transitional Closure	19	2039-07-01	210	32	0.088	0.0035	0.024	0.02	0.11	0.55	0.00051	0.00055	0.043
Transitional Closure	19	2039-08-01	210	29	0.075	0.0041	0.016	0.014	0.093	0.26	0.00047	0.0005	0.029
Transitional Closure	19	2039-09-01	200	30	0.086	0.0024	0.019	0.0069	0.1	0.86	0.00052	0.00054	0.029
Transitional Closure	19	2039-10-01	220	35	0.13	0.0022	0.061	0.0074	0.11	0.62	0.0005	0.00025	0.011
Transitional Closure	19	2039-11-01	250	41	0.23	0.0031	0.023	0.0033	0.12	0.5	0.00054	0.00057	0.0061
Transitional Closure	19	2039-12-01	290	43	0.31	0.0035	0.031	0.0057	0.11	0.67	0.00052	0.00024	0.028
Transitional Closure	19	2040-01-01	290	45	0.36	0.0036	0.056	0.0087	0.12	0.63	0.00025	0.00025	0.0084
Transitional Closure	19	2040-02-01	310	48	0.39	0.0035	0.06	0.0068	0.12	0.75	0.00025	0.00025	0.018
Transitional Closure	20	2040-03-01	370	55	0.34	0.0034	0.044	0.0054	0.14	0.81	0.00063	0.00024	0.0024
Transitional Closure	20	2040-04-01	290	45	0.33	0.0033	0.029	0.0058	0.13	0.55	0.00053	0.00036	0.0098
Transitional Closure	20	2040-05-01	120	21	0.1	0.0026	0.02	0.018	0.086	1	0.00063	0.00054	0.038
Transitional Closure	20	2040-06-01	160	24	0.07	0.0023	0.026	0.011	0.1	0.83	0.00065	0.00049	0.11
Transitional Closure	20	2040-07-01	210	32	0.084	0.0034	0.023	0.02	0.11	0.55	0.00051	0.00055	0.043
Transitional Closure	20	2040-08-01	210	29	0.072	0.0041	0.015	0.014	0.093	0.26	0.00047	0.0005	0.029

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Transitional Closure	17	2037-11-01	0.00012	0.00059	0.000018	66	0.000025	0.00067	0.025	0.00011	0.017	0.00088
Transitional Closure	17	2037-12-01	0.00013	0.00076	0.000025	78	0.0001	0.00088	0.079	0.000099	0.025	0.0012
Transitional Closure	17	2038-01-01	0.00014	0.00055	0.000032	76	0.000031	0.001	0.048	0.00076	0.018	0.00089
Transitional Closure	17	2038-02-01	0.00012	0.00062	0.000028	81	0.000043	0.00095	0.14	0.00021	0.023	0.00096
Transitional Closure	18	2038-03-01	0.000098	0.00057	0.000024	96	0.000023	0.00081	0.01	0.000023	0.022	0.00077
Transitional Closure	18	2038-04-01	0.000099	0.00073	0.00002	78	0.000048	0.00086	0.12	0.000031	0.013	0.00093
Transitional Closure	18	2038-05-01	0.00012	0.0013	0.000015	34	0.000077	0.0012	0.27	0.000066	0.017	0.0018
Transitional Closure	18	2038-06-01	0.00018	0.0013	0.000036	43	0.00019	0.0015	0.28	0.00027	0.018	0.002
Transitional Closure	18	2038-07-01	0.00023	0.0013	0.000018	55	0.00016	0.001	0.21	0.00016	0.018	0.0018
Transitional Closure	18	2038-08-01	0.00018	0.00068	0.000013	56	0.00021	0.00095	0.16	0.00022	0.0092	0.0017
Transitional Closure	18	2038-09-01	0.00015	0.0012	0.000017	52	0.00018	0.0011	0.17	0.000061	0.022	0.0017
Transitional Closure	18	2038-10-01	0.000083	0.0015	0.000021	58	0.000076	0.00052	0.22	0.000021	0.048	0.0012
Transitional Closure	18	2038-11-01	0.00012	0.00059	0.000018	66	0.000022	0.00067	0.025	0.00011	0.015	0.00085
Transitional Closure	18	2038-12-01	0.00013	0.00076	0.000025	78	0.0001	0.00088	0.079	0.000099	0.022	0.0011
Transitional Closure	18	2039-01-01	0.00014	0.00055	0.000032	76	0.000027	0.001	0.048	0.00075	0.014	0.00084
Transitional Closure	18	2039-02-01	0.00012	0.00062	0.000028	81	0.000039	0.00095	0.14	0.00021	0.019	0.00092
Transitional Closure	19	2039-03-01	0.000098	0.00056	0.000024	96	0.000018	0.00081	0.01	0.000022	0.018	0.00072
Transitional Closure	19	2039-04-01	0.000098	0.00073	0.00002	78	0.000043	0.00086	0.12	0.00003	0.0086	0.00088
Transitional Closure	19	2039-05-01	0.00012	0.0013	0.000015	34	0.000076	0.0012	0.27	0.000066	0.016	0.0018
Transitional Closure	19	2039-06-01	0.00018	0.0013	0.000035	43	0.00019	0.0015	0.28	0.00027	0.018	0.0019
Transitional Closure	19	2039-07-01	0.00023	0.0013	0.000018	55	0.00016	0.001	0.21	0.00016	0.017	0.0018
Transitional Closure	19	2039-08-01	0.00018	0.00068	0.000013	56	0.00021	0.00095	0.16	0.00022	0.0088	0.0017
Transitional Closure	19	2039-09-01	0.00015	0.0012	0.000017	52	0.00018	0.0011	0.17	0.000061	0.022	0.0016
Transitional Closure	19	2039-10-01	0.000083	0.0015	0.000021	58	0.000076	0.00052	0.22	0.000021	0.047	0.0012
Transitional Closure	19	2039-11-01	0.00012	0.00059	0.000018	66	0.000021	0.00067	0.025	0.00011	0.014	0.00084
Transitional Closure	19	2039-12-01	0.00013	0.00076	0.000025	78	0.000098	0.00088	0.079	0.000098	0.021	0.0011
Transitional Closure	19	2040-01-01	0.00014	0.00055	0.000032	76	0.000025	0.001	0.049	0.00075	0.013	0.00082
Transitional Closure	19	2040-02-01	0.00012	0.00061	0.000028	81	0.000037	0.00095	0.14	0.00021	0.017	0.0009
Transitional Closure	20	2040-03-01	0.000098	0.00056	0.000024	96	0.000016	0.00081	0.01	0.000022	0.016	0.0007
Transitional Closure	20	2040-04-01	0.000098	0.00073	0.00002	78	0.00004	0.00086	0.12	0.00003	0.0068	0.00085
Transitional Closure	20	2040-05-01	0.00012	0.0013	0.000015	34	0.000076	0.0012	0.27	0.000066	0.016	0.0018
Transitional Closure	20	2040-06-01	0.00018	0.0013	0.000036	43	0.00019	0.0015	0.28	0.00027	0.017	0.0019
Transitional Closure	20	2040-07-01	0.00023	0.0013	0.000018	55	0.00016	0.001	0.21	0.00016	0.017	0.0018
Transitional Closure	20	2040-08-01	0.00018	0.00068	0.000013	56	0.00021	0.00095	0.16	0.00022	0.0086	0.0017

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	17	2037-11-01	0.0000028	0.00091	0.0000026	0.0031	0.0022	2.4	0.0034	0.00013	0.0005	0.000012
Transitional Closure	17	2037-12-01	0.0000028	0.0011	0.000003	0.0034	0.0023	2.3	0.0018	0.00013	0.00051	0.000019
Transitional Closure	17	2038-01-01	0.0000046	0.00097	0.000003	0.0037	0.005	1.6	0.0032	0.00012	0.00042	0.000019
Transitional Closure	17	2038-02-01	0.0000028	0.00095	0.0000029	0.0036	0.0035	1.6	0.0019	0.00012	0.00049	0.000021
Transitional Closure	18	2038-03-01	0.0000028	0.0011	0.0000027	0.0038	0.0033	1.9	0.0018	0.00011	0.0005	0.000022
Transitional Closure	18	2038-04-01	0.0000029	0.00086	0.0000026	0.0037	0.0022	1.8	0.002	0.000087	0.00053	0.000019
Transitional Closure	18	2038-05-01	0.0000047	0.0004	0.0000027	0.0014	0.0016	5	0.01	0.00011	0.00084	0.0000091
Transitional Closure	18	2038-06-01	0.000013	0.00044	0.0000046	0.0018	0.0029	4.3	0.0073	0.00015	0.00084	0.000011
Transitional Closure	18	2038-07-01	0.0000052	0.00049	0.0000036	0.0021	0.00093	6.3	0.0067	0.00019	0.00099	0.0000075
Transitional Closure	18	2038-08-01	0.0000052	0.00044	0.0000042	0.0021	0.002	5	0.0048	0.00015	0.0007	0.0000065
Transitional Closure	18	2038-09-01	0.0000052	0.00054	0.0000022	0.0021	0.0018	5.5	0.0066	0.00014	0.00086	0.0000082
Transitional Closure	18	2038-10-01	0.0000026	0.001	0.0000018	0.003	0.002	2.9	0.0019	0.000087	0.001	0.000012
Transitional Closure	18	2038-11-01	0.0000027	0.00091	0.0000024	0.0031	0.0022	2.4	0.0034	0.00013	0.0005	0.000012
Transitional Closure	18	2038-12-01	0.0000027	0.0011	0.0000026	0.0034	0.0023	2.3	0.0017	0.00012	0.00051	0.000019
Transitional Closure	18	2039-01-01	0.0000045	0.00097	0.0000026	0.0037	0.005	1.6	0.0032	0.00012	0.00042	0.000019
Transitional Closure	18	2039-02-01	0.0000027	0.00095	0.0000025	0.0036	0.0035	1.6	0.0019	0.00012	0.00049	0.000021
Transitional Closure	19	2039-03-01	0.0000027	0.0011	0.0000022	0.0038	0.0033	1.9	0.0017	0.00011	0.0005	0.000022
Transitional Closure	19	2039-04-01	0.0000028	0.00086	0.0000021	0.0037	0.0022	1.8	0.002	0.000087	0.00053	0.000019
Transitional Closure	19	2039-05-01	0.0000047	0.0004	0.0000026	0.0014	0.0016	5	0.01	0.00011	0.00084	0.0000091
Transitional Closure	19	2039-06-01	0.000013	0.00044	0.0000046	0.0018	0.0029	4.3	0.0073	0.00015	0.00084	0.000011
Transitional Closure	19	2039-07-01	0.0000052	0.00049	0.0000036	0.0021	0.00093	6.3	0.0067	0.00019	0.00099	0.0000075
Transitional Closure	19	2039-08-01	0.0000052	0.00044	0.0000041	0.0021	0.002	5	0.0048	0.00015	0.0007	0.0000065
Transitional Closure	19	2039-09-01	0.0000052	0.00054	0.0000021	0.0021	0.0018	5.5	0.0066	0.00014	0.00086	0.0000082
Transitional Closure	19	2039-10-01	0.0000026	0.001	0.0000017	0.003	0.002	2.9	0.0019	0.000087	0.001	0.000012
Transitional Closure	19	2039-11-01	0.0000027	0.00091	0.0000023	0.0031	0.0022	2.4	0.0034	0.00013	0.0005	0.000012
Transitional Closure	19	2039-12-01	0.0000027	0.0011	0.0000025	0.0034	0.0023	2.3	0.0017	0.00012	0.00051	0.000019
Transitional Closure	19	2040-01-01	0.0000045	0.00097	0.0000024	0.0037	0.005	1.6	0.0032	0.00012	0.00042	0.000019
Transitional Closure	19	2040-02-01	0.0000027	0.00095	0.0000022	0.0036	0.0035	1.6	0.0018	0.00011	0.00048	0.000021
Transitional Closure	20	2040-03-01	0.0000026	0.0011	0.000002	0.0038	0.0033	1.9	0.0017	0.00011	0.00049	0.000022
Transitional Closure	20	2040-04-01	0.0000027	0.00086	0.0000019	0.0037	0.0022	1.8	0.002	0.000086	0.00053	0.000019
Transitional Closure	20	2040-05-01	0.0000047	0.0004	0.0000026	0.0014	0.0016	5	0.01	0.00011	0.00084	0.0000091
Transitional Closure	20	2040-06-01	0.000013	0.00044	0.0000046	0.0018	0.0029	4.3	0.0073	0.00015	0.00084	0.000011
Transitional Closure	20	2040-07-01	0.0000052	0.00049	0.0000035	0.0021	0.00093	6.3	0.0067	0.00019	0.00099	0.0000075
Transitional Closure	20	2040-08-01	0.0000052	0.00044	0.0000041	0.0021	0.002	5	0.0048	0.00015	0.0007	0.0000065

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	17	2037-11-01	68	0.000016	0.00062	0.0069	0.00001	0.011	0.00084	0.0000028	0.00091
Transitional Closure	17	2037-12-01	77	0.000016	0.00071	0.0087	0.000012	0.011	0.0008	0.0000028	0.001
Transitional Closure	17	2038-01-01	80	0.000018	0.00078	0.009	0.000077	0.015	0.00079	0.0000028	0.001
Transitional Closure	17	2038-02-01	82	0.000018	0.00083	0.0074	0.000024	0.017	0.00079	0.0000028	0.00091
Transitional Closure	18	2038-03-01	88	0.000018	0.0008	0.0061	0.00002	0.017	0.0007	0.0000028	0.001
Transitional Closure	18	2038-04-01	81	0.000034	0.0009	0.015	0.00001	0.0095	0.0009	0.0000028	0.00086
Transitional Closure	18	2038-05-01	35	0.000031	0.00098	0.09	0.0000083	0.0044	0.0012	0.0000025	0.0004
Transitional Closure	18	2038-06-01	38	0.000032	0.00082	0.044	0.000021	0.0032	0.0012	0.0000027	0.00042
Transitional Closure	18	2038-07-01	55	0.000051	0.00073	0.038	0.000023	0.0071	0.0014	0.0000027	0.00047
Transitional Closure	18	2038-08-01	54	0.0002	0.00069	0.029	0.000053	0.0046	0.00087	0.0000027	0.00041
Transitional Closure	18	2038-09-01	52	0.000044	0.00084	0.032	0.000012	0.0035	0.0011	0.0000027	0.00051
Transitional Closure	18	2038-10-01	58	0.000042	0.00043	0.051	0.0000039	0.024	0.00099	0.0000026	0.00093
Transitional Closure	18	2038-11-01	68	0.000013	0.00061	0.0069	0.0000094	0.0084	0.00081	0.0000027	0.00091
Transitional Closure	18	2038-12-01	77	0.000012	0.00071	0.0086	0.000011	0.0081	0.00076	0.0000027	0.001
Transitional Closure	18	2039-01-01	80	0.000014	0.00078	0.009	0.000076	0.012	0.00075	0.0000027	0.001
Transitional Closure	18	2039-02-01	82	0.000014	0.00083	0.0073	0.000023	0.013	0.00074	0.0000027	0.00091
Transitional Closure	19	2039-03-01	88	0.000013	0.0008	0.006	0.000019	0.013	0.00065	0.0000027	0.001
Transitional Closure	19	2039-04-01	81	0.000029	0.00089	0.015	0.000009	0.0053	0.00085	0.0000027	0.00086
Transitional Closure	19	2039-05-01	35	0.000031	0.00098	0.09	0.0000082	0.0039	0.0012	0.0000025	0.0004
Transitional Closure	19	2039-06-01	38	0.000032	0.00082	0.044	0.000021	0.0029	0.0012	0.0000027	0.00042
Transitional Closure	19	2039-07-01	55	0.000051	0.00073	0.038	0.000023	0.0067	0.0014	0.0000027	0.00047
Transitional Closure	19	2039-08-01	54	0.0002	0.00069	0.029	0.000053	0.0041	0.00086	0.0000027	0.00041
Transitional Closure	19	2039-09-01	52	0.000044	0.00084	0.032	0.000012	0.0031	0.0011	0.0000027	0.00051
Transitional Closure	19	2039-10-01	58	0.000041	0.00043	0.051	0.0000037	0.024	0.00098	0.0000026	0.00093
Transitional Closure	19	2039-11-01	68	0.000012	0.00061	0.0069	0.0000092	0.0074	0.00079	0.0000027	0.00091
Transitional Closure	19	2039-12-01	77	0.00001	0.00071	0.0086	0.000011	0.0068	0.00074	0.0000027	0.001
Transitional Closure	19	2040-01-01	80	0.000012	0.00078	0.009	0.000075	0.01	0.00073	0.0000027	0.001
Transitional Closure	19	2040-02-01	82	0.000012	0.00083	0.0073	0.000022	0.011	0.00072	0.0000027	0.00091
Transitional Closure	20	2040-03-01	88	0.000011	0.0008	0.006	0.000019	0.012	0.00063	0.0000026	0.001
Transitional Closure	20	2040-04-01	81	0.000027	0.00089	0.015	0.0000086	0.0035	0.00083	0.0000027	0.00086
Transitional Closure	20	2040-05-01	35	0.00003	0.00098	0.09	0.0000081	0.0036	0.0012	0.0000025	0.0004
Transitional Closure	20	2040-06-01	38	0.000032	0.00082	0.044	0.000021	0.0027	0.0012	0.0000027	0.00042
Transitional Closure	20	2040-07-01	55	0.000051	0.00073	0.038	0.000023	0.0065	0.0014	0.0000027	0.00047
Transitional Closure	20	2040-08-01	54	0.0002	0.00069	0.029	0.000053	0.0039	0.00086	0.0000027	0.00041

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Transitional Closure	17	2037-11-01	0.0000027	0.0031	0.0016
Transitional Closure	17	2037-12-01	0.000003	0.0033	0.0021
Transitional Closure	17	2038-01-01	0.0000029	0.0036	0.0048
Transitional Closure	17	2038-02-01	0.0000029	0.0037	0.003
Transitional Closure	18	2038-03-01	0.0000027	0.004	0.0037
Transitional Closure	18	2038-04-01	0.0000026	0.0037	0.002
Transitional Closure	18	2038-05-01	0.000002	0.0014	0.00095
Transitional Closure	18	2038-06-01	0.0000021	0.0018	0.00054
Transitional Closure	18	2038-07-01	0.0000024	0.002	0.00073
Transitional Closure	18	2038-08-01	0.0000023	0.002	0.0015
Transitional Closure	18	2038-09-01	0.0000022	0.0021	0.00077
Transitional Closure	18	2038-10-01	0.0000018	0.0029	0.0011
Transitional Closure	18	2038-11-01	0.0000024	0.0031	0.0016
Transitional Closure	18	2038-12-01	0.0000026	0.0033	0.0021
Transitional Closure	18	2039-01-01	0.0000025	0.0036	0.0048
Transitional Closure	18	2039-02-01	0.0000025	0.0037	0.003
Transitional Closure	19	2039-03-01	0.0000022	0.004	0.0037
Transitional Closure	19	2039-04-01	0.0000021	0.0037	0.002
Transitional Closure	19	2039-05-01	0.0000019	0.0014	0.00095
Transitional Closure	19	2039-06-01	0.0000021	0.0018	0.00054
Transitional Closure	19	2039-07-01	0.0000024	0.002	0.00073
Transitional Closure	19	2039-08-01	0.0000023	0.002	0.0015
Transitional Closure	19	2039-09-01	0.0000021	0.0021	0.00077
Transitional Closure	19	2039-10-01	0.0000017	0.0029	0.0011
Transitional Closure	19	2039-11-01	0.0000023	0.0031	0.0016
Transitional Closure	19	2039-12-01	0.0000024	0.0033	0.0021
Transitional Closure	19	2040-01-01	0.0000024	0.0036	0.0048
Transitional Closure	19	2040-02-01	0.0000022	0.0037	0.003
Transitional Closure	20	2040-03-01	0.000002	0.004	0.0038
Transitional Closure	20	2040-04-01	0.0000019	0.0037	0.002
Transitional Closure	20	2040-05-01	0.0000019	0.0014	0.00095
Transitional Closure	20	2040-06-01	0.0000021	0.0018	0.00054
Transitional Closure	20	2040-07-01	0.0000024	0.002	0.00073
Transitional Closure	20	2040-08-01	0.0000023	0.002	0.0015

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	20	2040-09-01	200	30	0.082	0.0024	0.018	0.0069	0.1	0.86	0.00052	0.00054	0.029
Transitional Closure	20	2040-10-01	220	35	0.13	0.0022	0.061	0.0074	0.11	0.62	0.0005	0.00025	0.011
Transitional Closure	20	2040-11-01	250	41	0.23	0.003	0.022	0.0033	0.12	0.5	0.00054	0.00057	0.0061
Transitional Closure	20	2040-12-01	290	43	0.3	0.0034	0.03	0.0057	0.11	0.67	0.00052	0.00024	0.028
Transitional Closure	20	2041-01-01	290	45	0.36	0.0035	0.055	0.0087	0.12	0.63	0.00025	0.00025	0.0084
Transitional Closure	20	2041-02-01	310	48	0.39	0.0035	0.059	0.0069	0.12	0.75	0.00025	0.00025	0.018
Transitional Closure	21	2041-03-01	370	55	0.34	0.0033	0.042	0.0054	0.14	0.81	0.00063	0.00024	0.0024
Transitional Closure	21	2041-04-01	290	45	0.33	0.0032	0.028	0.0058	0.13	0.55	0.00053	0.00036	0.0098
Transitional Closure	21	2041-05-01	120	21	0.098	0.0025	0.019	0.018	0.086	1	0.00063	0.00054	0.038
Transitional Closure	21	2041-06-01	160	24	0.067	0.0022	0.026	0.011	0.1	0.83	0.00065	0.00049	0.11
Transitional Closure	21	2041-07-01	210	32	0.08	0.0033	0.023	0.02	0.11	0.55	0.00051	0.00055	0.043
Transitional Closure	21	2041-08-01	210	29	0.068	0.004	0.015	0.014	0.093	0.26	0.00047	0.0005	0.029
Transitional Closure	21	2041-09-01	200	30	0.079	0.0023	0.018	0.0069	0.1	0.86	0.00052	0.00054	0.029
Transitional Closure	21	2041-10-01	220	35	0.12	0.0021	0.06	0.0074	0.11	0.62	0.0005	0.00025	0.011
Transitional Closure	21	2041-11-01	250	41	0.23	0.0029	0.021	0.0033	0.12	0.5	0.00054	0.00057	0.0061
Transitional Closure	21	2041-12-01	290	43	0.3	0.0033	0.029	0.0057	0.11	0.67	0.00052	0.00024	0.028
Transitional Closure	21	2042-01-01	290	45	0.35	0.0034	0.054	0.0087	0.12	0.63	0.00025	0.00025	0.0084
Transitional Closure	21	2042-02-01	310	48	0.39	0.0034	0.058	0.0069	0.12	0.75	0.00025	0.00025	0.018
Transitional Closure	22	2042-03-01	370	55	0.33	0.0032	0.041	0.0054	0.14	0.81	0.00063	0.00024	0.0024
Transitional Closure	22	2042-04-01	290	45	0.32	0.0031	0.027	0.0058	0.13	0.55	0.00053	0.00036	0.0098
Transitional Closure	22	2042-05-01	120	21	0.095	0.0024	0.019	0.018	0.086	1	0.00063	0.00054	0.038
Transitional Closure	22	2042-06-01	160	24	0.064	0.0022	0.025	0.011	0.1	0.83	0.00065	0.00049	0.11
Transitional Closure	22	2042-07-01	210	32	0.077	0.0033	0.022	0.02	0.11	0.55	0.00051	0.00055	0.043
Transitional Closure	22	2042-08-01	210	29	0.065	0.0039	0.014	0.014	0.093	0.26	0.00047	0.0005	0.029
Transitional Closure	22	2042-09-01	200	30	0.077	0.0022	0.017	0.0069	0.1	0.86	0.00052	0.00054	0.029
Transitional Closure	22	2042-10-01	220	35	0.12	0.0021	0.06	0.0074	0.11	0.62	0.0005	0.00025	0.011
Transitional Closure	22	2042-11-01	250	41	0.22	0.0028	0.021	0.0033	0.12	0.5	0.00054	0.00057	0.0061
Transitional Closure	22	2042-12-01	290	43	0.29	0.0032	0.029	0.0057	0.11	0.67	0.00052	0.00024	0.028
Transitional Closure	22	2043-01-01	290	45	0.35	0.0033	0.053	0.0087	0.12	0.63	0.00025	0.00025	0.0084
Transitional Closure	22	2043-02-01	310	48	0.38	0.0033	0.057	0.0069	0.12	0.75	0.00025	0.00025	0.018
Transitional Closure	23	2043-03-01	370	55	0.33	0.0032	0.041	0.0054	0.14	0.81	0.00063	0.00024	0.0024
Transitional Closure	23	2043-04-01	290	45	0.32	0.003	0.026	0.0058	0.13	0.55	0.00053	0.00036	0.0098
Transitional Closure	23	2043-05-01	120	21	0.092	0.0024	0.018	0.018	0.086	1	0.00063	0.00054	0.038
Transitional Closure	23	2043-06-01	160	24	0.061	0.0021	0.025	0.011	0.1	0.83	0.00065	0.00049	0.11

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	20	2040-09-01	0.00015	0.0012	0.000017	52	0.00018	0.0011	0.17	0.000061	0.022	0.0016
Transitional Closure	20	2040-10-01	0.000083	0.0015	0.000021	58	0.000075	0.00052	0.22	0.000021	0.047	0.0012
Transitional Closure	20	2040-11-01	0.00012	0.00059	0.000018	66	0.000021	0.00067	0.025	0.00011	0.014	0.00083
Transitional Closure	20	2040-12-01	0.00013	0.00076	0.000025	78	0.000098	0.00088	0.079	0.000098	0.02	0.0011
Transitional Closure	20	2041-01-01	0.00014	0.00055	0.000032	76	0.000025	0.001	0.049	0.00075	0.012	0.00081
Transitional Closure	20	2041-02-01	0.00012	0.00062	0.000028	81	0.000036	0.00095	0.14	0.00021	0.017	0.00089
Transitional Closure	21	2041-03-01	0.000097	0.00056	0.000024	96	0.000015	0.00081	0.011	0.000022	0.015	0.00069
Transitional Closure	21	2041-04-01	0.000098	0.00073	0.00002	77	0.000039	0.00086	0.12	0.000029	0.006	0.00084
Transitional Closure	21	2041-05-01	0.00012	0.0013	0.000015	34	0.000076	0.0012	0.27	0.000066	0.016	0.0018
Transitional Closure	21	2041-06-01	0.00018	0.0013	0.000035	43	0.00019	0.0015	0.28	0.00027	0.017	0.0019
Transitional Closure	21	2041-07-01	0.00023	0.0013	0.000018	55	0.00016	0.001	0.21	0.00016	0.017	0.0018
Transitional Closure	21	2041-08-01	0.00018	0.00068	0.000013	56	0.00021	0.00095	0.16	0.00022	0.0085	0.0017
Transitional Closure	21	2041-09-01	0.00015	0.0012	0.000017	52	0.00018	0.0011	0.17	0.000061	0.021	0.0016
Transitional Closure	21	2041-10-01	0.000083	0.0015	0.000021	58	0.000075	0.00051	0.22	0.000021	0.047	0.0012
Transitional Closure	21	2041-11-01	0.00012	0.00059	0.000018	66	0.000021	0.00067	0.025	0.00011	0.013	0.00083
Transitional Closure	21	2041-12-01	0.00013	0.00076	0.000025	78	0.000097	0.00088	0.079	0.000098	0.02	0.0011
Transitional Closure	21	2042-01-01	0.00014	0.00055	0.000032	76	0.000024	0.001	0.049	0.00075	0.012	0.00081
Transitional Closure	21	2042-02-01	0.00012	0.00062	0.000028	81	0.000035	0.00095	0.14	0.00021	0.017	0.00088
Transitional Closure	22	2042-03-01	0.000097	0.00056	0.000025	96	0.000014	0.00081	0.011	0.000022	0.015	0.00068
Transitional Closure	22	2042-04-01	0.000098	0.00073	0.00002	77	0.000039	0.00086	0.12	0.000029	0.0056	0.00084
Transitional Closure	22	2042-05-01	0.00012	0.0013	0.000015	34	0.000076	0.0012	0.27	0.000066	0.016	0.0018
Transitional Closure	22	2042-06-01	0.00018	0.0013	0.000035	43	0.00019	0.0015	0.28	0.00027	0.017	0.0019
Transitional Closure	22	2042-07-01	0.00023	0.0013	0.000018	55	0.00016	0.001	0.21	0.00016	0.017	0.0018
Transitional Closure	22	2042-08-01	0.00018	0.00068	0.000013	56	0.00021	0.00095	0.16	0.00022	0.0084	0.0017
Transitional Closure	22	2042-09-01	0.00015	0.0012	0.000017	52	0.00018	0.0011	0.17	0.000061	0.021	0.0016
Transitional Closure	22	2042-10-01	0.000083	0.0015	0.000021	58	0.000075	0.00051	0.22	0.000021	0.047	0.0012
Transitional Closure	22	2042-11-01	0.00012	0.00059	0.000018	66	0.00002	0.00067	0.025	0.00011	0.013	0.00083
Transitional Closure	22	2042-12-01	0.00013	0.00076	0.000025	78	0.000097	0.00088	0.079	0.000098	0.02	0.0011
Transitional Closure	22	2043-01-01	0.00014	0.00055	0.000033	76	0.000024	0.001	0.049	0.00075	0.012	0.00081
Transitional Closure	22	2043-02-01	0.00012	0.00062	0.000028	81	0.000035	0.00095	0.14	0.00021	0.016	0.00088
Transitional Closure	23	2043-03-01	0.000097	0.00056	0.000025	95	0.000014	0.00081	0.011	0.000022	0.015	0.00068
Transitional Closure	23	2043-04-01	0.000098	0.00073	0.00002	77	0.000039	0.00086	0.12	0.000029	0.0054	0.00084
Transitional Closure	23	2043-05-01	0.00012	0.0013	0.000015	34	0.000076	0.0012	0.27	0.000066	0.016	0.0018
Transitional Closure	23	2043-06-01	0.00018	0.0013	0.000035	43	0.00019	0.0015	0.28	0.00027	0.017	0.0019

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	20	2040-09-01	0.0000052	0.00054	0.0000021	0.0021	0.0018	5.5	0.0066	0.00014	0.00086	0.0000082
Transitional Closure	20	2040-10-01	0.0000026	0.001	0.0000017	0.003	0.002	2.9	0.0019	0.000087	0.001	0.000012
Transitional Closure	20	2040-11-01	0.0000027	0.00091	0.0000022	0.0031	0.0022	2.4	0.0034	0.00013	0.0005	0.000012
Transitional Closure	20	2040-12-01	0.0000027	0.0011	0.0000024	0.0034	0.0023	2.3	0.0017	0.00012	0.00051	0.000019
Transitional Closure	20	2041-01-01	0.0000045	0.00097	0.0000023	0.0037	0.005	1.6	0.0032	0.00012	0.00042	0.000019
Transitional Closure	20	2041-02-01	0.0000027	0.00095	0.0000022	0.0036	0.0036	1.6	0.0019	0.00012	0.00048	0.000021
Transitional Closure	21	2041-03-01	0.0000026	0.0011	0.0000019	0.0038	0.0033	1.9	0.0017	0.00011	0.00049	0.000022
Transitional Closure	21	2041-04-01	0.0000027	0.00086	0.0000018	0.0037	0.0022	1.8	0.0019	0.000086	0.00052	0.000019
Transitional Closure	21	2041-05-01	0.0000047	0.0004	0.0000026	0.0014	0.0016	5	0.01	0.00011	0.00084	0.0000091
Transitional Closure	21	2041-06-01	0.000013	0.00044	0.0000046	0.0018	0.0029	4.3	0.0073	0.00015	0.00084	0.000011
Transitional Closure	21	2041-07-01	0.0000052	0.00049	0.0000035	0.0021	0.00093	6.3	0.0067	0.00019	0.00099	0.0000075
Transitional Closure	21	2041-08-01	0.0000052	0.00044	0.0000041	0.0021	0.002	5	0.0048	0.00015	0.0007	0.0000065
Transitional Closure	21	2041-09-01	0.0000052	0.00054	0.0000021	0.0021	0.0018	5.5	0.0066	0.00014	0.00086	0.0000082
Transitional Closure	21	2041-10-01	0.0000026	0.001	0.0000017	0.003	0.002	2.9	0.0019	0.000087	0.001	0.000012
Transitional Closure	21	2041-11-01	0.0000027	0.00091	0.0000022	0.0031	0.0022	2.4	0.0034	0.00013	0.0005	0.000012
Transitional Closure	21	2041-12-01	0.0000027	0.0011	0.0000024	0.0034	0.0023	2.3	0.0017	0.00012	0.00051	0.000019
Transitional Closure	21	2042-01-01	0.0000045	0.00097	0.0000023	0.0037	0.005	1.6	0.0032	0.00012	0.00042	0.000019
Transitional Closure	21	2042-02-01	0.0000027	0.00095	0.0000022	0.0036	0.0036	1.6	0.0019	0.00012	0.00048	0.000021
Transitional Closure	22	2042-03-01	0.0000026	0.0011	0.0000019	0.0038	0.0033	1.9	0.0017	0.00011	0.00049	0.000022
Transitional Closure	22	2042-04-01	0.0000027	0.00086	0.0000017	0.0037	0.0022	1.8	0.0019	0.000086	0.00052	0.000019
Transitional Closure	22	2042-05-01	0.0000047	0.0004	0.0000026	0.0014	0.0016	5	0.01	0.00011	0.00084	0.0000091
Transitional Closure	22	2042-06-01	0.000013	0.00044	0.0000046	0.0018	0.0029	4.3	0.0073	0.00015	0.00084	0.000011
Transitional Closure	22	2042-07-01	0.0000052	0.00049	0.0000035	0.0021	0.00093	6.3	0.0067	0.00019	0.00099	0.0000075
Transitional Closure	22	2042-08-01	0.0000052	0.00044	0.0000041	0.0021	0.002	5	0.0048	0.00015	0.0007	0.0000065
Transitional Closure	22	2042-09-01	0.0000052	0.00054	0.0000021	0.0021	0.0018	5.5	0.0066	0.00014	0.00086	0.0000082
Transitional Closure	22	2042-10-01	0.0000026	0.001	0.0000017	0.003	0.002	2.9	0.0019	0.000087	0.001	0.000012
Transitional Closure	22	2042-11-01	0.0000027	0.00091	0.0000022	0.0031	0.0022	2.4	0.0034	0.00013	0.0005	0.000012
Transitional Closure	22	2042-12-01	0.0000027	0.0011	0.0000024	0.0034	0.0023	2.3	0.0017	0.00012	0.00051	0.000019
Transitional Closure	22	2043-01-01	0.0000045	0.00097	0.0000023	0.0037	0.005	1.6	0.0032	0.00012	0.00042	0.000019
Transitional Closure	22	2043-02-01	0.0000027	0.00095	0.0000021	0.0036	0.0036	1.6	0.0019	0.00012	0.00048	0.000021
Transitional Closure	23	2043-03-01	0.0000026	0.0011	0.0000019	0.0038	0.0033	1.9	0.0017	0.00011	0.00049	0.000022
Transitional Closure	23	2043-04-01	0.0000027	0.00086	0.0000017	0.0037	0.0022	1.8	0.002	0.000086	0.00052	0.000019
Transitional Closure	23	2043-05-01	0.0000047	0.0004	0.0000026	0.0014	0.0016	5	0.01	0.00011	0.00084	0.0000091
Transitional Closure	23	2043-06-01	0.000013	0.00044	0.0000046	0.0018	0.0029	4.3	0.0073	0.00015	0.00084	0.000011

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	20	2040-09-01	52	0.000044	0.00084	0.032	0.000012	0.0029	0.0011	0.0000027	0.00051
Transitional Closure	20	2040-10-01	58	0.000041	0.00043	0.051	0.0000037	0.023	0.00098	0.0000026	0.00093
Transitional Closure	20	2040-11-01	68	0.000012	0.00061	0.0069	0.0000091	0.007	0.00079	0.0000027	0.00091
Transitional Closure	20	2040-12-01	77	0.0000096	0.00071	0.0086	0.000011	0.0062	0.00074	0.0000027	0.001
Transitional Closure	20	2041-01-01	80	0.000011	0.00078	0.0089	0.000075	0.0094	0.00072	0.0000027	0.001
Transitional Closure	20	2041-02-01	82	0.000011	0.00083	0.0073	0.000022	0.011	0.00071	0.0000027	0.00091
Transitional Closure	21	2041-03-01	88	0.00001	0.0008	0.006	0.000018	0.011	0.00062	0.0000026	0.001
Transitional Closure	21	2041-04-01	81	0.000026	0.00089	0.015	0.0000084	0.0028	0.00082	0.0000026	0.00086
Transitional Closure	21	2041-05-01	35	0.00003	0.00097	0.09	0.0000081	0.0035	0.0012	0.0000025	0.0004
Transitional Closure	21	2041-06-01	38	0.000032	0.00082	0.044	0.000021	0.0027	0.0012	0.0000027	0.00042
Transitional Closure	21	2041-07-01	55	0.000051	0.00073	0.038	0.000023	0.0064	0.0014	0.0000027	0.00047
Transitional Closure	21	2041-08-01	54	0.0002	0.00069	0.029	0.000053	0.0038	0.00086	0.0000027	0.00041
Transitional Closure	21	2041-09-01	52	0.000044	0.00084	0.032	0.000012	0.0028	0.0011	0.0000027	0.00051
Transitional Closure	21	2041-10-01	58	0.000041	0.00043	0.051	0.0000037	0.023	0.00098	0.0000026	0.00093
Transitional Closure	21	2041-11-01	68	0.000011	0.00061	0.0069	0.000009	0.0068	0.00079	0.0000027	0.00091
Transitional Closure	21	2041-12-01	77	0.0000093	0.00071	0.0086	0.000011	0.006	0.00073	0.0000027	0.001
Transitional Closure	21	2042-01-01	80	0.000011	0.00078	0.0089	0.000075	0.0091	0.00072	0.0000027	0.001
Transitional Closure	21	2042-02-01	82	0.00001	0.00083	0.0073	0.000022	0.01	0.00071	0.0000027	0.00091
Transitional Closure	22	2042-03-01	88	0.0000099	0.0008	0.006	0.000018	0.011	0.00061	0.0000026	0.001
Transitional Closure	22	2042-04-01	81	0.000026	0.00089	0.015	0.0000083	0.0025	0.00081	0.0000026	0.00086
Transitional Closure	22	2042-05-01	35	0.00003	0.00097	0.09	0.0000081	0.0034	0.0012	0.0000025	0.0004
Transitional Closure	22	2042-06-01	38	0.000032	0.00082	0.044	0.000021	0.0026	0.0012	0.0000027	0.00042
Transitional Closure	22	2042-07-01	55	0.000051	0.00073	0.038	0.000023	0.0064	0.0014	0.0000027	0.00047
Transitional Closure	22	2042-08-01	54	0.0002	0.00069	0.029	0.000053	0.0038	0.00086	0.0000027	0.00041
Transitional Closure	22	2042-09-01	52	0.000044	0.00084	0.032	0.000012	0.0028	0.0011	0.0000027	0.00051
Transitional Closure	22	2042-10-01	58	0.000041	0.00043	0.051	0.0000036	0.023	0.00098	0.0000026	0.00093
Transitional Closure	22	2042-11-01	68	0.000011	0.00061	0.0069	0.000009	0.0068	0.00079	0.0000027	0.00091
Transitional Closure	22	2042-12-01	77	0.0000091	0.00071	0.0086	0.000011	0.0059	0.00073	0.0000027	0.001
Transitional Closure	22	2043-01-01	80	0.00001	0.00078	0.0089	0.000075	0.009	0.00071	0.0000027	0.001
Transitional Closure	22	2043-02-01	82	0.00001	0.00083	0.0073	0.000022	0.01	0.00071	0.0000027	0.00091
Transitional Closure	23	2043-03-01	88	0.0000097	0.0008	0.006	0.000018	0.01	0.00061	0.0000026	0.001
Transitional Closure	23	2043-04-01	81	0.000026	0.00089	0.015	0.0000082	0.0023	0.00081	0.0000026	0.00086
Transitional Closure	23	2043-05-01	35	0.00003	0.00097	0.09	0.0000081	0.0034	0.0012	0.0000025	0.0004
Transitional Closure	23	2043-06-01	38	0.000032	0.00082	0.044	0.000021	0.0026	0.0012	0.0000027	0.00042

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Transitional Closure	20	2040-09-01	0.0000021	0.0021	0.00077
Transitional Closure	20	2040-10-01	0.0000017	0.0029	0.0011
Transitional Closure	20	2040-11-01	0.0000022	0.0031	0.0016
Transitional Closure	20	2040-12-01	0.0000024	0.0033	0.0021
Transitional Closure	20	2041-01-01	0.0000023	0.0036	0.0048
Transitional Closure	20	2041-02-01	0.0000022	0.0037	0.003
Transitional Closure	21	2041-03-01	0.0000019	0.004	0.0038
Transitional Closure	21	2041-04-01	0.0000018	0.0037	0.002
Transitional Closure	21	2041-05-01	0.0000019	0.0014	0.00095
Transitional Closure	21	2041-06-01	0.0000021	0.0018	0.00054
Transitional Closure	21	2041-07-01	0.0000024	0.002	0.00073
Transitional Closure	21	2041-08-01	0.0000023	0.002	0.0015
Transitional Closure	21	2041-09-01	0.0000021	0.0021	0.00077
Transitional Closure	21	2041-10-01	0.0000017	0.0029	0.0011
Transitional Closure	21	2041-11-01	0.0000022	0.0031	0.0016
Transitional Closure	21	2041-12-01	0.0000024	0.0033	0.0021
Transitional Closure	21	2042-01-01	0.0000022	0.0036	0.0048
Transitional Closure	21	2042-02-01	0.0000022	0.0037	0.003
Transitional Closure	22	2042-03-01	0.0000019	0.004	0.0038
Transitional Closure	22	2042-04-01	0.0000017	0.0037	0.002
Transitional Closure	22	2042-05-01	0.0000019	0.0014	0.00095
Transitional Closure	22	2042-06-01	0.0000021	0.0018	0.00054
Transitional Closure	22	2042-07-01	0.0000024	0.002	0.00073
Transitional Closure	22	2042-08-01	0.0000022	0.002	0.0015
Transitional Closure	22	2042-09-01	0.0000021	0.0021	0.00078
Transitional Closure	22	2042-10-01	0.0000017	0.0029	0.0011
Transitional Closure	22	2042-11-01	0.0000022	0.0031	0.0016
Transitional Closure	22	2042-12-01	0.0000023	0.0033	0.0021
Transitional Closure	22	2043-01-01	0.0000022	0.0036	0.0048
Transitional Closure	22	2043-02-01	0.0000021	0.0037	0.003
Transitional Closure	23	2043-03-01	0.0000019	0.004	0.0038
Transitional Closure	23	2043-04-01	0.0000017	0.0037	0.002
Transitional Closure	23	2043-05-01	0.0000019	0.0014	0.00096
Transitional Closure	23	2043-06-01	0.0000021	0.0018	0.00054

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	23	2043-07-01	210	32	0.074	0.0032	0.022	0.02	0.11	0.55	0.00051	0.00055	0.043
Transitional Closure	23	2043-08-01	210	29	0.063	0.0039	0.014	0.014	0.093	0.26	0.00047	0.0005	0.029
Transitional Closure	23	2043-09-01	200	30	0.075	0.0022	0.017	0.0069	0.1	0.86	0.00052	0.00054	0.029
Transitional Closure	23	2043-10-01	220	35	0.12	0.002	0.06	0.0074	0.11	0.62	0.0005	0.00025	0.011
Transitional Closure	23	2043-11-01	250	41	0.22	0.0028	0.021	0.0033	0.12	0.5	0.00054	0.00057	0.0061
Transitional Closure	23	2043-12-01	290	43	0.29	0.0032	0.029	0.0057	0.11	0.67	0.00052	0.00024	0.028
Transitional Closure	23	2044-01-01	290	45	0.35	0.0033	0.054	0.0087	0.12	0.63	0.00025	0.00025	0.0084
Transitional Closure	23	2044-02-01	310	48	0.38	0.0033	0.058	0.0068	0.12	0.75	0.00025	0.00025	0.018
Transitional Closure	24	2044-03-01	370	55	0.33	0.0032	0.042	0.0054	0.14	0.81	0.00063	0.00024	0.0024
Transitional Closure	24	2044-04-01	290	45	0.32	0.0031	0.027	0.0058	0.13	0.55	0.00053	0.00036	0.0098
Transitional Closure	24	2044-05-01	120	21	0.09	0.0023	0.018	0.018	0.086	1	0.00063	0.00054	0.038
Transitional Closure	24	2044-06-01	160	24	0.053	0.0019	0.023	0.011	0.1	0.83	0.00065	0.00049	0.11
Transitional Closure	24	2044-07-01	210	32	0.063	0.0029	0.019	0.02	0.11	0.55	0.00051	0.00055	0.043
Transitional Closure	24	2044-08-01	210	29	0.05	0.0036	0.011	0.014	0.093	0.26	0.00047	0.0005	0.029
Transitional Closure	24	2044-09-01	200	30	0.062	0.0019	0.014	0.0069	0.1	0.86	0.00052	0.00054	0.029
Transitional Closure	24	2044-10-01	220	35	0.1	0.0017	0.056	0.0074	0.11	0.62	0.0005	0.00025	0.011
Transitional Closure	24	2044-11-01	250	41	0.19	0.0021	0.013	0.0033	0.12	0.5	0.00054	0.00057	0.0061
Transitional Closure	24	2044-12-01	290	43	0.25	0.0021	0.017	0.0057	0.11	0.67	0.00052	0.00024	0.028
Transitional Closure	24	2045-01-01	290	45	0.3	0.002	0.04	0.0087	0.12	0.63	0.00025	0.00025	0.0085
Transitional Closure	24	2045-02-01	310	48	0.33	0.002	0.043	0.0069	0.12	0.75	0.00025	0.00025	0.018
Transitional Closure	25	2045-03-01	370	55	0.27	0.0018	0.026	0.0054	0.14	0.81	0.00063	0.00024	0.0024
Transitional Closure	25	2045-04-01	290	45	0.26	0.0016	0.01	0.0058	0.13	0.55	0.00053	0.00036	0.0098
Transitional Closure	25	2045-05-01	120	21	0.076	0.002	0.015	0.018	0.086	1	0.00063	0.00054	0.038
Transitional Closure	25	2045-06-01	160	24	0.051	0.0019	0.023	0.011	0.1	0.83	0.00065	0.00049	0.11
Passive Closure	25	2045-07-01	220	38	0.019	0.0019	0.014	0.02	0.12	0.57	0.00051	0.00053	0.045
Passive Closure	25	2045-08-01	220	39	0.032	0.0032	0.0088	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	25	2045-09-01	210	38	0.044	0.0016	0.013	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	25	2045-10-01	230	42	0.088	0.0013	0.054	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	25	2045-11-01	260	48	0.16	0.0015	0.0098	0.0032	0.13	0.51	0.00054	0.00058	0.009
Passive Closure	25	2045-12-01	300	52	0.21	0.0015	0.014	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	25	2046-01-01	310	54	0.26	0.0014	0.036	0.0088	0.13	0.65	0.00025	0.00025	0.013
Passive Closure	25	2046-02-01	320	58	0.29	0.0014	0.038	0.0072	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	26	2046-03-01	380	66	0.24	0.0012	0.022	0.0055	0.14	0.82	0.00061	0.00023	0.007
Passive Closure	26	2046-04-01	310	56	0.23	0.001	0.0064	0.0063	0.14	0.54	0.00052	0.00035	0.014

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Transitional Closure	23	2043-07-01	0.00023	0.0013	0.000018	55	0.00016	0.001	0.21	0.00016	0.017	0.0018
Transitional Closure	23	2043-08-01	0.00018	0.00068	0.000013	56	0.00021	0.00095	0.16	0.00022	0.0084	0.0017
Transitional Closure	23	2043-09-01	0.00015	0.0012	0.000017	52	0.00018	0.0011	0.17	0.000061	0.021	0.0016
Transitional Closure	23	2043-10-01	0.000083	0.0015	0.000021	58	0.000075	0.00051	0.22	0.000021	0.047	0.0012
Transitional Closure	23	2043-11-01	0.00012	0.00059	0.000018	66	0.00002	0.00067	0.025	0.00011	0.013	0.00083
Transitional Closure	23	2043-12-01	0.00013	0.00076	0.000025	78	0.000097	0.00088	0.079	0.000098	0.02	0.0011
Transitional Closure	23	2044-01-01	0.00014	0.00055	0.000033	76	0.000024	0.001	0.05	0.00075	0.012	0.00081
Transitional Closure	23	2044-02-01	0.00012	0.00061	0.000028	81	0.000035	0.00095	0.14	0.00021	0.016	0.00088
Transitional Closure	24	2044-03-01	0.000097	0.00056	0.000025	95	0.000014	0.00081	0.011	0.000022	0.015	0.00068
Transitional Closure	24	2044-04-01	0.000098	0.00073	0.00002	77	0.000038	0.00086	0.12	0.000029	0.0053	0.00084
Transitional Closure	24	2044-05-01	0.00012	0.0013	0.000016	34	0.000076	0.0012	0.27	0.000066	0.016	0.0018
Transitional Closure	24	2044-06-01	0.00018	0.0013	0.000035	43	0.00019	0.0015	0.28	0.00027	0.017	0.0019
Transitional Closure	24	2044-07-01	0.00023	0.0013	0.000018	55	0.00016	0.001	0.21	0.00016	0.017	0.0018
Transitional Closure	24	2044-08-01	0.00018	0.00068	0.000013	56	0.00021	0.00095	0.16	0.00022	0.0084	0.0017
Transitional Closure	24	2044-09-01	0.00015	0.0012	0.000017	52	0.00018	0.0011	0.17	0.000061	0.021	0.0016
Transitional Closure	24	2044-10-01	0.000083	0.0015	0.000021	58	0.000075	0.00052	0.22	0.000021	0.047	0.0012
Transitional Closure	24	2044-11-01	0.00012	0.00059	0.000018	66	0.00002	0.00067	0.025	0.00011	0.013	0.00083
Transitional Closure	24	2044-12-01	0.00013	0.00076	0.000025	78	0.000097	0.00088	0.08	0.000098	0.02	0.0011
Transitional Closure	24	2045-01-01	0.00014	0.00055	0.000033	76	0.000024	0.001	0.05	0.00075	0.012	0.00081
Transitional Closure	24	2045-02-01	0.00012	0.00062	0.000028	81	0.000035	0.00095	0.14	0.00021	0.016	0.00088
Transitional Closure	25	2045-03-01	0.000097	0.00056	0.000025	95	0.000014	0.00081	0.011	0.000022	0.015	0.00068
Transitional Closure	25	2045-04-01	0.000098	0.00073	0.00002	77	0.000038	0.00086	0.12	0.000029	0.0052	0.00084
Transitional Closure	25	2045-05-01	0.00012	0.0013	0.000016	34	0.000076	0.0012	0.27	0.000067	0.016	0.0018
Transitional Closure	25	2045-06-01	0.00018	0.0013	0.000035	43	0.00019	0.0015	0.28	0.00027	0.017	0.0019
Passive Closure	25	2045-07-01	0.00048	0.0031	0.000032	59	0.00024	0.0011	0.25	0.00067	0.037	0.0019
Passive Closure	25	2045-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.22	0.00098	0.04	0.0019
Passive Closure	25	2045-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	25	2045-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00057	0.26	0.00051	0.067	0.0014
Passive Closure	25	2045-11-01	0.00047	0.0028	0.000035	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	25	2045-12-01	0.00054	0.0034	0.000041	81	0.00021	0.00094	0.14	0.00077	0.047	0.0013
Passive Closure	25	2046-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.12	0.0015	0.043	0.001
Passive Closure	25	2046-02-01	0.00061	0.0037	0.000048	84	0.00017	0.001	0.2	0.001	0.048	0.0011
Passive Closure	26	2046-03-01	0.00062	0.0038	0.000047	99	0.00016	0.00088	0.08	0.00086	0.048	0.00095
Passive Closure	26	2046-04-01	0.00066	0.0042	0.00004	81	0.00019	0.00092	0.19	0.00091	0.042	0.0011

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	23	2043-07-01	0.0000052	0.00049	0.0000035	0.0021	0.00094	6.3	0.0067	0.00019	0.00099	0.0000075
Transitional Closure	23	2043-08-01	0.0000052	0.00044	0.0000041	0.0021	0.002	5	0.0048	0.00015	0.0007	0.0000065
Transitional Closure	23	2043-09-01	0.0000052	0.00054	0.0000021	0.0021	0.0018	5.5	0.0066	0.00014	0.00086	0.0000082
Transitional Closure	23	2043-10-01	0.0000026	0.001	0.0000017	0.003	0.002	2.9	0.0019	0.000087	0.001	0.000012
Transitional Closure	23	2043-11-01	0.0000027	0.00091	0.0000022	0.0031	0.0022	2.4	0.0034	0.00013	0.0005	0.000012
Transitional Closure	23	2043-12-01	0.0000027	0.0011	0.0000024	0.0034	0.0024	2.3	0.0017	0.00012	0.00051	0.000019
Transitional Closure	23	2044-01-01	0.0000045	0.00097	0.0000023	0.0037	0.005	1.6	0.0032	0.00012	0.00042	0.000019
Transitional Closure	23	2044-02-01	0.0000027	0.00095	0.0000021	0.0036	0.0036	1.6	0.0018	0.00011	0.00048	0.000021
Transitional Closure	24	2044-03-01	0.0000026	0.0011	0.0000019	0.0038	0.0034	1.9	0.0017	0.00011	0.00049	0.000022
Transitional Closure	24	2044-04-01	0.0000027	0.00086	0.0000017	0.0037	0.0023	1.8	0.002	0.000086	0.00052	0.000019
Transitional Closure	24	2044-05-01	0.0000047	0.0004	0.0000026	0.0014	0.0016	5	0.01	0.00011	0.00084	0.0000091
Transitional Closure	24	2044-06-01	0.000013	0.00044	0.0000046	0.0018	0.0029	4.3	0.0073	0.00015	0.00084	0.000011
Transitional Closure	24	2044-07-01	0.0000052	0.00049	0.0000035	0.0021	0.00094	6.3	0.0067	0.00019	0.00099	0.0000075
Transitional Closure	24	2044-08-01	0.0000052	0.00044	0.0000041	0.0021	0.002	5	0.0048	0.00015	0.0007	0.0000065
Transitional Closure	24	2044-09-01	0.0000052	0.00054	0.0000021	0.0021	0.0019	5.5	0.0066	0.00014	0.00086	0.0000082
Transitional Closure	24	2044-10-01	0.0000026	0.001	0.0000017	0.003	0.002	2.9	0.0019	0.000087	0.001	0.000012
Transitional Closure	24	2044-11-01	0.0000027	0.00091	0.0000022	0.0031	0.0022	2.4	0.0034	0.00013	0.0005	0.000012
Transitional Closure	24	2044-12-01	0.0000027	0.0011	0.0000024	0.0034	0.0024	2.3	0.0017	0.00012	0.00051	0.000019
Transitional Closure	24	2045-01-01	0.0000045	0.00097	0.0000023	0.0037	0.005	1.6	0.0032	0.00012	0.00042	0.000019
Transitional Closure	24	2045-02-01	0.0000027	0.00095	0.0000021	0.0036	0.0036	1.6	0.0019	0.00012	0.00048	0.000021
Transitional Closure	25	2045-03-01	0.0000026	0.0011	0.0000019	0.0038	0.0034	1.9	0.0017	0.00011	0.00049	0.000022
Transitional Closure	25	2045-04-01	0.0000027	0.00086	0.0000017	0.0037	0.0023	1.8	0.002	0.000086	0.00052	0.000019
Transitional Closure	25	2045-05-01	0.0000047	0.0004	0.0000026	0.0014	0.0016	5	0.01	0.00011	0.00084	0.0000091
Transitional Closure	25	2045-06-01	0.000013	0.00044	0.0000046	0.0018	0.0029	4.3	0.0073	0.00015	0.00084	0.000011
Passive Closure	25	2045-07-01	0.0000058	0.00049	0.0000084	0.0024	0.0026	6.3	0.008	0.00044	0.0028	0.00002
Passive Closure	25	2045-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.00061	0.0035	0.000025
Passive Closure	25	2045-09-01	0.000006	0.00055	0.0000092	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	25	2045-10-01	0.0000033	0.001	0.0000073	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	25	2045-11-01	0.0000034	0.0009	0.0000086	0.0037	0.0039	2.4	0.006	0.00048	0.0027	0.000026
Passive Closure	25	2045-12-01	0.0000036	0.0011	0.0000098	0.004	0.0042	2.3	0.0047	0.00053	0.0031	0.000035
Passive Closure	25	2046-01-01	0.0000055	0.00096	0.000011	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	25	2046-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0055	0.0006	0.0035	0.000039
Passive Closure	26	2046-03-01	0.0000038	0.0011	0.000012	0.0047	0.0054	1.9	0.0058	0.00063	0.0038	0.000043
Passive Closure	26	2046-04-01	0.000004	0.00086	0.000012	0.0046	0.0042	1.8	0.0063	0.00065	0.004	0.000039

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	23	2043-07-01	55	0.000051	0.00073	0.038	0.000023	0.0064	0.0014	0.0000027	0.00047
Transitional Closure	23	2043-08-01	54	0.0002	0.00069	0.029	0.000053	0.0038	0.00086	0.0000027	0.00041
Transitional Closure	23	2043-09-01	52	0.000044	0.00084	0.032	0.000012	0.0028	0.0011	0.0000027	0.00051
Transitional Closure	23	2043-10-01	58	0.000041	0.00043	0.051	0.0000036	0.023	0.00098	0.0000026	0.00093
Transitional Closure	23	2043-11-01	68	0.000011	0.00061	0.0069	0.000009	0.0067	0.00079	0.0000027	0.00091
Transitional Closure	23	2043-12-01	77	0.000009	0.00071	0.0086	0.000011	0.0058	0.00073	0.0000027	0.001
Transitional Closure	23	2044-01-01	80	0.00001	0.00078	0.0089	0.000075	0.009	0.00071	0.0000027	0.001
Transitional Closure	23	2044-02-01	82	0.00001	0.00083	0.0073	0.000022	0.01	0.00071	0.0000027	0.00091
Transitional Closure	24	2044-03-01	88	0.0000097	0.0008	0.006	0.000018	0.01	0.00061	0.0000026	0.001
Transitional Closure	24	2044-04-01	81	0.000026	0.00089	0.015	0.0000082	0.0023	0.00081	0.0000026	0.00086
Transitional Closure	24	2044-05-01	35	0.00003	0.00097	0.09	0.000008	0.0034	0.0012	0.0000025	0.0004
Transitional Closure	24	2044-06-01	38	0.000032	0.00082	0.044	0.000021	0.0026	0.0012	0.0000027	0.00042
Transitional Closure	24	2044-07-01	55	0.000051	0.00073	0.038	0.000023	0.0064	0.0014	0.0000027	0.00047
Transitional Closure	24	2044-08-01	54	0.0002	0.00069	0.029	0.000053	0.0038	0.00086	0.0000027	0.00041
Transitional Closure	24	2044-09-01	52	0.000044	0.00084	0.032	0.000012	0.0028	0.0011	0.0000027	0.00051
Transitional Closure	24	2044-10-01	58	0.00004	0.00043	0.051	0.0000036	0.023	0.00098	0.0000026	0.00093
Transitional Closure	24	2044-11-01	68	0.000011	0.00061	0.0069	0.000009	0.0067	0.00079	0.0000027	0.00091
Transitional Closure	24	2044-12-01	77	0.000009	0.00071	0.0086	0.000011	0.0058	0.00073	0.0000027	0.001
Transitional Closure	24	2045-01-01	80	0.00001	0.00078	0.0089	0.000075	0.009	0.00071	0.0000027	0.001
Transitional Closure	24	2045-02-01	82	0.00001	0.00083	0.0073	0.000022	0.01	0.00071	0.0000027	0.00091
Transitional Closure	25	2045-03-01	88	0.0000096	0.0008	0.006	0.000018	0.01	0.00061	0.0000026	0.001
Transitional Closure	25	2045-04-01	81	0.000025	0.00089	0.015	0.0000082	0.0023	0.00081	0.0000026	0.00086
Transitional Closure	25	2045-05-01	35	0.00003	0.00097	0.09	0.000008	0.0034	0.0012	0.0000025	0.0004
Transitional Closure	25	2045-06-01	38	0.000032	0.00082	0.044	0.000021	0.0026	0.0012	0.0000027	0.00042
Passive Closure	25	2045-07-01	58	0.00013	0.00076	0.076	0.00053	0.026	0.0015	0.0000032	0.00046
Passive Closure	25	2045-08-01	58	0.00033	0.00077	0.086	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	25	2045-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	25	2045-10-01	61	0.00013	0.00048	0.089	0.00049	0.044	0.0011	0.0000033	0.00093
Passive Closure	25	2045-11-01	71	0.00011	0.00067	0.052	0.00059	0.031	0.00098	0.0000034	0.00091
Passive Closure	25	2045-12-01	80	0.00013	0.00076	0.061	0.00068	0.034	0.00095	0.0000036	0.001
Passive Closure	25	2046-01-01	83	0.00014	0.00084	0.066	0.0008	0.04	0.00095	0.0000037	0.001
Passive Closure	25	2046-02-01	86	0.00015	0.00089	0.068	0.00081	0.04	0.00095	0.0000037	0.0009
Passive Closure	26	2046-03-01	91	0.00016	0.00087	0.071	0.00085	0.043	0.00087	0.0000038	0.001
Passive Closure	26	2046-04-01	85	0.00018	0.00096	0.083	0.00089	0.042	0.0011	0.0000039	0.00085

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Transitional Closure	23	2043-07-01	0.0000024	0.002	0.00074
Transitional Closure	23	2043-08-01	0.0000022	0.002	0.0015
Transitional Closure	23	2043-09-01	0.0000021	0.0021	0.00078
Transitional Closure	23	2043-10-01	0.0000017	0.0029	0.0011
Transitional Closure	23	2043-11-01	0.0000022	0.0031	0.0016
Transitional Closure	23	2043-12-01	0.0000023	0.0033	0.0021
Transitional Closure	23	2044-01-01	0.0000022	0.0036	0.0049
Transitional Closure	23	2044-02-01	0.0000021	0.0037	0.003
Transitional Closure	24	2044-03-01	0.0000019	0.004	0.0038
Transitional Closure	24	2044-04-01	0.0000017	0.0037	0.002
Transitional Closure	24	2044-05-01	0.0000019	0.0014	0.00096
Transitional Closure	24	2044-06-01	0.0000021	0.0018	0.00054
Transitional Closure	24	2044-07-01	0.0000024	0.002	0.00074
Transitional Closure	24	2044-08-01	0.0000022	0.002	0.0015
Transitional Closure	24	2044-09-01	0.0000021	0.0021	0.00078
Transitional Closure	24	2044-10-01	0.0000017	0.0029	0.0012
Transitional Closure	24	2044-11-01	0.0000022	0.0031	0.0016
Transitional Closure	24	2044-12-01	0.0000023	0.0033	0.0021
Transitional Closure	24	2045-01-01	0.0000022	0.0036	0.0049
Transitional Closure	24	2045-02-01	0.0000021	0.0037	0.003
Transitional Closure	25	2045-03-01	0.0000019	0.0039	0.0039
Transitional Closure	25	2045-04-01	0.0000017	0.0037	0.002
Transitional Closure	25	2045-05-01	0.0000019	0.0014	0.00096
Transitional Closure	25	2045-06-01	0.0000021	0.0018	0.00054
Passive Closure	25	2045-07-01	0.0000071	0.0024	0.0023
Passive Closure	25	2045-08-01	0.000011	0.0028	0.0036
Passive Closure	25	2045-09-01	0.0000091	0.0027	0.0027
Passive Closure	25	2045-10-01	0.0000072	0.0034	0.0026
Passive Closure	25	2045-11-01	0.0000086	0.0037	0.0034
Passive Closure	25	2045-12-01	0.0000097	0.004	0.0037
Passive Closure	25	2046-01-01	0.00001	0.0043	0.0065
Passive Closure	25	2046-02-01	0.000011	0.0044	0.0049
Passive Closure	26	2046-03-01	0.000012	0.0048	0.0056
Passive Closure	26	2046-04-01	0.000012	0.0046	0.0039

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	26	2046-05-01	140	29	0.062	0.0017	0.014	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	26	2046-06-01	180	35	0.033	0.0015	0.021	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	26	2046-07-01	230	45	0.038	0.0024	0.016	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	26	2046-08-01	220	39	0.03	0.0031	0.0086	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	26	2046-09-01	210	38	0.043	0.0015	0.012	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	26	2046-10-01	230	42	0.087	0.0013	0.054	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	26	2046-11-01	260	48	0.16	0.0015	0.0097	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	26	2046-12-01	300	51	0.21	0.0014	0.014	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	26	2047-01-01	310	54	0.26	0.0014	0.036	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	26	2047-02-01	320	58	0.29	0.0013	0.038	0.0072	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	27	2047-03-01	380	65	0.24	0.0012	0.022	0.0055	0.14	0.82	0.00061	0.00023	0.007
Passive Closure	27	2047-04-01	310	56	0.23	0.001	0.0063	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	27	2047-05-01	140	29	0.06	0.0016	0.013	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	27	2047-06-01	180	35	0.032	0.0015	0.021	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	27	2047-07-01	230	45	0.037	0.0023	0.016	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	27	2047-08-01	220	39	0.029	0.0031	0.0084	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	27	2047-09-01	210	38	0.042	0.0015	0.012	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	27	2047-10-01	230	42	0.086	0.0013	0.053	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	27	2047-11-01	260	48	0.16	0.0014	0.0095	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	27	2047-12-01	300	51	0.21	0.0014	0.014	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	27	2048-01-01	310	54	0.26	0.0014	0.036	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	27	2048-02-01	320	58	0.29	0.0013	0.038	0.0071	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	28	2048-03-01	380	65	0.24	0.0012	0.022	0.0055	0.14	0.82	0.00061	0.00023	0.0069
Passive Closure	28	2048-04-01	310	56	0.23	0.001	0.0063	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	28	2048-05-01	140	29	0.058	0.0016	0.013	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	28	2048-06-01	180	35	0.031	0.0014	0.02	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	28	2048-07-01	230	45	0.035	0.0023	0.016	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	28	2048-08-01	220	39	0.027	0.0031	0.0083	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	28	2048-09-01	210	38	0.041	0.0015	0.012	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	28	2048-10-01	230	42	0.085	0.0013	0.053	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	28	2048-11-01	260	48	0.16	0.0014	0.0094	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	28	2048-12-01	300	51	0.21	0.0014	0.013	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	28	2049-01-01	310	54	0.26	0.0013	0.036	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	28	2049-02-01	320	58	0.29	0.0013	0.038	0.0072	0.13	0.77	0.00025	0.00026	0.022

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Passive Closure	26	2046-05-01	0.00048	0.0036	0.000033	39	0.00018	0.0012	0.32	0.00085	0.041	0.0019
Passive Closure	26	2046-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	26	2046-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	26	2046-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00098	0.04	0.0019
Passive Closure	26	2046-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	26	2046-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.00051	0.067	0.0014
Passive Closure	26	2046-11-01	0.00047	0.0028	0.000035	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	26	2046-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013
Passive Closure	26	2047-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	26	2047-02-01	0.00061	0.0037	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011
Passive Closure	27	2047-03-01	0.00062	0.0038	0.000047	99	0.00016	0.00087	0.079	0.00085	0.048	0.00095
Passive Closure	27	2047-04-01	0.00066	0.0042	0.00004	81	0.00019	0.00092	0.19	0.00091	0.042	0.0011
Passive Closure	27	2047-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	27	2047-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	27	2047-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	27	2047-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019
Passive Closure	27	2047-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	27	2047-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.00051	0.067	0.0014
Passive Closure	27	2047-11-01	0.00047	0.0028	0.000035	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	27	2047-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013
Passive Closure	27	2048-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	27	2048-02-01	0.0006	0.0036	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011
Passive Closure	28	2048-03-01	0.00062	0.0038	0.000047	99	0.00016	0.00088	0.079	0.00084	0.048	0.00094
Passive Closure	28	2048-04-01	0.00065	0.0042	0.00004	81	0.00019	0.00092	0.19	0.0009	0.042	0.0011
Passive Closure	28	2048-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	28	2048-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	28	2048-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	28	2048-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019
Passive Closure	28	2048-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	28	2048-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.0005	0.067	0.0014
Passive Closure	28	2048-11-01	0.00047	0.0028	0.000035	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	28	2048-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013
Passive Closure	28	2049-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	28	2049-02-01	0.0006	0.0036	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	26	2046-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	26	2046-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	26	2046-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	26	2046-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.00061	0.0035	0.000025
Passive Closure	26	2046-09-01	0.000006	0.00055	0.0000092	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	26	2046-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	26	2046-11-01	0.0000034	0.0009	0.0000086	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	26	2046-12-01	0.0000036	0.0011	0.0000098	0.004	0.0042	2.3	0.0046	0.00052	0.0031	0.000035
Passive Closure	26	2047-01-01	0.0000055	0.00096	0.000011	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	26	2047-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0055	0.0006	0.0035	0.000039
Passive Closure	27	2047-03-01	0.0000038	0.0011	0.000012	0.0047	0.0054	1.9	0.0057	0.00063	0.0037	0.000043
Passive Closure	27	2047-04-01	0.0000039	0.00086	0.000012	0.0046	0.0042	1.8	0.0062	0.00065	0.004	0.000039
Passive Closure	27	2047-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	27	2047-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	27	2047-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	27	2047-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025
Passive Closure	27	2047-09-01	0.000006	0.00055	0.0000092	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	27	2047-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	27	2047-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	27	2047-12-01	0.0000036	0.0011	0.0000097	0.004	0.0042	2.3	0.0046	0.00052	0.0031	0.000034
Passive Closure	27	2048-01-01	0.0000055	0.00096	0.00001	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	27	2048-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0054	0.0006	0.0035	0.000039
Passive Closure	28	2048-03-01	0.0000038	0.0011	0.000011	0.0046	0.0054	1.9	0.0057	0.00063	0.0037	0.000043
Passive Closure	28	2048-04-01	0.0000039	0.00086	0.000012	0.0046	0.0041	1.8	0.0062	0.00064	0.004	0.000039
Passive Closure	28	2048-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	28	2048-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	28	2048-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	28	2048-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025
Passive Closure	28	2048-09-01	0.000006	0.00055	0.0000091	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	28	2048-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	28	2048-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	28	2048-12-01	0.0000036	0.0011	0.0000097	0.004	0.0042	2.3	0.0046	0.00052	0.0031	0.000034
Passive Closure	28	2049-01-01	0.0000055	0.00096	0.00001	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	28	2049-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0055	0.0006	0.0035	0.000039

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	26	2046-05-01	39	0.00013	0.001	0.14	0.00078	0.029	0.0014	0.0000033	0.00045
Passive Closure	26	2046-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	26	2046-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	26	2046-08-01	58	0.00033	0.00077	0.086	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	26	2046-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	26	2046-10-01	61	0.00013	0.00048	0.089	0.00049	0.044	0.0011	0.0000033	0.00093
Passive Closure	26	2046-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	26	2046-12-01	80	0.00013	0.00076	0.061	0.00067	0.034	0.00095	0.0000036	0.001
Passive Closure	26	2047-01-01	83	0.00014	0.00084	0.066	0.0008	0.04	0.00095	0.0000036	0.001
Passive Closure	26	2047-02-01	86	0.00015	0.00089	0.068	0.0008	0.04	0.00095	0.0000037	0.0009
Passive Closure	27	2047-03-01	91	0.00016	0.00086	0.07	0.00084	0.043	0.00087	0.0000038	0.001
Passive Closure	27	2047-04-01	85	0.00018	0.00096	0.083	0.00088	0.041	0.0011	0.0000039	0.00085
Passive Closure	27	2047-05-01	39	0.00013	0.001	0.14	0.00078	0.029	0.0014	0.0000033	0.00045
Passive Closure	27	2047-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	27	2047-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	27	2047-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	27	2047-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	27	2047-10-01	61	0.00013	0.00048	0.089	0.00049	0.044	0.0011	0.0000033	0.00093
Passive Closure	27	2047-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	27	2047-12-01	80	0.00013	0.00076	0.061	0.00067	0.033	0.00095	0.0000036	0.001
Passive Closure	27	2048-01-01	83	0.00014	0.00084	0.065	0.0008	0.04	0.00095	0.0000036	0.001
Passive Closure	27	2048-02-01	86	0.00015	0.00089	0.067	0.0008	0.04	0.00095	0.0000037	0.0009
Passive Closure	28	2048-03-01	91	0.00015	0.00087	0.07	0.00084	0.042	0.00087	0.0000038	0.001
Passive Closure	28	2048-04-01	85	0.00018	0.00096	0.082	0.00088	0.041	0.0011	0.0000039	0.00085
Passive Closure	28	2048-05-01	39	0.00013	0.001	0.14	0.00078	0.029	0.0014	0.0000033	0.00045
Passive Closure	28	2048-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	28	2048-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	28	2048-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	28	2048-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	28	2048-10-01	61	0.00013	0.00048	0.089	0.00048	0.044	0.0011	0.0000033	0.00093
Passive Closure	28	2048-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	28	2048-12-01	80	0.00013	0.00076	0.061	0.00067	0.033	0.00095	0.0000036	0.001
Passive Closure	28	2049-01-01	83	0.00014	0.00084	0.065	0.0008	0.04	0.00095	0.0000036	0.001
Passive Closure	28	2049-02-01	86	0.00015	0.00089	0.067	0.0008	0.04	0.00095	0.0000037	0.0009

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Passive Closure	26	2046-05-01	0.00001	0.002	0.0034
Passive Closure	26	2046-06-01	0.000012	0.0027	0.0028
Passive Closure	26	2046-07-01	0.000013	0.003	0.0035
Passive Closure	26	2046-08-01	0.000011	0.0028	0.0036
Passive Closure	26	2046-09-01	0.000009	0.0027	0.0027
Passive Closure	26	2046-10-01	0.0000072	0.0034	0.0026
Passive Closure	26	2046-11-01	0.0000085	0.0037	0.0034
Passive Closure	26	2046-12-01	0.0000097	0.004	0.0037
Passive Closure	26	2047-01-01	0.00001	0.0043	0.0065
Passive Closure	26	2047-02-01	0.000011	0.0044	0.0049
Passive Closure	27	2047-03-01	0.000011	0.0048	0.0056
Passive Closure	27	2047-04-01	0.000012	0.0046	0.0039
Passive Closure	27	2047-05-01	0.00001	0.002	0.0034
Passive Closure	27	2047-06-01	0.000012	0.0027	0.0028
Passive Closure	27	2047-07-01	0.000013	0.0029	0.0035
Passive Closure	27	2047-08-01	0.000011	0.0028	0.0036
Passive Closure	27	2047-09-01	0.000009	0.0027	0.0027
Passive Closure	27	2047-10-01	0.0000072	0.0034	0.0026
Passive Closure	27	2047-11-01	0.0000085	0.0037	0.0034
Passive Closure	27	2047-12-01	0.0000096	0.0039	0.0037
Passive Closure	27	2048-01-01	0.00001	0.0043	0.0065
Passive Closure	27	2048-02-01	0.000011	0.0044	0.0049
Passive Closure	28	2048-03-01	0.000011	0.0048	0.0056
Passive Closure	28	2048-04-01	0.000012	0.0046	0.0039
Passive Closure	28	2048-05-01	0.00001	0.002	0.0034
Passive Closure	28	2048-06-01	0.000012	0.0027	0.0028
Passive Closure	28	2048-07-01	0.000013	0.0029	0.0035
Passive Closure	28	2048-08-01	0.000011	0.0028	0.0036
Passive Closure	28	2048-09-01	0.000009	0.0027	0.0027
Passive Closure	28	2048-10-01	0.0000072	0.0034	0.0026
Passive Closure	28	2048-11-01	0.0000085	0.0037	0.0034
Passive Closure	28	2048-12-01	0.0000096	0.0039	0.0037
Passive Closure	28	2049-01-01	0.00001	0.0043	0.0065
Passive Closure	28	2049-02-01	0.000011	0.0044	0.0049

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	29	2049-03-01	380	65	0.24	0.0012	0.022	0.0055	0.14	0.82	0.00061	0.00023	0.0069
Passive Closure	29	2049-04-01	310	56	0.23	0.001	0.0062	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	29	2049-05-01	140	29	0.057	0.0016	0.013	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	29	2049-06-01	180	35	0.03	0.0014	0.02	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	29	2049-07-01	230	45	0.034	0.0023	0.016	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	29	2049-08-01	220	39	0.026	0.003	0.0081	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	29	2049-09-01	210	38	0.04	0.0015	0.012	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	29	2049-10-01	230	42	0.085	0.0013	0.053	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	29	2049-11-01	260	48	0.16	0.0014	0.0093	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	29	2049-12-01	300	51	0.21	0.0014	0.013	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	29	2050-01-01	310	54	0.26	0.0013	0.036	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	29	2050-02-01	320	58	0.29	0.0013	0.038	0.0072	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	30	2050-03-01	380	65	0.24	0.0012	0.022	0.0055	0.14	0.82	0.00061	0.00023	0.0069
Passive Closure	30	2050-04-01	310	56	0.23	0.001	0.0061	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	30	2050-05-01	140	29	0.055	0.0015	0.013	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	30	2050-06-01	180	35	0.029	0.0014	0.02	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	30	2050-07-01	230	45	0.033	0.0022	0.016	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	30	2050-08-01	220	39	0.025	0.003	0.008	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	30	2050-09-01	210	38	0.039	0.0014	0.012	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	30	2050-10-01	230	42	0.084	0.0012	0.053	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	30	2050-11-01	260	48	0.15	0.0014	0.0092	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	30	2050-12-01	300	51	0.21	0.0013	0.013	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	30	2051-01-01	310	54	0.26	0.0013	0.035	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	30	2051-02-01	320	58	0.29	0.0013	0.038	0.0072	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	31	2051-03-01	380	65	0.24	0.0012	0.022	0.0055	0.14	0.82	0.00061	0.00023	0.0069
Passive Closure	31	2051-04-01	310	56	0.23	0.00099	0.0061	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	31	2051-05-01	140	29	0.054	0.0015	0.013	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	31	2051-06-01	180	35	0.028	0.0014	0.02	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	31	2051-07-01	230	45	0.031	0.0022	0.015	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	31	2051-08-01	220	39	0.024	0.003	0.0078	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	31	2051-09-01	210	38	0.038	0.0014	0.012	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	31	2051-10-01	230	42	0.083	0.0012	0.053	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	31	2051-11-01	260	48	0.15	0.0013	0.0091	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	31	2051-12-01	300	51	0.21	0.0013	0.013	0.0055	0.12	0.67	0.00051	0.00025	0.031

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Passive Closure	29	2049-03-01	0.00061	0.0038	0.000047	99	0.00016	0.00087	0.078	0.00084	0.048	0.00094
Passive Closure	29	2049-04-01	0.00065	0.0042	0.000039	81	0.00019	0.00092	0.19	0.0009	0.042	0.0011
Passive Closure	29	2049-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	29	2049-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	29	2049-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	29	2049-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019
Passive Closure	29	2049-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	29	2049-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.0005	0.067	0.0014
Passive Closure	29	2049-11-01	0.00047	0.0028	0.000035	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	29	2049-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013
Passive Closure	29	2050-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	29	2050-02-01	0.0006	0.0036	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011
Passive Closure	30	2050-03-01	0.00061	0.0038	0.000047	99	0.00015	0.00087	0.078	0.00084	0.048	0.00094
Passive Closure	30	2050-04-01	0.00065	0.0041	0.000039	81	0.00019	0.00092	0.19	0.0009	0.042	0.0011
Passive Closure	30	2050-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	30	2050-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	30	2050-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	30	2050-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019
Passive Closure	30	2050-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	30	2050-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.0005	0.067	0.0014
Passive Closure	30	2050-11-01	0.00047	0.0028	0.000035	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	30	2050-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013
Passive Closure	30	2051-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	30	2051-02-01	0.0006	0.0036	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011
Passive Closure	31	2051-03-01	0.00061	0.0038	0.000047	99	0.00015	0.00087	0.078	0.00084	0.048	0.00094
Passive Closure	31	2051-04-01	0.00065	0.0041	0.000039	81	0.00019	0.00092	0.19	0.0009	0.042	0.0011
Passive Closure	31	2051-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	31	2051-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	31	2051-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	31	2051-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019
Passive Closure	31	2051-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	31	2051-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.0005	0.067	0.0014
Passive Closure	31	2051-11-01	0.00047	0.0028	0.000034	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	31	2051-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	29	2049-03-01	0.0000038	0.0011	0.000011	0.0046	0.0054	1.9	0.0057	0.00062	0.0037	0.000043
Passive Closure	29	2049-04-01	0.0000039	0.00086	0.000012	0.0046	0.0041	1.8	0.0062	0.00064	0.004	0.000039
Passive Closure	29	2049-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	29	2049-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	29	2049-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	29	2049-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025
Passive Closure	29	2049-09-01	0.000006	0.00055	0.0000091	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	29	2049-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	29	2049-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	29	2049-12-01	0.0000036	0.0011	0.0000097	0.004	0.0041	2.3	0.0046	0.00052	0.0031	0.000034
Passive Closure	29	2050-01-01	0.0000055	0.00096	0.00001	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	29	2050-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0055	0.0006	0.0035	0.000039
Passive Closure	30	2050-03-01	0.0000038	0.0011	0.000011	0.0046	0.0054	1.9	0.0057	0.00062	0.0037	0.000043
Passive Closure	30	2050-04-01	0.0000039	0.00086	0.000012	0.0046	0.0041	1.8	0.0062	0.00064	0.0039	0.000039
Passive Closure	30	2050-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	30	2050-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	30	2050-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	30	2050-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025
Passive Closure	30	2050-09-01	0.000006	0.00055	0.0000091	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	30	2050-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	30	2050-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	30	2050-12-01	0.0000036	0.0011	0.0000097	0.004	0.0041	2.3	0.0046	0.00052	0.0031	0.000034
Passive Closure	30	2051-01-01	0.0000055	0.00096	0.00001	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	30	2051-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0054	0.00059	0.0035	0.000039
Passive Closure	31	2051-03-01	0.0000038	0.0011	0.000011	0.0046	0.0054	1.9	0.0057	0.00062	0.0037	0.000043
Passive Closure	31	2051-04-01	0.0000039	0.00086	0.000012	0.0046	0.0041	1.8	0.0062	0.00064	0.0039	0.000039
Passive Closure	31	2051-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	31	2051-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	31	2051-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	31	2051-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025
Passive Closure	31	2051-09-01	0.000006	0.00055	0.0000091	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	31	2051-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	31	2051-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	31	2051-12-01	0.0000036	0.0011	0.0000097	0.004	0.0041	2.3	0.0046	0.00052	0.0031	0.000034

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	29	2049-03-01	91	0.00015	0.00086	0.069	0.00084	0.042	0.00087	0.0000038	0.001
Passive Closure	29	2049-04-01	85	0.00018	0.00096	0.082	0.00088	0.041	0.0011	0.0000039	0.00085
Passive Closure	29	2049-05-01	39	0.00013	0.001	0.14	0.00078	0.029	0.0014	0.0000033	0.00045
Passive Closure	29	2049-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	29	2049-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	29	2049-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	29	2049-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	29	2049-10-01	61	0.00012	0.00048	0.089	0.00048	0.044	0.0011	0.0000033	0.00093
Passive Closure	29	2049-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	29	2049-12-01	80	0.00013	0.00076	0.06	0.00067	0.033	0.00095	0.0000036	0.001
Passive Closure	29	2050-01-01	83	0.00014	0.00084	0.065	0.0008	0.04	0.00095	0.0000036	0.001
Passive Closure	29	2050-02-01	86	0.00015	0.00089	0.067	0.00079	0.04	0.00095	0.0000037	0.0009
Passive Closure	30	2050-03-01	91	0.00015	0.00086	0.069	0.00083	0.042	0.00087	0.0000038	0.001
Passive Closure	30	2050-04-01	85	0.00018	0.00096	0.082	0.00088	0.041	0.0011	0.0000038	0.00085
Passive Closure	30	2050-05-01	39	0.00013	0.001	0.14	0.00077	0.029	0.0014	0.0000033	0.00045
Passive Closure	30	2050-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	30	2050-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	30	2050-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	30	2050-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	30	2050-10-01	61	0.00012	0.00048	0.089	0.00048	0.044	0.0011	0.0000033	0.00093
Passive Closure	30	2050-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	30	2050-12-01	80	0.00013	0.00076	0.06	0.00067	0.033	0.00095	0.0000036	0.001
Passive Closure	30	2051-01-01	83	0.00014	0.00084	0.065	0.0008	0.04	0.00095	0.0000036	0.001
Passive Closure	30	2051-02-01	86	0.00015	0.00089	0.067	0.00079	0.04	0.00095	0.0000037	0.0009
Passive Closure	31	2051-03-01	91	0.00015	0.00086	0.069	0.00083	0.042	0.00087	0.0000038	0.001
Passive Closure	31	2051-04-01	85	0.00018	0.00096	0.082	0.00088	0.041	0.0011	0.0000038	0.00085
Passive Closure	31	2051-05-01	39	0.00013	0.001	0.14	0.00077	0.029	0.0014	0.0000033	0.00045
Passive Closure	31	2051-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	31	2051-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	31	2051-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	31	2051-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	31	2051-10-01	61	0.00012	0.00048	0.089	0.00048	0.044	0.0011	0.0000033	0.00093
Passive Closure	31	2051-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	31	2051-12-01	80	0.00013	0.00076	0.06	0.00067	0.033	0.00095	0.0000036	0.001

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Passive Closure	29	2049-03-01	0.000011	0.0048	0.0056
Passive Closure	29	2049-04-01	0.000012	0.0046	0.0039
Passive Closure	29	2049-05-01	0.00001	0.002	0.0034
Passive Closure	29	2049-06-01	0.000012	0.0027	0.0028
Passive Closure	29	2049-07-01	0.000013	0.0029	0.0035
Passive Closure	29	2049-08-01	0.000011	0.0028	0.0036
Passive Closure	29	2049-09-01	0.000009	0.0027	0.0027
Passive Closure	29	2049-10-01	0.0000072	0.0034	0.0026
Passive Closure	29	2049-11-01	0.0000085	0.0037	0.0034
Passive Closure	29	2049-12-01	0.0000096	0.0039	0.0037
Passive Closure	29	2050-01-01	0.00001	0.0043	0.0065
Passive Closure	29	2050-02-01	0.000011	0.0044	0.0049
Passive Closure	30	2050-03-01	0.000011	0.0048	0.0056
Passive Closure	30	2050-04-01	0.000012	0.0046	0.0039
Passive Closure	30	2050-05-01	0.00001	0.002	0.0034
Passive Closure	30	2050-06-01	0.000012	0.0027	0.0028
Passive Closure	30	2050-07-01	0.000013	0.0029	0.0035
Passive Closure	30	2050-08-01	0.000011	0.0028	0.0036
Passive Closure	30	2050-09-01	0.000009	0.0027	0.0027
Passive Closure	30	2050-10-01	0.0000072	0.0034	0.0026
Passive Closure	30	2050-11-01	0.0000085	0.0037	0.0034
Passive Closure	30	2050-12-01	0.0000096	0.0039	0.0037
Passive Closure	30	2051-01-01	0.00001	0.0043	0.0065
Passive Closure	30	2051-02-01	0.000011	0.0044	0.0049
Passive Closure	31	2051-03-01	0.000011	0.0048	0.0055
Passive Closure	31	2051-04-01	0.000012	0.0046	0.0039
Passive Closure	31	2051-05-01	0.00001	0.002	0.0034
Passive Closure	31	2051-06-01	0.000012	0.0027	0.0028
Passive Closure	31	2051-07-01	0.000013	0.0029	0.0035
Passive Closure	31	2051-08-01	0.000011	0.0028	0.0036
Passive Closure	31	2051-09-01	0.000009	0.0027	0.0027
Passive Closure	31	2051-10-01	0.0000072	0.0034	0.0026
Passive Closure	31	2051-11-01	0.0000085	0.0037	0.0034
Passive Closure	31	2051-12-01	0.0000096	0.0039	0.0037

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	31	2052-01-01	310	54	0.26	0.0013	0.035	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	31	2052-02-01	320	58	0.29	0.0012	0.038	0.0071	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	32	2052-03-01	380	65	0.24	0.0012	0.021	0.0055	0.14	0.82	0.00062	0.00023	0.0069
Passive Closure	32	2052-04-01	310	56	0.23	0.00098	0.006	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	32	2052-05-01	140	29	0.053	0.0015	0.013	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	32	2052-06-01	180	35	0.027	0.0013	0.02	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	32	2052-07-01	230	45	0.03	0.0022	0.015	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	32	2052-08-01	220	39	0.023	0.003	0.0077	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	32	2052-09-01	210	38	0.037	0.0014	0.012	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	32	2052-10-01	230	42	0.083	0.0012	0.053	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	32	2052-11-01	260	48	0.15	0.0013	0.009	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	32	2052-12-01	300	51	0.21	0.0013	0.013	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	32	2053-01-01	310	54	0.26	0.0013	0.035	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	32	2053-02-01	320	58	0.29	0.0012	0.038	0.0072	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	33	2053-03-01	380	65	0.24	0.0012	0.021	0.0055	0.14	0.82	0.00061	0.00023	0.0069
Passive Closure	33	2053-04-01	310	56	0.23	0.00097	0.006	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	33	2053-05-01	140	29	0.051	0.0014	0.012	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	33	2053-06-01	180	35	0.026	0.0013	0.02	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	33	2053-07-01	230	45	0.029	0.0022	0.015	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	33	2053-08-01	220	39	0.022	0.0029	0.0075	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	33	2053-09-01	210	38	0.036	0.0014	0.012	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	33	2053-10-01	230	42	0.082	0.0012	0.053	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	33	2053-11-01	260	48	0.15	0.0013	0.0089	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	33	2053-12-01	300	51	0.2	0.0013	0.013	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	33	2054-01-01	310	54	0.25	0.0012	0.035	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	33	2054-02-01	320	58	0.29	0.0012	0.038	0.0072	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	34	2054-03-01	380	65	0.24	0.0011	0.021	0.0055	0.14	0.82	0.00062	0.00023	0.0069
Passive Closure	34	2054-04-01	310	56	0.22	0.00096	0.0059	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	34	2054-05-01	140	29	0.05	0.0014	0.012	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	34	2054-06-01	180	35	0.025	0.0013	0.02	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	34	2054-07-01	230	45	0.028	0.0021	0.015	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	34	2054-08-01	220	39	0.021	0.0029	0.0074	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	34	2054-09-01	210	38	0.035	0.0013	0.011	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	34	2054-10-01	230	42	0.082	0.0012	0.053	0.0075	0.11	0.61	0.0005	0.00025	0.013

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Passive Closure	31	2052-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	31	2052-02-01	0.0006	0.0036	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011
Passive Closure	32	2052-03-01	0.00061	0.0038	0.000047	99	0.00015	0.00088	0.078	0.00084	0.048	0.00094
Passive Closure	32	2052-04-01	0.00065	0.0041	0.000039	81	0.00019	0.00092	0.19	0.0009	0.042	0.0011
Passive Closure	32	2052-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	32	2052-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	32	2052-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	32	2052-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019
Passive Closure	32	2052-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	32	2052-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.0005	0.067	0.0014
Passive Closure	32	2052-11-01	0.00047	0.0028	0.000035	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	32	2052-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013
Passive Closure	32	2053-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	32	2053-02-01	0.0006	0.0036	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011
Passive Closure	33	2053-03-01	0.00061	0.0038	0.000047	99	0.00015	0.00087	0.078	0.00084	0.048	0.00094
Passive Closure	33	2053-04-01	0.00065	0.0041	0.000039	81	0.00019	0.00092	0.19	0.0009	0.042	0.0011
Passive Closure	33	2053-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	33	2053-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	33	2053-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	33	2053-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019
Passive Closure	33	2053-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	33	2053-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.0005	0.067	0.0014
Passive Closure	33	2053-11-01	0.00047	0.0028	0.000035	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	33	2053-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013
Passive Closure	33	2054-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	33	2054-02-01	0.0006	0.0036	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011
Passive Closure	34	2054-03-01	0.00061	0.0038	0.000047	99	0.00015	0.00087	0.078	0.00084	0.048	0.00094
Passive Closure	34	2054-04-01	0.00065	0.0041	0.000039	81	0.00019	0.00092	0.19	0.0009	0.042	0.0011
Passive Closure	34	2054-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	34	2054-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	34	2054-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	34	2054-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019
Passive Closure	34	2054-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	34	2054-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.0005	0.067	0.0014

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	31	2052-01-01	0.0000055	0.00096	0.00001	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	31	2052-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0054	0.00059	0.0035	0.000039
Passive Closure	32	2052-03-01	0.0000038	0.0011	0.000011	0.0046	0.0054	1.9	0.0057	0.00062	0.0037	0.000043
Passive Closure	32	2052-04-01	0.0000039	0.00086	0.000012	0.0046	0.0041	1.8	0.0062	0.00064	0.0039	0.000039
Passive Closure	32	2052-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	32	2052-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	32	2052-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	32	2052-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025
Passive Closure	32	2052-09-01	0.000006	0.00055	0.0000091	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	32	2052-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	32	2052-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	32	2052-12-01	0.0000036	0.0011	0.0000097	0.004	0.0041	2.3	0.0046	0.00052	0.0031	0.000034
Passive Closure	32	2053-01-01	0.0000055	0.00096	0.00001	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	32	2053-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0055	0.00059	0.0035	0.000039
Passive Closure	33	2053-03-01	0.0000038	0.0011	0.000011	0.0046	0.0054	1.9	0.0057	0.00062	0.0037	0.000043
Passive Closure	33	2053-04-01	0.0000039	0.00086	0.000012	0.0046	0.0041	1.8	0.0062	0.00064	0.0039	0.000039
Passive Closure	33	2053-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	33	2053-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	33	2053-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	33	2053-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025
Passive Closure	33	2053-09-01	0.000006	0.00055	0.0000091	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	33	2053-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	33	2053-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	33	2053-12-01	0.0000036	0.0011	0.0000097	0.004	0.0041	2.3	0.0046	0.00052	0.0031	0.000034
Passive Closure	33	2054-01-01	0.0000055	0.00096	0.00001	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	33	2054-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0055	0.00059	0.0035	0.000039
Passive Closure	34	2054-03-01	0.0000038	0.0011	0.000011	0.0046	0.0054	1.9	0.0057	0.00062	0.0037	0.000043
Passive Closure	34	2054-04-01	0.0000039	0.00086	0.000012	0.0046	0.0041	1.8	0.0062	0.00064	0.0039	0.000039
Passive Closure	34	2054-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	34	2054-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	34	2054-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	34	2054-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025
Passive Closure	34	2054-09-01	0.000006	0.00055	0.0000091	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	34	2054-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	31	2052-01-01	83	0.00014	0.00084	0.065	0.0008	0.039	0.00095	0.0000036	0.001
Passive Closure	31	2052-02-01	86	0.00015	0.00089	0.067	0.00079	0.04	0.00095	0.0000037	0.0009
Passive Closure	32	2052-03-01	91	0.00015	0.00087	0.069	0.00083	0.042	0.00087	0.0000038	0.001
Passive Closure	32	2052-04-01	85	0.00018	0.00096	0.082	0.00088	0.041	0.0011	0.0000038	0.00085
Passive Closure	32	2052-05-01	39	0.00013	0.001	0.14	0.00077	0.029	0.0014	0.0000033	0.00045
Passive Closure	32	2052-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	32	2052-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	32	2052-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	32	2052-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	32	2052-10-01	61	0.00012	0.00048	0.089	0.00048	0.044	0.0011	0.0000033	0.00093
Passive Closure	32	2052-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	32	2052-12-01	80	0.00013	0.00076	0.06	0.00067	0.033	0.00095	0.0000036	0.001
Passive Closure	32	2053-01-01	83	0.00014	0.00084	0.065	0.0008	0.04	0.00095	0.0000036	0.001
Passive Closure	32	2053-02-01	86	0.00015	0.00089	0.067	0.00079	0.04	0.00095	0.0000037	0.0009
Passive Closure	33	2053-03-01	91	0.00015	0.00086	0.069	0.00083	0.042	0.00087	0.0000038	0.001
Passive Closure	33	2053-04-01	85	0.00018	0.00096	0.082	0.00088	0.041	0.0011	0.0000038	0.00085
Passive Closure	33	2053-05-01	39	0.00013	0.001	0.14	0.00077	0.029	0.0014	0.0000033	0.00045
Passive Closure	33	2053-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	33	2053-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	33	2053-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	33	2053-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	33	2053-10-01	61	0.00012	0.00048	0.089	0.00048	0.044	0.0011	0.0000033	0.00093
Passive Closure	33	2053-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	33	2053-12-01	80	0.00013	0.00076	0.06	0.00067	0.033	0.00095	0.0000036	0.001
Passive Closure	33	2054-01-01	83	0.00014	0.00084	0.065	0.0008	0.04	0.00095	0.0000036	0.001
Passive Closure	33	2054-02-01	86	0.00015	0.00089	0.067	0.00079	0.04	0.00095	0.0000037	0.0009
Passive Closure	34	2054-03-01	91	0.00015	0.00086	0.069	0.00083	0.042	0.00087	0.0000038	0.001
Passive Closure	34	2054-04-01	85	0.00018	0.00096	0.082	0.00088	0.041	0.0011	0.0000038	0.00085
Passive Closure	34	2054-05-01	39	0.00013	0.001	0.14	0.00077	0.029	0.0014	0.0000033	0.00045
Passive Closure	34	2054-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	34	2054-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	34	2054-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	34	2054-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	34	2054-10-01	61	0.00012	0.00048	0.089	0.00048	0.044	0.0011	0.0000033	0.00093

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Passive Closure	31	2052-01-01	0.00001	0.0043	0.0065
Passive Closure	31	2052-02-01	0.000011	0.0044	0.0049
Passive Closure	32	2052-03-01	0.000011	0.0048	0.0055
Passive Closure	32	2052-04-01	0.000012	0.0046	0.0039
Passive Closure	32	2052-05-01	0.00001	0.002	0.0034
Passive Closure	32	2052-06-01	0.000012	0.0027	0.0028
Passive Closure	32	2052-07-01	0.000013	0.0029	0.0035
Passive Closure	32	2052-08-01	0.000011	0.0028	0.0036
Passive Closure	32	2052-09-01	0.000009	0.0027	0.0027
Passive Closure	32	2052-10-01	0.0000072	0.0034	0.0026
Passive Closure	32	2052-11-01	0.0000085	0.0037	0.0034
Passive Closure	32	2052-12-01	0.0000096	0.0039	0.0037
Passive Closure	32	2053-01-01	0.00001	0.0043	0.0065
Passive Closure	32	2053-02-01	0.000011	0.0044	0.0049
Passive Closure	33	2053-03-01	0.000011	0.0048	0.0055
Passive Closure	33	2053-04-01	0.000012	0.0046	0.0039
Passive Closure	33	2053-05-01	0.00001	0.002	0.0034
Passive Closure	33	2053-06-01	0.000012	0.0027	0.0028
Passive Closure	33	2053-07-01	0.000013	0.0029	0.0035
Passive Closure	33	2053-08-01	0.000011	0.0028	0.0036
Passive Closure	33	2053-09-01	0.000009	0.0027	0.0027
Passive Closure	33	2053-10-01	0.0000072	0.0034	0.0026
Passive Closure	33	2053-11-01	0.0000085	0.0037	0.0034
Passive Closure	33	2053-12-01	0.0000096	0.0039	0.0037
Passive Closure	33	2054-01-01	0.00001	0.0043	0.0065
Passive Closure	33	2054-02-01	0.000011	0.0044	0.0049
Passive Closure	34	2054-03-01	0.000011	0.0048	0.0055
Passive Closure	34	2054-04-01	0.000012	0.0046	0.0039
Passive Closure	34	2054-05-01	0.00001	0.002	0.0034
Passive Closure	34	2054-06-01	0.000012	0.0027	0.0028
Passive Closure	34	2054-07-01	0.000013	0.0029	0.0035
Passive Closure	34	2054-08-01	0.000011	0.0028	0.0036
Passive Closure	34	2054-09-01	0.000009	0.0027	0.0027
Passive Closure	34	2054-10-01	0.0000072	0.0034	0.0026

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	34	2054-11-01	260	48	0.15	0.0013	0.0088	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	34	2054-12-01	300	51	0.2	0.0013	0.013	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	34	2055-01-01	310	54	0.25	0.0012	0.035	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	34	2055-02-01	320	58	0.29	0.0012	0.038	0.0072	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	35	2055-03-01	380	65	0.24	0.0011	0.021	0.0055	0.14	0.82	0.00062	0.00023	0.0069
Passive Closure	35	2055-04-01	310	56	0.22	0.00095	0.0059	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	35	2055-05-01	140	29	0.049	0.0014	0.012	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	35	2055-06-01	180	35	0.024	0.0013	0.02	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	35	2055-07-01	230	45	0.027	0.0021	0.015	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	35	2055-08-01	220	39	0.02	0.0029	0.0073	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	35	2055-09-01	210	38	0.034	0.0013	0.011	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	35	2055-10-01	230	42	0.081	0.0012	0.053	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	35	2055-11-01	260	48	0.15	0.0013	0.0087	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	35	2055-12-01	300	51	0.2	0.0012	0.013	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	35	2056-01-01	310	54	0.25	0.0012	0.035	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	35	2056-02-01	320	58	0.28	0.0012	0.037	0.0071	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	36	2056-03-01	380	65	0.23	0.001	0.021	0.0055	0.14	0.82	0.00062	0.00023	0.0069
Passive Closure	36	2056-04-01	310	56	0.22	0.00088	0.0055	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	36	2056-05-01	140	29	0.037	0.0011	0.011	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	36	2056-06-01	180	35	0.02	0.0012	0.019	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	36	2056-07-01	230	45	0.021	0.002	0.014	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	36	2056-08-01	220	39	0.013	0.0027	0.0065	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	36	2056-09-01	210	38	0.028	0.0012	0.011	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	36	2056-10-01	230	42	0.076	0.0011	0.052	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	36	2056-11-01	260	48	0.14	0.0011	0.0079	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	36	2056-12-01	300	51	0.2	0.0011	0.012	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	36	2057-01-01	310	54	0.25	0.0011	0.034	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	36	2057-02-01	320	58	0.28	0.0011	0.037	0.0072	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	37	2057-03-01	380	65	0.23	0.001	0.021	0.0055	0.14	0.82	0.00062	0.00023	0.0069
Passive Closure	37	2057-04-01	310	56	0.22	0.00088	0.0055	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	37	2057-05-01	140	29	0.037	0.0011	0.011	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	37	2057-06-01	180	35	0.019	0.0012	0.019	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	37	2057-07-01	230	45	0.02	0.002	0.014	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	37	2057-08-01	220	39	0.013	0.0027	0.0064	0.014	0.1	0.29	0.00046	0.00052	0.033

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Passive Closure	34	2054-11-01	0.00047	0.0028	0.000034	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	34	2054-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013
Passive Closure	34	2055-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	34	2055-02-01	0.0006	0.0036	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011
Passive Closure	35	2055-03-01	0.00061	0.0038	0.000047	99	0.00015	0.00087	0.078	0.00084	0.048	0.00094
Passive Closure	35	2055-04-01	0.00065	0.0041	0.000039	81	0.00019	0.00092	0.19	0.0009	0.042	0.0011
Passive Closure	35	2055-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	35	2055-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	35	2055-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	35	2055-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019
Passive Closure	35	2055-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	35	2055-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.0005	0.067	0.0014
Passive Closure	35	2055-11-01	0.00047	0.0028	0.000034	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	35	2055-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013
Passive Closure	35	2056-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	35	2056-02-01	0.0006	0.0036	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011
Passive Closure	36	2056-03-01	0.00061	0.0038	0.000047	99	0.00015	0.00088	0.078	0.00084	0.048	0.00094
Passive Closure	36	2056-04-01	0.00065	0.0041	0.000039	81	0.00019	0.00092	0.19	0.0009	0.042	0.0011
Passive Closure	36	2056-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	36	2056-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	36	2056-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	36	2056-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019
Passive Closure	36	2056-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	36	2056-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.0005	0.067	0.0014
Passive Closure	36	2056-11-01	0.00047	0.0028	0.000035	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	36	2056-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013
Passive Closure	36	2057-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	36	2057-02-01	0.0006	0.0036	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011
Passive Closure	37	2057-03-01	0.00061	0.0038	0.000047	99	0.00015	0.00087	0.078	0.00084	0.048	0.00094
Passive Closure	37	2057-04-01	0.00065	0.0041	0.000039	81	0.00019	0.00092	0.19	0.0009	0.042	0.0011
Passive Closure	37	2057-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	37	2057-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	37	2057-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	37	2057-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	34	2054-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	34	2054-12-01	0.0000036	0.0011	0.0000097	0.004	0.0041	2.3	0.0046	0.00052	0.0031	0.000034
Passive Closure	34	2055-01-01	0.0000055	0.00096	0.00001	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	34	2055-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0055	0.00059	0.0035	0.000039
Passive Closure	35	2055-03-01	0.0000038	0.0011	0.000011	0.0046	0.0054	1.9	0.0057	0.00062	0.0037	0.000043
Passive Closure	35	2055-04-01	0.0000039	0.00086	0.000012	0.0046	0.0041	1.8	0.0062	0.00064	0.0039	0.000039
Passive Closure	35	2055-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	35	2055-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	35	2055-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	35	2055-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025
Passive Closure	35	2055-09-01	0.000006	0.00055	0.0000091	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	35	2055-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	35	2055-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	35	2055-12-01	0.0000036	0.0011	0.0000097	0.004	0.0041	2.3	0.0046	0.00052	0.0031	0.000034
Passive Closure	35	2056-01-01	0.0000055	0.00096	0.00001	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	35	2056-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0054	0.00059	0.0035	0.000039
Passive Closure	36	2056-03-01	0.0000038	0.0011	0.000011	0.0046	0.0054	1.9	0.0057	0.00062	0.0037	0.000043
Passive Closure	36	2056-04-01	0.0000039	0.00086	0.000012	0.0046	0.0041	1.8	0.0062	0.00064	0.0039	0.000039
Passive Closure	36	2056-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	36	2056-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	36	2056-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	36	2056-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025
Passive Closure	36	2056-09-01	0.000006	0.00055	0.0000091	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	36	2056-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	36	2056-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	36	2056-12-01	0.0000036	0.0011	0.0000097	0.004	0.0041	2.3	0.0046	0.00052	0.0031	0.000034
Passive Closure	36	2057-01-01	0.0000055	0.00096	0.00001	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	36	2057-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0055	0.00059	0.0035	0.000039
Passive Closure	37	2057-03-01	0.0000038	0.0011	0.000011	0.0046	0.0054	1.9	0.0057	0.00062	0.0037	0.000043
Passive Closure	37	2057-04-01	0.0000039	0.00086	0.000012	0.0046	0.0041	1.8	0.0062	0.00064	0.0039	0.000039
Passive Closure	37	2057-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	37	2057-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	37	2057-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	37	2057-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	34	2054-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	34	2054-12-01	80	0.00013	0.00076	0.06	0.00067	0.033	0.00095	0.0000036	0.001
Passive Closure	34	2055-01-01	83	0.00014	0.00084	0.065	0.0008	0.039	0.00095	0.0000036	0.001
Passive Closure	34	2055-02-01	86	0.00015	0.00089	0.067	0.00079	0.04	0.00095	0.0000037	0.0009
Passive Closure	35	2055-03-01	91	0.00015	0.00086	0.069	0.00083	0.042	0.00087	0.0000038	0.001
Passive Closure	35	2055-04-01	85	0.00018	0.00096	0.082	0.00087	0.041	0.0011	0.0000038	0.00085
Passive Closure	35	2055-05-01	39	0.00013	0.001	0.14	0.00077	0.029	0.0014	0.0000033	0.00045
Passive Closure	35	2055-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	35	2055-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	35	2055-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	35	2055-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	35	2055-10-01	61	0.00012	0.00048	0.089	0.00048	0.044	0.0011	0.0000033	0.00093
Passive Closure	35	2055-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	35	2055-12-01	80	0.00013	0.00076	0.06	0.00067	0.033	0.00095	0.0000036	0.001
Passive Closure	35	2056-01-01	83	0.00014	0.00084	0.065	0.0008	0.039	0.00095	0.0000036	0.001
Passive Closure	35	2056-02-01	86	0.00015	0.00089	0.067	0.00079	0.04	0.00095	0.0000037	0.0009
Passive Closure	36	2056-03-01	91	0.00015	0.00087	0.069	0.00083	0.042	0.00087	0.0000038	0.001
Passive Closure	36	2056-04-01	85	0.00018	0.00096	0.082	0.00088	0.041	0.0011	0.0000038	0.00085
Passive Closure	36	2056-05-01	39	0.00013	0.001	0.14	0.00077	0.029	0.0014	0.0000033	0.00045
Passive Closure	36	2056-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	36	2056-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	36	2056-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	36	2056-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	36	2056-10-01	61	0.00012	0.00048	0.089	0.00048	0.044	0.0011	0.0000033	0.00093
Passive Closure	36	2056-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	36	2056-12-01	80	0.00013	0.00076	0.06	0.00067	0.033	0.00095	0.0000036	0.001
Passive Closure	36	2057-01-01	83	0.00014	0.00084	0.065	0.0008	0.04	0.00095	0.0000036	0.001
Passive Closure	36	2057-02-01	86	0.00015	0.00089	0.067	0.00079	0.04	0.00095	0.0000037	0.0009
Passive Closure	37	2057-03-01	91	0.00015	0.00086	0.069	0.00083	0.042	0.00087	0.0000038	0.001
Passive Closure	37	2057-04-01	85	0.00018	0.00096	0.082	0.00088	0.041	0.0011	0.0000038	0.00085
Passive Closure	37	2057-05-01	39	0.00013	0.001	0.14	0.00077	0.029	0.0014	0.0000033	0.00045
Passive Closure	37	2057-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	37	2057-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	37	2057-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Passive Closure	34	2054-11-01	0.0000085	0.0037	0.0034
Passive Closure	34	2054-12-01	0.0000096	0.0039	0.0037
Passive Closure	34	2055-01-01	0.00001	0.0043	0.0065
Passive Closure	34	2055-02-01	0.000011	0.0044	0.0049
Passive Closure	35	2055-03-01	0.000011	0.0048	0.0055
Passive Closure	35	2055-04-01	0.000012	0.0046	0.0039
Passive Closure	35	2055-05-01	0.00001	0.002	0.0034
Passive Closure	35	2055-06-01	0.000012	0.0027	0.0028
Passive Closure	35	2055-07-01	0.000013	0.0029	0.0035
Passive Closure	35	2055-08-01	0.000011	0.0028	0.0036
Passive Closure	35	2055-09-01	0.000009	0.0027	0.0027
Passive Closure	35	2055-10-01	0.0000072	0.0034	0.0026
Passive Closure	35	2055-11-01	0.0000085	0.0037	0.0034
Passive Closure	35	2055-12-01	0.0000096	0.0039	0.0037
Passive Closure	35	2056-01-01	0.00001	0.0043	0.0065
Passive Closure	35	2056-02-01	0.000011	0.0044	0.0049
Passive Closure	36	2056-03-01	0.000011	0.0048	0.0055
Passive Closure	36	2056-04-01	0.000012	0.0046	0.0039
Passive Closure	36	2056-05-01	0.00001	0.002	0.0034
Passive Closure	36	2056-06-01	0.000012	0.0027	0.0028
Passive Closure	36	2056-07-01	0.000013	0.0029	0.0035
Passive Closure	36	2056-08-01	0.000011	0.0028	0.0036
Passive Closure	36	2056-09-01	0.000009	0.0027	0.0027
Passive Closure	36	2056-10-01	0.0000072	0.0034	0.0026
Passive Closure	36	2056-11-01	0.0000085	0.0037	0.0034
Passive Closure	36	2056-12-01	0.0000096	0.0039	0.0037
Passive Closure	36	2057-01-01	0.00001	0.0043	0.0065
Passive Closure	36	2057-02-01	0.000011	0.0044	0.0049
Passive Closure	37	2057-03-01	0.000011	0.0048	0.0055
Passive Closure	37	2057-04-01	0.000012	0.0046	0.0039
Passive Closure	37	2057-05-01	0.00001	0.002	0.0034
Passive Closure	37	2057-06-01	0.000012	0.0027	0.0028
Passive Closure	37	2057-07-01	0.000013	0.0029	0.0035
Passive Closure	37	2057-08-01	0.000011	0.0028	0.0036

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	37	2057-09-01	210	38	0.028	0.0012	0.011	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	37	2057-10-01	230	42	0.075	0.001	0.052	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	37	2057-11-01	260	48	0.14	0.0011	0.0078	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	37	2057-12-01	300	51	0.2	0.0011	0.012	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	37	2058-01-01	310	54	0.25	0.0011	0.034	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	37	2058-02-01	320	58	0.28	0.0011	0.037	0.0072	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	38	2058-03-01	380	65	0.23	0.001	0.021	0.0055	0.14	0.82	0.00062	0.00023	0.0069
Passive Closure	38	2058-04-01	310	56	0.22	0.00087	0.0055	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	38	2058-05-01	140	29	0.036	0.0011	0.01	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	38	2058-06-01	180	35	0.019	0.0012	0.019	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	38	2058-07-01	230	45	0.019	0.0019	0.014	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	38	2058-08-01	220	39	0.012	0.0027	0.0064	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	38	2058-09-01	210	38	0.028	0.0012	0.01	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	38	2058-10-01	230	42	0.075	0.001	0.052	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	38	2058-11-01	260	48	0.14	0.0011	0.0078	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	38	2058-12-01	300	51	0.2	0.0011	0.012	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	38	2059-01-01	310	54	0.25	0.0011	0.034	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	38	2059-02-01	320	58	0.28	0.0011	0.037	0.0072	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	39	2059-03-01	380	65	0.23	0.001	0.021	0.0055	0.14	0.82	0.00062	0.00023	0.0069
Passive Closure	39	2059-04-01	310	56	0.22	0.00087	0.0054	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	39	2059-05-01	140	29	0.036	0.0011	0.01	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	39	2059-06-01	180	35	0.018	0.0011	0.019	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	39	2059-07-01	230	45	0.019	0.0019	0.014	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	39	2059-08-01	220	39	0.012	0.0027	0.0063	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	39	2059-09-01	210	38	0.027	0.0012	0.01	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	39	2059-10-01	230	42	0.075	0.001	0.052	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	39	2059-11-01	260	48	0.14	0.0011	0.0078	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	39	2059-12-01	300	51	0.2	0.0011	0.012	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	39	2060-01-01	310	54	0.25	0.0011	0.034	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	39	2060-02-01	320	58	0.28	0.0011	0.037	0.0071	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	40	2060-03-01	380	65	0.23	0.001	0.021	0.0055	0.14	0.82	0.00062	0.00023	0.0069
Passive Closure	40	2060-04-01	310	56	0.22	0.00087	0.0054	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	40	2060-05-01	140	29	0.035	0.0011	0.01	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	40	2060-06-01	180	35	0.018	0.0011	0.019	0.011	0.11	0.84	0.00064	0.00048	0.11

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Passive Closure	37	2057-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	37	2057-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.0005	0.067	0.0014
Passive Closure	37	2057-11-01	0.00047	0.0028	0.000035	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	37	2057-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013
Passive Closure	37	2058-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	37	2058-02-01	0.0006	0.0036	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011
Passive Closure	38	2058-03-01	0.00061	0.0038	0.000047	99	0.00015	0.00087	0.078	0.00084	0.048	0.00094
Passive Closure	38	2058-04-01	0.00065	0.0041	0.000039	81	0.00019	0.00092	0.19	0.0009	0.042	0.0011
Passive Closure	38	2058-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	38	2058-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	38	2058-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	38	2058-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019
Passive Closure	38	2058-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	38	2058-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.0005	0.067	0.0014
Passive Closure	38	2058-11-01	0.00047	0.0028	0.000034	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	38	2058-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013
Passive Closure	38	2059-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	38	2059-02-01	0.0006	0.0036	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011
Passive Closure	39	2059-03-01	0.00061	0.0038	0.000047	99	0.00015	0.00087	0.078	0.00084	0.048	0.00094
Passive Closure	39	2059-04-01	0.00065	0.0041	0.000039	81	0.00019	0.00092	0.19	0.0009	0.042	0.0011
Passive Closure	39	2059-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	39	2059-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	39	2059-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	39	2059-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019
Passive Closure	39	2059-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	39	2059-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.0005	0.067	0.0014
Passive Closure	39	2059-11-01	0.00047	0.0028	0.000034	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	39	2059-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013
Passive Closure	39	2060-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	39	2060-02-01	0.0006	0.0036	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011
Passive Closure	40	2060-03-01	0.00061	0.0038	0.000047	99	0.00015	0.00088	0.078	0.00084	0.048	0.00094
Passive Closure	40	2060-04-01	0.00065	0.0041	0.000039	81	0.00019	0.00092	0.19	0.0009	0.042	0.0011
Passive Closure	40	2060-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	40	2060-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	37	2057-09-01	0.000006	0.00055	0.0000091	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	37	2057-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	37	2057-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	37	2057-12-01	0.0000036	0.0011	0.0000097	0.004	0.0041	2.3	0.0046	0.00052	0.0031	0.000034
Passive Closure	37	2058-01-01	0.0000055	0.00096	0.00001	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	37	2058-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0055	0.00059	0.0035	0.000039
Passive Closure	38	2058-03-01	0.0000038	0.0011	0.000011	0.0046	0.0054	1.9	0.0057	0.00062	0.0037	0.000043
Passive Closure	38	2058-04-01	0.0000039	0.00086	0.000012	0.0046	0.0041	1.8	0.0062	0.00064	0.0039	0.000039
Passive Closure	38	2058-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	38	2058-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	38	2058-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	38	2058-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025
Passive Closure	38	2058-09-01	0.000006	0.00055	0.0000091	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	38	2058-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	38	2058-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	38	2058-12-01	0.0000036	0.0011	0.0000097	0.004	0.0041	2.3	0.0046	0.00052	0.0031	0.000034
Passive Closure	38	2059-01-01	0.0000055	0.00096	0.00001	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	38	2059-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0055	0.00059	0.0035	0.000039
Passive Closure	39	2059-03-01	0.0000038	0.0011	0.000011	0.0046	0.0054	1.9	0.0057	0.00062	0.0037	0.000043
Passive Closure	39	2059-04-01	0.0000039	0.00086	0.000012	0.0046	0.0041	1.8	0.0062	0.00064	0.0039	0.000039
Passive Closure	39	2059-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	39	2059-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	39	2059-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	39	2059-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025
Passive Closure	39	2059-09-01	0.000006	0.00055	0.0000091	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	39	2059-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	39	2059-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	39	2059-12-01	0.0000036	0.0011	0.0000097	0.004	0.0041	2.3	0.0046	0.00052	0.0031	0.000034
Passive Closure	39	2060-01-01	0.0000055	0.00096	0.00001	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	39	2060-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0054	0.00059	0.0035	0.000039
Passive Closure	40	2060-03-01	0.0000038	0.0011	0.000011	0.0046	0.0054	1.9	0.0057	0.00062	0.0037	0.000043
Passive Closure	40	2060-04-01	0.0000039	0.00086	0.000012	0.0046	0.0041	1.8	0.0062	0.00064	0.0039	0.000039
Passive Closure	40	2060-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	40	2060-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	37	2057-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	37	2057-10-01	61	0.00012	0.00048	0.089	0.00048	0.044	0.0011	0.0000033	0.00093
Passive Closure	37	2057-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	37	2057-12-01	80	0.00013	0.00076	0.06	0.00067	0.033	0.00095	0.0000036	0.001
Passive Closure	37	2058-01-01	83	0.00014	0.00084	0.065	0.0008	0.039	0.00095	0.0000036	0.001
Passive Closure	37	2058-02-01	86	0.00015	0.00089	0.067	0.00079	0.04	0.00095	0.0000037	0.0009
Passive Closure	38	2058-03-01	91	0.00015	0.00086	0.069	0.00083	0.042	0.00087	0.0000038	0.001
Passive Closure	38	2058-04-01	85	0.00018	0.00096	0.082	0.00088	0.041	0.0011	0.0000038	0.00085
Passive Closure	38	2058-05-01	39	0.00013	0.001	0.14	0.00077	0.029	0.0014	0.0000033	0.00045
Passive Closure	38	2058-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	38	2058-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	38	2058-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	38	2058-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	38	2058-10-01	61	0.00012	0.00048	0.089	0.00048	0.044	0.0011	0.0000033	0.00093
Passive Closure	38	2058-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	38	2058-12-01	80	0.00013	0.00076	0.06	0.00067	0.033	0.00095	0.0000036	0.001
Passive Closure	38	2059-01-01	83	0.00014	0.00084	0.065	0.0008	0.039	0.00095	0.0000036	0.001
Passive Closure	38	2059-02-01	86	0.00015	0.00089	0.067	0.00079	0.04	0.00095	0.0000037	0.0009
Passive Closure	39	2059-03-01	91	0.00015	0.00086	0.069	0.00083	0.042	0.00087	0.0000038	0.001
Passive Closure	39	2059-04-01	85	0.00018	0.00096	0.082	0.00087	0.041	0.0011	0.0000038	0.00085
Passive Closure	39	2059-05-01	39	0.00013	0.001	0.14	0.00077	0.029	0.0014	0.0000033	0.00045
Passive Closure	39	2059-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	39	2059-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	39	2059-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	39	2059-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	39	2059-10-01	61	0.00012	0.00048	0.089	0.00048	0.044	0.0011	0.0000033	0.00093
Passive Closure	39	2059-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	39	2059-12-01	80	0.00013	0.00076	0.06	0.00067	0.033	0.00095	0.0000036	0.001
Passive Closure	39	2060-01-01	83	0.00014	0.00084	0.065	0.0008	0.039	0.00095	0.0000036	0.001
Passive Closure	39	2060-02-01	86	0.00015	0.00089	0.067	0.00079	0.04	0.00095	0.0000037	0.0009
Passive Closure	40	2060-03-01	91	0.00015	0.00087	0.069	0.00083	0.042	0.00087	0.0000038	0.001
Passive Closure	40	2060-04-01	85	0.00018	0.00096	0.082	0.00088	0.041	0.0011	0.0000038	0.00085
Passive Closure	40	2060-05-01	39	0.00013	0.001	0.14	0.00077	0.029	0.0014	0.0000033	0.00045
Passive Closure	40	2060-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Passive Closure	37	2057-09-01	0.000009	0.0027	0.0027
Passive Closure	37	2057-10-01	0.0000072	0.0034	0.0026
Passive Closure	37	2057-11-01	0.0000085	0.0037	0.0034
Passive Closure	37	2057-12-01	0.0000096	0.0039	0.0037
Passive Closure	37	2058-01-01	0.00001	0.0043	0.0065
Passive Closure	37	2058-02-01	0.000011	0.0044	0.0049
Passive Closure	38	2058-03-01	0.000011	0.0048	0.0055
Passive Closure	38	2058-04-01	0.000012	0.0046	0.0039
Passive Closure	38	2058-05-01	0.00001	0.002	0.0034
Passive Closure	38	2058-06-01	0.000012	0.0027	0.0028
Passive Closure	38	2058-07-01	0.000013	0.0029	0.0035
Passive Closure	38	2058-08-01	0.000011	0.0028	0.0036
Passive Closure	38	2058-09-01	0.000009	0.0027	0.0027
Passive Closure	38	2058-10-01	0.0000072	0.0034	0.0026
Passive Closure	38	2058-11-01	0.0000085	0.0037	0.0034
Passive Closure	38	2058-12-01	0.0000096	0.0039	0.0037
Passive Closure	38	2059-01-01	0.00001	0.0043	0.0065
Passive Closure	38	2059-02-01	0.000011	0.0044	0.0049
Passive Closure	39	2059-03-01	0.000011	0.0048	0.0055
Passive Closure	39	2059-04-01	0.000012	0.0046	0.0039
Passive Closure	39	2059-05-01	0.00001	0.002	0.0034
Passive Closure	39	2059-06-01	0.000012	0.0027	0.0028
Passive Closure	39	2059-07-01	0.000013	0.0029	0.0035
Passive Closure	39	2059-08-01	0.000011	0.0028	0.0036
Passive Closure	39	2059-09-01	0.000009	0.0027	0.0027
Passive Closure	39	2059-10-01	0.0000072	0.0034	0.0026
Passive Closure	39	2059-11-01	0.0000085	0.0037	0.0034
Passive Closure	39	2059-12-01	0.0000096	0.0039	0.0037
Passive Closure	39	2060-01-01	0.00001	0.0043	0.0065
Passive Closure	39	2060-02-01	0.000011	0.0044	0.0049
Passive Closure	40	2060-03-01	0.000011	0.0048	0.0055
Passive Closure	40	2060-04-01	0.000012	0.0046	0.0039
Passive Closure	40	2060-05-01	0.00001	0.002	0.0034
Passive Closure	40	2060-06-01	0.000012	0.0027	0.0028

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	40	2060-07-01	230	45	0.018	0.0019	0.014	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	40	2060-08-01	220	39	0.011	0.0027	0.0063	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	40	2060-09-01	210	38	0.027	0.0012	0.01	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	40	2060-10-01	230	42	0.075	0.001	0.052	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	40	2060-11-01	260	48	0.14	0.0011	0.0077	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Passive Closure	40	2060-12-01	300	51	0.2	0.0011	0.012	0.0055	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	40	2061-01-01	310	54	0.25	0.0011	0.034	0.0088	0.13	0.65	0.00025	0.00025	0.012
Passive Closure	40	2061-02-01	320	58	0.28	0.0011	0.037	0.0072	0.13	0.77	0.00025	0.00026	0.022
Passive Closure	41	2061-03-01	380	65	0.23	0.001	0.021	0.0055	0.14	0.82	0.00062	0.00023	0.0069
Passive Closure	41	2061-04-01	310	56	0.22	0.00086	0.0054	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	41	2061-05-01	140	29	0.035	0.0011	0.01	0.018	0.094	1	0.00061	0.00053	0.042
Passive Closure	41	2061-06-01	180	35	0.018	0.0011	0.019	0.011	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	41	2061-07-01	230	45	0.018	0.0019	0.014	0.021	0.12	0.58	0.0005	0.00051	0.048
Passive Closure	41	2061-08-01	220	39	0.011	0.0027	0.0062	0.014	0.1	0.29	0.00046	0.00052	0.033
Passive Closure	41	2061-09-01	210	38	0.026	0.0011	0.01	0.007	0.11	0.88	0.00054	0.00056	0.032
Passive Closure	41	2061-10-01	230	42	0.075	0.001	0.052	0.0075	0.11	0.61	0.0005	0.00025	0.013
Passive Closure	41	2061-11-01	260	48	0.14	0.0011	0.0077	0.0032	0.13	0.51	0.00054	0.00058	0.0089
Receiving Environment Water Quality Model - KZ-26 - Dry Year -1 Model													
Construction	-1	2020-03-01	370	60	0.24	0.0015	0.029	0.0044	0.13	0.85	0.00057	0.0002	0.0022
Construction	-1	2020-04-01	300	51	0.23	0.0013	0.015	0.0055	0.13	0.55	0.00047	0.0003	0.0087
Construction	-1	2020-05-01	130	23	0.077	0.002	0.018	0.017	0.085	1	0.0006	0.00051	0.036
Construction	-1	2020-06-01	160	24	0.051	0.0019	0.024	0.011	0.098	0.82	0.00062	0.00046	0.11
Construction	-1	2020-07-01	210	33	0.073	0.0032	0.022	0.019	0.11	0.55	0.00048	0.0005	0.043
Construction	-1	2020-08-01	210	31	0.074	0.0041	0.016	0.013	0.092	0.27	0.00043	0.00048	0.029
Construction	-1	2020-09-01	200	33	0.092	0.0026	0.02	0.0066	0.1	0.87	0.00051	0.00053	0.028
Construction	-1	2020-10-01	220	39	0.14	0.0025	0.063	0.0072	0.11	0.61	0.00049	0.00024	0.011
Construction	-1	2020-11-01	260	47	0.22	0.0029	0.022	0.0029	0.12	0.52	0.00052	0.00055	0.0065
Construction	-1	2020-12-01	310	50	0.27	0.0029	0.027	0.0052	0.11	0.7	0.00049	0.00023	0.028
Construction	-1	2021-01-01	310	53	0.32	0.0028	0.049	0.0085	0.12	0.69	0.00023	0.00023	0.0087
Construction	-1	2021-02-01	320	57	0.34	0.0026	0.052	0.0068	0.12	0.82	0.00023	0.00023	0.018
Receiving Environment Water Quality Model - KZ-26 - Wet Year -1 Model													
Construction	-1	2020-03-01	370	60	0.24	0.0014	0.029	0.0044	0.13	0.85	0.00057	0.0002	0.0021

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Passive Closure	40	2060-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	40	2060-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019
Passive Closure	40	2060-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	40	2060-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.0005	0.067	0.0014
Passive Closure	40	2060-11-01	0.00047	0.0028	0.000035	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Passive Closure	40	2060-12-01	0.00053	0.0033	0.000041	81	0.00021	0.00094	0.13	0.00076	0.047	0.0013
Passive Closure	40	2061-01-01	0.00059	0.0034	0.000051	79	0.00015	0.0011	0.11	0.0015	0.043	0.001
Passive Closure	40	2061-02-01	0.0006	0.0036	0.000048	84	0.00017	0.001	0.2	0.00099	0.047	0.0011
Passive Closure	41	2061-03-01	0.00061	0.0038	0.000047	99	0.00015	0.00087	0.078	0.00084	0.048	0.00094
Passive Closure	41	2061-04-01	0.00065	0.0041	0.000039	81	0.00019	0.00092	0.19	0.0009	0.042	0.0011
Passive Closure	41	2061-05-01	0.00048	0.0035	0.000033	39	0.00018	0.0012	0.32	0.00084	0.041	0.0019
Passive Closure	41	2061-06-01	0.0007	0.0045	0.000057	49	0.00034	0.0015	0.35	0.0011	0.053	0.0022
Passive Closure	41	2061-07-01	0.00081	0.005	0.000044	61	0.00032	0.0011	0.28	0.0011	0.058	0.0021
Passive Closure	41	2061-08-01	0.00063	0.0035	0.000032	61	0.00034	0.001	0.21	0.00097	0.04	0.0019
Passive Closure	41	2061-09-01	0.00051	0.0034	0.000032	56	0.00028	0.0012	0.21	0.00068	0.046	0.0018
Passive Closure	41	2061-10-01	0.00038	0.0034	0.000034	61	0.00016	0.00056	0.26	0.0005	0.067	0.0014
Passive Closure	41	2061-11-01	0.00047	0.0028	0.000035	69	0.00012	0.00073	0.065	0.00069	0.039	0.001
Receiving Environment Water Quality Model - KZ-26 - Dry Year -1 Model												**Receiving Environ**
Construction	-1	2020-03-01	0.000089	0.00076	0.000037	95	0.000035	0.00037	0.014	0.00003	0.027	0.00075
Construction	-1	2020-04-01	0.000097	0.00095	0.000028	78	0.000063	0.00035	0.12	0.000037	0.025	0.00092
Construction	-1	2020-05-01	0.00009	0.0013	0.000018	35	0.000084	0.0011	0.26	0.00006	0.021	0.0018
Construction	-1	2020-06-01	0.00014	0.0012	0.000038	43	0.0002	0.0014	0.28	0.00026	0.021	0.002
Construction	-1	2020-07-01	0.0002	0.0013	0.000022	55	0.00017	0.00094	0.2	0.00016	0.025	0.0018
Construction	-1	2020-08-01	0.00018	0.00074	0.000021	56	0.00023	0.00087	0.15	0.00022	0.019	0.0019
Construction	-1	2020-09-01	0.00016	0.0013	0.000025	53	0.00021	0.001	0.16	0.000063	0.034	0.0018
Construction	-1	2020-10-01	0.00012	0.0016	0.000031	59	0.00011	0.00043	0.22	0.000026	0.062	0.0015
Construction	-1	2020-11-01	0.00016	0.00082	0.000038	68	0.000078	0.0005	0.015	0.00013	0.039	0.0012
Construction	-1	2020-12-01	0.00017	0.001	0.000046	81	0.00016	0.00063	0.079	0.00011	0.047	0.0015
Construction	-1	2021-01-01	0.00018	0.00084	0.000054	79	0.000085	0.00069	0.049	0.00077	0.041	0.0012
Construction	-1	2021-02-01	0.00016	0.00092	0.000054	84	0.000099	0.00059	0.14	0.00023	0.047	0.0013
Receiving Environment Water Quality Model - KZ-26 - Wet Year -1 Model												**Receiving Environ**
Construction	-1	2020-03-01	0.000088	0.00075	0.000036	95	0.000034	0.00037	0.014	0.000029	0.027	0.00075

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L
Passive Closure	40	2060-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	40	2060-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025
Passive Closure	40	2060-09-01	0.000006	0.00055	0.0000091	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	40	2060-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	40	2060-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Passive Closure	40	2060-12-01	0.0000036	0.0011	0.0000097	0.004	0.0041	2.3	0.0046	0.00052	0.0031	0.000034
Passive Closure	40	2061-01-01	0.0000055	0.00096	0.00001	0.0043	0.0068	1.7	0.0065	0.00057	0.0033	0.000036
Passive Closure	40	2061-02-01	0.0000037	0.00094	0.000011	0.0044	0.0056	1.6	0.0055	0.00059	0.0035	0.000039
Passive Closure	41	2061-03-01	0.0000038	0.0011	0.000011	0.0046	0.0054	1.9	0.0057	0.00062	0.0037	0.000043
Passive Closure	41	2061-04-01	0.0000039	0.00086	0.000012	0.0046	0.0041	1.8	0.0062	0.00064	0.0039	0.000039
Passive Closure	41	2061-05-01	0.0000054	0.00045	0.000011	0.002	0.0041	5.1	0.013	0.00048	0.0031	0.000026
Passive Closure	41	2061-06-01	0.000014	0.00046	0.000014	0.0027	0.0051	4.2	0.011	0.00067	0.0041	0.000032
Passive Closure	41	2061-07-01	0.0000065	0.00052	0.000015	0.003	0.0038	6.2	0.011	0.00077	0.0046	0.000033
Passive Closure	41	2061-08-01	0.0000063	0.00044	0.000013	0.0028	0.0041	5	0.0081	0.0006	0.0035	0.000025
Passive Closure	41	2061-09-01	0.000006	0.00055	0.0000091	0.0027	0.0038	5.5	0.0093	0.0005	0.0031	0.000024
Passive Closure	41	2061-10-01	0.0000033	0.001	0.0000072	0.0035	0.0033	2.9	0.0041	0.00039	0.0029	0.000024
Passive Closure	41	2061-11-01	0.0000034	0.0009	0.0000085	0.0037	0.0039	2.4	0.0059	0.00047	0.0027	0.000026
Receiving Environment Water Quality Model - KZ-26 - Dry Year -1 Model			**ment Water Quality Model - KZ-26 - Dry Year -1 Model**									
Construction	-1	2020-03-01	0.0000025	0.001	0.000015	0.004	0.0061	1.9	0.0014	0.000099	0.0007	0.000033
Construction	-1	2020-04-01	0.0000027	0.00079	0.000018	0.0038	0.0052	1.7	0.0018	0.000088	0.00076	0.000027
Construction	-1	2020-05-01	0.0000044	0.00039	0.0000095	0.0014	0.0023	4.8	0.0094	0.000083	0.00085	0.000013
Construction	-1	2020-06-01	0.000013	0.00043	0.000014	0.0018	0.0037	4.1	0.0068	0.00011	0.00083	0.000014
Construction	-1	2020-07-01	0.0000047	0.00049	0.000021	0.0021	0.0024	6.2	0.0063	0.00016	0.001	0.000013
Construction	-1	2020-08-01	0.000005	0.00045	0.000034	0.0021	0.0043	4.9	0.0047	0.00015	0.00077	0.000015
Construction	-1	2020-09-01	0.0000051	0.00058	0.000038	0.0022	0.0044	5.5	0.007	0.00015	0.00096	0.000018
Construction	-1	2020-10-01	0.0000026	0.001	0.000046	0.0031	0.0048	2.9	0.0024	0.00012	0.0012	0.000023
Construction	-1	2020-11-01	0.0000027	0.00099	0.000072	0.0033	0.0072	2.4	0.004	0.00017	0.00073	0.000032
Construction	-1	2020-12-01	0.0000028	0.0012	0.000077	0.0036	0.008	2.3	0.0023	0.00016	0.00077	0.000041
Construction	-1	2021-01-01	0.0000046	0.001	0.000073	0.0039	0.011	1.7	0.0038	0.00016	0.00071	0.000041
Construction	-1	2021-02-01	0.0000028	0.001	0.000076	0.0039	0.01	1.6	0.0024	0.00016	0.00079	0.000046
Receiving Environment Water Quality Model - KZ-26 - Wet Year -1 Model			**nent Water Quality Model - KZ-26 - Wet Year -1 Model**									
Construction	-1	2020-03-01	0.0000025	0.001	0.000015	0.0039	0.0059	1.9	0.0014	0.000098	0.00069	0.000033

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	40	2060-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	40	2060-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	40	2060-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	40	2060-10-01	61	0.00012	0.00048	0.089	0.00048	0.044	0.0011	0.0000033	0.00093
Passive Closure	40	2060-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Passive Closure	40	2060-12-01	80	0.00013	0.00076	0.06	0.00067	0.033	0.00095	0.0000036	0.001
Passive Closure	40	2061-01-01	83	0.00014	0.00084	0.065	0.0008	0.04	0.00095	0.0000036	0.001
Passive Closure	40	2061-02-01	86	0.00015	0.00089	0.067	0.00079	0.04	0.00095	0.0000037	0.0009
Passive Closure	41	2061-03-01	91	0.00015	0.00086	0.069	0.00083	0.042	0.00087	0.0000038	0.001
Passive Closure	41	2061-04-01	85	0.00018	0.00096	0.082	0.00088	0.041	0.0011	0.0000038	0.00085
Passive Closure	41	2061-05-01	39	0.00013	0.001	0.14	0.00077	0.029	0.0014	0.0000033	0.00045
Passive Closure	41	2061-06-01	44	0.00018	0.00086	0.11	0.00085	0.039	0.0015	0.0000039	0.00044
Passive Closure	41	2061-07-01	61	0.00021	0.0008	0.11	0.00098	0.047	0.0017	0.000004	0.00048
Passive Closure	41	2061-08-01	58	0.00033	0.00077	0.085	0.00081	0.035	0.0011	0.0000038	0.00041
Passive Closure	41	2061-09-01	55	0.00014	0.00091	0.077	0.00063	0.028	0.0013	0.0000035	0.00052
Passive Closure	41	2061-10-01	61	0.00012	0.00048	0.089	0.00048	0.044	0.0011	0.0000033	0.00093
Passive Closure	41	2061-11-01	71	0.00011	0.00067	0.052	0.00058	0.031	0.00098	0.0000034	0.00091
Receiving Environment Water Quality Model - KZ-26 - Dry Year -1 Model											
Construction	-1	2020-03-01	87	0.000035	0.00036	0.0081	0.000026	0.023	0.00067	0.0000025	0.00093
Construction	-1	2020-04-01	81	0.000056	0.0004	0.017	0.000018	0.024	0.00089	0.0000026	0.00077
Construction	-1	2020-05-01	36	0.000039	0.00087	0.087	0.0000081	0.0092	0.0012	0.0000023	0.00039
Construction	-1	2020-06-01	38	0.000041	0.00073	0.043	0.000022	0.0076	0.0013	0.0000025	0.0004
Construction	-1	2020-07-01	55	0.000068	0.00064	0.038	0.000025	0.015	0.0014	0.0000025	0.00045
Construction	-1	2020-08-01	53	0.00023	0.00062	0.03	0.000057	0.015	0.001	0.0000025	0.00043
Construction	-1	2020-09-01	53	0.000074	0.00078	0.032	0.000016	0.016	0.0013	0.0000026	0.00056
Construction	-1	2020-10-01	60	0.000078	0.00035	0.052	0.000011	0.039	0.0012	0.0000026	0.00098
Construction	-1	2020-11-01	70	0.00007	0.00045	0.0089	0.00002	0.032	0.0012	0.0000027	0.001
Construction	-1	2020-12-01	80	0.000074	0.00045	0.011	0.000023	0.034	0.0012	0.0000028	0.0011
Construction	-1	2021-01-01	83	0.000074	0.00046	0.012	0.000086	0.039	0.0011	0.0000028	0.0011
Construction	-1	2021-02-01	86	0.000079	0.00047	0.01	0.000037	0.039	0.0011	0.0000028	0.00098
Receiving Environment Water Quality Model - KZ-26 - Wet Year -1 Model											
Construction	-1	2020-03-01	87	0.000034	0.00036	0.0079	0.000026	0.022	0.00067	0.0000025	0.00093

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Passive Closure	40	2060-07-01	0.000013	0.0029	0.0035
Passive Closure	40	2060-08-01	0.000011	0.0028	0.0036
Passive Closure	40	2060-09-01	0.000009	0.0027	0.0027
Passive Closure	40	2060-10-01	0.0000072	0.0034	0.0026
Passive Closure	40	2060-11-01	0.0000085	0.0037	0.0034
Passive Closure	40	2060-12-01	0.0000096	0.0039	0.0037
Passive Closure	40	2061-01-01	0.00001	0.0043	0.0065
Passive Closure	40	2061-02-01	0.000011	0.0044	0.0049
Passive Closure	41	2061-03-01	0.000011	0.0048	0.0055
Passive Closure	41	2061-04-01	0.000012	0.0046	0.0039
Passive Closure	41	2061-05-01	0.00001	0.002	0.0034
Passive Closure	41	2061-06-01	0.000012	0.0027	0.0028
Passive Closure	41	2061-07-01	0.000013	0.0029	0.0035
Passive Closure	41	2061-08-01	0.000011	0.0028	0.0036
Passive Closure	41	2061-09-01	0.000009	0.0027	0.0027
Passive Closure	41	2061-10-01	0.0000072	0.0034	0.0026
Passive Closure	41	2061-11-01	0.0000085	0.0037	0.0034
Receiving Environment Water Quality Model - KZ-26 - Dry Year -1 Model					
Construction	-1	2020-03-01	0.000015	0.0041	0.0061
Construction	-1	2020-04-01	0.000018	0.0039	0.0051
Construction	-1	2020-05-01	0.0000089	0.0014	0.0019
Construction	-1	2020-06-01	0.000011	0.0018	0.0015
Construction	-1	2020-07-01	0.00002	0.002	0.0023
Construction	-1	2020-08-01	0.000033	0.0021	0.004
Construction	-1	2020-09-01	0.000038	0.0022	0.0034
Construction	-1	2020-10-01	0.000046	0.003	0.0044
Construction	-1	2020-11-01	0.000072	0.0033	0.0068
Construction	-1	2020-12-01	0.000077	0.0036	0.0078
Construction	-1	2021-01-01	0.000073	0.0039	0.01
Construction	-1	2021-02-01	0.000076	0.004	0.0094
Receiving Environment Water Quality Model - KZ-26 - Wet Year -1 Model					
Construction	-1	2020-03-01	0.000015	0.0041	0.0059

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-04-01	300	51	0.23	0.0013	0.014	0.0055	0.13	0.55	0.00047	0.0003	0.0087
Construction	-1	2020-05-01	130	21	0.049	0.0014	0.013	0.017	0.084	1	0.00062	0.00054	0.037
Construction	-1	2020-06-01	160	23	0.023	0.0012	0.02	0.011	0.096	0.82	0.00063	0.00047	0.11
Construction	-1	2020-07-01	210	31	0.025	0.0021	0.015	0.019	0.11	0.54	0.0005	0.00054	0.043
Construction	-1	2020-08-01	200	29	0.021	0.0029	0.0077	0.013	0.09	0.26	0.00045	0.00049	0.028
Construction	-1	2020-09-01	190	30	0.041	0.0014	0.012	0.0062	0.097	0.86	0.00051	0.00053	0.028
Construction	-1	2020-10-01	210	36	0.094	0.0015	0.055	0.0069	0.11	0.6	0.00049	0.00024	0.01
Construction	-1	2020-11-01	250	43	0.18	0.002	0.014	0.0025	0.12	0.5	0.00052	0.00056	0.0058
Construction	-1	2020-12-01	300	47	0.24	0.0023	0.022	0.0049	0.11	0.67	0.00049	0.00023	0.027
Construction	-1	2021-01-01	300	50	0.3	0.0023	0.045	0.0082	0.12	0.67	0.00023	0.00023	0.0089
Construction	-1	2021-02-01	310	54	0.33	0.0023	0.048	0.0066	0.12	0.81	0.00023	0.00023	0.018
Receiving Environment Water Quality Model - KZ-26 - Dry Year 2 Model													
Production	2	2022-03-01	370	58	0.27	0.0018	0.025	0.0048	0.14	0.81	0.00062	0.00023	0.0033
Production	2	2022-04-01	300	48	0.25	0.0015	0.0093	0.0053	0.13	0.54	0.00052	0.00035	0.01
Production	2	2022-05-01	140	26	0.16	0.0038	0.024	0.018	0.096	1	0.00064	0.00055	0.039
Production	2	2022-06-01	170	27	0.12	0.0035	0.03	0.011	0.11	0.82	0.00064	0.00048	0.11
Production	2	2022-07-01	220	38	0.17	0.0053	0.03	0.02	0.12	0.54	0.00051	0.00054	0.047
Production	2	2022-08-01	220	35	0.15	0.0059	0.021	0.014	0.11	0.26	0.00046	0.0005	0.033
Production	2	2022-09-01	210	36	0.15	0.004	0.023	0.007	0.11	0.85	0.00052	0.00054	0.032
Production	2	2022-10-01	220	40	0.17	0.0031	0.062	0.0073	0.12	0.6	0.00049	0.00024	0.013
Production	2	2022-11-01	260	47	0.25	0.0035	0.019	0.0031	0.13	0.49	0.00053	0.00056	0.0086
Production	2	2022-12-01	300	49	0.29	0.0033	0.022	0.0053	0.12	0.66	0.00051	0.00024	0.03
Production	2	2023-01-01	300	51	0.33	0.003	0.043	0.0083	0.13	0.63	0.00024	0.00024	0.01
Production	2	2023-02-01	320	54	0.36	0.0028	0.046	0.0066	0.13	0.75	0.00024	0.00025	0.02
Receiving Environment Water Quality Model - KZ-26 - Wet Year 2 Model													
Production	2	2022-03-01	370	58	0.27	0.0017	0.025	0.0048	0.14	0.81	0.00062	0.00023	0.0032
Production	2	2022-04-01	300	48	0.25	0.0015	0.0091	0.0053	0.13	0.54	0.00052	0.00035	0.01
Production	2	2022-05-01	130	24	0.084	0.0021	0.016	0.018	0.091	1	0.00065	0.00056	0.038
Production	2	2022-06-01	160	24	0.045	0.0017	0.022	0.011	0.1	0.82	0.00064	0.00048	0.11
Production	2	2022-07-01	210	33	0.05	0.0026	0.017	0.02	0.11	0.54	0.00051	0.00055	0.044
Production	2	2022-08-01	210	30	0.042	0.0034	0.0091	0.013	0.094	0.26	0.00046	0.0005	0.03
Production	2	2022-09-01	200	32	0.059	0.0018	0.013	0.0064	0.1	0.86	0.00052	0.00054	0.029

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Construction	-1	2020-04-01	0.000096	0.00095	0.000027	78	0.000062	0.00035	0.12	0.000037	0.024	0.00092
Construction	-1	2020-05-01	0.000079	0.0013	0.000016	35	0.00008	0.0011	0.27	0.000064	0.018	0.0018
Construction	-1	2020-06-01	0.00013	0.0012	0.000034	42	0.00019	0.0014	0.28	0.00026	0.017	0.0019
Construction	-1	2020-07-01	0.00017	0.0012	0.000017	54	0.00016	0.00096	0.2	0.00016	0.017	0.0018
Construction	-1	2020-08-01	0.00013	0.00062	0.000012	55	0.00021	0.00086	0.16	0.00022	0.01	0.0017
Construction	-1	2020-09-01	0.00012	0.0012	0.000017	52	0.00018	0.00099	0.16	0.000058	0.024	0.0017
Construction	-1	2020-10-01	0.000072	0.0015	0.000021	58	0.000085	0.00041	0.22	0.00002	0.051	0.0013
Construction	-1	2020-11-01	0.00012	0.00067	0.000026	66	0.000048	0.00048	0.015	0.00012	0.025	0.001
Construction	-1	2020-12-01	0.00014	0.0009	0.000037	79	0.00014	0.00061	0.08	0.00011	0.036	0.0014
Construction	-1	2021-01-01	0.00016	0.00074	0.000048	77	0.000068	0.00068	0.058	0.00077	0.034	0.0011
Construction	-1	2021-02-01	0.00014	0.00082	0.000048	82	0.000084	0.00057	0.14	0.00022	0.038	0.0012
Receiving Environment Water Quality Model - KZ-26 - Dry Year 2 Model												**Receiving Environ**
Production	2	2022-03-01	0.000097	0.00063	0.000035	94	0.000008	0.00037	0.03	0.00038	0.021	0.0007
Production	2	2022-04-01	0.0001	0.00081	0.000025	76	0.000033	0.00036	0.14	0.00041	0.0078	0.00085
Production	2	2022-05-01	0.00013	0.0014	0.000024	34	0.000078	0.0012	0.28	0.00024	0.028	0.0019
Production	2	2022-06-01	0.00019	0.0013	0.000041	43	0.00019	0.0015	0.29	0.00038	0.026	0.002
Production	2	2022-07-01	0.00026	0.0014	0.000026	55	0.00016	0.001	0.21	0.00033	0.03	0.0019
Production	2	2022-08-01	0.00022	0.00079	0.000022	56	0.00021	0.00092	0.17	0.00041	0.024	0.0018
Production	2	2022-09-01	0.00018	0.0013	0.000025	52	0.00018	0.001	0.17	0.00025	0.036	0.0018
Production	2	2022-10-01	0.00011	0.0016	0.000027	57	0.000078	0.00045	0.23	0.00023	0.059	0.0013
Production	2	2022-11-01	0.00015	0.00072	0.000029	65	0.000024	0.00052	0.032	0.00042	0.029	0.00094
Production	2	2022-12-01	0.00015	0.00088	0.000034	77	0.000099	0.00063	0.092	0.00045	0.033	0.0012
Production	2	2023-01-01	0.00016	0.00068	0.000043	75	0.000025	0.00069	0.064	0.0011	0.027	0.00091
Production	2	2023-02-01	0.00014	0.00075	0.000041	79	0.000032	0.00058	0.15	0.00062	0.032	0.00097
Receiving Environment Water Quality Model - KZ-26 - Wet Year 2 Model												**Receiving Environ**
Production	2	2022-03-01	0.000096	0.00063	0.000034	94	0.0000078	0.00037	0.029	0.00037	0.021	0.0007
Production	2	2022-04-01	0.0001	0.00081	0.000025	76	0.000033	0.00036	0.14	0.0004	0.0076	0.00085
Production	2	2022-05-01	0.0001	0.0014	0.000023	34	0.000078	0.0012	0.28	0.00017	0.024	0.0018
Production	2	2022-06-01	0.00014	0.0012	0.000038	43	0.00019	0.0015	0.28	0.00031	0.019	0.002
Production	2	2022-07-01	0.00018	0.0013	0.000022	54	0.00016	0.00099	0.21	0.00022	0.02	0.0018
Production	2	2022-08-01	0.00015	0.00068	0.000017	56	0.00021	0.00089	0.16	0.00029	0.012	0.0017
Production	2	2022-09-01	0.00013	0.0012	0.00002	52	0.00018	0.001	0.17	0.00013	0.026	0.0017

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	**Year**	**Date**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Construction	-1	2020-04-01	0.0000026	0.00079	0.000018	0.0038	0.0051	1.7	0.0018	0.000087	0.00075	0.000027
Construction	-1	2020-05-01	0.0000045	0.00038	0.000005	0.0013	0.0018	4.9	0.0092	0.000072	0.0008	0.0000097
Construction	-1	2020-06-01	0.000013	0.00041	0.0000063	0.0017	0.0028	4.2	0.0065	0.000096	0.00077	0.00001
Construction	-1	2020-07-01	0.0000047	0.00046	0.0000067	0.0019	0.00098	6.3	0.0058	0.00013	0.00091	0.000007
Construction	-1	2020-08-01	0.0000049	0.00042	0.000011	0.002	0.0023	5	0.0041	0.00011	0.00065	0.0000069
Construction	-1	2020-09-01	0.000005	0.00053	0.000011	0.002	0.0022	5.5	0.0061	0.00011	0.00083	0.0000093
Construction	-1	2020-10-01	0.0000025	0.00098	0.000016	0.003	0.0024	2.8	0.0017	0.000076	0.0011	0.000013
Construction	-1	2020-11-01	0.0000025	0.00092	0.000038	0.0031	0.0044	2.4	0.0033	0.00012	0.00057	0.00002
Construction	-1	2020-12-01	0.0000026	0.0011	0.000053	0.0034	0.0062	2.3	0.0018	0.00013	0.00065	0.000031
Construction	-1	2021-01-01	0.0000044	0.00099	0.000057	0.0038	0.0093	1.7	0.0034	0.00014	0.00061	0.000033
Construction	-1	2021-02-01	0.0000027	0.00097	0.00006	0.0038	0.0088	1.6	0.0021	0.00014	0.00069	0.000038
Receiving Environment Water Quality Model - KZ-26 - Dry Year 2 Model			ment Water Quality Model - KZ-26 - Dry Year 2 Model									
Production	2	2022-03-01	0.0000029	0.0012	0.000019	0.0038	0.0051	1.9	0.0022	0.00011	0.00056	0.000031
Production	2	2022-04-01	0.000003	0.001	0.000018	0.0037	0.0036	1.8	0.0024	0.000092	0.00061	0.000023
Production	2	2022-05-01	0.0000051	0.00053	0.000031	0.0015	0.0025	5.1	0.012	0.00013	0.00093	0.000018
Production	2	2022-06-01	0.000013	0.00052	0.000023	0.002	0.0035	4.2	0.0096	0.00016	0.00088	0.000017
Production	2	2022-07-01	0.0000056	0.00061	0.000033	0.0023	0.002	6.3	0.01	0.00022	0.0011	0.000016
Production	2	2022-08-01	0.0000058	0.00057	0.000038	0.0023	0.0032	5	0.0083	0.00019	0.00082	0.000016
Production	2	2022-09-01	0.0000057	0.00065	0.000036	0.0023	0.0028	5.5	0.0098	0.00018	0.00097	0.000017
Production	2	2022-10-01	0.000003	0.0011	0.000032	0.0031	0.0027	2.9	0.004	0.00011	0.0012	0.000018
Production	2	2022-11-01	0.0000032	0.001	0.00004	0.0032	0.0035	2.4	0.0058	0.00015	0.00063	0.000022
Production	2	2022-12-01	0.0000032	0.0012	0.00004	0.0035	0.0038	2.3	0.0039	0.00014	0.00063	0.000028
Production	2	2023-01-01	0.000005	0.0011	0.000038	0.0037	0.0064	1.7	0.005	0.00014	0.00055	0.000029
Production	2	2023-02-01	0.0000032	0.0011	0.000038	0.0037	0.0055	1.6	0.0035	0.00014	0.00062	0.000033
Receiving Environment Water Quality Model - KZ-26 - Wet Year 2 Model			ment Water Quality Model - KZ-26 - Wet Year 2 Model									
Production	2	2022-03-01	0.0000029	0.0012	0.000019	0.0038	0.005	1.9	0.0021	0.00011	0.00056	0.00003
Production	2	2022-04-01	0.000003	0.001	0.000018	0.0037	0.0036	1.8	0.0023	0.000091	0.0006	0.000023
Production	2	2022-05-01	0.000005	0.00049	0.000019	0.0014	0.0024	5.1	0.01	0.000093	0.00091	0.000017
Production	2	2022-06-01	0.000013	0.00046	0.00001	0.0018	0.0031	4.2	0.0075	0.00011	0.00082	0.000013
Production	2	2022-07-01	0.0000051	0.00052	0.000011	0.002	0.0013	6.3	0.0069	0.00014	0.00097	0.000011
Production	2	2022-08-01	0.0000052	0.00048	0.000014	0.002	0.0025	5	0.0051	0.00012	0.00071	0.000011
Production	2	2022-09-01	0.0000052	0.00058	0.000013	0.0021	0.0022	5.5	0.0071	0.00012	0.00088	0.000012

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-04-01	81	0.000054	0.00039	0.017	0.000018	0.024	0.00089	0.0000026	0.00078
Construction	-1	2020-05-01	35	0.000034	0.00089	0.089	0.0000083	0.0053	0.0012	0.0000023	0.00038
Construction	-1	2020-06-01	37	0.000033	0.00074	0.042	0.00002	0.0031	0.0012	0.0000024	0.00038
Construction	-1	2020-07-01	54	0.000053	0.00065	0.038	0.000022	0.0072	0.0014	0.0000024	0.00043
Construction	-1	2020-08-01	53	0.00021	0.00061	0.029	0.000052	0.0053	0.00089	0.0000024	0.00039
Construction	-1	2020-09-01	51	0.00005	0.00076	0.031	0.000011	0.0056	0.0012	0.0000025	0.0005
Construction	-1	2020-10-01	58	0.000052	0.00033	0.051	0.0000051	0.028	0.0011	0.0000025	0.00092
Construction	-1	2020-11-01	68	0.00004	0.00042	0.0073	0.000014	0.018	0.00098	0.0000025	0.00092
Construction	-1	2020-12-01	77	0.000052	0.00043	0.0098	0.000019	0.025	0.001	0.0000026	0.001
Construction	-1	2021-01-01	81	0.000058	0.00044	0.01	0.000082	0.03	0.001	0.0000026	0.001
Construction	-1	2021-02-01	84	0.000063	0.00045	0.0088	0.000033	0.031	0.001	0.0000027	0.00093
Receiving Environment Water Quality Model - KZ-26 - Dry Year 2 Model											
Production	2	2022-03-01	87	0.0000063	0.00036	0.019	0.00037	0.016	0.00063	0.0000029	0.0011
Production	2	2022-04-01	80	0.000022	0.0004	0.03	0.00039	0.0072	0.00082	0.0000029	0.001
Production	2	2022-05-01	35	0.000035	0.00094	0.099	0.00019	0.015	0.0013	0.0000029	0.00053
Production	2	2022-06-01	38	0.000036	0.00078	0.05	0.00014	0.012	0.0013	0.000003	0.00049
Production	2	2022-07-01	55	0.000058	0.0007	0.048	0.0002	0.02	0.0015	0.0000032	0.00058
Production	2	2022-08-01	53	0.00021	0.00067	0.041	0.00025	0.019	0.00097	0.0000033	0.00054
Production	2	2022-09-01	51	0.000049	0.00081	0.042	0.0002	0.018	0.0012	0.0000032	0.00063
Production	2	2022-10-01	57	0.000044	0.00036	0.061	0.00022	0.035	0.0011	0.000003	0.001
Production	2	2022-11-01	67	0.000015	0.00046	0.02	0.00031	0.022	0.0009	0.0000032	0.001
Production	2	2022-12-01	75	0.000011	0.00046	0.023	0.00036	0.021	0.00084	0.0000032	0.0012
Production	2	2023-01-01	79	0.000011	0.00046	0.024	0.00046	0.024	0.00081	0.0000032	0.0012
Production	2	2023-02-01	81	0.00001	0.00046	0.024	0.00043	0.024	0.0008	0.0000032	0.0011
Receiving Environment Water Quality Model - KZ-26 - Wet Year 2 Model											
Production	2	2022-03-01	87	0.0000064	0.00036	0.018	0.00037	0.015	0.00063	0.0000029	0.0011
Production	2	2022-04-01	80	0.000022	0.0004	0.029	0.00038	0.007	0.00082	0.0000029	0.001
Production	2	2022-05-01	35	0.000032	0.00094	0.096	0.00012	0.0098	0.0013	0.0000027	0.00049
Production	2	2022-06-01	38	0.000031	0.00077	0.045	0.000067	0.0048	0.0012	0.0000026	0.00044
Production	2	2022-07-01	55	0.000051	0.00067	0.042	0.000081	0.0092	0.0014	0.0000027	0.0005
Production	2	2022-08-01	53	0.0002	0.00063	0.033	0.00012	0.0069	0.00088	0.0000027	0.00046
Production	2	2022-09-01	51	0.000044	0.00078	0.035	0.000084	0.007	0.0011	0.0000027	0.00055

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	**Year**	**Date**	**mg/L**	**mg/L**	**mg/L**
Construction	-1	2020-04-01	0.000018	0.0039	0.005
Construction	-1	2020-05-01	0.0000042	0.0014	0.0012
Construction	-1	2020-06-01	0.0000038	0.0017	0.00055
Construction	-1	2020-07-01	0.0000056	0.0018	0.00073
Construction	-1	2020-08-01	0.0000088	0.0019	0.002
Construction	-1	2020-09-01	0.000011	0.002	0.0012
Construction	-1	2020-10-01	0.000016	0.0029	0.0018
Construction	-1	2020-11-01	0.000038	0.0031	0.0041
Construction	-1	2020-12-01	0.000053	0.0034	0.0058
Construction	-1	2021-01-01	0.000056	0.0037	0.0089
Construction	-1	2021-02-01	0.00006	0.0038	0.008
Receiving Environment Water Quality Model - KZ-26 - Dry Year 2 Model					
Production	2	2022-03-01	0.000019	0.0039	0.0052
Production	2	2022-04-01	0.000018	0.0037	0.0033
Production	2	2022-05-01	0.00003	0.0015	0.002
Production	2	2022-06-01	0.000021	0.002	0.0013
Production	2	2022-07-01	0.000032	0.0022	0.0018
Production	2	2022-08-01	0.000036	0.0022	0.0028
Production	2	2022-09-01	0.000036	0.0023	0.0019
Production	2	2022-10-01	0.000032	0.003	0.002
Production	2	2022-11-01	0.00004	0.0032	0.0029
Production	2	2022-12-01	0.00004	0.0034	0.0035
Production	2	2023-01-01	0.000038	0.0037	0.0061
Production	2	2023-02-01	0.000038	0.0038	0.0048
Receiving Environment Water Quality Model - KZ-26 - Wet Year 2 Model					
Production	2	2022-03-01	0.000019	0.0039	0.0051
Production	2	2022-04-01	0.000018	0.0037	0.0032
Production	2	2022-05-01	0.000018	0.0014	0.0018
Production	2	2022-06-01	0.000008	0.0018	0.00078
Production	2	2022-07-01	0.00001	0.0019	0.001
Production	2	2022-08-01	0.000012	0.002	0.0021
Production	2	2022-09-01	0.000013	0.002	0.0012

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Production	2	2022-10-01	220	37	0.1	0.0017	0.055	0.007	0.11	0.6	0.0005	0.00025	0.011
Production	2	2022-11-01	250	44	0.2	0.0023	0.013	0.0027	0.12	0.49	0.00053	0.00057	0.0072
Production	2	2022-12-01	300	47	0.26	0.0025	0.019	0.0049	0.12	0.65	0.0005	0.00024	0.029
Production	2	2023-01-01	300	49	0.31	0.0025	0.041	0.0081	0.12	0.63	0.00024	0.00024	0.01
Production	2	2023-02-01	310	52	0.34	0.0024	0.043	0.0065	0.12	0.76	0.00024	0.00025	0.019
Receiving Environment Water Quality Model - KZ-26 - Dry Year 9 Model													
Production	9	2029-03-01	410	85	0.31	0.0029	0.029	0.0054	0.15	0.8	0.00061	0.00023	0.013
Production	9	2029-04-01	330	71	0.29	0.0024	0.013	0.0058	0.14	0.53	0.00052	0.00034	0.02
Production	9	2029-05-01	210	46	0.29	0.0069	0.036	0.019	0.11	1	0.00064	0.00056	0.046
Production	9	2029-06-01	210	39	0.25	0.0064	0.042	0.012	0.12	0.83	0.00064	0.00048	0.11
Production	9	2029-07-01	290	56	0.34	0.0093	0.044	0.022	0.14	0.54	0.00051	0.00054	0.054
Production	9	2029-08-01	300	56	0.3	0.0094	0.033	0.015	0.12	0.26	0.00046	0.0005	0.039
Production	9	2029-09-01	280	55	0.28	0.0068	0.033	0.008	0.12	0.85	0.00052	0.00054	0.038
Production	9	2029-10-01	280	57	0.25	0.005	0.068	0.0079	0.13	0.59	0.00049	0.00024	0.018
Production	9	2029-11-01	330	70	0.33	0.0054	0.025	0.0037	0.14	0.48	0.00052	0.00056	0.015
Production	9	2029-12-01	380	77	0.36	0.0049	0.028	0.006	0.13	0.65	0.0005	0.00024	0.038
Production	9	2030-01-01	370	83	0.39	0.0043	0.048	0.0089	0.14	0.62	0.00024	0.00024	0.018
Production	9	2030-02-01	380	89	0.4	0.0039	0.05	0.0071	0.14	0.75	0.00024	0.00024	0.029
Receiving Environment Water Quality Model - KZ-26 - Wet Year 9 Model													
Production	9	2029-03-01	410	84	0.31	0.0028	0.029	0.0053	0.15	0.8	0.00061	0.00023	0.012
Production	9	2029-04-01	330	70	0.28	0.0023	0.013	0.0058	0.14	0.53	0.00052	0.00034	0.019
Production	9	2029-05-01	170	44	0.15	0.0036	0.02	0.018	0.098	1	0.00064	0.00056	0.043
Production	9	2029-06-01	170	31	0.083	0.0026	0.025	0.011	0.1	0.82	0.00064	0.00048	0.11
Production	9	2029-07-01	230	43	0.094	0.0036	0.02	0.02	0.12	0.54	0.00052	0.00055	0.047
Production	9	2029-08-01	230	41	0.081	0.0043	0.012	0.014	0.098	0.26	0.00047	0.0005	0.033
Production	9	2029-09-01	220	42	0.095	0.0026	0.016	0.0067	0.11	0.86	0.00052	0.00054	0.032
Production	9	2029-10-01	240	46	0.13	0.0024	0.058	0.0072	0.12	0.61	0.0005	0.00025	0.014
Production	9	2029-11-01	300	62	0.24	0.0034	0.017	0.0031	0.13	0.49	0.00053	0.00056	0.012
Production	9	2029-12-01	350	72	0.31	0.0036	0.023	0.0055	0.12	0.64	0.0005	0.00024	0.035
Production	9	2030-01-01	350	78	0.35	0.0034	0.044	0.0086	0.13	0.62	0.00024	0.00024	0.017
Production	9	2030-02-01	360	84	0.37	0.0032	0.046	0.0068	0.13	0.75	0.00024	0.00024	0.027

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Production	2	2022-10-01	0.000071	0.0015	0.000023	57	0.000075	0.00043	0.23	0.00011	0.051	0.0013
Production	2	2022-11-01	0.00011	0.00066	0.000026	64	0.00002	0.0005	0.028	0.00031	0.022	0.00089
Production	2	2022-12-01	0.00013	0.00083	0.000033	76	0.000096	0.00062	0.094	0.00039	0.028	0.0012
Production	2	2023-01-01	0.00014	0.00064	0.000043	74	0.000023	0.00068	0.074	0.0011	0.024	0.00088
Production	2	2023-02-01	0.00013	0.0007	0.000042	78	0.00003	0.00057	0.16	0.00059	0.027	0.00093
Receiving Environment Water Quality Model - KZ-26 - Dry Year 9 Model												**Receiving Environ**
Production	9	2029-03-01	0.00014	0.00092	0.00005	94	0.00011	0.001	0.04	0.00051	0.083	0.0014
Production	9	2029-04-01	0.00014	0.0011	0.000042	76	0.00011	0.0011	0.15	0.00055	0.051	0.0014
Production	9	2029-05-01	0.00021	0.0016	0.000032	35	0.00032	0.0016	0.28	0.00031	0.17	0.0036
Production	9	2029-06-01	0.00028	0.0014	0.000045	44	0.00034	0.0017	0.29	0.00042	0.11	0.003
Production	9	2029-07-01	0.00037	0.0015	0.000032	56	0.00038	0.0013	0.22	0.0004	0.16	0.0034
Production	9	2029-08-01	0.00032	0.00091	0.000029	57	0.00047	0.0013	0.18	0.00049	0.17	0.0036
Production	9	2029-09-01	0.00027	0.0014	0.000031	52	0.00042	0.0014	0.18	0.00033	0.17	0.0035
Production	9	2029-10-01	0.00016	0.0017	0.000031	57	0.00029	0.00076	0.23	0.0003	0.18	0.0028
Production	9	2029-11-01	0.00022	0.00085	0.000036	64	0.00027	0.00097	0.036	0.00052	0.17	0.0027
Production	9	2029-12-01	0.00022	0.0011	0.000043	77	0.00034	0.0012	0.098	0.00056	0.17	0.0029
Production	9	2030-01-01	0.00021	0.00089	0.000052	75	0.00024	0.0013	0.066	0.0012	0.15	0.0024
Production	9	2030-02-01	0.00019	0.00099	0.000054	79	0.00023	0.0013	0.16	0.00073	0.14	0.0024
Receiving Environment Water Quality Model - KZ-26 - Wet Year 9 Model												**Receiving Environ**
Production	9	2029-03-01	0.00014	0.00091	0.000048	94	0.00011	0.001	0.038	0.0005	0.08	0.0014
Production	9	2029-04-01	0.00014	0.0011	0.000041	76	0.0001	0.001	0.15	0.00053	0.049	0.0014
Production	9	2029-05-01	0.00014	0.0015	0.00003	34	0.00022	0.0015	0.29	0.00021	0.1	0.0028
Production	9	2029-06-01	0.00017	0.0013	0.000039	43	0.00023	0.0016	0.29	0.00032	0.045	0.0023
Production	9	2029-07-01	0.00021	0.0013	0.000024	55	0.00022	0.0011	0.22	0.00024	0.053	0.0022
Production	9	2029-08-01	0.00017	0.00073	0.000019	56	0.00028	0.0011	0.17	0.00031	0.053	0.0022
Production	9	2029-09-01	0.00015	0.0013	0.000023	52	0.00025	0.0012	0.17	0.00016	0.068	0.0022
Production	9	2029-10-01	0.000092	0.0016	0.000025	58	0.00015	0.00058	0.23	0.00014	0.094	0.0018
Production	9	2029-11-01	0.00015	0.00075	0.00003	64	0.00016	0.00081	0.032	0.00037	0.099	0.0019
Production	9	2029-12-01	0.00017	0.00098	0.00004	76	0.00026	0.0011	0.098	0.00047	0.12	0.0024
Production	9	2030-01-01	0.00019	0.00083	0.00005	74	0.00019	0.0012	0.071	0.0012	0.11	0.002
Production	9	2030-02-01	0.00016	0.00093	0.000051	78	0.00018	0.0012	0.16	0.00067	0.11	0.002

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	**Year**	**Date**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Production	2	2022-10-01	0.0000027	0.001	0.000014	0.003	0.0021	2.9	0.0023	0.000075	0.0011	0.000014
Production	2	2022-11-01	0.0000029	0.00098	0.000024	0.0031	0.0031	2.4	0.0044	0.00012	0.00057	0.000018
Production	2	2022-12-01	0.000003	0.0012	0.00003	0.0034	0.0038	2.3	0.0029	0.00012	0.00058	0.000026
Production	2	2023-01-01	0.0000048	0.0011	0.000031	0.0036	0.0067	1.7	0.0044	0.00012	0.00051	0.000027
Production	2	2023-02-01	0.000003	0.0011	0.000032	0.0036	0.0058	1.6	0.003	0.00012	0.00057	0.000031
Receiving Environment Water Quality Model - KZ-26 - Dry Year 9 Model			**ment Water Quality Model - KZ-26 - Dry Year 9 Model**									
Production	9	2029-03-01	0.0000061	0.0014	0.000059	0.004	0.0064	1.9	0.012	0.00015	0.00086	0.000046
Production	9	2029-04-01	0.0000055	0.0011	0.000047	0.0038	0.0052	1.8	0.012	0.00013	0.00089	0.000041
Production	9	2029-05-01	0.000012	0.00063	0.00011	0.0019	0.0033	5.1	0.019	0.00021	0.0011	0.000026
Production	9	2029-06-01	0.000018	0.00059	0.000069	0.0024	0.004	4.2	0.015	0.00025	0.00096	0.000021
Production	9	2029-07-01	0.000012	0.00071	0.0001	0.0028	0.0026	6.3	0.017	0.00033	0.0012	0.000022
Production	9	2029-08-01	0.000013	0.00066	0.00012	0.0027	0.0039	5	0.015	0.00029	0.00093	0.000023
Production	9	2029-09-01	0.000013	0.00074	0.00011	0.0026	0.0035	5.5	0.016	0.00026	0.0011	0.000023
Production	9	2029-10-01	0.0000089	0.0011	0.000095	0.0033	0.0031	2.9	0.0089	0.00017	0.0012	0.000023
Production	9	2029-11-01	0.00001	0.0011	0.00011	0.0035	0.0042	2.4	0.013	0.00022	0.00076	0.00003
Production	9	2029-12-01	0.00001	0.0013	0.00011	0.0037	0.0047	2.3	0.012	0.00021	0.0008	0.000038
Production	9	2030-01-01	0.000011	0.0012	0.0001	0.0039	0.0073	1.7	0.014	0.00019	0.00076	0.00004
Production	9	2030-02-01	0.0000089	0.0012	0.000096	0.0039	0.0068	1.6	0.013	0.00018	0.00086	0.000046
Receiving Environment Water Quality Model - KZ-26 - Wet Year 9 Model			**ment Water Quality Model - KZ-26 - Wet Year 9 Model**									
Production	9	2029-03-01	0.000006	0.0014	0.000057	0.0039	0.0062	1.9	0.011	0.00015	0.00084	0.000045
Production	9	2029-04-01	0.0000053	0.0011	0.000045	0.0038	0.0051	1.8	0.012	0.00013	0.00088	0.00004
Production	9	2029-05-01	0.0000089	0.00057	0.000065	0.0015	0.003	5.1	0.016	0.00013	0.001	0.000024
Production	9	2029-06-01	0.000014	0.00048	0.000024	0.0019	0.0033	4.2	0.0098	0.00014	0.00085	0.000015
Production	9	2029-07-01	0.0000068	0.00055	0.000029	0.0021	0.0015	6.3	0.0098	0.00017	0.001	0.000013
Production	9	2029-08-01	0.0000073	0.00052	0.000035	0.0021	0.0028	5	0.0081	0.00014	0.00075	0.000014
Production	9	2029-09-01	0.0000074	0.00061	0.000035	0.0022	0.0025	5.5	0.0099	0.00014	0.00092	0.000015
Production	9	2029-10-01	0.0000049	0.0011	0.000036	0.003	0.0024	2.9	0.0049	0.000096	0.0011	0.000016
Production	9	2029-11-01	0.0000069	0.001	0.000065	0.0032	0.0034	2.4	0.0093	0.00016	0.00066	0.000023
Production	9	2029-12-01	0.0000078	0.0012	0.000079	0.0035	0.0043	2.3	0.0098	0.00017	0.00073	0.000033
Production	9	2030-01-01	0.0000096	0.0012	0.000079	0.0038	0.0072	1.7	0.012	0.00017	0.0007	0.000036
Production	9	2030-02-01	0.0000075	0.0012	0.000075	0.0038	0.0065	1.6	0.011	0.00016	0.0008	0.000042

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	2	2022-10-01	57	0.000041	0.00034	0.055	0.000097	0.028	0.001	0.0000027	0.00096
Production	2	2022-11-01	66	0.000012	0.00044	0.015	0.00021	0.014	0.00085	0.0000029	0.00098
Production	2	2022-12-01	74	0.0000091	0.00044	0.021	0.0003	0.015	0.0008	0.000003	0.0011
Production	2	2023-01-01	78	0.0000087	0.00045	0.022	0.00041	0.02	0.00078	0.000003	0.0011
Production	2	2023-02-01	80	0.0000091	0.00045	0.022	0.00039	0.019	0.00076	0.000003	0.001
Receiving Environment Water Quality Model - KZ-26 - Dry Year 9 Model											
Production	9	2029-03-01	86	0.00011	0.001	0.034	0.00051	0.077	0.0014	0.0000061	0.0013
Production	9	2029-04-01	79	0.000096	0.0011	0.045	0.00053	0.05	0.0013	0.0000054	0.0011
Production	9	2029-05-01	36	0.00028	0.0013	0.11	0.00026	0.16	0.0031	0.0000099	0.00063
Production	9	2029-06-01	39	0.00018	0.001	0.054	0.00018	0.095	0.0023	0.0000072	0.00057
Production	9	2029-07-01	56	0.00028	0.001	0.054	0.00026	0.15	0.003	0.0000095	0.00068
Production	9	2029-08-01	54	0.00046	0.001	0.047	0.00033	0.16	0.0028	0.00001	0.00064
Production	9	2029-09-01	52	0.00029	0.0011	0.049	0.00028	0.16	0.0029	0.00001	0.00071
Production	9	2029-10-01	57	0.00025	0.00068	0.067	0.00029	0.15	0.0025	0.0000089	0.0011
Production	9	2029-11-01	66	0.00026	0.00091	0.028	0.00041	0.16	0.0026	0.00001	0.0011
Production	9	2029-12-01	75	0.00025	0.001	0.033	0.00047	0.16	0.0025	0.00001	0.0012
Production	9	2030-01-01	79	0.00023	0.0011	0.036	0.00056	0.15	0.0023	0.0000094	0.0013
Production	9	2030-02-01	81	0.00021	0.0011	0.036	0.00054	0.14	0.0022	0.0000089	0.0012
Receiving Environment Water Quality Model - KZ-26 - Wet Year 9 Model											
Production	9	2029-03-01	86	0.0001	0.00099	0.033	0.0005	0.074	0.0013	0.000006	0.0013
Production	9	2029-04-01	80	0.000093	0.0011	0.044	0.00051	0.049	0.0013	0.0000053	0.0011
Production	9	2029-05-01	35	0.00017	0.0013	0.11	0.00016	0.09	0.0023	0.0000067	0.00057
Production	9	2029-06-01	38	0.000077	0.00088	0.049	0.000079	0.031	0.0015	0.000004	0.00046
Production	9	2029-07-01	55	0.00011	0.00082	0.046	0.0001	0.043	0.0018	0.0000044	0.00053
Production	9	2029-08-01	53	0.00027	0.0008	0.038	0.00014	0.048	0.0014	0.0000048	0.00049
Production	9	2029-09-01	51	0.00012	0.00094	0.041	0.00011	0.049	0.0017	0.0000048	0.00059
Production	9	2029-10-01	58	0.00012	0.0005	0.059	0.00012	0.071	0.0015	0.0000049	0.00099
Production	9	2029-11-01	66	0.00015	0.00075	0.022	0.00027	0.092	0.0018	0.0000069	0.001
Production	9	2029-12-01	74	0.00018	0.00089	0.029	0.00038	0.11	0.002	0.0000078	0.0012
Production	9	2030-01-01	78	0.00017	0.00098	0.033	0.0005	0.11	0.0019	0.0000078	0.0012
Production	9	2030-02-01	80	0.00016	0.001	0.033	0.00048	0.1	0.0018	0.0000075	0.0011

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Production	2	2022-10-01	0.000014	0.0029	0.0015
Production	2	2022-11-01	0.000024	0.0031	0.0026
Production	2	2022-12-01	0.00003	0.0033	0.0034
Production	2	2023-01-01	0.000031	0.0036	0.0061
Production	2	2023-02-01	0.000032	0.0037	0.0048
Receiving Environment Water Quality Model - KZ-26 - Dry Year 9 Model					
Production	9	2029-03-01	0.000059	0.0041	0.0064
Production	9	2029-04-01	0.000047	0.0038	0.005
Production	9	2029-05-01	0.00011	0.0019	0.0028
Production	9	2029-06-01	0.000067	0.0024	0.0017
Production	9	2029-07-01	0.0001	0.0027	0.0025
Production	9	2029-08-01	0.00011	0.0026	0.0035
Production	9	2029-09-01	0.00011	0.0026	0.0026
Production	9	2029-10-01	0.000095	0.0032	0.0026
Production	9	2029-11-01	0.00011	0.0035	0.0036
Production	9	2029-12-01	0.00011	0.0036	0.0045
Production	9	2030-01-01	0.0001	0.0039	0.0073
Production	9	2030-02-01	0.000095	0.0039	0.0062
Receiving Environment Water Quality Model - KZ-26 - Wet Year 9 Model					
Production	9	2029-03-01	0.000057	0.0041	0.0063
Production	9	2029-04-01	0.000045	0.0038	0.0048
Production	9	2029-05-01	0.000065	0.0015	0.0025
Production	9	2029-06-01	0.000022	0.0019	0.00096
Production	9	2029-07-01	0.000028	0.002	0.0012
Production	9	2029-08-01	0.000034	0.0021	0.0024
Production	9	2029-09-01	0.000035	0.0021	0.0014
Production	9	2029-10-01	0.000036	0.003	0.0017
Production	9	2029-11-01	0.000065	0.0032	0.0029
Production	9	2029-12-01	0.000079	0.0035	0.004
Production	9	2030-01-01	0.000079	0.0037	0.0069
Production	9	2030-02-01	0.000075	0.0038	0.0058

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Receiving Environment Water Quality Model - KZ-26 - Dry Year 12 Model													
Active Closure	12	2032-03-01	430	61	0.4	0.0047	0.061	0.0057	0.14	0.8	0.00062	0.00023	0.0039
Active Closure	12	2032-04-01	350	51	0.36	0.004	0.04	0.0061	0.13	0.54	0.00052	0.00035	0.011
Active Closure	12	2032-05-01	150	27	0.29	0.0069	0.057	0.019	0.094	1	0.00065	0.00056	0.04
Active Closure	12	2032-06-01	190	28	0.21	0.0056	0.053	0.012	0.11	0.84	0.00066	0.00049	0.11
Active Closure	12	2032-07-01	250	39	0.31	0.0086	0.067	0.022	0.12	0.55	0.00051	0.00056	0.045
Active Closure	12	2032-08-01	260	37	0.31	0.0095	0.065	0.015	0.1	0.26	0.00046	0.0005	0.031
Active Closure	12	2032-09-01	250	38	0.3	0.0075	0.067	0.008	0.11	0.86	0.00052	0.00054	0.031
Active Closure	12	2032-10-01	280	42	0.32	0.0067	0.11	0.0082	0.12	0.6	0.00049	0.00024	0.012
Active Closure	12	2032-11-01	340	50	0.43	0.0078	0.075	0.0041	0.13	0.49	0.00053	0.00056	0.0082
Active Closure	12	2032-12-01	380	51	0.47	0.0074	0.077	0.0064	0.12	0.65	0.00051	0.00024	0.029
Active Closure	12	2033-01-01	380	52	0.49	0.0065	0.091	0.0093	0.13	0.62	0.00024	0.00024	0.01
Active Closure	12	2033-02-01	390	55	0.49	0.0057	0.087	0.0074	0.13	0.75	0.00024	0.00024	0.02
Receiving Environment Water Quality Model - KZ-26 - Wet Year 12 Model													
Active Closure	12	2032-03-01	430	61	0.37	0.0041	0.054	0.0056	0.14	0.8	0.00062	0.00023	0.0038
Active Closure	12	2032-04-01	350	51	0.34	0.0034	0.034	0.006	0.13	0.54	0.00052	0.00035	0.011
Active Closure	12	2032-05-01	140	32	0.23	0.0055	0.052	0.018	0.092	1	0.00063	0.00054	0.04
Active Closure	12	2032-06-01	170	26	0.11	0.0032	0.038	0.011	0.1	0.83	0.00065	0.00049	0.11
Active Closure	12	2032-07-01	230	35	0.11	0.004	0.033	0.02	0.11	0.55	0.00052	0.00056	0.044
Active Closure	12	2032-08-01	230	33	0.11	0.005	0.029	0.014	0.096	0.26	0.00047	0.0005	0.03
Active Closure	12	2032-09-01	220	34	0.12	0.0033	0.031	0.0068	0.1	0.87	0.00052	0.00054	0.029
Active Closure	12	2032-10-01	250	39	0.16	0.003	0.073	0.0074	0.11	0.62	0.0005	0.00025	0.011
Active Closure	12	2032-11-01	310	48	0.3	0.0047	0.047	0.0034	0.13	0.49	0.00053	0.00056	0.0074
Active Closure	12	2032-12-01	380	52	0.4	0.0056	0.062	0.0059	0.12	0.65	0.0005	0.00024	0.029
Active Closure	12	2033-01-01	390	53	0.44	0.0055	0.084	0.009	0.13	0.62	0.00024	0.00024	0.01
Active Closure	12	2033-02-01	400	56	0.45	0.005	0.082	0.0072	0.13	0.75	0.00024	0.00024	0.02
Receiving Environment Water Quality Model - KZ-26 - Dry Year 20 Model													
Transitional Closure	20	2040-03-01	370	55	0.34	0.0035	0.044	0.0055	0.14	0.81	0.00063	0.00024	0.0024
Transitional Closure	20	2040-04-01	290	45	0.33	0.0034	0.029	0.0058	0.13	0.55	0.00053	0.00036	0.0098
Transitional Closure	20	2040-05-01	130	22	0.15	0.0037	0.027	0.018	0.088	1	0.00063	0.00055	0.039
Transitional Closure	20	2040-06-01	160	24	0.12	0.0034	0.033	0.012	0.1	0.83	0.00065	0.00049	0.11

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Receiving Environment Water Quality Model - KZ-26 - Dry Year 12 Model												**Receiving Environ**
Active Closure	12	2032-03-01	0.00012	0.00063	0.000027	94	0.00016	0.00074	0.016	0.000058	0.14	0.0023
Active Closure	12	2032-04-01	0.00012	0.00079	0.00002	77	0.00018	0.00076	0.12	0.000063	0.13	0.0024
Active Closure	12	2032-05-01	0.00017	0.0015	0.00002	35	0.00013	0.0013	0.28	0.000085	0.063	0.0024
Active Closure	12	2032-06-01	0.00023	0.0014	0.000039	44	0.00024	0.0016	0.29	0.00029	0.062	0.0025
Active Closure	12	2032-07-01	0.00031	0.0015	0.000022	56	0.00024	0.0011	0.21	0.00019	0.088	0.0026
Active Closure	12	2032-08-01	0.00026	0.00084	0.000018	57	0.00032	0.0011	0.16	0.00026	0.1	0.0029
Active Closure	12	2032-09-01	0.00022	0.0014	0.000021	53	0.0003	0.0012	0.17	0.0001	0.13	0.0029
Active Closure	12	2032-10-01	0.00013	0.0016	0.000025	58	0.00022	0.00063	0.22	0.000069	0.17	0.0028
Active Closure	12	2032-11-01	0.00018	0.00071	0.000024	65	0.00022	0.00078	0.025	0.00017	0.18	0.003
Active Closure	12	2032-12-01	0.00018	0.00086	0.000029	78	0.00031	0.00095	0.084	0.00016	0.2	0.0034
Active Closure	12	2033-01-01	0.00018	0.00064	0.000036	75	0.00024	0.001	0.052	0.00081	0.19	0.0031
Active Closure	12	2033-02-01	0.00016	0.00069	0.000031	80	0.00024	0.00098	0.14	0.00026	0.19	0.003
Receiving Environment Water Quality Model - KZ-26 - Wet Year 12 Model												**Receiving Environ**
Active Closure	12	2032-03-01	0.00012	0.00063	0.000027	95	0.00016	0.00073	0.015	0.000058	0.14	0.0023
Active Closure	12	2032-04-01	0.00011	0.00078	0.00002	77	0.00018	0.00075	0.12	0.000063	0.13	0.0024
Active Closure	12	2032-05-01	0.00013	0.0014	0.000022	34	0.0001	0.0013	0.28	0.000095	0.038	0.002
Active Closure	12	2032-06-01	0.00016	0.0012	0.000036	43	0.00021	0.0015	0.28	0.00027	0.034	0.0022
Active Closure	12	2032-07-01	0.0002	0.0013	0.00002	55	0.00018	0.0011	0.21	0.00018	0.042	0.0021
Active Closure	12	2032-08-01	0.00016	0.00067	0.000015	57	0.00025	0.00096	0.16	0.00024	0.043	0.0021
Active Closure	12	2032-09-01	0.00014	0.0012	0.000019	53	0.00023	0.0011	0.17	0.000081	0.064	0.0022
Active Closure	12	2032-10-01	0.000081	0.0015	0.000023	58	0.00015	0.00051	0.23	0.000048	0.11	0.002
Active Closure	12	2032-11-01	0.00013	0.00064	0.000021	65	0.00018	0.00066	0.026	0.00016	0.14	0.0025
Active Closure	12	2032-12-01	0.00015	0.00083	0.000028	77	0.00031	0.00088	0.085	0.00016	0.2	0.0034
Active Closure	12	2033-01-01	0.00017	0.00063	0.000035	75	0.00026	0.001	0.054	0.00082	0.21	0.0033
Active Closure	12	2033-02-01	0.00015	0.00069	0.00003	79	0.00027	0.00093	0.14	0.00027	0.21	0.0034
Receiving Environment Water Quality Model - KZ-26 - Dry Year 20 Model												**Receiving Environ**
Transitional Closure	20	2040-03-01	0.000098	0.00057	0.000025	96	0.000016	0.00082	0.01	0.000022	0.016	0.0007
Transitional Closure	20	2040-04-01	0.000099	0.00073	0.00002	78	0.000041	0.00087	0.12	0.00003	0.0068	0.00085
Transitional Closure	20	2040-05-01	0.00015	0.0014	0.000016	35	0.000077	0.0013	0.27	0.000065	0.017	0.0018
Transitional Closure	20	2040-06-01	0.00022	0.0013	0.000037	44	0.00019	0.0016	0.28	0.00027	0.018	0.002

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L
Receiving Environment Water Quality Model - KZ-26 - Dry Year 12 Model			**nment Water Quality Model - KZ-26 - Dry Year 12 Model**									
Active Closure	12	2032-03-01	0.0000057	0.0011	0.000018	0.0038	0.0035	1.9	0.0032	0.00013	0.00056	0.000024
Active Closure	12	2032-04-01	0.0000057	0.00088	0.000018	0.0037	0.0022	1.8	0.0032	0.00011	0.00058	0.000019
Active Closure	12	2032-05-01	0.0000062	0.00046	0.0000094	0.0015	0.002	5.2	0.012	0.00016	0.00096	0.000013
Active Closure	12	2032-06-01	0.000014	0.00049	0.000011	0.002	0.0032	4.3	0.0087	0.0002	0.00095	0.000014
Active Closure	12	2032-07-01	0.0000073	0.00056	0.000014	0.0023	0.0014	6.3	0.0088	0.00027	0.0012	0.000012
Active Closure	12	2032-08-01	0.0000079	0.00051	0.000018	0.0022	0.0026	5	0.007	0.00023	0.00086	0.000012
Active Closure	12	2032-09-01	0.000008	0.0006	0.000017	0.0023	0.0024	5.5	0.0087	0.00021	0.001	0.000013
Active Closure	12	2032-10-01	0.0000058	0.001	0.000018	0.0031	0.0023	2.9	0.0037	0.00014	0.0011	0.000016
Active Closure	12	2032-11-01	0.000007	0.00095	0.000025	0.0032	0.0027	2.4	0.0055	0.00018	0.00062	0.000017
Active Closure	12	2032-12-01	0.0000073	0.0011	0.000026	0.0034	0.0027	2.3	0.0037	0.00017	0.00061	0.000023
Active Closure	12	2033-01-01	0.0000089	0.001	0.000025	0.0037	0.0052	1.6	0.0049	0.00016	0.00051	0.000023
Active Closure	12	2033-02-01	0.0000069	0.00098	0.000024	0.0037	0.0039	1.6	0.0034	0.00015	0.00056	0.000024
Receiving Environment Water Quality Model - KZ-26 - Wet Year 12 Model			**nent Water Quality Model - KZ-26 - Wet Year 12 Model**									
Active Closure	12	2032-03-01	0.0000057	0.0011	0.000018	0.0038	0.0034	1.9	0.0032	0.00013	0.00056	0.000024
Active Closure	12	2032-04-01	0.0000057	0.00088	0.000018	0.0037	0.0021	1.8	0.0032	0.0001	0.00058	0.000019
Active Closure	12	2032-05-01	0.0000054	0.00046	0.0000055	0.0014	0.0023	5	0.012	0.00012	0.00093	0.000016
Active Closure	12	2032-06-01	0.000013	0.00045	0.0000063	0.0018	0.003	4.3	0.0075	0.00013	0.00082	0.000012
Active Closure	12	2032-07-01	0.0000058	0.00051	0.0000061	0.002	0.0012	6.4	0.0069	0.00016	0.00097	0.0000096
Active Closure	12	2032-08-01	0.0000061	0.00046	0.0000081	0.002	0.0023	5	0.0053	0.00013	0.0007	0.0000087
Active Closure	12	2032-09-01	0.0000062	0.00056	0.0000072	0.0021	0.0021	5.5	0.0071	0.00013	0.00087	0.000011
Active Closure	12	2032-10-01	0.0000041	0.001	0.0000096	0.003	0.0021	2.9	0.0025	0.000085	0.0011	0.000013
Active Closure	12	2032-11-01	0.0000059	0.00093	0.000019	0.0031	0.0024	2.4	0.0047	0.00014	0.00055	0.000014
Active Closure	12	2032-12-01	0.0000072	0.0011	0.000026	0.0034	0.0025	2.3	0.0035	0.00014	0.00058	0.000022
Active Closure	12	2033-01-01	0.0000093	0.00099	0.000028	0.0036	0.0051	1.6	0.005	0.00015	0.0005	0.000022
Active Closure	12	2033-02-01	0.0000075	0.00097	0.000027	0.0036	0.0038	1.5	0.0035	0.00014	0.00056	0.000023
Receiving Environment Water Quality Model - KZ-26 - Dry Year 20 Model			**nent Water Quality Model - KZ-26 - Dry Year 20 Model**									
Transitional Closure	20	2040-03-01	0.0000027	0.0011	0.000002	0.0038	0.0033	1.9	0.0017	0.00011	0.0005	0.000022
Transitional Closure	20	2040-04-01	0.0000027	0.00086	0.0000019	0.0037	0.0022	1.8	0.002	0.000087	0.00053	0.000019
Transitional Closure	20	2040-05-01	0.0000048	0.00042	0.0000033	0.0015	0.0016	5	0.011	0.00015	0.00089	0.00001
Transitional Closure	20	2040-06-01	0.000013	0.00047	0.0000055	0.002	0.003	4.3	0.008	0.00019	0.00091	0.000012

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L
Receiving Environment Water Quality Model - KZ-26 - Dry Year 12 Model											
Active Closure	12	2032-03-01	87	0.00016	0.00073	0.01	0.000054	0.14	0.0022	0.0000057	0.001
Active Closure	12	2032-04-01	80	0.00017	0.0008	0.018	0.000042	0.13	0.0024	0.0000056	0.00088
Active Closure	12	2032-05-01	36	0.000085	0.0011	0.094	0.000029	0.049	0.0018	0.0000039	0.00046
Active Closure	12	2032-06-01	39	0.000084	0.00089	0.046	0.000043	0.047	0.0018	0.0000041	0.00046
Active Closure	12	2032-07-01	56	0.00014	0.00083	0.042	0.000055	0.078	0.0022	0.0000048	0.00053
Active Closure	12	2032-08-01	54	0.00032	0.00081	0.034	0.000095	0.1	0.002	0.0000054	0.00048
Active Closure	12	2032-09-01	52	0.00017	0.00096	0.037	0.000055	0.11	0.0024	0.0000055	0.00057
Active Closure	12	2032-10-01	58	0.00019	0.00054	0.056	0.000052	0.15	0.0025	0.0000058	0.00097
Active Closure	12	2032-11-01	67	0.00021	0.00073	0.013	0.000069	0.18	0.0029	0.000007	0.00096
Active Closure	12	2032-12-01	76	0.00023	0.00078	0.015	0.000069	0.19	0.003	0.0000073	0.0011
Active Closure	12	2033-01-01	79	0.00022	0.00083	0.014	0.00013	0.19	0.003	0.0000071	0.001
Active Closure	12	2033-02-01	82	0.00022	0.00085	0.012	0.000071	0.18	0.0029	0.0000069	0.00094
Receiving Environment Water Quality Model - KZ-26 - Wet Year 12 Model											
Active Closure	12	2032-03-01	87	0.00016	0.00072	0.01	0.000054	0.14	0.0022	0.0000057	0.001
Active Closure	12	2032-04-01	80	0.00017	0.00078	0.018	0.000042	0.13	0.0024	0.0000056	0.00087
Active Closure	12	2032-05-01	35	0.000054	0.0011	0.099	0.000035	0.025	0.0015	0.0000032	0.00046
Active Closure	12	2032-06-01	38	0.00005	0.00082	0.045	0.000029	0.019	0.0014	0.0000031	0.00042
Active Closure	12	2032-07-01	56	0.000079	0.00074	0.041	0.000036	0.031	0.0017	0.0000033	0.00048
Active Closure	12	2032-08-01	54	0.00024	0.0007	0.033	0.000071	0.038	0.0013	0.0000036	0.00043
Active Closure	12	2032-09-01	52	0.000093	0.00085	0.035	0.000031	0.045	0.0016	0.0000037	0.00053
Active Closure	12	2032-10-01	59	0.00011	0.00042	0.054	0.000031	0.086	0.0018	0.0000041	0.00095
Active Closure	12	2032-11-01	67	0.00017	0.00061	0.012	0.000059	0.14	0.0024	0.0000059	0.00094
Active Closure	12	2032-12-01	75	0.00023	0.00071	0.015	0.000074	0.19	0.003	0.0000072	0.001
Active Closure	12	2033-01-01	79	0.00025	0.00077	0.015	0.00014	0.21	0.0032	0.0000075	0.001
Active Closure	12	2033-02-01	81	0.00025	0.0008	0.013	0.00008	0.21	0.0032	0.0000075	0.00093
Receiving Environment Water Quality Model - KZ-26 - Dry Year 20 Model											
Transitional Closure	20	2040-03-01	88	0.000011	0.00081	0.0061	0.000019	0.012	0.00063	0.0000027	0.001
Transitional Closure	20	2040-04-01	81	0.000027	0.0009	0.015	0.0000086	0.0036	0.00083	0.0000027	0.00086
Transitional Closure	20	2040-05-01	35	0.000032	0.001	0.09	0.0000093	0.0044	0.0012	0.0000026	0.00042
Transitional Closure	20	2040-06-01	39	0.000034	0.00087	0.043	0.000023	0.004	0.0012	0.0000029	0.00044

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Receiving Environment Water Quality Model - KZ-26 - Dry Year 12 Model					
Active Closure	12	2032-03-01	0.000018	0.004	0.0038
Active Closure	12	2032-04-01	0.000018	0.0037	0.002
Active Closure	12	2032-05-01	0.0000086	0.0015	0.0014
Active Closure	12	2032-06-01	0.0000088	0.002	0.00087
Active Closure	12	2032-07-01	0.000013	0.0022	0.0012
Active Closure	12	2032-08-01	0.000016	0.0022	0.0021
Active Closure	12	2032-09-01	0.000016	0.0022	0.0013
Active Closure	12	2032-10-01	0.000018	0.003	0.0016
Active Closure	12	2032-11-01	0.000025	0.0032	0.0021
Active Closure	12	2032-12-01	0.000026	0.0034	0.0025
Active Closure	12	2033-01-01	0.000025	0.0037	0.0051
Active Closure	12	2033-02-01	0.000024	0.0037	0.0033
Receiving Environment Water Quality Model - KZ-26 - Wet Year 12 Model					
Active Closure	12	2032-03-01	0.000018	0.004	0.0038
Active Closure	12	2032-04-01	0.000018	0.0037	0.0019
Active Closure	12	2032-05-01	0.0000047	0.0014	0.0016
Active Closure	12	2032-06-01	0.0000038	0.0018	0.00063
Active Closure	12	2032-07-01	0.000005	0.0019	0.00084
Active Closure	12	2032-08-01	0.0000063	0.002	0.0018
Active Closure	12	2032-09-01	0.0000071	0.0021	0.00099
Active Closure	12	2032-10-01	0.0000096	0.0029	0.0013
Active Closure	12	2032-11-01	0.000019	0.0031	0.0018
Active Closure	12	2032-12-01	0.000026	0.0033	0.0023
Active Closure	12	2033-01-01	0.000028	0.0036	0.005
Active Closure	12	2033-02-01	0.000027	0.0037	0.0032
Receiving Environment Water Quality Model - KZ-26 - Dry Year 20 Model					
Transitional Closure	20	2040-03-01	0.000002	0.004	0.0038
Transitional Closure	20	2040-04-01	0.0000019	0.0037	0.002
Transitional Closure	20	2040-05-01	0.0000026	0.0015	0.0011
Transitional Closure	20	2040-06-01	0.000003	0.002	0.00069

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	20	2040-07-01	210	33	0.15	0.005	0.033	0.021	0.12	0.55	0.00051	0.00056	0.044
Transitional Closure	20	2040-08-01	210	30	0.14	0.0055	0.024	0.015	0.097	0.26	0.00047	0.0005	0.03
Transitional Closure	20	2040-09-01	200	31	0.14	0.0036	0.026	0.0076	0.1	0.86	0.00052	0.00054	0.029
Transitional Closure	20	2040-10-01	220	35	0.16	0.003	0.067	0.0077	0.11	0.61	0.0005	0.00025	0.011
Transitional Closure	20	2040-11-01	250	41	0.26	0.0037	0.027	0.0036	0.12	0.5	0.00054	0.00056	0.0064
Transitional Closure	20	2040-12-01	290	43	0.32	0.0039	0.034	0.0059	0.11	0.67	0.00052	0.00024	0.028
Transitional Closure	20	2041-01-01	290	45	0.37	0.0038	0.057	0.0088	0.12	0.63	0.00025	0.00025	0.0086
Transitional Closure	20	2041-02-01	310	48	0.41	0.0038	0.062	0.007	0.12	0.75	0.00025	0.00025	0.018
Receiving Environment Water Quality Model - KZ-26 - Wet Year 20 Model													
Transitional Closure	20	2040-03-01	370	55	0.34	0.0034	0.043	0.0054	0.14	0.81	0.00063	0.00024	0.0023
Transitional Closure	20	2040-04-01	290	45	0.33	0.0033	0.028	0.0058	0.13	0.55	0.00053	0.00036	0.0098
Transitional Closure	20	2040-05-01	120	21	0.078	0.0021	0.016	0.018	0.085	1	0.00063	0.00055	0.038
Transitional Closure	20	2040-06-01	160	23	0.041	0.0016	0.022	0.011	0.098	0.83	0.00065	0.00048	0.11
Transitional Closure	20	2040-07-01	210	32	0.044	0.0025	0.017	0.02	0.11	0.55	0.00052	0.00056	0.043
Transitional Closure	20	2040-08-01	210	29	0.035	0.0032	0.0097	0.013	0.092	0.26	0.00047	0.0005	0.029
Transitional Closure	20	2040-09-01	200	30	0.053	0.0017	0.014	0.0065	0.099	0.87	0.00052	0.00054	0.028
Transitional Closure	20	2040-10-01	220	35	0.1	0.0017	0.057	0.0072	0.11	0.63	0.0005	0.00025	0.011
Transitional Closure	20	2040-11-01	250	41	0.2	0.0024	0.018	0.0031	0.12	0.5	0.00054	0.00057	0.0059
Transitional Closure	20	2040-12-01	290	43	0.28	0.003	0.027	0.0056	0.11	0.67	0.00052	0.00024	0.027
Transitional Closure	20	2041-01-01	290	45	0.35	0.0032	0.052	0.0086	0.12	0.63	0.00025	0.00025	0.0083
Transitional Closure	20	2041-02-01	300	48	0.38	0.0033	0.057	0.0068	0.12	0.75	0.00025	0.00025	0.018
Receiving Environment Water Quality Model - KZ-26 - Dry Year 38 Model													
Passive Closure	38	2058-03-01	380	65	0.23	0.001	0.021	0.0055	0.14	0.82	0.00061	0.00023	0.007
Passive Closure	38	2058-04-01	310	56	0.22	0.00087	0.0054	0.0063	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	38	2058-05-01	140	31	0.041	0.0012	0.011	0.018	0.096	1	0.00061	0.00052	0.042
Passive Closure	38	2058-06-01	180	36	0.026	0.0013	0.02	0.012	0.11	0.84	0.00064	0.00048	0.11
Passive Closure	38	2058-07-01	240	48	0.029	0.0022	0.015	0.021	0.13	0.58	0.00049	0.0005	0.05
Passive Closure	38	2058-08-01	230	40	0.021	0.0029	0.0075	0.015	0.1	0.29	0.00046	0.00051	0.034
Passive Closure	38	2058-09-01	210	40	0.034	0.0013	0.011	0.0075	0.11	0.87	0.00054	0.00056	0.032
Passive Closure	38	2058-10-01	230	43	0.076	0.0011	0.052	0.0077	0.12	0.6	0.0005	0.00025	0.014
Passive Closure	38	2058-11-01	260	49	0.14	0.0012	0.008	0.0033	0.13	0.51	0.00054	0.00058	0.0095
Passive Closure	38	2058-12-01	310	53	0.2	0.0011	0.012	0.0056	0.12	0.67	0.00051	0.00025	0.031

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Transitional Closure	20	2040-07-01	0.00029	0.0014	0.000019	56	0.00016	0.0011	0.21	0.00016	0.019	0.0018
Transitional Closure	20	2040-08-01	0.00024	0.00077	0.000015	57	0.00021	0.001	0.16	0.00022	0.01	0.0017
Transitional Closure	20	2040-09-01	0.0002	0.0013	0.000018	53	0.00018	0.0011	0.17	0.000062	0.023	0.0017
Transitional Closure	20	2040-10-01	0.00011	0.0015	0.000022	58	0.000076	0.00058	0.22	0.000021	0.047	0.0012
Transitional Closure	20	2040-11-01	0.00014	0.00062	0.000019	66	0.000022	0.00074	0.025	0.00011	0.014	0.00084
Transitional Closure	20	2040-12-01	0.00014	0.00078	0.000026	79	0.000099	0.00094	0.079	0.000099	0.021	0.0011
Transitional Closure	20	2041-01-01	0.00015	0.00057	0.000033	76	0.000025	0.0011	0.048	0.00076	0.013	0.00082
Transitional Closure	20	2041-02-01	0.00013	0.00063	0.000029	81	0.000037	0.001	0.14	0.00021	0.018	0.00089
Receiving Environment Water Quality Model - KZ-26 - Wet Year 20 Model												**Receiving Environr**
Transitional Closure	20	2040-03-01	0.000097	0.00056	0.000024	96	0.000016	0.0008	0.01	0.000022	0.016	0.0007
Transitional Closure	20	2040-04-01	0.000097	0.00073	0.00002	78	0.00004	0.00085	0.12	0.000029	0.0068	0.00085
Transitional Closure	20	2040-05-01	0.0001	0.0013	0.000016	34	0.000077	0.0012	0.28	0.000068	0.016	0.0018
Transitional Closure	20	2040-06-01	0.00015	0.0012	0.000034	43	0.00019	0.0015	0.28	0.00026	0.016	0.0019
Transitional Closure	20	2040-07-01	0.00019	0.0013	0.000018	55	0.00016	0.001	0.21	0.00016	0.016	0.0018
Transitional Closure	20	2040-08-01	0.00015	0.00062	0.000012	56	0.00021	0.00091	0.16	0.00022	0.0079	0.0017
Transitional Closure	20	2040-09-01	0.00013	0.0012	0.000016	52	0.00018	0.001	0.17	0.00006	0.021	0.0016
Transitional Closure	20	2040-10-01	0.000069	0.0015	0.000021	58	0.000075	0.00047	0.22	0.000021	0.047	0.0012
Transitional Closure	20	2040-11-01	0.00011	0.00057	0.000017	66	0.00002	0.00061	0.026	0.0001	0.013	0.00083
Transitional Closure	20	2040-12-01	0.00012	0.00074	0.000024	78	0.000097	0.00083	0.079	0.000098	0.02	0.0011
Transitional Closure	20	2041-01-01	0.00014	0.00054	0.000032	76	0.000024	0.00096	0.049	0.00075	0.012	0.00081
Transitional Closure	20	2041-02-01	0.00012	0.00061	0.000027	80	0.000035	0.00091	0.14	0.00021	0.016	0.00088
Receiving Environment Water Quality Model - KZ-26 - Dry Year 38 Model												**Receiving Environ**
Passive Closure	38	2058-03-01	0.00062	0.0038	0.000047	99	0.00016	0.00088	0.079	0.00085	0.048	0.00095
Passive Closure	38	2058-04-01	0.00066	0.0042	0.00004	81	0.00019	0.00093	0.19	0.00091	0.042	0.0011
Passive Closure	38	2058-05-01	0.00057	0.004	0.000036	40	0.0002	0.0013	0.33	0.00091	0.046	0.002
Passive Closure	38	2058-06-01	0.00075	0.0047	0.000058	49	0.00034	0.0016	0.35	0.0011	0.055	0.0022
Passive Closure	38	2058-07-01	0.001	0.006	0.000051	63	0.00036	0.0012	0.3	0.0013	0.069	0.0021
Passive Closure	38	2058-08-01	0.00072	0.0039	0.000035	61	0.00035	0.0011	0.22	0.001	0.044	0.002
Passive Closure	38	2058-09-01	0.00059	0.0039	0.000034	57	0.0003	0.0012	0.22	0.00074	0.05	0.0019
Passive Closure	38	2058-10-01	0.00046	0.0038	0.000038	61	0.00018	0.00064	0.27	0.00062	0.071	0.0014
Passive Closure	38	2058-11-01	0.00054	0.0032	0.000038	69	0.00014	0.0008	0.071	0.00078	0.043	0.0011
Passive Closure	38	2058-12-01	0.00058	0.0036	0.000044	82	0.00023	0.001	0.14	0.00083	0.05	0.0014

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L
Transitional Closure	20	2040-07-01	0.0000055	0.00053	0.0000049	0.0022	0.0011	6.3	0.0077	0.00025	0.0011	0.0000092
Transitional Closure	20	2040-08-01	0.0000055	0.00047	0.0000053	0.0022	0.0022	5	0.0056	0.00021	0.00079	0.0000084
Transitional Closure	20	2040-09-01	0.0000054	0.00057	0.0000031	0.0022	0.002	5.5	0.0073	0.00019	0.00094	0.0000098
Transitional Closure	20	2040-10-01	0.0000027	0.001	0.0000022	0.003	0.002	2.9	0.0022	0.00011	0.0011	0.000012
Transitional Closure	20	2040-11-01	0.0000028	0.00092	0.0000027	0.0032	0.0023	2.4	0.0037	0.00015	0.00053	0.000013
Transitional Closure	20	2040-12-01	0.0000028	0.0011	0.0000027	0.0034	0.0025	2.3	0.0019	0.00014	0.00053	0.00002
Transitional Closure	20	2041-01-01	0.0000045	0.00098	0.0000025	0.0037	0.0051	1.6	0.0033	0.00013	0.00044	0.00002
Transitional Closure	20	2041-02-01	0.0000027	0.00096	0.0000023	0.0037	0.0038	1.6	0.002	0.00012	0.0005	0.000022
Receiving Environment Water Quality Model - KZ-26 - Wet Year 20 Model			**nent Water Quality Model - KZ-26 - Wet Year 20 Model**									
Transitional Closure	20	2040-03-01	0.0000026	0.0011	0.000002	0.0038	0.0032	1.9	0.0017	0.00011	0.00049	0.000022
Transitional Closure	20	2040-04-01	0.0000027	0.00086	0.0000019	0.0037	0.0022	1.8	0.0019	0.000086	0.00052	0.000019
Transitional Closure	20	2040-05-01	0.0000046	0.00039	0.0000023	0.0014	0.0016	5	0.0096	0.000097	0.00081	0.0000088
Transitional Closure	20	2040-06-01	0.000013	0.00042	0.000004	0.0018	0.0028	4.2	0.0068	0.00012	0.00079	0.0000098
Transitional Closure	20	2040-07-01	0.0000051	0.00048	0.0000027	0.002	0.00098	6.3	0.0061	0.00015	0.00093	0.0000071
Transitional Closure	20	2040-08-01	0.0000051	0.00043	0.0000034	0.002	0.002	5	0.0043	0.00012	0.00065	0.0000059
Transitional Closure	20	2040-09-01	0.0000051	0.00053	0.0000016	0.0021	0.0018	5.5	0.0062	0.00012	0.00082	0.0000079
Transitional Closure	20	2040-10-01	0.0000025	0.00099	0.0000014	0.003	0.0019	2.9	0.0017	0.000073	0.001	0.000011
Transitional Closure	20	2040-11-01	0.0000026	0.0009	0.0000019	0.0031	0.0021	2.4	0.0032	0.00011	0.00048	0.00001
Transitional Closure	20	2040-12-01	0.0000027	0.0011	0.0000022	0.0033	0.0022	2.3	0.0016	0.00011	0.00049	0.000018
Transitional Closure	20	2041-01-01	0.0000044	0.00096	0.0000022	0.0036	0.0049	1.6	0.0031	0.00012	0.00041	0.000019
Transitional Closure	20	2041-02-01	0.0000027	0.00094	0.0000021	0.0036	0.0035	1.6	0.0018	0.00011	0.00048	0.00002
Receiving Environment Water Quality Model - KZ-26 - Dry Year 38 Model			**nent Water Quality Model - KZ-26 - Dry Year 38 Model**									
Passive Closure	38	2058-03-01	0.0000038	0.0011	0.000012	0.0047	0.0054	1.9	0.0057	0.00063	0.0037	0.000043
Passive Closure	38	2058-04-01	0.000004	0.00086	0.000012	0.0046	0.0042	1.8	0.0063	0.00065	0.004	0.000039
Passive Closure	38	2058-05-01	0.0000056	0.00046	0.000012	0.0022	0.0042	5	0.013	0.00057	0.0035	0.000029
Passive Closure	38	2058-06-01	0.000014	0.00048	0.000015	0.0028	0.0052	4.2	0.011	0.00072	0.0043	0.000033
Passive Closure	38	2058-07-01	0.000007	0.00054	0.000018	0.0034	0.0044	6.2	0.012	0.00096	0.0056	0.000039
Passive Closure	38	2058-08-01	0.0000065	0.00046	0.000014	0.003	0.0043	5	0.0089	0.00069	0.0039	0.000028
Passive Closure	38	2058-09-01	0.0000062	0.00056	0.00001	0.0029	0.004	5.5	0.01	0.00058	0.0035	0.000027
Passive Closure	38	2058-10-01	0.0000035	0.001	0.0000088	0.0036	0.0037	2.9	0.0048	0.00047	0.0034	0.000028
Passive Closure	38	2058-11-01	0.0000036	0.0009	0.0000098	0.0038	0.0043	2.4	0.0065	0.00054	0.0031	0.00003
Passive Closure	38	2058-12-01	0.0000037	0.0011	0.000011	0.0041	0.0044	2.3	0.0051	0.00058	0.0034	0.000037

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	20	2040-07-01	56	0.000053	0.0008	0.038	0.000025	0.0082	0.0014	0.000003	0.0005
Transitional Closure	20	2040-08-01	54	0.00021	0.00077	0.03	0.000055	0.0054	0.00087	0.000003	0.00045
Transitional Closure	20	2040-09-01	52	0.000046	0.00091	0.032	0.000013	0.004	0.0011	0.0000029	0.00054
Transitional Closure	20	2040-10-01	58	0.000042	0.0005	0.051	0.0000043	0.024	0.00098	0.0000027	0.00093
Transitional Closure	20	2040-11-01	68	0.000013	0.00069	0.0073	0.0000097	0.0077	0.00079	0.0000028	0.00092
Transitional Closure	20	2040-12-01	77	0.000011	0.00076	0.0089	0.000011	0.007	0.00074	0.0000028	0.001
Transitional Closure	20	2041-01-01	80	0.000012	0.00083	0.0093	0.000076	0.01	0.00072	0.0000027	0.001
Transitional Closure	20	2041-02-01	83	0.000011	0.00088	0.0076	0.000022	0.012	0.00072	0.0000027	0.00092
Receiving Environment Water Quality Model - KZ-26 - Wet Year 20 Model											
Transitional Closure	20	2040-03-01	88	0.000011	0.00079	0.0059	0.000019	0.012	0.00063	0.0000026	0.001
Transitional Closure	20	2040-04-01	81	0.000027	0.00088	0.015	0.0000085	0.0035	0.00083	0.0000027	0.00086
Transitional Closure	20	2040-05-01	35	0.00003	0.00095	0.091	0.0000082	0.0033	0.0012	0.0000024	0.00039
Transitional Closure	20	2040-06-01	38	0.00003	0.00078	0.043	0.00002	0.002	0.0012	0.0000026	0.0004
Transitional Closure	20	2040-07-01	55	0.00005	0.00069	0.039	0.000022	0.0057	0.0014	0.0000026	0.00045
Transitional Closure	20	2040-08-01	53	0.0002	0.00065	0.029	0.000052	0.0028	0.00086	0.0000026	0.0004
Transitional Closure	20	2040-09-01	52	0.000043	0.0008	0.032	0.000011	0.0026	0.0011	0.0000026	0.0005
Transitional Closure	20	2040-10-01	59	0.00004	0.00038	0.051	0.0000032	0.023	0.00098	0.0000025	0.00093
Transitional Closure	20	2040-11-01	68	0.000011	0.00055	0.0066	0.0000086	0.0065	0.00079	0.0000026	0.00091
Transitional Closure	20	2040-12-01	76	0.0000087	0.00066	0.0083	0.000011	0.0058	0.00073	0.0000027	0.001
Transitional Closure	20	2041-01-01	80	0.00001	0.00074	0.0087	0.000075	0.0091	0.00072	0.0000027	0.001
Transitional Closure	20	2041-02-01	82	0.00001	0.00079	0.007	0.000022	0.01	0.00071	0.0000027	0.00091
Receiving Environment Water Quality Model - KZ-26 - Dry Year 38 Model											
Passive Closure	38	2058-03-01	91	0.00016	0.00087	0.07	0.00084	0.043	0.00087	0.0000038	0.001
Passive Closure	38	2058-04-01	85	0.00018	0.00096	0.083	0.00089	0.041	0.0011	0.0000039	0.00085
Passive Closure	38	2058-05-01	40	0.00015	0.0011	0.14	0.00085	0.034	0.0014	0.0000035	0.00045
Passive Closure	38	2058-06-01	44	0.00018	0.0009	0.11	0.00088	0.041	0.0015	0.0000041	0.00045
Passive Closure	38	2058-07-01	63	0.00026	0.00088	0.13	0.0012	0.058	0.0017	0.0000045	0.0005
Passive Closure	38	2058-08-01	58	0.00035	0.00084	0.092	0.00086	0.04	0.0011	0.000004	0.00043
Passive Closure	38	2058-09-01	56	0.00016	0.00098	0.084	0.00068	0.033	0.0013	0.0000037	0.00053
Passive Closure	38	2058-10-01	62	0.00015	0.00056	0.098	0.0006	0.049	0.0012	0.0000035	0.00093
Passive Closure	38	2058-11-01	71	0.00013	0.00074	0.059	0.00067	0.035	0.001	0.0000036	0.00091
Passive Closure	38	2058-12-01	80	0.00014	0.00082	0.067	0.00075	0.037	0.00098	0.0000037	0.001

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Transitional Closure	20	2040-07-01	0.0000038	0.0021	0.00092
Transitional Closure	20	2040-08-01	0.0000035	0.0022	0.0018
Transitional Closure	20	2040-09-01	0.0000031	0.0022	0.00092
Transitional Closure	20	2040-10-01	0.0000022	0.003	0.0012
Transitional Closure	20	2040-11-01	0.0000027	0.0032	0.0017
Transitional Closure	20	2040-12-01	0.0000026	0.0034	0.0023
Transitional Closure	20	2041-01-01	0.0000025	0.0036	0.005
Transitional Closure	20	2041-02-01	0.0000023	0.0037	0.0032
Receiving Environment Water Quality Model - KZ-26 - Wet Year 20 Model					
Transitional Closure	20	2040-03-01	0.000002	0.004	0.0037
Transitional Closure	20	2040-04-01	0.0000019	0.0037	0.002
Transitional Closure	20	2040-05-01	0.0000016	0.0014	0.0009
Transitional Closure	20	2040-06-01	0.0000015	0.0018	0.00045
Transitional Closure	20	2040-07-01	0.0000016	0.0019	0.0006
Transitional Closure	20	2040-08-01	0.0000016	0.0019	0.0015
Transitional Closure	20	2040-09-01	0.0000015	0.002	0.00072
Transitional Closure	20	2040-10-01	0.0000014	0.0029	0.0011
Transitional Closure	20	2040-11-01	0.0000019	0.0031	0.0015
Transitional Closure	20	2040-12-01	0.0000021	0.0033	0.002
Transitional Closure	20	2041-01-01	0.0000021	0.0036	0.0047
Transitional Closure	20	2041-02-01	0.0000021	0.0037	0.0029
Receiving Environment Water Quality Model - KZ-26 - Dry Year 38 Model					
Passive Closure	38	2058-03-01	0.000011	0.0048	0.0056
Passive Closure	38	2058-04-01	0.000012	0.0046	0.0039
Passive Closure	38	2058-05-01	0.000012	0.0022	0.0036
Passive Closure	38	2058-06-01	0.000013	0.0028	0.003
Passive Closure	38	2058-07-01	0.000017	0.0033	0.0041
Passive Closure	38	2058-08-01	0.000012	0.0029	0.0038
Passive Closure	38	2058-09-01	0.00001	0.0028	0.0029
Passive Closure	38	2058-10-01	0.0000088	0.0035	0.0031
Passive Closure	38	2058-11-01	0.0000098	0.0038	0.0038
Passive Closure	38	2058-12-01	0.000011	0.004	0.004

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	38	2059-01-01	310	55	0.25	0.0011	0.034	0.0089	0.13	0.65	0.00025	0.00025	0.013
Passive Closure	38	2059-02-01	320	59	0.28	0.0011	0.037	0.0073	0.13	0.78	0.00025	0.00026	0.022
Receiving Environment Water Quality Model - KZ-26 - Wet Year 38 Model													
Passive Closure	38	2058-03-01	380	65	0.23	0.001	0.021	0.0055	0.14	0.82	0.00062	0.00023	0.0068
Passive Closure	38	2058-04-01	310	56	0.22	0.00087	0.0055	0.0062	0.14	0.54	0.00052	0.00035	0.014
Passive Closure	38	2058-05-01	140	29	0.034	0.001	0.01	0.018	0.093	1	0.00062	0.00053	0.042
Passive Closure	38	2058-06-01	180	34	0.014	0.0011	0.018	0.011	0.11	0.84	0.00065	0.00048	0.11
Passive Closure	38	2058-07-01	230	41	0.014	0.0018	0.013	0.02	0.12	0.57	0.00051	0.00053	0.047
Passive Closure	38	2058-08-01	220	37	0.008	0.0026	0.0058	0.014	0.099	0.29	0.00047	0.00052	0.032
Passive Closure	38	2058-09-01	210	37	0.025	0.0011	0.0099	0.0067	0.1	0.88	0.00054	0.00056	0.031
Passive Closure	38	2058-10-01	230	41	0.075	0.001	0.052	0.0074	0.11	0.62	0.0005	0.00025	0.013
Passive Closure	38	2058-11-01	260	47	0.14	0.0011	0.0076	0.0031	0.12	0.51	0.00054	0.00058	0.0084
Passive Closure	38	2058-12-01	300	51	0.2	0.0011	0.012	0.0054	0.12	0.67	0.00051	0.00025	0.031
Passive Closure	38	2059-01-01	310	54	0.25	0.0011	0.034	0.0088	0.12	0.65	0.00025	0.00025	0.012
Passive Closure	38	2059-02-01	320	57	0.28	0.0011	0.037	0.0071	0.12	0.77	0.00025	0.00026	0.022

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	38	2059-01-01	0.00063	0.0036	0.000053	80	0.00016	0.0011	0.12	0.0015	0.046	0.0011
Passive Closure	38	2059-02-01	0.00064	0.0039	0.000051	84	0.00018	0.0011	0.21	0.001	0.051	0.0011
Receiving Environment Water Quality Model - KZ-26 - Wet Year 38 Model												**Receiving Environr**
Passive Closure	38	2058-03-01	0.0006	0.0037	0.000046	99	0.00015	0.00086	0.076	0.00082	0.047	0.00094
Passive Closure	38	2058-04-01	0.00064	0.0041	0.000039	81	0.00019	0.0009	0.19	0.00088	0.041	0.0011
Passive Closure	38	2058-05-01	0.00045	0.0034	0.000032	39	0.00017	0.0012	0.32	0.00081	0.04	0.0019
Passive Closure	38	2058-06-01	0.00063	0.0042	0.000055	48	0.00032	0.0015	0.34	0.0011	0.049	0.0022
Passive Closure	38	2058-07-01	0.00061	0.0039	0.000038	60	0.00027	0.0011	0.26	0.00087	0.046	0.002
Passive Closure	38	2058-08-01	0.00053	0.003	0.000028	60	0.00031	0.00097	0.21	0.00087	0.034	0.0019
Passive Closure	38	2058-09-01	0.00044	0.0031	0.000029	56	0.00026	0.0011	0.21	0.0006	0.042	0.0018
Passive Closure	38	2058-10-01	0.00033	0.0031	0.000032	61	0.00015	0.00052	0.25	0.00043	0.064	0.0014
Passive Closure	38	2058-11-01	0.00041	0.0025	0.000031	68	0.00011	0.00066	0.06	0.00061	0.035	0.00099
Passive Closure	38	2058-12-01	0.00049	0.0031	0.000039	81	0.0002	0.00089	0.13	0.00071	0.044	0.0013
Passive Closure	38	2059-01-01	0.00056	0.0032	0.00005	79	0.00014	0.001	0.11	0.0014	0.041	0.001
Passive Closure	38	2059-02-01	0.00058	0.0035	0.000047	83	0.00016	0.00098	0.2	0.00095	0.046	0.0011

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	38	2059-01-01	0.0000056	0.00096	0.000011	0.0044	0.007	1.7	0.0069	0.00061	0.0035	0.000038
Passive Closure	38	2059-02-01	0.0000038	0.00094	0.000012	0.0045	0.0059	1.6	0.0058	0.00064	0.0038	0.000042
Receiving Environment Water Quality Model - KZ-26 - Wet Year 38 Model			**nent Water Quality Model - KZ-26 - Wet Year 38 Model**									
Passive Closure	38	2058-03-01	0.0000037	0.0011	0.000011	0.0046	0.0053	1.9	0.0056	0.00061	0.0036	0.000042
Passive Closure	38	2058-04-01	0.0000039	0.00086	0.000012	0.0045	0.004	1.8	0.0061	0.00063	0.0039	0.000038
Passive Closure	38	2058-05-01	0.0000053	0.00044	0.00001	0.002	0.004	5.1	0.012	0.00044	0.0029	0.000025
Passive Closure	38	2058-06-01	0.000014	0.00046	0.000014	0.0026	0.0051	4.2	0.01	0.0006	0.0038	0.000029
Passive Closure	38	2058-07-01	0.0000061	0.00051	0.000011	0.0027	0.0031	6.3	0.0091	0.00057	0.0035	0.000026
Passive Closure	38	2058-08-01	0.000006	0.00044	0.000011	0.0026	0.0038	5	0.0072	0.0005	0.003	0.000021
Passive Closure	38	2058-09-01	0.0000058	0.00054	0.0000079	0.0026	0.0036	5.5	0.0087	0.00043	0.0027	0.000021
Passive Closure	38	2058-10-01	0.0000031	0.001	0.0000063	0.0034	0.003	2.9	0.0037	0.00033	0.0026	0.000022
Passive Closure	38	2058-11-01	0.0000033	0.0009	0.0000075	0.0036	0.0035	2.4	0.0055	0.00042	0.0024	0.000023
Passive Closure	38	2058-12-01	0.0000035	0.0011	0.000009	0.0039	0.0039	2.3	0.0043	0.00048	0.0029	0.000033
Passive Closure	38	2059-01-01	0.0000054	0.00096	0.0000099	0.0043	0.0067	1.7	0.0062	0.00054	0.0031	0.000034
Passive Closure	38	2059-02-01	0.0000037	0.00093	0.000011	0.0043	0.0055	1.6	0.0052	0.00057	0.0034	0.000038

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	38	2059-01-01	84	0.00015	0.00089	0.071	0.00086	0.043	0.00097	0.0000038	0.001
Passive Closure	38	2059-02-01	86	0.00016	0.00095	0.072	0.00085	0.043	0.00097	0.0000038	0.0009
Receiving Environment Water Quality Model - KZ-26 - Wet Year 38 Model											
Passive Closure	38	2058-03-01	91	0.00015	0.00085	0.068	0.00081	0.041	0.00086	0.0000037	0.001
Passive Closure	38	2058-04-01	85	0.00018	0.00094	0.081	0.00086	0.04	0.0011	0.0000038	0.00085
Passive Closure	38	2058-05-01	39	0.00012	0.00099	0.14	0.00074	0.027	0.0014	0.0000032	0.00044
Passive Closure	38	2058-06-01	44	0.00016	0.00082	0.1	0.00083	0.035	0.0015	0.0000038	0.00043
Passive Closure	38	2058-07-01	60	0.00017	0.00075	0.09	0.00073	0.035	0.0016	0.0000036	0.00047
Passive Closure	38	2058-08-01	57	0.00031	0.00072	0.076	0.0007	0.029	0.0011	0.0000035	0.00041
Passive Closure	38	2058-09-01	55	0.00013	0.00086	0.071	0.00055	0.024	0.0013	0.0000033	0.00051
Passive Closure	38	2058-10-01	61	0.00011	0.00043	0.083	0.00041	0.041	0.0011	0.0000031	0.00093
Passive Closure	38	2058-11-01	70	0.000099	0.0006	0.046	0.00051	0.028	0.00095	0.0000033	0.00091
Passive Closure	38	2058-12-01	79	0.00012	0.00071	0.056	0.00062	0.031	0.00093	0.0000035	0.001
Passive Closure	38	2059-01-01	83	0.00013	0.0008	0.062	0.00076	0.038	0.00094	0.0000036	0.001
Passive Closure	38	2059-02-01	85	0.00014	0.00085	0.064	0.00076	0.038	0.00094	0.0000036	0.00089

Appendix F3: Receiving Environment Water Quality Model Results - Lower Finlayson Creek (KZ-26)

Phase	Year	Date	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Passive Closure	38	2059-01-01	0.000011	0.0044	0.0067
Passive Closure	38	2059-02-01	0.000012	0.0045	0.0052
Receiving Environment Water Quality Model - KZ-26 - Wet Year 38 Model					
Passive Closure	38	2058-03-01	0.000011	0.0047	0.0055
Passive Closure	38	2058-04-01	0.000012	0.0046	0.0038
Passive Closure	38	2058-05-01	0.0000097	0.002	0.0032
Passive Closure	38	2058-06-01	0.000011	0.0026	0.0028
Passive Closure	38	2058-07-01	0.0000098	0.0026	0.0027
Passive Closure	38	2058-08-01	0.0000091	0.0026	0.0033
Passive Closure	38	2058-09-01	0.0000078	0.0025	0.0024
Passive Closure	38	2058-10-01	0.0000062	0.0033	0.0023
Passive Closure	38	2058-11-01	0.0000075	0.0036	0.003
Passive Closure	38	2058-12-01	0.0000089	0.0039	0.0035
Passive Closure	38	2059-01-01	0.0000098	0.0043	0.0063
Passive Closure	38	2059-02-01	0.00001	0.0044	0.0047

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Receiving Environment Water Quality Model - KZ-13 - Mean Model													
Baseline	-3	2018-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Baseline	-3	2018-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Baseline	-3	2018-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Baseline	-3	2018-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Baseline	-3	2018-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Baseline	-3	2018-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Baseline	-3	2018-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Baseline	-3	2018-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Baseline	-3	2018-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Baseline	-3	2018-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Baseline	-3	2019-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Baseline	-3	2019-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Construction	-2	2019-03-01	130	24	0.13	0.001	0.042	0.0044	0.062	0.31	0.00059	0.00046	0.0078
Construction	-2	2019-04-01	120	19	0.12	0.0012	0.01	0.0036	0.061	0.61	0.00048	0.00034	0.015
Construction	-2	2019-05-01	54	6.4	0.035	0.0019	0.0075	0.019	0.039	0.66	0.00075	0.00067	0.23
Construction	-2	2019-06-01	72	15	0.033	0.001	0.0078	0.0047	0.042	0.56	0.00066	0.00044	0.05
Construction	-2	2019-07-01	84	18	0.023	0.001	0.015	0.004	0.045	0.29	0.00045	0.00058	0.029
Construction	-2	2019-08-01	84	16	0.037	0.0017	0.004	0.0044	0.044	0.33	0.00049	0.00049	0.024
Construction	-2	2019-09-01	83	18	0.054	0.0011	0.0065	0.0042	0.048	0.33	0.00052	0.00051	0.024
Construction	-2	2019-10-01	88	19	0.071	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Construction	-2	2019-11-01	100	23	0.11	0.0011	0.0086	0.0031	0.051	0.31	0.00051	0.00029	0.013
Construction	-2	2019-12-01	110	23	0.12	0.001	0.0083	0.0033	0.048	0.5	0.00025	0.00025	0.017
Construction	-2	2020-01-01	130	25	0.12	0.001	0.016	0.0031	0.055	0.5	0.00027	0.00027	0.018
Construction	-2	2020-02-01	120	26	0.15	0.001	0.029	0.005	0.059	0.56	0.00027	0.00028	0.019
Construction	-1	2020-03-01	130	27	0.13	0.001	0.038	0.0041	0.062	0.34	0.00055	0.00043	0.0076
Construction	-1	2020-04-01	130	21	0.13	0.0013	0.011	0.0033	0.061	0.63	0.00047	0.00033	0.015
Construction	-1	2020-05-01	55	6.9	0.035	0.0019	0.0075	0.019	0.039	0.67	0.00075	0.00066	0.23
Construction	-1	2020-06-01	72	16	0.033	0.001	0.0078	0.0047	0.042	0.55	0.00066	0.00044	0.049
Construction	-1	2020-07-01	85	18	0.023	0.001	0.015	0.0039	0.045	0.29	0.00045	0.00058	0.029
Construction	-1	2020-08-01	86	16	0.037	0.0017	0.004	0.0044	0.044	0.33	0.00049	0.00049	0.024
Construction	-1	2020-09-01	85	19	0.054	0.0011	0.0065	0.0042	0.048	0.34	0.00052	0.00051	0.023

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Receiving Environment Water Quality Model - KZ-13 - Mean Model												**Receiving Enviro**
Baseline	-3	2018-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Baseline	-3	2018-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Baseline	-3	2018-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Baseline	-3	2018-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Baseline	-3	2018-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Baseline	-3	2018-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Baseline	-3	2018-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Baseline	-3	2018-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Baseline	-3	2018-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Baseline	-3	2018-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Baseline	-3	2019-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Baseline	-3	2019-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Construction	-2	2019-03-01	0.000038	0.00021	0.000085	41	0.000046	0.00045	0.15	0.000037	0.076	0.00043
Construction	-2	2019-04-01	0.000028	0.00018	0.000046	40	0.000064	0.00052	0.16	0.00012	0.052	0.00045
Construction	-2	2019-05-01	0.000028	0.00035	0.000072	18	0.00022	0.0018	0.22	0.00017	0.07	0.0013
Construction	-2	2019-06-01	0.000033	0.00021	0.000061	24	0.000057	0.0009	0.15	0.00015	0.016	0.00054
Construction	-2	2019-07-01	0.000036	0.00022	0.00008	29	0.000048	0.00076	0.11	0.000081	0.023	0.00046
Construction	-2	2019-08-01	0.000032	0.00021	0.00007	29	0.00012	0.00077	0.093	0.00009	0.018	0.00048
Construction	-2	2019-09-01	0.000029	0.00018	0.000063	28	0.000044	0.00066	0.096	0.000068	0.018	0.00046
Construction	-2	2019-10-01	0.000029	0.0002	0.000066	30	0.000035	0.00052	0.091	0.000074	0.022	0.00045
Construction	-2	2019-11-01	0.000032	0.00018	0.000072	34	0.00004	0.00045	0.12	0.000084	0.042	0.00038
Construction	-2	2019-12-01	0.000033	0.0002	0.000074	36	0.000047	0.00044	0.15	0.000064	0.049	0.00038
Construction	-2	2020-01-01	0.000033	0.00027	0.000093	42	0.000062	0.00041	0.27	0.000098	0.076	0.00038
Construction	-2	2020-02-01	0.000031	0.00026	0.000089	40	0.000063	0.00052	0.26	0.000085	0.091	0.00043
Construction	-1	2020-03-01	0.000037	0.0002	0.000095	43	0.000044	0.00043	0.15	0.000042	0.069	0.00041
Construction	-1	2020-04-01	0.000029	0.00018	0.000058	42	0.000062	0.00054	0.16	0.00013	0.048	0.00045
Construction	-1	2020-05-01	0.000029	0.00035	0.000075	18	0.00022	0.0018	0.22	0.00017	0.068	0.0013
Construction	-1	2020-06-01	0.000033	0.00021	0.000063	24	0.000056	0.0009	0.15	0.00015	0.016	0.00054
Construction	-1	2020-07-01	0.000037	0.00022	0.000082	29	0.000048	0.00077	0.12	0.000082	0.023	0.00046
Construction	-1	2020-08-01	0.000032	0.00021	0.000073	29	0.00012	0.00077	0.094	0.00009	0.018	0.00048
Construction	-1	2020-09-01	0.00003	0.00018	0.000066	29	0.000044	0.00067	0.096	0.00007	0.018	0.00046

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L
Receiving Environment Water Quality Model - KZ-13 - Mean Model			**nment Water Quality Model - KZ-13 - Mean Model**									
Baseline	-3	2018-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Baseline	-3	2018-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Baseline	-3	2018-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Baseline	-3	2018-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Baseline	-3	2018-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Baseline	-3	2018-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Baseline	-3	2018-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Baseline	-3	2018-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Baseline	-3	2018-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Baseline	-3	2018-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Baseline	-3	2019-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Baseline	-3	2019-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Construction	-2	2019-03-01	0.0000025	0.00069	0.000002	0.002	0.0096	2.5	0.0032	0.000037	0.00016	0.000064
Construction	-2	2019-04-01	0.0000036	0.00058	0.000002	0.0021	0.0076	3	0.0059	0.000033	0.00017	0.000041
Construction	-2	2019-05-01	0.0000048	0.0003	0.0000044	0.00055	0.011	8.6	0.031	0.000016	0.0002	0.000037
Construction	-2	2019-06-01	0.0000043	0.00028	0.0000031	0.00056	0.011	3.1	0.011	0.00003	0.00015	0.000052
Construction	-2	2019-07-01	0.0000049	0.00032	0.0000027	0.0007	0.012	3.2	0.0067	0.000036	0.00019	0.000059
Construction	-2	2019-08-01	0.0000036	0.00022	0.0000017	0.00063	0.0089	3.8	0.0083	0.000033	0.00017	0.000048
Construction	-2	2019-09-01	0.0000026	0.00026	0.0000023	0.00073	0.0092	3.4	0.0079	0.00003	0.00015	0.000047
Construction	-2	2019-10-01	0.0000025	0.00038	0.0000012	0.0009	0.0095	3	0.0057	0.000027	0.00017	0.00005
Construction	-2	2019-11-01	0.0000025	0.00054	0.0000011	0.0011	0.011	2.1	0.0047	0.000029	0.00014	0.000047
Construction	-2	2019-12-01	0.0000025	0.00063	0.0000013	0.0014	0.013	2.5	0.0037	0.000028	0.00014	0.000057
Construction	-2	2020-01-01	0.0000026	0.00069	0.0000015	0.0017	0.014	1.9	0.0032	0.000033	0.00016	0.00006
Construction	-2	2020-02-01	0.0000025	0.00076	0.0000012	0.0017	0.013	1.8	0.003	0.000028	0.00015	0.000073
Construction	-1	2020-03-01	0.0000025	0.00082	0.000002	0.0021	0.012	2.2	0.0031	0.000036	0.00015	0.000077
Construction	-1	2020-04-01	0.0000036	0.00076	0.0000019	0.0022	0.01	2.8	0.0059	0.000034	0.00015	0.000052
Construction	-1	2020-05-01	0.0000048	0.00032	0.0000043	0.00056	0.011	8.5	0.03	0.000017	0.0002	0.000039
Construction	-1	2020-06-01	0.0000043	0.00029	0.0000031	0.00057	0.011	3.1	0.011	0.00003	0.00015	0.000053
Construction	-1	2020-07-01	0.000005	0.00032	0.0000027	0.00071	0.012	3.2	0.0066	0.000036	0.00018	0.000062
Construction	-1	2020-08-01	0.0000036	0.00023	0.0000018	0.00065	0.0092	3.7	0.0082	0.000034	0.00017	0.000051
Construction	-1	2020-09-01	0.0000026	0.00027	0.0000023	0.00075	0.0096	3.3	0.0078	0.00003	0.00015	0.000049

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Receiving Environment Water Quality Model - KZ-13 - Mean Model											
Baseline	-3	2018-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Baseline	-3	2018-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Baseline	-3	2018-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Baseline	-3	2018-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Baseline	-3	2018-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Baseline	-3	2018-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Baseline	-3	2018-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Baseline	-3	2018-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Baseline	-3	2018-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Baseline	-3	2018-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Baseline	-3	2019-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Baseline	-3	2019-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Construction	-2	2019-03-01	44	0.000039	0.00039	0.054	0.000012	0.069	0.0004	0.0000025	0.00068
Construction	-2	2019-04-01	41	0.000025	0.00041	0.057	0.0000084	0.03	0.00041	0.0000025	0.00059
Construction	-2	2019-05-01	17	0.000033	0.0011	0.099	0.000028	0.023	0.0007	0.0000041	0.00026
Construction	-2	2019-06-01	24	0.000017	0.00078	0.033	0.000021	0.005	0.00048	0.0000036	0.00027
Construction	-2	2019-07-01	29	0.000017	0.00054	0.029	0.00002	0.0077	0.00043	0.0000025	0.00032
Construction	-2	2019-08-01	29	0.00011	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00022
Construction	-2	2019-09-01	28	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00026
Construction	-2	2019-10-01	29	0.000015	0.00043	0.02	0.0000077	0.0088	0.00036	0.0000025	0.00037
Construction	-2	2019-11-01	33	0.000029	0.00039	0.027	0.000037	0.028	0.00035	0.0000025	0.00053
Construction	-2	2019-12-01	35	0.000033	0.00036	0.038	0.00002	0.038	0.00037	0.0000025	0.00064
Construction	-2	2020-01-01	42	0.000038	0.00032	0.043	0.000012	0.066	0.00039	0.0000025	0.00067
Construction	-2	2020-02-01	41	0.000038	0.00042	0.036	0.000026	0.067	0.00035	0.0000025	0.00075
Construction	-1	2020-03-01	46	0.000037	0.00038	0.047	0.000013	0.064	0.0004	0.0000025	0.00083
Construction	-1	2020-04-01	44	0.000026	0.00044	0.052	0.0000099	0.029	0.0004	0.0000025	0.00077
Construction	-1	2020-05-01	18	0.000033	0.0012	0.099	0.000029	0.022	0.0007	0.0000041	0.00027
Construction	-1	2020-06-01	24	0.000017	0.00078	0.033	0.000022	0.0049	0.00048	0.0000036	0.00028
Construction	-1	2020-07-01	30	0.000016	0.00054	0.029	0.00002	0.0076	0.00043	0.0000025	0.00033
Construction	-1	2020-08-01	29	0.0001	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00022
Construction	-1	2020-09-01	29	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00027

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
			mg/L	mg/L	mg/L
Receiving Environment Water Quality Model - KZ-13 - Mean Model					
Baseline	-3	2018-03-01	0.000002	0.0017	0.0031
Baseline	-3	2018-04-01	0.000001	0.002	0.0018
Baseline	-3	2018-05-01	0.0000023	0.00033	0.0017
Baseline	-3	2018-06-01	0.000002	0.0004	0.0018
Baseline	-3	2018-07-01	0.000002	0.00057	0.0023
Baseline	-3	2018-08-01	0.000001	0.0004	0.003
Baseline	-3	2018-09-01	0.000001	0.00052	0.0029
Baseline	-3	2018-10-01	0.000001	0.00065	0.0021
Baseline	-3	2018-11-01	0.000002	0.00078	0.0024
Baseline	-3	2018-12-01	0.000001	0.00094	0.0037
Baseline	-3	2019-01-01	0.000001	0.0014	0.0029
Baseline	-3	2019-02-01	0.000001	0.0012	0.0035
Construction	-2	2019-03-01	0.0000022	0.0021	0.011
Construction	-2	2019-04-01	0.0000012	0.0021	0.006
Construction	-2	2019-05-01	0.0000028	0.0005	0.0052
Construction	-2	2019-06-01	0.0000024	0.00053	0.0089
Construction	-2	2019-07-01	0.0000022	0.0007	0.0093
Construction	-2	2019-08-01	0.0000017	0.00058	0.0068
Construction	-2	2019-09-01	0.0000013	0.0007	0.0072
Construction	-2	2019-10-01	0.0000014	0.00088	0.007
Construction	-2	2019-11-01	0.0000021	0.0011	0.0095
Construction	-2	2019-12-01	0.0000013	0.0013	0.011
Construction	-2	2020-01-01	0.0000012	0.0017	0.0098
Construction	-2	2020-02-01	0.0000012	0.0017	0.01
Construction	-1	2020-03-01	0.0000023	0.0023	0.015
Construction	-1	2020-04-01	0.0000013	0.0022	0.0082
Construction	-1	2020-05-01	0.0000029	0.00052	0.0057
Construction	-1	2020-06-01	0.0000025	0.00054	0.0092
Construction	-1	2020-07-01	0.0000022	0.0007	0.0097
Construction	-1	2020-08-01	0.0000017	0.00059	0.0071
Construction	-1	2020-09-01	0.0000013	0.00071	0.0076

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-10-01	90	20	0.072	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Construction	-1	2020-11-01	100	23	0.11	0.0011	0.0087	0.0032	0.051	0.32	0.0005	0.00029	0.013
Construction	-1	2020-12-01	110	24	0.12	0.001	0.0084	0.0032	0.049	0.5	0.00025	0.00025	0.016
Construction	-1	2021-01-01	130	26	0.13	0.001	0.017	0.0031	0.055	0.49	0.00027	0.00028	0.019
Construction	-1	2021-02-01	120	28	0.15	0.001	0.028	0.0051	0.06	0.55	0.00027	0.00029	0.018
Production	1	2021-03-01	130	27	0.14	0.001	0.038	0.0041	0.063	0.34	0.00054	0.00043	0.0076
Production	1	2021-04-01	130	21	0.13	0.0013	0.011	0.0033	0.061	0.63	0.00047	0.00033	0.015
Production	1	2021-05-01	55	6.9	0.035	0.0019	0.0075	0.019	0.039	0.66	0.00075	0.00066	0.23
Production	1	2021-06-01	72	16	0.033	0.001	0.0078	0.0047	0.042	0.55	0.00066	0.00044	0.049
Production	1	2021-07-01	85	18	0.023	0.001	0.015	0.0039	0.045	0.29	0.00045	0.00058	0.029
Production	1	2021-08-01	86	16	0.037	0.0017	0.004	0.0044	0.044	0.33	0.00049	0.00049	0.024
Production	1	2021-09-01	85	19	0.054	0.0011	0.0065	0.0042	0.048	0.33	0.00052	0.00051	0.023
Production	1	2021-10-01	89	20	0.071	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Production	1	2021-11-01	100	23	0.11	0.0011	0.0087	0.0032	0.051	0.32	0.0005	0.00029	0.013
Production	1	2021-12-01	110	24	0.12	0.001	0.0084	0.0033	0.049	0.5	0.00025	0.00025	0.016
Production	1	2022-01-01	130	26	0.13	0.001	0.017	0.0031	0.055	0.5	0.00027	0.00028	0.019
Production	1	2022-02-01	120	27	0.15	0.001	0.029	0.0051	0.059	0.55	0.00027	0.00029	0.018
Production	2	2022-03-01	130	27	0.14	0.001	0.038	0.0041	0.063	0.34	0.00054	0.00043	0.0076
Production	2	2022-04-01	130	21	0.13	0.0013	0.011	0.0034	0.061	0.63	0.00047	0.00033	0.015
Production	2	2022-05-01	55	6.8	0.035	0.0019	0.0075	0.019	0.039	0.66	0.00075	0.00067	0.23
Production	2	2022-06-01	72	16	0.033	0.001	0.0078	0.0047	0.042	0.55	0.00066	0.00044	0.049
Production	2	2022-07-01	85	18	0.023	0.001	0.015	0.004	0.045	0.29	0.00045	0.00058	0.029
Production	2	2022-08-01	85	16	0.037	0.0017	0.004	0.0044	0.044	0.33	0.00049	0.00049	0.024
Production	2	2022-09-01	85	19	0.054	0.0011	0.0065	0.0042	0.048	0.33	0.00052	0.00051	0.023
Production	2	2022-10-01	89	20	0.071	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Production	2	2022-11-01	100	23	0.11	0.0011	0.0086	0.0031	0.051	0.32	0.00051	0.00029	0.013
Production	2	2022-12-01	110	23	0.12	0.001	0.0083	0.0033	0.048	0.5	0.00025	0.00025	0.017
Production	2	2023-01-01	130	25	0.12	0.001	0.016	0.0031	0.055	0.5	0.00027	0.00027	0.018
Production	2	2023-02-01	120	26	0.15	0.001	0.029	0.005	0.059	0.56	0.00027	0.00028	0.019
Production	3	2023-03-01	130	26	0.13	0.001	0.04	0.0043	0.062	0.33	0.00057	0.00045	0.0077
Production	3	2023-04-01	120	20	0.12	0.0012	0.01	0.0035	0.061	0.62	0.00047	0.00034	0.015
Production	3	2023-05-01	55	6.7	0.035	0.0019	0.0075	0.019	0.039	0.66	0.00075	0.00067	0.23
Production	3	2023-06-01	72	16	0.033	0.001	0.0078	0.0047	0.042	0.55	0.00066	0.00044	0.049

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-10-01	0.000029	0.0002	0.00007	30	0.000035	0.00052	0.092	0.000076	0.022	0.00044
Construction	-1	2020-11-01	0.000032	0.00018	0.000076	34	0.000041	0.00045	0.13	0.000085	0.042	0.00037
Construction	-1	2020-12-01	0.000033	0.0002	0.000078	37	0.000047	0.00043	0.15	0.000065	0.048	0.00038
Construction	-1	2021-01-01	0.000032	0.00027	0.000099	43	0.000063	0.00042	0.28	0.00011	0.075	0.00039
Construction	-1	2021-02-01	0.00003	0.00025	0.000095	41	0.000061	0.00051	0.25	0.000085	0.087	0.00042
Production	1	2021-03-01	0.000036	0.0002	0.000097	43	0.000044	0.00043	0.15	0.000043	0.068	0.00041
Production	1	2021-04-01	0.000029	0.00018	0.000059	42	0.000062	0.00054	0.16	0.00013	0.048	0.00045
Production	1	2021-05-01	0.000029	0.00035	0.000074	18	0.00022	0.0018	0.22	0.00017	0.068	0.0013
Production	1	2021-06-01	0.000033	0.00021	0.000063	24	0.000056	0.0009	0.15	0.00015	0.016	0.00054
Production	1	2021-07-01	0.000037	0.00022	0.000082	29	0.000048	0.00077	0.12	0.000082	0.023	0.00046
Production	1	2021-08-01	0.000032	0.00021	0.000073	29	0.00012	0.00077	0.094	0.00009	0.018	0.00048
Production	1	2021-09-01	0.00003	0.00018	0.000066	29	0.000044	0.00067	0.096	0.00007	0.018	0.00046
Production	1	2021-10-01	0.000029	0.0002	0.00007	30	0.000035	0.00052	0.092	0.000076	0.022	0.00044
Production	1	2021-11-01	0.000032	0.00018	0.000076	34	0.000041	0.00045	0.13	0.000085	0.042	0.00037
Production	1	2021-12-01	0.000033	0.0002	0.000077	37	0.000047	0.00044	0.15	0.000065	0.048	0.00038
Production	1	2022-01-01	0.000032	0.00027	0.000097	42	0.000063	0.00042	0.28	0.0001	0.075	0.00039
Production	1	2022-02-01	0.00003	0.00026	0.000093	41	0.000062	0.00051	0.25	0.000085	0.088	0.00043
Production	2	2022-03-01	0.000036	0.0002	0.000096	43	0.000044	0.00043	0.15	0.000043	0.069	0.00041
Production	2	2022-04-01	0.000029	0.00018	0.000057	42	0.000062	0.00054	0.16	0.00013	0.048	0.00045
Production	2	2022-05-01	0.000028	0.00035	0.000074	18	0.00022	0.0018	0.22	0.00017	0.068	0.0013
Production	2	2022-06-01	0.000033	0.00021	0.000063	24	0.000056	0.0009	0.15	0.00015	0.016	0.00054
Production	2	2022-07-01	0.000037	0.00022	0.000082	29	0.000048	0.00077	0.12	0.000082	0.023	0.00046
Production	2	2022-08-01	0.000032	0.00021	0.000072	29	0.00012	0.00077	0.094	0.00009	0.018	0.00048
Production	2	2022-09-01	0.00003	0.00018	0.000065	29	0.000044	0.00067	0.096	0.000069	0.018	0.00046
Production	2	2022-10-01	0.000029	0.0002	0.000069	30	0.000035	0.00052	0.092	0.000076	0.022	0.00045
Production	2	2022-11-01	0.000032	0.00018	0.000074	34	0.000041	0.00045	0.13	0.000085	0.042	0.00037
Production	2	2022-12-01	0.000033	0.0002	0.000074	36	0.000047	0.00044	0.15	0.000064	0.049	0.00038
Production	2	2023-01-01	0.000033	0.00027	0.000093	42	0.000062	0.00041	0.27	0.000098	0.076	0.00038
Production	2	2023-02-01	0.000031	0.00026	0.000088	40	0.000063	0.00052	0.26	0.000085	0.092	0.00043
Production	3	2023-03-01	0.000037	0.0002	0.000091	42	0.000045	0.00044	0.15	0.00004	0.072	0.00042
Production	3	2023-04-01	0.000028	0.00018	0.000051	41	0.000063	0.00053	0.16	0.00013	0.051	0.00045
Production	3	2023-05-01	0.000028	0.00035	0.000074	18	0.00022	0.0018	0.22	0.00017	0.068	0.0013
Production	3	2023-06-01	0.000033	0.00021	0.000063	24	0.000056	0.0009	0.15	0.00015	0.016	0.00054

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-10-01	0.0000025	0.0004	0.0000013	0.00092	0.01	3	0.0056	0.000027	0.00017	0.000053
Construction	-1	2020-11-01	0.0000025	0.00057	0.0000012	0.0011	0.012	2.1	0.0047	0.000029	0.00013	0.000049
Construction	-1	2020-12-01	0.0000025	0.00066	0.0000013	0.0015	0.014	2.5	0.0036	0.000028	0.00013	0.00006
Construction	-1	2021-01-01	0.0000027	0.00074	0.0000016	0.0018	0.016	1.8	0.0032	0.000032	0.00015	0.000063
Construction	-1	2021-02-01	0.0000025	0.00082	0.0000012	0.0017	0.014	1.7	0.003	0.000028	0.00014	0.000076
Production	1	2021-03-01	0.0000025	0.00084	0.000002	0.0021	0.012	2.2	0.0031	0.000036	0.00015	0.000079
Production	1	2021-04-01	0.0000036	0.00077	0.0000019	0.0022	0.01	2.8	0.0059	0.000034	0.00015	0.000052
Production	1	2021-05-01	0.0000048	0.00032	0.0000043	0.00056	0.011	8.5	0.03	0.000017	0.0002	0.000039
Production	1	2021-06-01	0.0000043	0.00029	0.0000031	0.00057	0.011	3.1	0.011	0.00003	0.00015	0.000053
Production	1	2021-07-01	0.0000049	0.00032	0.0000027	0.00071	0.012	3.2	0.0066	0.000036	0.00018	0.000062
Production	1	2021-08-01	0.0000036	0.00023	0.0000018	0.00065	0.0092	3.7	0.0082	0.000034	0.00017	0.000051
Production	1	2021-09-01	0.0000026	0.00027	0.0000023	0.00075	0.0096	3.3	0.0078	0.00003	0.00015	0.000049
Production	1	2021-10-01	0.0000025	0.0004	0.0000013	0.00092	0.01	3	0.0056	0.000027	0.00017	0.000053
Production	1	2021-11-01	0.0000025	0.00056	0.0000012	0.0011	0.012	2.1	0.0047	0.000029	0.00013	0.000049
Production	1	2021-12-01	0.0000025	0.00065	0.0000013	0.0015	0.014	2.5	0.0036	0.000028	0.00013	0.00006
Production	1	2022-01-01	0.0000026	0.00072	0.0000016	0.0017	0.015	1.8	0.0032	0.000032	0.00016	0.000062
Production	1	2022-02-01	0.0000025	0.0008	0.0000012	0.0017	0.014	1.7	0.003	0.000028	0.00014	0.000075
Production	2	2022-03-01	0.0000025	0.00084	0.000002	0.0021	0.012	2.2	0.0031	0.000036	0.00015	0.000079
Production	2	2022-04-01	0.0000036	0.00074	0.0000019	0.0022	0.0098	2.9	0.0059	0.000034	0.00016	0.000051
Production	2	2022-05-01	0.0000048	0.00031	0.0000043	0.00056	0.011	8.5	0.03	0.000017	0.0002	0.000039
Production	2	2022-06-01	0.0000043	0.00029	0.0000031	0.00057	0.011	3.1	0.011	0.00003	0.00015	0.000053
Production	2	2022-07-01	0.0000049	0.00032	0.0000027	0.00071	0.012	3.2	0.0066	0.000036	0.00018	0.000061
Production	2	2022-08-01	0.0000036	0.00023	0.0000018	0.00064	0.0092	3.7	0.0082	0.000034	0.00017	0.00005
Production	2	2022-09-01	0.0000026	0.00026	0.0000023	0.00074	0.0095	3.3	0.0078	0.00003	0.00015	0.000048
Production	2	2022-10-01	0.0000025	0.0004	0.0000013	0.00092	0.0099	3	0.0056	0.000027	0.00017	0.000052
Production	2	2022-11-01	0.0000025	0.00055	0.0000011	0.0011	0.012	2.1	0.0047	0.000029	0.00013	0.000048
Production	2	2022-12-01	0.0000025	0.00063	0.0000013	0.0014	0.013	2.5	0.0037	0.000028	0.00013	0.000058
Production	2	2023-01-01	0.0000026	0.00068	0.0000015	0.0017	0.014	1.9	0.0032	0.000033	0.00016	0.00006
Production	2	2023-02-01	0.0000025	0.00074	0.0000012	0.0017	0.013	1.8	0.003	0.000028	0.00015	0.000072
Production	3	2023-03-01	0.0000025	0.00076	0.000002	0.002	0.011	2.3	0.0032	0.000036	0.00016	0.000072
Production	3	2023-04-01	0.0000036	0.00065	0.0000019	0.0021	0.0085	3	0.0059	0.000033	0.00016	0.000045
Production	3	2023-05-01	0.0000048	0.00031	0.0000043	0.00056	0.011	8.5	0.03	0.000017	0.0002	0.000039
Production	3	2023-06-01	0.0000043	0.00029	0.0000031	0.00057	0.011	3.1	0.011	0.00003	0.00015	0.000053

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Construction	-1	2020-10-01	29	0.000015	0.00042	0.02	0.0000079	0.0087	0.00036	0.0000025	0.00039
Construction	-1	2020-11-01	34	0.000029	0.00039	0.026	0.000036	0.029	0.00035	0.0000025	0.00055
Construction	-1	2020-12-01	36	0.000033	0.00036	0.038	0.000019	0.038	0.00037	0.0000025	0.00068
Construction	-1	2021-01-01	43	0.000038	0.00031	0.041	0.000013	0.064	0.00038	0.0000025	0.00072
Construction	-1	2021-02-01	42	0.000037	0.00041	0.033	0.000025	0.064	0.00035	0.0000025	0.00081
Production	1	2021-03-01	46	0.000037	0.00038	0.046	0.000013	0.063	0.00039	0.0000025	0.00085
Production	1	2021-04-01	44	0.000026	0.00044	0.051	0.00001	0.028	0.0004	0.0000025	0.00078
Production	1	2021-05-01	17	0.000033	0.0012	0.099	0.000029	0.022	0.0007	0.0000041	0.00027
Production	1	2021-06-01	24	0.000017	0.00078	0.033	0.000022	0.0049	0.00048	0.0000036	0.00028
Production	1	2021-07-01	29	0.000016	0.00054	0.029	0.00002	0.0076	0.00043	0.0000025	0.00033
Production	1	2021-08-01	29	0.0001	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00022
Production	1	2021-09-01	29	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00027
Production	1	2021-10-01	29	0.000015	0.00043	0.02	0.0000079	0.0088	0.00036	0.0000025	0.00039
Production	1	2021-11-01	34	0.000029	0.00039	0.026	0.000036	0.028	0.00035	0.0000025	0.00055
Production	1	2021-12-01	36	0.000033	0.00036	0.038	0.000019	0.038	0.00037	0.0000025	0.00067
Production	1	2022-01-01	42	0.000038	0.00031	0.041	0.000013	0.064	0.00038	0.0000025	0.00071
Production	1	2022-02-01	41	0.000038	0.00041	0.034	0.000025	0.065	0.00035	0.0000025	0.00079
Production	2	2022-03-01	46	0.000037	0.00038	0.047	0.000013	0.063	0.00039	0.0000025	0.00085
Production	2	2022-04-01	43	0.000026	0.00044	0.052	0.0000098	0.029	0.0004	0.0000025	0.00076
Production	2	2022-05-01	17	0.000033	0.0012	0.099	0.000029	0.022	0.0007	0.0000041	0.00027
Production	2	2022-06-01	24	0.000017	0.00078	0.033	0.000022	0.0049	0.00048	0.0000036	0.00028
Production	2	2022-07-01	29	0.000016	0.00054	0.029	0.00002	0.0076	0.00043	0.0000025	0.00033
Production	2	2022-08-01	29	0.00011	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00022
Production	2	2022-09-01	28	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00027
Production	2	2022-10-01	29	0.000015	0.00043	0.02	0.0000079	0.0088	0.00036	0.0000025	0.00038
Production	2	2022-11-01	34	0.000029	0.00039	0.027	0.000036	0.028	0.00035	0.0000025	0.00054
Production	2	2022-12-01	36	0.000033	0.00036	0.038	0.00002	0.038	0.00037	0.0000025	0.00065
Production	2	2023-01-01	42	0.000038	0.00032	0.043	0.000012	0.066	0.00039	0.0000025	0.00067
Production	2	2023-02-01	40	0.000038	0.00042	0.036	0.000026	0.068	0.00035	0.0000025	0.00073
Production	3	2023-03-01	45	0.000038	0.00039	0.05	0.000012	0.066	0.0004	0.0000025	0.00077
Production	3	2023-04-01	42	0.000026	0.00042	0.055	0.000009	0.03	0.00041	0.0000025	0.00067
Production	3	2023-05-01	17	0.000033	0.0012	0.099	0.000028	0.022	0.0007	0.0000041	0.00027
Production	3	2023-06-01	24	0.000017	0.00078	0.033	0.000022	0.0049	0.00048	0.0000036	0.00028

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Construction	-1	2020-10-01	0.0000014	0.0009	0.0075
Construction	-1	2020-11-01	0.0000022	0.0011	0.01
Construction	-1	2020-12-01	0.0000013	0.0014	0.012
Construction	-1	2021-01-01	0.0000012	0.0018	0.011
Construction	-1	2021-02-01	0.0000012	0.0017	0.011
Production	1	2021-03-01	0.0000023	0.0023	0.015
Production	1	2021-04-01	0.0000013	0.0022	0.0083
Production	1	2021-05-01	0.0000029	0.00052	0.0056
Production	1	2021-06-01	0.0000025	0.00054	0.0092
Production	1	2021-07-01	0.0000022	0.0007	0.0096
Production	1	2021-08-01	0.0000017	0.00059	0.0071
Production	1	2021-09-01	0.0000013	0.00071	0.0076
Production	1	2021-10-01	0.0000014	0.00089	0.0074
Production	1	2021-11-01	0.0000022	0.0011	0.01
Production	1	2021-12-01	0.0000013	0.0013	0.012
Production	1	2022-01-01	0.0000012	0.0018	0.01
Production	1	2022-02-01	0.0000012	0.0017	0.011
Production	2	2022-03-01	0.0000023	0.0023	0.015
Production	2	2022-04-01	0.0000013	0.0022	0.008
Production	2	2022-05-01	0.0000029	0.00051	0.0056
Production	2	2022-06-01	0.0000025	0.00053	0.0091
Production	2	2022-07-01	0.0000022	0.0007	0.0096
Production	2	2022-08-01	0.0000017	0.00059	0.007
Production	2	2022-09-01	0.0000013	0.00071	0.0075
Production	2	2022-10-01	0.0000014	0.00089	0.0073
Production	2	2022-11-01	0.0000021	0.0011	0.0098
Production	2	2022-12-01	0.0000013	0.0013	0.011
Production	2	2023-01-01	0.0000012	0.0017	0.0098
Production	2	2023-02-01	0.0000012	0.0017	0.01
Production	3	2023-03-01	0.0000023	0.0022	0.013
Production	3	2023-04-01	0.0000013	0.0022	0.0068
Production	3	2023-05-01	0.0000029	0.00051	0.0055
Production	3	2023-06-01	0.0000025	0.00053	0.0091

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-07-01	85	18	0.023	0.001	0.015	0.0039	0.045	0.29	0.00045	0.00058	0.029
Production	3	2023-08-01	85	16	0.037	0.0017	0.004	0.0044	0.044	0.33	0.00049	0.00049	0.024
Production	3	2023-09-01	84	19	0.054	0.0011	0.0065	0.0042	0.048	0.33	0.00052	0.00051	0.023
Production	3	2023-10-01	88	19	0.071	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Production	3	2023-11-01	100	22	0.11	0.0011	0.0085	0.0031	0.051	0.31	0.00051	0.00028	0.013
Production	3	2023-12-01	100	22	0.12	0.001	0.008	0.0034	0.048	0.52	0.00025	0.00025	0.017
Production	3	2024-01-01	120	23	0.12	0.001	0.016	0.0032	0.054	0.52	0.00026	0.00027	0.017
Production	3	2024-02-01	110	23	0.15	0.001	0.031	0.0048	0.058	0.58	0.00026	0.00027	0.021
Production	4	2024-03-01	120	23	0.12	0.001	0.045	0.0047	0.062	0.29	0.00062	0.00049	0.008
Production	4	2024-04-01	110	17	0.12	0.0011	0.01	0.0039	0.061	0.6	0.00049	0.00036	0.015
Production	4	2024-05-01	54	6.6	0.035	0.0019	0.0075	0.019	0.039	0.66	0.00075	0.00067	0.23
Production	4	2024-06-01	72	16	0.033	0.001	0.0078	0.0047	0.042	0.55	0.00066	0.00044	0.049
Production	4	2024-07-01	85	18	0.023	0.001	0.015	0.0039	0.045	0.29	0.00045	0.00058	0.029
Production	4	2024-08-01	85	16	0.037	0.0017	0.004	0.0044	0.044	0.33	0.00049	0.00049	0.024
Production	4	2024-09-01	84	18	0.054	0.0011	0.0065	0.0042	0.048	0.33	0.00052	0.00051	0.023
Production	4	2024-10-01	88	19	0.071	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Production	4	2024-11-01	100	22	0.11	0.0011	0.0085	0.0031	0.051	0.31	0.00051	0.00028	0.013
Production	4	2024-12-01	100	22	0.12	0.001	0.0081	0.0034	0.048	0.51	0.00025	0.00025	0.017
Production	4	2025-01-01	120	24	0.12	0.001	0.016	0.0032	0.054	0.51	0.00026	0.00027	0.017
Production	4	2025-02-01	110	24	0.15	0.001	0.031	0.0049	0.058	0.57	0.00027	0.00028	0.02
Production	5	2025-03-01	120	24	0.13	0.001	0.043	0.0045	0.062	0.31	0.0006	0.00047	0.0079
Production	5	2025-04-01	120	18	0.12	0.0012	0.01	0.0037	0.061	0.61	0.00048	0.00035	0.015
Production	5	2025-05-01	55	6.6	0.035	0.0019	0.0075	0.019	0.039	0.66	0.00075	0.00067	0.23
Production	5	2025-06-01	72	16	0.033	0.001	0.0078	0.0047	0.042	0.55	0.00066	0.00044	0.049
Production	5	2025-07-01	85	18	0.023	0.001	0.015	0.0039	0.045	0.29	0.00045	0.00058	0.029
Production	5	2025-08-01	86	16	0.037	0.0017	0.004	0.0044	0.044	0.33	0.00049	0.00049	0.024
Production	5	2025-09-01	85	19	0.054	0.0011	0.0065	0.0042	0.048	0.33	0.00052	0.00051	0.023
Production	5	2025-10-01	89	20	0.071	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Production	5	2025-11-01	100	22	0.11	0.0011	0.0085	0.0031	0.051	0.31	0.00051	0.00029	0.013
Production	5	2025-12-01	110	23	0.12	0.001	0.0082	0.0033	0.048	0.51	0.00025	0.00025	0.017
Production	5	2026-01-01	120	24	0.12	0.001	0.016	0.0032	0.054	0.51	0.00027	0.00027	0.018
Production	5	2026-02-01	120	25	0.15	0.001	0.03	0.0049	0.059	0.56	0.00027	0.00028	0.019
Production	6	2026-03-01	130	25	0.13	0.001	0.041	0.0044	0.062	0.32	0.00058	0.00046	0.0078

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-07-01	0.000037	0.00022	0.000082	29	0.000048	0.00077	0.12	0.000082	0.023	0.00046
Production	3	2023-08-01	0.000032	0.00021	0.000072	29	0.00012	0.00077	0.094	0.00009	0.018	0.00048
Production	3	2023-09-01	0.00003	0.00018	0.000065	29	0.000044	0.00067	0.096	0.000069	0.018	0.00046
Production	3	2023-10-01	0.000029	0.0002	0.000068	30	0.000035	0.00052	0.091	0.000075	0.022	0.00045
Production	3	2023-11-01	0.000032	0.00018	0.00007	33	0.00004	0.00045	0.12	0.000084	0.042	0.00038
Production	3	2023-12-01	0.000033	0.0002	0.000067	35	0.000046	0.00045	0.14	0.000061	0.049	0.00039
Production	3	2024-01-01	0.000033	0.00026	0.000081	40	0.000059	0.0004	0.24	0.000083	0.078	0.00038
Production	3	2024-02-01	0.000032	0.00027	0.000073	37	0.000067	0.00054	0.27	0.000084	0.1	0.00045
Production	4	2024-03-01	0.000039	0.00021	0.000078	40	0.000047	0.00047	0.15	0.000033	0.081	0.00044
Production	4	2024-04-01	0.000027	0.00018	0.000037	38	0.000066	0.0005	0.15	0.00012	0.055	0.00045
Production	4	2024-05-01	0.000028	0.00035	0.000073	18	0.00022	0.0018	0.22	0.00017	0.069	0.0013
Production	4	2024-06-01	0.000033	0.00021	0.000063	24	0.000056	0.0009	0.15	0.00015	0.016	0.00054
Production	4	2024-07-01	0.000037	0.00022	0.000082	29	0.000048	0.00077	0.12	0.000082	0.023	0.00046
Production	4	2024-08-01	0.000032	0.00021	0.000072	29	0.00012	0.00077	0.094	0.00009	0.018	0.00048
Production	4	2024-09-01	0.00003	0.00018	0.000065	29	0.000044	0.00067	0.096	0.000069	0.018	0.00046
Production	4	2024-10-01	0.000029	0.0002	0.000068	30	0.000035	0.00052	0.091	0.000075	0.022	0.00045
Production	4	2024-11-01	0.000032	0.00018	0.00007	33	0.00004	0.00045	0.12	0.000084	0.042	0.00038
Production	4	2024-12-01	0.000033	0.0002	0.000069	35	0.000046	0.00044	0.15	0.000062	0.049	0.00039
Production	4	2025-01-01	0.000033	0.00026	0.000085	41	0.00006	0.00041	0.25	0.000088	0.078	0.00038
Production	4	2025-02-01	0.000032	0.00027	0.000078	38	0.000066	0.00053	0.27	0.000085	0.098	0.00044
Production	5	2025-03-01	0.000038	0.00021	0.000083	41	0.000046	0.00046	0.15	0.000036	0.077	0.00043
Production	5	2025-04-01	0.000027	0.00018	0.000043	39	0.000065	0.00052	0.15	0.00012	0.053	0.00045
Production	5	2025-05-01	0.000028	0.00035	0.000073	18	0.00022	0.0018	0.22	0.00017	0.069	0.0013
Production	5	2025-06-01	0.000033	0.00021	0.000063	24	0.000056	0.0009	0.15	0.00015	0.016	0.00054
Production	5	2025-07-01	0.000037	0.00022	0.000082	29	0.000048	0.00077	0.12	0.000082	0.023	0.00046
Production	5	2025-08-01	0.000032	0.00021	0.000072	29	0.00012	0.00077	0.094	0.00009	0.018	0.00048
Production	5	2025-09-01	0.00003	0.00018	0.000065	29	0.000044	0.00067	0.096	0.000069	0.018	0.00046
Production	5	2025-10-01	0.000029	0.0002	0.000068	30	0.000035	0.00052	0.091	0.000075	0.022	0.00045
Production	5	2025-11-01	0.000032	0.00018	0.000072	34	0.00004	0.00045	0.12	0.000084	0.042	0.00038
Production	5	2025-12-01	0.000033	0.0002	0.000071	36	0.000047	0.00044	0.15	0.000063	0.049	0.00039
Production	5	2026-01-01	0.000033	0.00027	0.000089	41	0.000061	0.00041	0.26	0.000093	0.077	0.00038
Production	5	2026-02-01	0.000031	0.00026	0.000084	39	0.000064	0.00052	0.26	0.000085	0.094	0.00044
Production	6	2026-03-01	0.000038	0.0002	0.000088	42	0.000046	0.00045	0.15	0.000038	0.074	0.00043

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-07-01	0.0000049	0.00032	0.0000027	0.00071	0.012	3.2	0.0066	0.000036	0.00018	0.000061
Production	3	2023-08-01	0.0000036	0.00023	0.0000018	0.00064	0.0092	3.7	0.0082	0.000034	0.00017	0.00005
Production	3	2023-09-01	0.0000026	0.00026	0.0000023	0.00074	0.0095	3.3	0.0078	0.00003	0.00015	0.000048
Production	3	2023-10-01	0.0000025	0.00039	0.0000012	0.00091	0.0097	3	0.0057	0.000027	0.00017	0.000051
Production	3	2023-11-01	0.0000025	0.00052	0.0000011	0.0011	0.011	2.1	0.0048	0.000029	0.00014	0.000045
Production	3	2023-12-01	0.0000025	0.00057	0.0000013	0.0014	0.012	2.6	0.0039	0.000028	0.00014	0.000054
Production	3	2024-01-01	0.0000026	0.00058	0.0000014	0.0016	0.012	2	0.0034	0.000033	0.00017	0.000055
Production	3	2024-02-01	0.0000025	0.00058	0.0000011	0.0015	0.0096	2	0.0032	0.000029	0.00016	0.000065
Production	4	2024-03-01	0.0000025	0.00058	0.000002	0.0019	0.0077	2.7	0.0033	0.000038	0.00017	0.000054
Production	4	2024-04-01	0.0000037	0.00045	0.000002	0.002	0.0058	3.2	0.0059	0.000033	0.00017	0.000033
Production	4	2024-05-01	0.0000048	0.00031	0.0000044	0.00055	0.011	8.6	0.03	0.000016	0.0002	0.000038
Production	4	2024-06-01	0.0000043	0.00029	0.0000031	0.00057	0.011	3.1	0.011	0.00003	0.00015	0.000053
Production	4	2024-07-01	0.0000049	0.00032	0.0000027	0.00071	0.012	3.2	0.0066	0.000036	0.00018	0.000061
Production	4	2024-08-01	0.0000036	0.00023	0.0000018	0.00064	0.0092	3.7	0.0082	0.000034	0.00017	0.00005
Production	4	2024-09-01	0.0000026	0.00026	0.0000023	0.00074	0.0094	3.3	0.0078	0.00003	0.00015	0.000048
Production	4	2024-10-01	0.0000025	0.00039	0.0000012	0.00091	0.0097	3	0.0057	0.000027	0.00017	0.000051
Production	4	2024-11-01	0.0000025	0.00053	0.0000011	0.0011	0.011	2.1	0.0048	0.000029	0.00014	0.000046
Production	4	2024-12-01	0.0000025	0.00059	0.0000013	0.0014	0.012	2.6	0.0038	0.000028	0.00014	0.000055
Production	4	2025-01-01	0.0000026	0.00061	0.0000014	0.0016	0.013	2	0.0034	0.000033	0.00016	0.000057
Production	4	2025-02-01	0.0000025	0.00064	0.0000012	0.0016	0.011	1.9	0.0031	0.000028	0.00015	0.000068
Production	5	2025-03-01	0.0000025	0.00065	0.000002	0.002	0.0091	2.6	0.0032	0.000037	0.00017	0.000061
Production	5	2025-04-01	0.0000037	0.00053	0.000002	0.0021	0.007	3.1	0.0059	0.000033	0.00017	0.000038
Production	5	2025-05-01	0.0000048	0.00031	0.0000043	0.00055	0.011	8.6	0.03	0.000017	0.0002	0.000038
Production	5	2025-06-01	0.0000043	0.00029	0.0000031	0.00057	0.011	3.1	0.011	0.00003	0.00015	0.000053
Production	5	2025-07-01	0.000005	0.00032	0.0000027	0.00071	0.012	3.2	0.0066	0.000036	0.00018	0.000062
Production	5	2025-08-01	0.0000036	0.00023	0.0000018	0.00064	0.0092	3.7	0.0082	0.000034	0.00017	0.00005
Production	5	2025-09-01	0.0000026	0.00026	0.0000023	0.00074	0.0095	3.3	0.0078	0.00003	0.00015	0.000048
Production	5	2025-10-01	0.0000025	0.00039	0.0000013	0.00091	0.0098	3	0.0057	0.000027	0.00017	0.000052
Production	5	2025-11-01	0.0000025	0.00054	0.0000011	0.0011	0.011	2.1	0.0047	0.000029	0.00014	0.000046
Production	5	2025-12-01	0.0000025	0.00061	0.0000013	0.0014	0.013	2.6	0.0038	0.000028	0.00014	0.000056
Production	5	2026-01-01	0.0000026	0.00065	0.0000015	0.0017	0.014	1.9	0.0033	0.000033	0.00016	0.000059
Production	5	2026-02-01	0.0000025	0.0007	0.0000012	0.0016	0.012	1.8	0.0031	0.000028	0.00015	0.000071
Production	6	2026-03-01	0.0000025	0.00072	0.000002	0.002	0.01	2.4	0.0032	0.000037	0.00016	0.000067

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	3	2023-07-01	29	0.000016	0.00054	0.029	0.00002	0.0076	0.00043	0.0000025	0.00033
Production	3	2023-08-01	29	0.00011	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00022
Production	3	2023-09-01	28	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00026
Production	3	2023-10-01	29	0.000015	0.00043	0.02	0.0000078	0.0088	0.00036	0.0000025	0.00038
Production	3	2023-11-01	33	0.000028	0.00039	0.027	0.000037	0.028	0.00035	0.0000025	0.00051
Production	3	2023-12-01	34	0.000033	0.00037	0.039	0.00002	0.038	0.00037	0.0000025	0.00059
Production	3	2024-01-01	40	0.00004	0.00032	0.047	0.000011	0.071	0.0004	0.0000025	0.00056
Production	3	2024-02-01	38	0.000041	0.00044	0.042	0.000027	0.076	0.00036	0.0000025	0.00057
Production	4	2024-03-01	43	0.00004	0.0004	0.059	0.000012	0.072	0.00041	0.0000025	0.00057
Production	4	2024-04-01	40	0.000025	0.00039	0.06	0.0000073	0.032	0.00042	0.0000025	0.00046
Production	4	2024-05-01	17	0.000033	0.0011	0.099	0.000028	0.022	0.0007	0.0000041	0.00026
Production	4	2024-06-01	24	0.000017	0.00078	0.033	0.000022	0.0049	0.00048	0.0000036	0.00028
Production	4	2024-07-01	29	0.000016	0.00054	0.029	0.00002	0.0076	0.00043	0.0000025	0.00033
Production	4	2024-08-01	29	0.00011	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00022
Production	4	2024-09-01	28	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00026
Production	4	2024-10-01	29	0.000015	0.00043	0.02	0.0000078	0.0088	0.00036	0.0000025	0.00038
Production	4	2024-11-01	33	0.000029	0.00039	0.027	0.000037	0.028	0.00035	0.0000025	0.00051
Production	4	2024-12-01	35	0.000033	0.00037	0.039	0.00002	0.038	0.00037	0.0000025	0.0006
Production	4	2025-01-01	41	0.000039	0.00032	0.046	0.000011	0.069	0.0004	0.0000025	0.0006
Production	4	2025-02-01	39	0.00004	0.00043	0.04	0.000027	0.073	0.00036	0.0000025	0.00063
Production	5	2025-03-01	44	0.000039	0.00039	0.055	0.000012	0.07	0.0004	0.0000025	0.00065
Production	5	2025-04-01	41	0.000025	0.00041	0.058	0.000008	0.031	0.00042	0.0000025	0.00055
Production	5	2025-05-01	17	0.000033	0.0012	0.099	0.000028	0.022	0.0007	0.0000041	0.00026
Production	5	2025-06-01	24	0.000017	0.00078	0.033	0.000022	0.0049	0.00048	0.0000036	0.00028
Production	5	2025-07-01	30	0.000016	0.00054	0.029	0.00002	0.0076	0.00043	0.0000025	0.00033
Production	5	2025-08-01	29	0.00011	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00022
Production	5	2025-09-01	28	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00026
Production	5	2025-10-01	29	0.000015	0.00043	0.02	0.0000078	0.0088	0.00036	0.0000025	0.00038
Production	5	2025-11-01	33	0.000029	0.00039	0.027	0.000037	0.028	0.00035	0.0000025	0.00052
Production	5	2025-12-01	35	0.000033	0.00037	0.039	0.00002	0.038	0.00037	0.0000025	0.00062
Production	5	2026-01-01	41	0.000039	0.00032	0.044	0.000012	0.067	0.00039	0.0000025	0.00064
Production	5	2026-02-01	40	0.000039	0.00042	0.038	0.000026	0.07	0.00035	0.0000025	0.00069
Production	6	2026-03-01	45	0.000038	0.00039	0.052	0.000012	0.067	0.0004	0.0000025	0.00072

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Production	3	2023-07-01	0.0000022	0.0007	0.0096
Production	3	2023-08-01	0.0000017	0.00059	0.007
Production	3	2023-09-01	0.0000013	0.00071	0.0075
Production	3	2023-10-01	0.0000014	0.00088	0.0071
Production	3	2023-11-01	0.0000021	0.0011	0.0091
Production	3	2023-12-01	0.0000012	0.0013	0.01
Production	3	2024-01-01	0.0000012	0.0017	0.0079
Production	3	2024-02-01	0.0000011	0.0015	0.0076
Production	4	2024-03-01	0.0000022	0.002	0.009
Production	4	2024-04-01	0.0000011	0.0021	0.0043
Production	4	2024-05-01	0.0000029	0.00051	0.0054
Production	4	2024-06-01	0.0000025	0.00053	0.0091
Production	4	2024-07-01	0.0000022	0.0007	0.0096
Production	4	2024-08-01	0.0000017	0.00059	0.007
Production	4	2024-09-01	0.0000013	0.0007	0.0075
Production	4	2024-10-01	0.0000014	0.00088	0.0071
Production	4	2024-11-01	0.0000021	0.0011	0.0091
Production	4	2024-12-01	0.0000012	0.0013	0.01
Production	4	2025-01-01	0.0000012	0.0017	0.0086
Production	4	2025-02-01	0.0000011	0.0016	0.0086
Production	5	2025-03-01	0.0000022	0.0021	0.011
Production	5	2025-04-01	0.0000012	0.0021	0.0054
Production	5	2025-05-01	0.0000029	0.00051	0.0054
Production	5	2025-06-01	0.0000025	0.00054	0.0092
Production	5	2025-07-01	0.0000022	0.0007	0.0097
Production	5	2025-08-01	0.0000017	0.00059	0.007
Production	5	2025-09-01	0.0000013	0.00071	0.0075
Production	5	2025-10-01	0.0000014	0.00089	0.0072
Production	5	2025-11-01	0.0000021	0.0011	0.0094
Production	5	2025-12-01	0.0000012	0.0013	0.011
Production	5	2026-01-01	0.0000012	0.0017	0.0092
Production	5	2026-02-01	0.0000012	0.0016	0.0095
Production	6	2026-03-01	0.0000023	0.0021	0.012

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-04-01	120	19	0.12	0.0012	0.01	0.0036	0.061	0.62	0.00048	0.00034	0.015
Production	6	2026-05-01	55	6.7	0.035	0.0019	0.0075	0.019	0.039	0.66	0.00075	0.00067	0.23
Production	6	2026-06-01	72	16	0.033	0.001	0.0078	0.0047	0.042	0.55	0.00066	0.00044	0.049
Production	6	2026-07-01	85	18	0.023	0.001	0.015	0.0039	0.045	0.29	0.00045	0.00058	0.029
Production	6	2026-08-01	86	16	0.037	0.0017	0.004	0.0044	0.044	0.33	0.00049	0.00049	0.024
Production	6	2026-09-01	85	19	0.054	0.0011	0.0065	0.0042	0.048	0.33	0.00052	0.00051	0.023
Production	6	2026-10-01	89	20	0.071	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Production	6	2026-11-01	100	23	0.11	0.0011	0.0086	0.0031	0.051	0.31	0.00051	0.00029	0.013
Production	6	2026-12-01	110	23	0.12	0.001	0.0082	0.0033	0.048	0.5	0.00025	0.00025	0.017
Production	6	2027-01-01	120	25	0.12	0.001	0.016	0.0032	0.054	0.5	0.00027	0.00027	0.018
Production	6	2027-02-01	120	26	0.15	0.001	0.029	0.005	0.059	0.56	0.00027	0.00028	0.019
Production	7	2027-03-01	130	26	0.13	0.001	0.04	0.0043	0.062	0.32	0.00057	0.00045	0.0077
Production	7	2027-04-01	120	20	0.12	0.0012	0.01	0.0035	0.061	0.62	0.00047	0.00034	0.015
Production	7	2027-05-01	55	6.7	0.035	0.0019	0.0075	0.019	0.039	0.66	0.00075	0.00067	0.23
Production	7	2027-06-01	72	16	0.033	0.001	0.0078	0.0047	0.042	0.55	0.00066	0.00044	0.049
Production	7	2027-07-01	85	18	0.023	0.001	0.015	0.0039	0.045	0.29	0.00045	0.00058	0.029
Production	7	2027-08-01	86	16	0.037	0.0017	0.004	0.0044	0.044	0.33	0.00049	0.00049	0.024
Production	7	2027-09-01	85	19	0.054	0.0011	0.0065	0.0042	0.048	0.34	0.00052	0.00051	0.023
Production	7	2027-10-01	89	20	0.071	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Production	7	2027-11-01	100	23	0.11	0.0011	0.0087	0.0031	0.051	0.32	0.0005	0.00029	0.013
Production	7	2027-12-01	110	24	0.12	0.001	0.0084	0.0033	0.049	0.5	0.00025	0.00025	0.016
Production	7	2028-01-01	130	26	0.13	0.001	0.017	0.0031	0.055	0.5	0.00027	0.00027	0.019
Production	7	2028-02-01	120	27	0.15	0.001	0.029	0.0051	0.059	0.55	0.00027	0.00029	0.018
Production	8	2028-03-01	130	27	0.13	0.001	0.039	0.0041	0.062	0.33	0.00055	0.00043	0.0076
Production	8	2028-04-01	130	21	0.13	0.0013	0.011	0.0034	0.061	0.63	0.00047	0.00033	0.015
Production	8	2028-05-01	55	6.8	0.035	0.0019	0.0075	0.019	0.039	0.66	0.00075	0.00067	0.23
Production	8	2028-06-01	72	16	0.033	0.001	0.0078	0.0047	0.042	0.55	0.00066	0.00044	0.049
Production	8	2028-07-01	85	18	0.023	0.001	0.015	0.0039	0.045	0.29	0.00045	0.00058	0.029
Production	8	2028-08-01	86	16	0.037	0.0017	0.0041	0.0044	0.044	0.33	0.00049	0.00049	0.024
Production	8	2028-09-01	85	19	0.054	0.0011	0.0065	0.0042	0.048	0.34	0.00052	0.00051	0.023
Production	8	2028-10-01	90	20	0.072	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Production	8	2028-11-01	100	23	0.11	0.0011	0.0087	0.0031	0.051	0.32	0.0005	0.00029	0.013
Production	8	2028-12-01	110	23	0.12	0.001	0.0083	0.0033	0.048	0.5	0.00025	0.00025	0.017

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-04-01	0.000028	0.00018	0.000048	40	0.000064	0.00053	0.16	0.00013	0.051	0.00045
Production	6	2026-05-01	0.000028	0.00035	0.000074	18	0.00022	0.0018	0.22	0.00017	0.069	0.0013
Production	6	2026-06-01	0.000033	0.00021	0.000063	24	0.000056	0.0009	0.15	0.00015	0.016	0.00054
Production	6	2026-07-01	0.000037	0.00022	0.000083	29	0.000048	0.00077	0.12	0.000082	0.023	0.00046
Production	6	2026-08-01	0.000032	0.00021	0.000073	29	0.00012	0.00077	0.094	0.00009	0.018	0.00048
Production	6	2026-09-01	0.00003	0.00018	0.000065	29	0.000044	0.00067	0.096	0.000069	0.018	0.00046
Production	6	2026-10-01	0.000029	0.0002	0.000069	30	0.000035	0.00052	0.092	0.000075	0.022	0.00045
Production	6	2026-11-01	0.000032	0.00018	0.000073	34	0.00004	0.00045	0.12	0.000084	0.042	0.00038
Production	6	2026-12-01	0.000033	0.0002	0.000073	36	0.000047	0.00044	0.15	0.000063	0.049	0.00039
Production	6	2027-01-01	0.000033	0.00027	0.000092	42	0.000062	0.00041	0.27	0.000096	0.076	0.00038
Production	6	2027-02-01	0.000031	0.00026	0.000087	40	0.000063	0.00052	0.26	0.000085	0.092	0.00043
Production	7	2027-03-01	0.000037	0.0002	0.00009	42	0.000045	0.00044	0.15	0.000039	0.072	0.00042
Production	7	2027-04-01	0.000028	0.00018	0.000051	41	0.000063	0.00053	0.16	0.00013	0.05	0.00045
Production	7	2027-05-01	0.000028	0.00035	0.000074	18	0.00022	0.0018	0.22	0.00017	0.068	0.0013
Production	7	2027-06-01	0.000033	0.00021	0.000063	24	0.000056	0.0009	0.15	0.00015	0.016	0.00054
Production	7	2027-07-01	0.000037	0.00021	0.000083	29	0.000048	0.00077	0.12	0.000082	0.023	0.00046
Production	7	2027-08-01	0.000032	0.00021	0.000073	29	0.00012	0.00077	0.094	0.00009	0.018	0.00048
Production	7	2027-09-01	0.00003	0.00018	0.000066	29	0.000044	0.00067	0.096	0.00007	0.018	0.00046
Production	7	2027-10-01	0.000029	0.0002	0.00007	30	0.000035	0.00052	0.092	0.000076	0.022	0.00044
Production	7	2027-11-01	0.000032	0.00018	0.000075	34	0.000041	0.00045	0.13	0.000085	0.042	0.00037
Production	7	2027-12-01	0.000033	0.0002	0.000077	37	0.000047	0.00044	0.15	0.000065	0.048	0.00038
Production	7	2028-01-01	0.000032	0.00027	0.000096	42	0.000063	0.00042	0.28	0.0001	0.076	0.00039
Production	7	2028-02-01	0.00003	0.00026	0.000092	40	0.000062	0.00051	0.25	0.000085	0.089	0.00043
Production	8	2028-03-01	0.000037	0.0002	0.000095	43	0.000044	0.00043	0.15	0.000042	0.069	0.00041
Production	8	2028-04-01	0.000029	0.00018	0.000057	42	0.000063	0.00054	0.16	0.00013	0.049	0.00045
Production	8	2028-05-01	0.000028	0.00035	0.000074	18	0.00022	0.0018	0.22	0.00017	0.068	0.0013
Production	8	2028-06-01	0.000033	0.00021	0.000063	24	0.000056	0.0009	0.15	0.00015	0.016	0.00054
Production	8	2028-07-01	0.000037	0.00021	0.000083	29	0.000048	0.00077	0.12	0.000082	0.023	0.00046
Production	8	2028-08-01	0.000032	0.00021	0.000073	29	0.00012	0.00077	0.094	0.00009	0.018	0.00048
Production	8	2028-09-01	0.00003	0.00018	0.000066	29	0.000044	0.00067	0.096	0.00007	0.018	0.00046
Production	8	2028-10-01	0.000029	0.0002	0.00007	30	0.000035	0.00052	0.092	0.000076	0.022	0.00044
Production	8	2028-11-01	0.000032	0.00018	0.000075	34	0.000041	0.00045	0.13	0.000085	0.042	0.00037
Production	8	2028-12-01	0.000033	0.0002	0.000076	37	0.000047	0.00044	0.15	0.000064	0.049	0.00038

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-04-01	0.0000036	0.00061	0.000002	0.0021	0.008	3	0.0059	0.000033	0.00016	0.000043
Production	6	2026-05-01	0.0000048	0.00031	0.0000043	0.00056	0.011	8.6	0.03	0.000017	0.0002	0.000038
Production	6	2026-06-01	0.0000043	0.00029	0.0000031	0.00057	0.011	3.1	0.011	0.00003	0.00015	0.000053
Production	6	2026-07-01	0.000005	0.00032	0.0000027	0.00071	0.012	3.2	0.0066	0.000036	0.00018	0.000062
Production	6	2026-08-01	0.0000036	0.00023	0.0000018	0.00064	0.0092	3.7	0.0082	0.000034	0.00017	0.00005
Production	6	2026-09-01	0.0000026	0.00026	0.0000023	0.00074	0.0095	3.3	0.0078	0.00003	0.00015	0.000048
Production	6	2026-10-01	0.0000025	0.00039	0.0000013	0.00092	0.0099	3	0.0057	0.000027	0.00017	0.000052
Production	6	2026-11-01	0.0000025	0.00055	0.0000011	0.0011	0.012	2.1	0.0047	0.000029	0.00014	0.000047
Production	6	2026-12-01	0.0000025	0.00062	0.0000013	0.0014	0.013	2.5	0.0037	0.000028	0.00014	0.000057
Production	6	2027-01-01	0.0000026	0.00067	0.0000015	0.0017	0.014	1.9	0.0033	0.000033	0.00016	0.00006
Production	6	2027-02-01	0.0000025	0.00073	0.0000012	0.0017	0.012	1.8	0.003	0.000028	0.00015	0.000072
Production	7	2027-03-01	0.0000025	0.00075	0.000002	0.002	0.011	2.4	0.0032	0.000036	0.00016	0.000071
Production	7	2027-04-01	0.0000036	0.00066	0.0000019	0.0021	0.0087	2.9	0.0059	0.000033	0.00016	0.000046
Production	7	2027-05-01	0.0000048	0.00031	0.0000043	0.00056	0.011	8.5	0.03	0.000017	0.0002	0.000038
Production	7	2027-06-01	0.0000043	0.00029	0.0000031	0.00057	0.012	3.1	0.011	0.00003	0.00015	0.000053
Production	7	2027-07-01	0.000005	0.00033	0.0000027	0.00071	0.012	3.2	0.0066	0.000036	0.00018	0.000062
Production	7	2027-08-01	0.0000036	0.00023	0.0000018	0.00065	0.0092	3.7	0.0082	0.000034	0.00017	0.000051
Production	7	2027-09-01	0.0000026	0.00027	0.0000023	0.00075	0.0096	3.3	0.0078	0.00003	0.00015	0.000049
Production	7	2027-10-01	0.0000025	0.0004	0.0000013	0.00092	0.01	3	0.0056	0.000027	0.00017	0.000053
Production	7	2027-11-01	0.0000025	0.00056	0.0000011	0.0011	0.012	2.1	0.0047	0.000029	0.00013	0.000049
Production	7	2027-12-01	0.0000025	0.00065	0.0000013	0.0014	0.014	2.5	0.0036	0.000028	0.00013	0.000059
Production	7	2028-01-01	0.0000026	0.00071	0.0000016	0.0017	0.015	1.9	0.0032	0.000032	0.00016	0.000062
Production	7	2028-02-01	0.0000025	0.00078	0.0000012	0.0017	0.013	1.7	0.003	0.000028	0.00014	0.000074
Production	8	2028-03-01	0.0000025	0.00082	0.000002	0.0021	0.012	2.2	0.0031	0.000036	0.00015	0.000077
Production	8	2028-04-01	0.0000036	0.00074	0.0000019	0.0022	0.0097	2.9	0.0059	0.000034	0.00016	0.000051
Production	8	2028-05-01	0.0000048	0.00031	0.0000043	0.00056	0.011	8.5	0.03	0.000017	0.0002	0.000039
Production	8	2028-06-01	0.0000043	0.00029	0.0000031	0.00057	0.012	3	0.011	0.00003	0.00015	0.000053
Production	8	2028-07-01	0.000005	0.00033	0.0000027	0.00071	0.012	3.1	0.0066	0.000036	0.00018	0.000062
Production	8	2028-08-01	0.0000036	0.00023	0.0000018	0.00065	0.0093	3.7	0.0082	0.000034	0.00017	0.000051
Production	8	2028-09-01	0.0000026	0.00027	0.0000023	0.00075	0.0097	3.3	0.0078	0.00003	0.00015	0.000049
Production	8	2028-10-01	0.0000025	0.0004	0.0000013	0.00092	0.01	3	0.0056	0.000027	0.00017	0.000053
Production	8	2028-11-01	0.0000025	0.00056	0.0000011	0.0011	0.012	2.1	0.0047	0.000029	0.00013	0.000049
Production	8	2028-12-01	0.0000025	0.00064	0.0000013	0.0014	0.014	2.5	0.0037	0.000028	0.00013	0.000059

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	6	2026-04-01	42	0.000026	0.00042	0.056	0.0000086	0.03	0.00041	0.0000025	0.00063
Production	6	2026-05-01	17	0.000033	0.0012	0.099	0.000028	0.022	0.0007	0.0000041	0.00026
Production	6	2026-06-01	24	0.000017	0.00078	0.033	0.000022	0.0049	0.00048	0.0000036	0.00028
Production	6	2026-07-01	30	0.000016	0.00054	0.029	0.00002	0.0076	0.00043	0.0000025	0.00033
Production	6	2026-08-01	29	0.0001	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00022
Production	6	2026-09-01	28	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00027
Production	6	2026-10-01	29	0.000015	0.00043	0.02	0.0000078	0.0088	0.00036	0.0000025	0.00038
Production	6	2026-11-01	33	0.000029	0.00039	0.027	0.000037	0.028	0.00035	0.0000025	0.00053
Production	6	2026-12-01	35	0.000033	0.00036	0.039	0.00002	0.038	0.00037	0.0000025	0.00063
Production	6	2027-01-01	42	0.000038	0.00032	0.043	0.000012	0.066	0.00039	0.0000025	0.00066
Production	6	2027-02-01	40	0.000039	0.00042	0.037	0.000026	0.069	0.00035	0.0000025	0.00072
Production	7	2027-03-01	45	0.000038	0.00039	0.05	0.000012	0.066	0.0004	0.0000025	0.00076
Production	7	2027-04-01	42	0.000026	0.00042	0.054	0.0000091	0.03	0.00041	0.0000025	0.00068
Production	7	2027-05-01	17	0.000033	0.0012	0.099	0.000028	0.022	0.0007	0.0000041	0.00027
Production	7	2027-06-01	24	0.000017	0.00078	0.033	0.000022	0.0049	0.00048	0.0000036	0.00028
Production	7	2027-07-01	30	0.000016	0.00054	0.029	0.00002	0.0076	0.00043	0.0000025	0.00033
Production	7	2027-08-01	29	0.0001	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00022
Production	7	2027-09-01	29	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00027
Production	7	2027-10-01	29	0.000015	0.00043	0.02	0.0000079	0.0088	0.00036	0.0000025	0.00039
Production	7	2027-11-01	34	0.000029	0.00039	0.027	0.000036	0.028	0.00035	0.0000025	0.00055
Production	7	2027-12-01	36	0.000033	0.00036	0.038	0.000019	0.038	0.00037	0.0000025	0.00066
Production	7	2028-01-01	42	0.000038	0.00031	0.042	0.000013	0.065	0.00038	0.0000025	0.0007
Production	7	2028-02-01	41	0.000038	0.00041	0.035	0.000025	0.066	0.00035	0.0000025	0.00077
Production	8	2028-03-01	46	0.000037	0.00038	0.047	0.000013	0.064	0.0004	0.0000025	0.00083
Production	8	2028-04-01	43	0.000026	0.00043	0.052	0.0000097	0.029	0.0004	0.0000025	0.00075
Production	8	2028-05-01	17	0.000033	0.0012	0.099	0.000029	0.022	0.0007	0.0000041	0.00027
Production	8	2028-06-01	24	0.000017	0.00078	0.033	0.000022	0.0049	0.00048	0.0000036	0.00028
Production	8	2028-07-01	30	0.000016	0.00054	0.029	0.000021	0.0075	0.00043	0.0000025	0.00033
Production	8	2028-08-01	29	0.0001	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00023
Production	8	2028-09-01	29	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00027
Production	8	2028-10-01	29	0.000015	0.00042	0.02	0.0000079	0.0087	0.00036	0.0000025	0.00039
Production	8	2028-11-01	34	0.000029	0.00039	0.027	0.000036	0.028	0.00035	0.0000025	0.00055
Production	8	2028-12-01	36	0.000033	0.00036	0.038	0.000019	0.038	0.00037	0.0000025	0.00066

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Production	6	2026-04-01	0.0000012	0.0022	0.0063
Production	6	2026-05-01	0.0000029	0.00051	0.0055
Production	6	2026-06-01	0.0000025	0.00054	0.0092
Production	6	2026-07-01	0.0000022	0.0007	0.0097
Production	6	2026-08-01	0.0000017	0.00059	0.0071
Production	6	2026-09-01	0.0000013	0.00071	0.0075
Production	6	2026-10-01	0.0000014	0.00089	0.0073
Production	6	2026-11-01	0.0000021	0.0011	0.0096
Production	6	2026-12-01	0.0000013	0.0013	0.011
Production	6	2027-01-01	0.0000012	0.0017	0.0096
Production	6	2027-02-01	0.0000012	0.0016	0.0099
Production	7	2027-03-01	0.0000023	0.0022	0.013
Production	7	2027-04-01	0.0000013	0.0022	0.007
Production	7	2027-05-01	0.0000029	0.00051	0.0055
Production	7	2027-06-01	0.0000025	0.00054	0.0092
Production	7	2027-07-01	0.0000022	0.0007	0.0097
Production	7	2027-08-01	0.0000017	0.00059	0.0071
Production	7	2027-09-01	0.0000013	0.00071	0.0076
Production	7	2027-10-01	0.0000014	0.0009	0.0074
Production	7	2027-11-01	0.0000021	0.0011	0.01
Production	7	2027-12-01	0.0000013	0.0013	0.012
Production	7	2028-01-01	0.0000012	0.0018	0.01
Production	7	2028-02-01	0.0000012	0.0017	0.011
Production	8	2028-03-01	0.0000023	0.0023	0.015
Production	8	2028-04-01	0.0000013	0.0022	0.0079
Production	8	2028-05-01	0.0000029	0.00051	0.0056
Production	8	2028-06-01	0.0000025	0.00054	0.0092
Production	8	2028-07-01	0.0000022	0.0007	0.0097
Production	8	2028-08-01	0.0000017	0.0006	0.0071
Production	8	2028-09-01	0.0000013	0.00071	0.0076
Production	8	2028-10-01	0.0000014	0.0009	0.0075
Production	8	2028-11-01	0.0000021	0.0011	0.01
Production	8	2028-12-01	0.0000013	0.0013	0.012

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	8	2029-01-01	130	25	0.13	0.001	0.016	0.0031	0.055	0.5	0.00027	0.00027	0.018
Production	8	2029-02-01	120	27	0.15	0.001	0.029	0.005	0.059	0.56	0.00027	0.00028	0.018
Production	9	2029-03-01	130	26	0.13	0.001	0.04	0.0042	0.062	0.33	0.00056	0.00045	0.0077
Production	9	2029-04-01	120	20	0.12	0.0012	0.01	0.0035	0.061	0.62	0.00047	0.00034	0.015
Production	9	2029-05-01	55	6.7	0.035	0.0019	0.0075	0.019	0.039	0.66	0.00075	0.00067	0.23
Production	9	2029-06-01	72	16	0.033	0.001	0.0078	0.0047	0.042	0.55	0.00066	0.00044	0.049
Production	9	2029-07-01	85	18	0.023	0.001	0.015	0.0039	0.045	0.29	0.00045	0.00058	0.029
Production	9	2029-08-01	86	16	0.037	0.0017	0.004	0.0044	0.044	0.33	0.00049	0.00049	0.024
Production	9	2029-09-01	85	19	0.054	0.0011	0.0065	0.0042	0.048	0.33	0.00052	0.00051	0.023
Production	9	2029-10-01	89	20	0.071	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Production	9	2029-11-01	100	23	0.11	0.0011	0.0086	0.0031	0.051	0.32	0.00051	0.00029	0.013
Production	9	2029-12-01	110	23	0.12	0.001	0.0082	0.0033	0.048	0.5	0.00025	0.00025	0.017
Production	9	2030-01-01	120	25	0.12	0.001	0.016	0.0032	0.054	0.51	0.00027	0.00027	0.018
Production	9	2030-02-01	120	26	0.15	0.001	0.03	0.005	0.059	0.56	0.00027	0.00028	0.019
Production	10	2030-03-01	130	25	0.13	0.001	0.041	0.0043	0.062	0.32	0.00057	0.00045	0.0077
Production	10	2030-04-01	120	20	0.12	0.0012	0.01	0.0035	0.061	0.62	0.00048	0.00034	0.015
Production	10	2030-05-01	55	6.7	0.035	0.0019	0.0075	0.019	0.039	0.66	0.00075	0.00067	0.23
Production	10	2030-06-01	72	16	0.033	0.001	0.0078	0.0047	0.042	0.55	0.00066	0.00044	0.049
Production	10	2030-07-01	85	18	0.023	0.001	0.015	0.0039	0.045	0.29	0.00045	0.00058	0.029
Production	10	2030-08-01	86	16	0.037	0.0017	0.004	0.0044	0.044	0.33	0.00049	0.00049	0.024
Production	10	2030-09-01	85	19	0.054	0.0011	0.0065	0.0042	0.048	0.33	0.00052	0.00051	0.023
Active Closure	10	2030-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Active Closure	10	2030-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Active Closure	10	2030-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Active Closure	10	2031-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Active Closure	10	2031-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Active Closure	11	2031-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Active Closure	11	2031-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Active Closure	11	2031-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Active Closure	11	2031-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Active Closure	11	2031-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Active Closure	11	2031-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Active Closure	11	2031-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	8	2029-01-01	0.000033	0.00027	0.000095	42	0.000062	0.00042	0.27	0.0001	0.076	0.00038
Production	8	2029-02-01	0.000031	0.00026	0.00009	40	0.000062	0.00051	0.26	0.000085	0.09	0.00043
Production	9	2029-03-01	0.000037	0.0002	0.000092	42	0.000045	0.00044	0.15	0.00004	0.072	0.00042
Production	9	2029-04-01	0.000028	0.00018	0.000052	41	0.000063	0.00053	0.16	0.00013	0.05	0.00045
Production	9	2029-05-01	0.000028	0.00035	0.000074	18	0.00022	0.0018	0.22	0.00017	0.068	0.0013
Production	9	2029-06-01	0.000033	0.00021	0.000063	24	0.000056	0.0009	0.15	0.00015	0.016	0.00054
Production	9	2029-07-01	0.000037	0.00021	0.000083	29	0.000048	0.00077	0.12	0.000082	0.023	0.00046
Production	9	2029-08-01	0.000032	0.00021	0.000073	29	0.00012	0.00077	0.094	0.00009	0.018	0.00048
Production	9	2029-09-01	0.00003	0.00018	0.000066	29	0.000044	0.00067	0.096	0.00007	0.018	0.00046
Production	9	2029-10-01	0.000029	0.0002	0.000069	30	0.000035	0.00052	0.092	0.000076	0.022	0.00044
Production	9	2029-11-01	0.000032	0.00018	0.000073	34	0.00004	0.00045	0.13	0.000084	0.042	0.00038
Production	9	2029-12-01	0.000033	0.0002	0.000073	36	0.000047	0.00044	0.15	0.000064	0.049	0.00039
Production	9	2030-01-01	0.000033	0.00027	0.000091	42	0.000061	0.00041	0.27	0.000096	0.076	0.00038
Production	9	2030-02-01	0.000031	0.00026	0.000086	39	0.000064	0.00052	0.26	0.000085	0.093	0.00043
Production	10	2030-03-01	0.000037	0.0002	0.000089	42	0.000045	0.00045	0.15	0.000039	0.073	0.00042
Production	10	2030-04-01	0.000028	0.00018	0.00005	41	0.000064	0.00053	0.16	0.00013	0.051	0.00045
Production	10	2030-05-01	0.000028	0.00035	0.000074	18	0.00022	0.0018	0.22	0.00017	0.069	0.0013
Production	10	2030-06-01	0.000033	0.00021	0.000063	24	0.000056	0.0009	0.15	0.00015	0.016	0.00054
Production	10	2030-07-01	0.000037	0.00021	0.000083	29	0.000048	0.00077	0.12	0.000082	0.023	0.00046
Production	10	2030-08-01	0.000032	0.00021	0.000073	29	0.00012	0.00077	0.094	0.00009	0.018	0.00048
Production	10	2030-09-01	0.00003	0.00018	0.000065	29	0.000044	0.00067	0.096	0.00007	0.018	0.00046
Active Closure	10	2030-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Active Closure	10	2030-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Active Closure	10	2030-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Active Closure	10	2031-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Active Closure	10	2031-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Active Closure	11	2031-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Active Closure	11	2031-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Active Closure	11	2031-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Active Closure	11	2031-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Active Closure	11	2031-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Active Closure	11	2031-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Active Closure	11	2031-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	8	2029-01-01	0.0000026	0.0007	0.0000015	0.0017	0.015	1.9	0.0032	0.000033	0.00016	0.000061
Production	8	2029-02-01	0.0000025	0.00077	0.0000012	0.0017	0.013	1.7	0.003	0.000028	0.00015	0.000074
Production	9	2029-03-01	0.0000025	0.00077	0.000002	0.002	0.011	2.3	0.0032	0.000036	0.00016	0.000072
Production	9	2029-04-01	0.0000036	0.00067	0.0000019	0.0021	0.0088	2.9	0.0059	0.000033	0.00016	0.000046
Production	9	2029-05-01	0.0000048	0.00031	0.0000043	0.00056	0.011	8.5	0.03	0.000017	0.0002	0.000038
Production	9	2029-06-01	0.0000043	0.00029	0.0000031	0.00057	0.012	3	0.011	0.00003	0.00015	0.000053
Production	9	2029-07-01	0.000005	0.00033	0.0000027	0.00071	0.012	3.2	0.0066	0.000036	0.00018	0.000062
Production	9	2029-08-01	0.0000036	0.00023	0.0000018	0.00065	0.0092	3.7	0.0082	0.000034	0.00017	0.000051
Production	9	2029-09-01	0.0000026	0.00027	0.0000023	0.00074	0.0096	3.3	0.0078	0.00003	0.00015	0.000049
Production	9	2029-10-01	0.0000025	0.0004	0.0000013	0.00092	0.0099	3	0.0056	0.000027	0.00017	0.000053
Production	9	2029-11-01	0.0000025	0.00055	0.0000011	0.0011	0.012	2.1	0.0047	0.000029	0.00014	0.000048
Production	9	2029-12-01	0.0000025	0.00062	0.0000013	0.0014	0.013	2.5	0.0037	0.000028	0.00014	0.000057
Production	9	2030-01-01	0.0000026	0.00067	0.0000015	0.0017	0.014	1.9	0.0033	0.000033	0.00016	0.000059
Production	9	2030-02-01	0.0000025	0.00072	0.0000012	0.0016	0.012	1.8	0.0031	0.000028	0.00015	0.000071
Production	10	2030-03-01	0.0000025	0.00074	0.000002	0.002	0.011	2.4	0.0032	0.000037	0.00016	0.00007
Production	10	2030-04-01	0.0000036	0.00064	0.000002	0.0021	0.0084	3	0.0059	0.000033	0.00016	0.000044
Production	10	2030-05-01	0.0000048	0.00031	0.0000043	0.00056	0.011	8.6	0.03	0.000017	0.0002	0.000038
Production	10	2030-06-01	0.0000043	0.00029	0.0000031	0.00057	0.012	3.1	0.011	0.00003	0.00015	0.000053
Production	10	2030-07-01	0.000005	0.00033	0.0000027	0.00071	0.012	3.2	0.0066	0.000036	0.00018	0.000062
Production	10	2030-08-01	0.0000036	0.00023	0.0000018	0.00065	0.0092	3.7	0.0082	0.000034	0.00017	0.000051
Production	10	2030-09-01	0.0000026	0.00027	0.0000023	0.00074	0.0096	3.3	0.0078	0.00003	0.00015	0.000049
Active Closure	10	2030-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Active Closure	10	2030-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Active Closure	10	2030-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Active Closure	10	2031-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Active Closure	10	2031-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Active Closure	11	2031-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Active Closure	11	2031-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Active Closure	11	2031-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Active Closure	11	2031-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Active Closure	11	2031-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Active Closure	11	2031-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Active Closure	11	2031-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	8	2029-01-01	42	0.000038	0.00031	0.042	0.000012	0.065	0.00039	0.0000025	0.00069
Production	8	2029-02-01	41	0.000038	0.00042	0.035	0.000026	0.067	0.00035	0.0000025	0.00076
Production	9	2029-03-01	46	0.000038	0.00039	0.05	0.000012	0.066	0.0004	0.0000025	0.00078
Production	9	2029-04-01	42	0.000026	0.00042	0.054	0.0000091	0.03	0.00041	0.0000025	0.00068
Production	9	2029-05-01	17	0.000033	0.0012	0.099	0.000028	0.022	0.0007	0.0000041	0.00027
Production	9	2029-06-01	24	0.000017	0.00078	0.033	0.000022	0.0049	0.00048	0.0000036	0.00028
Production	9	2029-07-01	30	0.000016	0.00054	0.029	0.00002	0.0076	0.00043	0.0000025	0.00033
Production	9	2029-08-01	29	0.0001	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00022
Production	9	2029-09-01	29	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00027
Production	9	2029-10-01	29	0.000015	0.00043	0.02	0.0000079	0.0088	0.00036	0.0000025	0.00038
Production	9	2029-11-01	33	0.000029	0.00039	0.027	0.000036	0.028	0.00035	0.0000025	0.00053
Production	9	2029-12-01	35	0.000033	0.00036	0.039	0.00002	0.038	0.00037	0.0000025	0.00064
Production	9	2030-01-01	42	0.000038	0.00032	0.043	0.000012	0.067	0.00039	0.0000025	0.00065
Production	9	2030-02-01	40	0.000039	0.00042	0.037	0.000026	0.069	0.00035	0.0000025	0.00071
Production	10	2030-03-01	45	0.000038	0.00039	0.051	0.000012	0.067	0.0004	0.0000025	0.00074
Production	10	2030-04-01	42	0.000026	0.00042	0.055	0.0000089	0.03	0.00041	0.0000025	0.00065
Production	10	2030-05-01	17	0.000033	0.0012	0.099	0.000028	0.022	0.0007	0.0000041	0.00026
Production	10	2030-06-01	24	0.000017	0.00078	0.033	0.000022	0.0049	0.00048	0.0000036	0.00028
Production	10	2030-07-01	30	0.000016	0.00054	0.029	0.00002	0.0076	0.00043	0.0000025	0.00033
Production	10	2030-08-01	29	0.0001	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00022
Production	10	2030-09-01	29	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00027
Active Closure	10	2030-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Active Closure	10	2030-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Active Closure	10	2030-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Active Closure	10	2031-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Active Closure	10	2031-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Active Closure	11	2031-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Active Closure	11	2031-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Active Closure	11	2031-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Active Closure	11	2031-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Active Closure	11	2031-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Active Closure	11	2031-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Active Closure	11	2031-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Production	8	2029-01-01	0.0000012	0.0018	0.01
Production	8	2029-02-01	0.0000012	0.0017	0.01
Production	9	2029-03-01	0.0000023	0.0022	0.013
Production	9	2029-04-01	0.0000013	0.0022	0.007
Production	9	2029-05-01	0.0000029	0.00051	0.0055
Production	9	2029-06-01	0.0000025	0.00054	0.0092
Production	9	2029-07-01	0.0000022	0.0007	0.0097
Production	9	2029-08-01	0.0000017	0.00059	0.0071
Production	9	2029-09-01	0.0000013	0.00071	0.0076
Production	9	2029-10-01	0.0000014	0.00089	0.0073
Production	9	2029-11-01	0.0000021	0.0011	0.0097
Production	9	2029-12-01	0.0000013	0.0013	0.011
Production	9	2030-01-01	0.0000012	0.0017	0.0095
Production	9	2030-02-01	0.0000012	0.0016	0.0098
Production	10	2030-03-01	0.0000023	0.0022	0.013
Production	10	2030-04-01	0.0000012	0.0022	0.0067
Production	10	2030-05-01	0.0000029	0.00051	0.0055
Production	10	2030-06-01	0.0000025	0.00054	0.0092
Production	10	2030-07-01	0.0000022	0.0007	0.0097
Production	10	2030-08-01	0.0000017	0.00059	0.0071
Production	10	2030-09-01	0.0000013	0.00071	0.0076
Active Closure	10	2030-10-01	0.000001	0.00065	0.0021
Active Closure	10	2030-11-01	0.000002	0.00078	0.0024
Active Closure	10	2030-12-01	0.000001	0.00094	0.0037
Active Closure	10	2031-01-01	0.000001	0.0014	0.0029
Active Closure	10	2031-02-01	0.000001	0.0012	0.0035
Active Closure	11	2031-03-01	0.000002	0.0017	0.0031
Active Closure	11	2031-04-01	0.000001	0.002	0.0018
Active Closure	11	2031-05-01	0.0000023	0.00033	0.0017
Active Closure	11	2031-06-01	0.000002	0.0004	0.0018
Active Closure	11	2031-07-01	0.000002	0.00057	0.0023
Active Closure	11	2031-08-01	0.000001	0.0004	0.003
Active Closure	11	2031-09-01	0.000001	0.00052	0.0029

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Active Closure	11	2031-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Active Closure	11	2031-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Active Closure	11	2031-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Active Closure	11	2032-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Active Closure	11	2032-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Active Closure	12	2032-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Active Closure	12	2032-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Active Closure	12	2032-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Active Closure	12	2032-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Active Closure	12	2032-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Active Closure	12	2032-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Active Closure	12	2032-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Active Closure	12	2032-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Active Closure	12	2032-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Active Closure	12	2032-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Active Closure	12	2033-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Active Closure	12	2033-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Active Closure	13	2033-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Active Closure	13	2033-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Active Closure	13	2033-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Active Closure	13	2033-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Active Closure	13	2033-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Active Closure	13	2033-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Active Closure	13	2033-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Transitional Closure	13	2033-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Transitional Closure	13	2033-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Transitional Closure	13	2033-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Transitional Closure	13	2034-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Transitional Closure	13	2034-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Transitional Closure	14	2034-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Transitional Closure	14	2034-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Transitional Closure	14	2034-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Transitional Closure	14	2034-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	11	2031-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Active Closure	11	2031-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Active Closure	11	2031-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Active Closure	11	2032-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Active Closure	11	2032-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Active Closure	12	2032-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Active Closure	12	2032-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Active Closure	12	2032-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Active Closure	12	2032-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Active Closure	12	2032-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Active Closure	12	2032-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Active Closure	12	2032-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Active Closure	12	2032-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Active Closure	12	2032-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Active Closure	12	2032-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Active Closure	12	2033-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Active Closure	12	2033-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Active Closure	13	2033-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Active Closure	13	2033-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Active Closure	13	2033-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Active Closure	13	2033-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Active Closure	13	2033-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Active Closure	13	2033-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Active Closure	13	2033-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Transitional Closure	13	2033-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Transitional Closure	13	2033-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Transitional Closure	13	2033-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Transitional Closure	13	2034-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Transitional Closure	13	2034-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Transitional Closure	14	2034-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Transitional Closure	14	2034-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Transitional Closure	14	2034-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Transitional Closure	14	2034-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	11	2031-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Active Closure	11	2031-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Active Closure	11	2031-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Active Closure	11	2032-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Active Closure	11	2032-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Active Closure	12	2032-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Active Closure	12	2032-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Active Closure	12	2032-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Active Closure	12	2032-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Active Closure	12	2032-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Active Closure	12	2032-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Active Closure	12	2032-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Active Closure	12	2032-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Active Closure	12	2032-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Active Closure	12	2032-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Active Closure	12	2033-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Active Closure	12	2033-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Active Closure	13	2033-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Active Closure	13	2033-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Active Closure	13	2033-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Active Closure	13	2033-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Active Closure	13	2033-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Active Closure	13	2033-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Active Closure	13	2033-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Transitional Closure	13	2033-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Transitional Closure	13	2033-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Transitional Closure	13	2033-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Transitional Closure	13	2034-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Transitional Closure	13	2034-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Transitional Closure	14	2034-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Transitional Closure	14	2034-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Transitional Closure	14	2034-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Transitional Closure	14	2034-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Active Closure	11	2031-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Active Closure	11	2031-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Active Closure	11	2031-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Active Closure	11	2032-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Active Closure	11	2032-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Active Closure	12	2032-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Active Closure	12	2032-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Active Closure	12	2032-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Active Closure	12	2032-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Active Closure	12	2032-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Active Closure	12	2032-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Active Closure	12	2032-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Active Closure	12	2032-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Active Closure	12	2032-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Active Closure	12	2032-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Active Closure	12	2033-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Active Closure	12	2033-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Active Closure	13	2033-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Active Closure	13	2033-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Active Closure	13	2033-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Active Closure	13	2033-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Active Closure	13	2033-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Active Closure	13	2033-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Active Closure	13	2033-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Transitional Closure	13	2033-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Transitional Closure	13	2033-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Transitional Closure	13	2033-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Transitional Closure	13	2034-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Transitional Closure	13	2034-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Transitional Closure	14	2034-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Transitional Closure	14	2034-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Transitional Closure	14	2034-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Transitional Closure	14	2034-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Active Closure	11	2031-10-01	0.000001	0.00065	0.0021
Active Closure	11	2031-11-01	0.000002	0.00078	0.0024
Active Closure	11	2031-12-01	0.000001	0.00094	0.0037
Active Closure	11	2032-01-01	0.000001	0.0014	0.0029
Active Closure	11	2032-02-01	0.000001	0.0012	0.0035
Active Closure	12	2032-03-01	0.000002	0.0017	0.0031
Active Closure	12	2032-04-01	0.000001	0.002	0.0018
Active Closure	12	2032-05-01	0.0000023	0.00033	0.0017
Active Closure	12	2032-06-01	0.000002	0.0004	0.0018
Active Closure	12	2032-07-01	0.000002	0.00057	0.0023
Active Closure	12	2032-08-01	0.000001	0.0004	0.003
Active Closure	12	2032-09-01	0.000001	0.00052	0.0029
Active Closure	12	2032-10-01	0.000001	0.00065	0.0021
Active Closure	12	2032-11-01	0.000002	0.00078	0.0024
Active Closure	12	2032-12-01	0.000001	0.00094	0.0037
Active Closure	12	2033-01-01	0.000001	0.0014	0.0029
Active Closure	12	2033-02-01	0.000001	0.0012	0.0035
Active Closure	13	2033-03-01	0.000002	0.0017	0.0031
Active Closure	13	2033-04-01	0.000001	0.002	0.0018
Active Closure	13	2033-05-01	0.0000023	0.00033	0.0017
Active Closure	13	2033-06-01	0.000002	0.0004	0.0018
Active Closure	13	2033-07-01	0.000002	0.00057	0.0023
Active Closure	13	2033-08-01	0.000001	0.0004	0.003
Active Closure	13	2033-09-01	0.000001	0.00052	0.0029
Transitional Closure	13	2033-10-01	0.000001	0.00065	0.0021
Transitional Closure	13	2033-11-01	0.000002	0.00078	0.0024
Transitional Closure	13	2033-12-01	0.000001	0.00094	0.0037
Transitional Closure	13	2034-01-01	0.000001	0.0014	0.0029
Transitional Closure	13	2034-02-01	0.000001	0.0012	0.0035
Transitional Closure	14	2034-03-01	0.000002	0.0017	0.0031
Transitional Closure	14	2034-04-01	0.000001	0.002	0.0018
Transitional Closure	14	2034-05-01	0.0000023	0.00033	0.0017
Transitional Closure	14	2034-06-01	0.000002	0.0004	0.0018

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Transitional Closure	14	2034-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Transitional Closure	14	2034-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Transitional Closure	14	2034-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Transitional Closure	14	2034-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Transitional Closure	14	2034-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Transitional Closure	14	2034-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Transitional Closure	14	2035-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Transitional Closure	14	2035-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Transitional Closure	15	2035-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Transitional Closure	15	2035-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Transitional Closure	15	2035-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Transitional Closure	15	2035-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Transitional Closure	15	2035-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Transitional Closure	15	2035-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Transitional Closure	15	2035-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Transitional Closure	15	2035-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Transitional Closure	15	2035-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Transitional Closure	15	2035-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Transitional Closure	15	2036-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Transitional Closure	15	2036-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Transitional Closure	16	2036-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Transitional Closure	16	2036-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Transitional Closure	16	2036-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Transitional Closure	16	2036-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Transitional Closure	16	2036-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Transitional Closure	16	2036-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Transitional Closure	16	2036-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Transitional Closure	16	2036-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Transitional Closure	16	2036-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Transitional Closure	16	2036-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Transitional Closure	16	2037-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Transitional Closure	16	2037-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Transitional Closure	17	2037-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	14	2034-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Transitional Closure	14	2034-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Transitional Closure	14	2034-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Transitional Closure	14	2034-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Transitional Closure	14	2034-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Transitional Closure	14	2034-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Transitional Closure	14	2035-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Transitional Closure	14	2035-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Transitional Closure	15	2035-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Transitional Closure	15	2035-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Transitional Closure	15	2035-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Transitional Closure	15	2035-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Transitional Closure	15	2035-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Transitional Closure	15	2035-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Transitional Closure	15	2035-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Transitional Closure	15	2035-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Transitional Closure	15	2035-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Transitional Closure	15	2035-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Transitional Closure	15	2036-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Transitional Closure	15	2036-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Transitional Closure	16	2036-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Transitional Closure	16	2036-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Transitional Closure	16	2036-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Transitional Closure	16	2036-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Transitional Closure	16	2036-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Transitional Closure	16	2036-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Transitional Closure	16	2036-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Transitional Closure	16	2036-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Transitional Closure	16	2036-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Transitional Closure	16	2036-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Transitional Closure	16	2037-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Transitional Closure	16	2037-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Transitional Closure	17	2037-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	14	2034-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Transitional Closure	14	2034-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Transitional Closure	14	2034-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Transitional Closure	14	2034-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Transitional Closure	14	2034-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Transitional Closure	14	2034-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Transitional Closure	14	2035-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Transitional Closure	14	2035-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Transitional Closure	15	2035-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Transitional Closure	15	2035-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Transitional Closure	15	2035-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Transitional Closure	15	2035-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Transitional Closure	15	2035-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Transitional Closure	15	2035-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Transitional Closure	15	2035-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Transitional Closure	15	2035-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Transitional Closure	15	2035-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Transitional Closure	15	2035-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Transitional Closure	15	2036-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Transitional Closure	15	2036-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Transitional Closure	16	2036-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Transitional Closure	16	2036-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Transitional Closure	16	2036-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Transitional Closure	16	2036-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Transitional Closure	16	2036-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Transitional Closure	16	2036-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Transitional Closure	16	2036-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Transitional Closure	16	2036-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Transitional Closure	16	2036-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Transitional Closure	16	2036-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Transitional Closure	16	2037-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Transitional Closure	16	2037-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Transitional Closure	17	2037-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	14	2034-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Transitional Closure	14	2034-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Transitional Closure	14	2034-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Transitional Closure	14	2034-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Transitional Closure	14	2034-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Transitional Closure	14	2034-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Transitional Closure	14	2035-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Transitional Closure	14	2035-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Transitional Closure	15	2035-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Transitional Closure	15	2035-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Transitional Closure	15	2035-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Transitional Closure	15	2035-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Transitional Closure	15	2035-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Transitional Closure	15	2035-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Transitional Closure	15	2035-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Transitional Closure	15	2035-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Transitional Closure	15	2035-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Transitional Closure	15	2035-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Transitional Closure	15	2036-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Transitional Closure	15	2036-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Transitional Closure	16	2036-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Transitional Closure	16	2036-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Transitional Closure	16	2036-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Transitional Closure	16	2036-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Transitional Closure	16	2036-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Transitional Closure	16	2036-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Transitional Closure	16	2036-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Transitional Closure	16	2036-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Transitional Closure	16	2036-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Transitional Closure	16	2036-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Transitional Closure	16	2037-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Transitional Closure	16	2037-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Transitional Closure	17	2037-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Transitional Closure	14	2034-07-01	0.000002	0.00057	0.0023
Transitional Closure	14	2034-08-01	0.000001	0.0004	0.003
Transitional Closure	14	2034-09-01	0.000001	0.00052	0.0029
Transitional Closure	14	2034-10-01	0.000001	0.00065	0.0021
Transitional Closure	14	2034-11-01	0.000002	0.00078	0.0024
Transitional Closure	14	2034-12-01	0.000001	0.00094	0.0037
Transitional Closure	14	2035-01-01	0.000001	0.0014	0.0029
Transitional Closure	14	2035-02-01	0.000001	0.0012	0.0035
Transitional Closure	15	2035-03-01	0.000002	0.0017	0.0031
Transitional Closure	15	2035-04-01	0.000001	0.002	0.0018
Transitional Closure	15	2035-05-01	0.0000023	0.00033	0.0017
Transitional Closure	15	2035-06-01	0.000002	0.0004	0.0018
Transitional Closure	15	2035-07-01	0.000002	0.00057	0.0023
Transitional Closure	15	2035-08-01	0.000001	0.0004	0.003
Transitional Closure	15	2035-09-01	0.000001	0.00052	0.0029
Transitional Closure	15	2035-10-01	0.000001	0.00065	0.0021
Transitional Closure	15	2035-11-01	0.000002	0.00078	0.0024
Transitional Closure	15	2035-12-01	0.000001	0.00094	0.0037
Transitional Closure	15	2036-01-01	0.000001	0.0014	0.0029
Transitional Closure	15	2036-02-01	0.000001	0.0012	0.0035
Transitional Closure	16	2036-03-01	0.000002	0.0017	0.0031
Transitional Closure	16	2036-04-01	0.000001	0.002	0.0018
Transitional Closure	16	2036-05-01	0.0000023	0.00033	0.0017
Transitional Closure	16	2036-06-01	0.000002	0.0004	0.0018
Transitional Closure	16	2036-07-01	0.000002	0.00057	0.0023
Transitional Closure	16	2036-08-01	0.000001	0.0004	0.003
Transitional Closure	16	2036-09-01	0.000001	0.00052	0.0029
Transitional Closure	16	2036-10-01	0.000001	0.00065	0.0021
Transitional Closure	16	2036-11-01	0.000002	0.00078	0.0024
Transitional Closure	16	2036-12-01	0.000001	0.00094	0.0037
Transitional Closure	16	2037-01-01	0.000001	0.0014	0.0029
Transitional Closure	16	2037-02-01	0.000001	0.0012	0.0035
Transitional Closure	17	2037-03-01	0.000002	0.0017	0.0031

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Transitional Closure	17	2037-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Transitional Closure	17	2037-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Transitional Closure	17	2037-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Transitional Closure	17	2037-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Transitional Closure	17	2037-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Transitional Closure	17	2037-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Transitional Closure	17	2037-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Transitional Closure	17	2037-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Transitional Closure	17	2037-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Transitional Closure	17	2038-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Transitional Closure	17	2038-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Transitional Closure	18	2038-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Transitional Closure	18	2038-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Transitional Closure	18	2038-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Transitional Closure	18	2038-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Transitional Closure	18	2038-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Transitional Closure	18	2038-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Transitional Closure	18	2038-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Transitional Closure	18	2038-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Transitional Closure	18	2038-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Transitional Closure	18	2038-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Transitional Closure	18	2039-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Transitional Closure	18	2039-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Transitional Closure	19	2039-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Transitional Closure	19	2039-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Transitional Closure	19	2039-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Transitional Closure	19	2039-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Transitional Closure	19	2039-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Transitional Closure	19	2039-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Transitional Closure	19	2039-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Transitional Closure	19	2039-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Transitional Closure	19	2039-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Transitional Closure	19	2039-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	17	2037-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Transitional Closure	17	2037-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Transitional Closure	17	2037-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Transitional Closure	17	2037-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Transitional Closure	17	2037-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Transitional Closure	17	2037-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Transitional Closure	17	2037-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Transitional Closure	17	2037-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Transitional Closure	17	2037-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Transitional Closure	17	2038-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Transitional Closure	17	2038-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Transitional Closure	18	2038-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Transitional Closure	18	2038-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Transitional Closure	18	2038-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Transitional Closure	18	2038-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Transitional Closure	18	2038-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Transitional Closure	18	2038-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Transitional Closure	18	2038-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Transitional Closure	18	2038-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Transitional Closure	18	2038-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Transitional Closure	18	2038-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Transitional Closure	18	2039-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Transitional Closure	18	2039-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Transitional Closure	19	2039-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Transitional Closure	19	2039-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Transitional Closure	19	2039-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Transitional Closure	19	2039-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Transitional Closure	19	2039-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Transitional Closure	19	2039-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Transitional Closure	19	2039-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Transitional Closure	19	2039-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Transitional Closure	19	2039-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Transitional Closure	19	2039-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	17	2037-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Transitional Closure	17	2037-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Transitional Closure	17	2037-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Transitional Closure	17	2037-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Transitional Closure	17	2037-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Transitional Closure	17	2037-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Transitional Closure	17	2037-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Transitional Closure	17	2037-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Transitional Closure	17	2037-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Transitional Closure	17	2038-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Transitional Closure	17	2038-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Transitional Closure	18	2038-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Transitional Closure	18	2038-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Transitional Closure	18	2038-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Transitional Closure	18	2038-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Transitional Closure	18	2038-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Transitional Closure	18	2038-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Transitional Closure	18	2038-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Transitional Closure	18	2038-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Transitional Closure	18	2038-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Transitional Closure	18	2038-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Transitional Closure	18	2039-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Transitional Closure	18	2039-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Transitional Closure	19	2039-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Transitional Closure	19	2039-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Transitional Closure	19	2039-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Transitional Closure	19	2039-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Transitional Closure	19	2039-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Transitional Closure	19	2039-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Transitional Closure	19	2039-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Transitional Closure	19	2039-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Transitional Closure	19	2039-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Transitional Closure	19	2039-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	17	2037-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Transitional Closure	17	2037-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Transitional Closure	17	2037-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Transitional Closure	17	2037-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Transitional Closure	17	2037-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Transitional Closure	17	2037-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Transitional Closure	17	2037-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Transitional Closure	17	2037-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Transitional Closure	17	2037-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Transitional Closure	17	2038-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Transitional Closure	17	2038-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Transitional Closure	18	2038-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Transitional Closure	18	2038-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Transitional Closure	18	2038-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Transitional Closure	18	2038-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Transitional Closure	18	2038-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Transitional Closure	18	2038-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Transitional Closure	18	2038-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Transitional Closure	18	2038-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Transitional Closure	18	2038-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Transitional Closure	18	2038-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Transitional Closure	18	2039-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Transitional Closure	18	2039-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Transitional Closure	19	2039-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Transitional Closure	19	2039-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Transitional Closure	19	2039-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Transitional Closure	19	2039-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Transitional Closure	19	2039-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Transitional Closure	19	2039-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Transitional Closure	19	2039-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Transitional Closure	19	2039-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Transitional Closure	19	2039-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Transitional Closure	19	2039-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Transitional Closure	17	2037-04-01	0.000001	0.002	0.0018
Transitional Closure	17	2037-05-01	0.0000023	0.00033	0.0017
Transitional Closure	17	2037-06-01	0.000002	0.0004	0.0018
Transitional Closure	17	2037-07-01	0.000002	0.00057	0.0023
Transitional Closure	17	2037-08-01	0.000001	0.0004	0.003
Transitional Closure	17	2037-09-01	0.000001	0.00052	0.0029
Transitional Closure	17	2037-10-01	0.000001	0.00065	0.0021
Transitional Closure	17	2037-11-01	0.000002	0.00078	0.0024
Transitional Closure	17	2037-12-01	0.000001	0.00094	0.0037
Transitional Closure	17	2038-01-01	0.000001	0.0014	0.0029
Transitional Closure	17	2038-02-01	0.000001	0.0012	0.0035
Transitional Closure	18	2038-03-01	0.000002	0.0017	0.0031
Transitional Closure	18	2038-04-01	0.000001	0.002	0.0018
Transitional Closure	18	2038-05-01	0.0000023	0.00033	0.0017
Transitional Closure	18	2038-06-01	0.000002	0.0004	0.0018
Transitional Closure	18	2038-07-01	0.000002	0.00057	0.0023
Transitional Closure	18	2038-08-01	0.000001	0.0004	0.003
Transitional Closure	18	2038-09-01	0.000001	0.00052	0.0029
Transitional Closure	18	2038-10-01	0.000001	0.00065	0.0021
Transitional Closure	18	2038-11-01	0.000002	0.00078	0.0024
Transitional Closure	18	2038-12-01	0.000001	0.00094	0.0037
Transitional Closure	18	2039-01-01	0.000001	0.0014	0.0029
Transitional Closure	18	2039-02-01	0.000001	0.0012	0.0035
Transitional Closure	19	2039-03-01	0.000002	0.0017	0.0031
Transitional Closure	19	2039-04-01	0.000001	0.002	0.0018
Transitional Closure	19	2039-05-01	0.0000023	0.00033	0.0017
Transitional Closure	19	2039-06-01	0.000002	0.0004	0.0018
Transitional Closure	19	2039-07-01	0.000002	0.00057	0.0023
Transitional Closure	19	2039-08-01	0.000001	0.0004	0.003
Transitional Closure	19	2039-09-01	0.000001	0.00052	0.0029
Transitional Closure	19	2039-10-01	0.000001	0.00065	0.0021
Transitional Closure	19	2039-11-01	0.000002	0.00078	0.0024
Transitional Closure	19	2039-12-01	0.000001	0.00094	0.0037

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	19	2040-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Transitional Closure	19	2040-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Transitional Closure	20	2040-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Transitional Closure	20	2040-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Transitional Closure	20	2040-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Transitional Closure	20	2040-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Transitional Closure	20	2040-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Transitional Closure	20	2040-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Transitional Closure	20	2040-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Transitional Closure	20	2040-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Transitional Closure	20	2040-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Transitional Closure	20	2040-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Transitional Closure	20	2041-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Transitional Closure	20	2041-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Transitional Closure	21	2041-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Transitional Closure	21	2041-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Transitional Closure	21	2041-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Transitional Closure	21	2041-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Transitional Closure	21	2041-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Transitional Closure	21	2041-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Transitional Closure	21	2041-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Transitional Closure	21	2041-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Transitional Closure	21	2041-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Transitional Closure	21	2041-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Transitional Closure	21	2042-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Transitional Closure	21	2042-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Transitional Closure	22	2042-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Transitional Closure	22	2042-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Transitional Closure	22	2042-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Transitional Closure	22	2042-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Transitional Closure	22	2042-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Transitional Closure	22	2042-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Transitional Closure	22	2042-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	19	2040-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Transitional Closure	19	2040-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Transitional Closure	20	2040-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Transitional Closure	20	2040-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Transitional Closure	20	2040-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Transitional Closure	20	2040-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Transitional Closure	20	2040-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Transitional Closure	20	2040-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Transitional Closure	20	2040-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Transitional Closure	20	2040-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Transitional Closure	20	2040-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Transitional Closure	20	2040-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Transitional Closure	20	2041-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Transitional Closure	20	2041-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Transitional Closure	21	2041-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Transitional Closure	21	2041-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Transitional Closure	21	2041-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Transitional Closure	21	2041-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Transitional Closure	21	2041-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Transitional Closure	21	2041-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Transitional Closure	21	2041-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Transitional Closure	21	2041-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Transitional Closure	21	2041-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Transitional Closure	21	2041-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Transitional Closure	21	2042-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Transitional Closure	21	2042-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Transitional Closure	22	2042-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Transitional Closure	22	2042-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Transitional Closure	22	2042-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Transitional Closure	22	2042-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Transitional Closure	22	2042-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Transitional Closure	22	2042-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Transitional Closure	22	2042-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	19	2040-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Transitional Closure	19	2040-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Transitional Closure	20	2040-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Transitional Closure	20	2040-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Transitional Closure	20	2040-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Transitional Closure	20	2040-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Transitional Closure	20	2040-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Transitional Closure	20	2040-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Transitional Closure	20	2040-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Transitional Closure	20	2040-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Transitional Closure	20	2040-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Transitional Closure	20	2040-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Transitional Closure	20	2041-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Transitional Closure	20	2041-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Transitional Closure	21	2041-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Transitional Closure	21	2041-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Transitional Closure	21	2041-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Transitional Closure	21	2041-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Transitional Closure	21	2041-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Transitional Closure	21	2041-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Transitional Closure	21	2041-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Transitional Closure	21	2041-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Transitional Closure	21	2041-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Transitional Closure	21	2041-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Transitional Closure	21	2042-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Transitional Closure	21	2042-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Transitional Closure	22	2042-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Transitional Closure	22	2042-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Transitional Closure	22	2042-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Transitional Closure	22	2042-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Transitional Closure	22	2042-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Transitional Closure	22	2042-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Transitional Closure	22	2042-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	19	2040-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Transitional Closure	19	2040-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Transitional Closure	20	2040-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Transitional Closure	20	2040-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Transitional Closure	20	2040-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Transitional Closure	20	2040-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Transitional Closure	20	2040-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Transitional Closure	20	2040-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Transitional Closure	20	2040-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Transitional Closure	20	2040-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Transitional Closure	20	2040-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Transitional Closure	20	2040-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Transitional Closure	20	2041-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Transitional Closure	20	2041-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Transitional Closure	21	2041-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Transitional Closure	21	2041-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Transitional Closure	21	2041-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Transitional Closure	21	2041-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Transitional Closure	21	2041-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Transitional Closure	21	2041-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Transitional Closure	21	2041-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Transitional Closure	21	2041-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Transitional Closure	21	2041-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Transitional Closure	21	2041-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Transitional Closure	21	2042-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Transitional Closure	21	2042-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Transitional Closure	22	2042-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Transitional Closure	22	2042-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Transitional Closure	22	2042-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Transitional Closure	22	2042-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Transitional Closure	22	2042-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Transitional Closure	22	2042-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Transitional Closure	22	2042-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Transitional Closure	19	2040-01-01	0.000001	0.0014	0.0029
Transitional Closure	19	2040-02-01	0.000001	0.0012	0.0035
Transitional Closure	20	2040-03-01	0.000002	0.0017	0.0031
Transitional Closure	20	2040-04-01	0.000001	0.002	0.0018
Transitional Closure	20	2040-05-01	0.0000023	0.00033	0.0017
Transitional Closure	20	2040-06-01	0.000002	0.0004	0.0018
Transitional Closure	20	2040-07-01	0.000002	0.00057	0.0023
Transitional Closure	20	2040-08-01	0.000001	0.0004	0.003
Transitional Closure	20	2040-09-01	0.000001	0.00052	0.0029
Transitional Closure	20	2040-10-01	0.000001	0.00065	0.0021
Transitional Closure	20	2040-11-01	0.000002	0.00078	0.0024
Transitional Closure	20	2040-12-01	0.000001	0.00094	0.0037
Transitional Closure	20	2041-01-01	0.000001	0.0014	0.0029
Transitional Closure	20	2041-02-01	0.000001	0.0012	0.0035
Transitional Closure	21	2041-03-01	0.000002	0.0017	0.0031
Transitional Closure	21	2041-04-01	0.000001	0.002	0.0018
Transitional Closure	21	2041-05-01	0.0000023	0.00033	0.0017
Transitional Closure	21	2041-06-01	0.000002	0.0004	0.0018
Transitional Closure	21	2041-07-01	0.000002	0.00057	0.0023
Transitional Closure	21	2041-08-01	0.000001	0.0004	0.003
Transitional Closure	21	2041-09-01	0.000001	0.00052	0.0029
Transitional Closure	21	2041-10-01	0.000001	0.00065	0.0021
Transitional Closure	21	2041-11-01	0.000002	0.00078	0.0024
Transitional Closure	21	2041-12-01	0.000001	0.00094	0.0037
Transitional Closure	21	2042-01-01	0.000001	0.0014	0.0029
Transitional Closure	21	2042-02-01	0.000001	0.0012	0.0035
Transitional Closure	22	2042-03-01	0.000002	0.0017	0.0031
Transitional Closure	22	2042-04-01	0.000001	0.002	0.0018
Transitional Closure	22	2042-05-01	0.0000023	0.00033	0.0017
Transitional Closure	22	2042-06-01	0.000002	0.0004	0.0018
Transitional Closure	22	2042-07-01	0.000002	0.00057	0.0023
Transitional Closure	22	2042-08-01	0.000001	0.0004	0.003
Transitional Closure	22	2042-09-01	0.000001	0.00052	0.0029

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	22	2042-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Transitional Closure	22	2042-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Transitional Closure	22	2042-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Transitional Closure	22	2043-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Transitional Closure	22	2043-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Transitional Closure	23	2043-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Transitional Closure	23	2043-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Transitional Closure	23	2043-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Transitional Closure	23	2043-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Transitional Closure	23	2043-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Transitional Closure	23	2043-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Transitional Closure	23	2043-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Transitional Closure	23	2043-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Transitional Closure	23	2043-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Transitional Closure	23	2043-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Transitional Closure	23	2044-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Transitional Closure	23	2044-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Transitional Closure	24	2044-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Transitional Closure	24	2044-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Transitional Closure	24	2044-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Transitional Closure	24	2044-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Transitional Closure	24	2044-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Transitional Closure	24	2044-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Transitional Closure	24	2044-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Transitional Closure	24	2044-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Transitional Closure	24	2044-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Transitional Closure	24	2044-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Transitional Closure	24	2045-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Transitional Closure	24	2045-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Transitional Closure	25	2045-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Transitional Closure	25	2045-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Transitional Closure	25	2045-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Transitional Closure	25	2045-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	22	2042-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Transitional Closure	22	2042-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Transitional Closure	22	2042-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Transitional Closure	22	2043-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Transitional Closure	22	2043-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Transitional Closure	23	2043-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Transitional Closure	23	2043-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Transitional Closure	23	2043-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Transitional Closure	23	2043-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Transitional Closure	23	2043-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Transitional Closure	23	2043-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Transitional Closure	23	2043-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Transitional Closure	23	2043-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Transitional Closure	23	2043-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Transitional Closure	23	2043-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Transitional Closure	23	2044-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Transitional Closure	23	2044-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Transitional Closure	24	2044-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Transitional Closure	24	2044-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Transitional Closure	24	2044-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Transitional Closure	24	2044-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Transitional Closure	24	2044-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Transitional Closure	24	2044-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Transitional Closure	24	2044-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Transitional Closure	24	2044-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Transitional Closure	24	2044-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Transitional Closure	24	2044-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Transitional Closure	24	2045-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Transitional Closure	24	2045-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Transitional Closure	25	2045-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Transitional Closure	25	2045-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Transitional Closure	25	2045-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Transitional Closure	25	2045-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	22	2042-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Transitional Closure	22	2042-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Transitional Closure	22	2042-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Transitional Closure	22	2043-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Transitional Closure	22	2043-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Transitional Closure	23	2043-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Transitional Closure	23	2043-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Transitional Closure	23	2043-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Transitional Closure	23	2043-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Transitional Closure	23	2043-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Transitional Closure	23	2043-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Transitional Closure	23	2043-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Transitional Closure	23	2043-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Transitional Closure	23	2043-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Transitional Closure	23	2043-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Transitional Closure	23	2044-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Transitional Closure	23	2044-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Transitional Closure	24	2044-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Transitional Closure	24	2044-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Transitional Closure	24	2044-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Transitional Closure	24	2044-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Transitional Closure	24	2044-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Transitional Closure	24	2044-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Transitional Closure	24	2044-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Transitional Closure	24	2044-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Transitional Closure	24	2044-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Transitional Closure	24	2044-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Transitional Closure	24	2045-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Transitional Closure	24	2045-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Transitional Closure	25	2045-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Transitional Closure	25	2045-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Transitional Closure	25	2045-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Transitional Closure	25	2045-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Transitional Closure	22	2042-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Transitional Closure	22	2042-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Transitional Closure	22	2042-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Transitional Closure	22	2043-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Transitional Closure	22	2043-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Transitional Closure	23	2043-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Transitional Closure	23	2043-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Transitional Closure	23	2043-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Transitional Closure	23	2043-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Transitional Closure	23	2043-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Transitional Closure	23	2043-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Transitional Closure	23	2043-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Transitional Closure	23	2043-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Transitional Closure	23	2043-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Transitional Closure	23	2043-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Transitional Closure	23	2044-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Transitional Closure	23	2044-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Transitional Closure	24	2044-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Transitional Closure	24	2044-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Transitional Closure	24	2044-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Transitional Closure	24	2044-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Transitional Closure	24	2044-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Transitional Closure	24	2044-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Transitional Closure	24	2044-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Transitional Closure	24	2044-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Transitional Closure	24	2044-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Transitional Closure	24	2044-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Transitional Closure	24	2045-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Transitional Closure	24	2045-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Transitional Closure	25	2045-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Transitional Closure	25	2045-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Transitional Closure	25	2045-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Transitional Closure	25	2045-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Transitional Closure	22	2042-10-01	0.000001	0.00065	0.0021
Transitional Closure	22	2042-11-01	0.000002	0.00078	0.0024
Transitional Closure	22	2042-12-01	0.000001	0.00094	0.0037
Transitional Closure	22	2043-01-01	0.000001	0.0014	0.0029
Transitional Closure	22	2043-02-01	0.000001	0.0012	0.0035
Transitional Closure	23	2043-03-01	0.000002	0.0017	0.0031
Transitional Closure	23	2043-04-01	0.000001	0.002	0.0018
Transitional Closure	23	2043-05-01	0.0000023	0.00033	0.0017
Transitional Closure	23	2043-06-01	0.000002	0.0004	0.0018
Transitional Closure	23	2043-07-01	0.000002	0.00057	0.0023
Transitional Closure	23	2043-08-01	0.000001	0.0004	0.003
Transitional Closure	23	2043-09-01	0.000001	0.00052	0.0029
Transitional Closure	23	2043-10-01	0.000001	0.00065	0.0021
Transitional Closure	23	2043-11-01	0.000002	0.00078	0.0024
Transitional Closure	23	2043-12-01	0.000001	0.00094	0.0037
Transitional Closure	23	2044-01-01	0.000001	0.0014	0.0029
Transitional Closure	23	2044-02-01	0.000001	0.0012	0.0035
Transitional Closure	24	2044-03-01	0.000002	0.0017	0.0031
Transitional Closure	24	2044-04-01	0.000001	0.002	0.0018
Transitional Closure	24	2044-05-01	0.0000023	0.00033	0.0017
Transitional Closure	24	2044-06-01	0.000002	0.0004	0.0018
Transitional Closure	24	2044-07-01	0.000002	0.00057	0.0023
Transitional Closure	24	2044-08-01	0.000001	0.0004	0.003
Transitional Closure	24	2044-09-01	0.000001	0.00052	0.0029
Transitional Closure	24	2044-10-01	0.000001	0.00065	0.0021
Transitional Closure	24	2044-11-01	0.000002	0.00078	0.0024
Transitional Closure	24	2044-12-01	0.000001	0.00094	0.0037
Transitional Closure	24	2045-01-01	0.000001	0.0014	0.0029
Transitional Closure	24	2045-02-01	0.000001	0.0012	0.0035
Transitional Closure	25	2045-03-01	0.000002	0.0017	0.0031
Transitional Closure	25	2045-04-01	0.000001	0.002	0.0018
Transitional Closure	25	2045-05-01	0.0000023	0.00033	0.0017
Transitional Closure	25	2045-06-01	0.000002	0.0004	0.0018

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	25	2045-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	25	2045-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	25	2045-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	25	2045-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	25	2045-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	25	2045-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	25	2046-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	25	2046-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	26	2046-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Passive Closure	26	2046-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	26	2046-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	26	2046-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	26	2046-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	26	2046-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	26	2046-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	26	2046-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	26	2046-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	26	2046-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	26	2047-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	26	2047-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	27	2047-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Passive Closure	27	2047-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	27	2047-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	27	2047-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	27	2047-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	27	2047-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	27	2047-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	27	2047-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	27	2047-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	27	2047-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	27	2048-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	27	2048-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	28	2048-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	25	2045-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	25	2045-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	25	2045-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	25	2045-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	25	2045-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	25	2045-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	25	2046-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	25	2046-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	26	2046-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Passive Closure	26	2046-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	26	2046-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	26	2046-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	26	2046-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	26	2046-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	26	2046-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	26	2046-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	26	2046-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	26	2046-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	26	2047-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	26	2047-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	27	2047-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Passive Closure	27	2047-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	27	2047-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	27	2047-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	27	2047-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	27	2047-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	27	2047-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	27	2047-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	27	2047-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	27	2047-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	27	2048-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	27	2048-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	28	2048-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	25	2045-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	25	2045-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	25	2045-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	25	2045-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	25	2045-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	25	2045-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	25	2046-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	25	2046-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	26	2046-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Passive Closure	26	2046-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	26	2046-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	26	2046-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	26	2046-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	26	2046-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	26	2046-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	26	2046-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	26	2046-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	26	2046-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	26	2047-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	26	2047-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	27	2047-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Passive Closure	27	2047-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	27	2047-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	27	2047-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	27	2047-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	27	2047-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	27	2047-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	27	2047-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	27	2047-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	27	2047-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	27	2048-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	27	2048-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	28	2048-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	25	2045-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	25	2045-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	25	2045-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	25	2045-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	25	2045-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	25	2045-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	25	2046-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	25	2046-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	26	2046-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Passive Closure	26	2046-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	26	2046-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	26	2046-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	26	2046-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	26	2046-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	26	2046-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	26	2046-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	26	2046-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	26	2046-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	26	2047-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	26	2047-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	27	2047-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Passive Closure	27	2047-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	27	2047-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	27	2047-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	27	2047-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	27	2047-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	27	2047-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	27	2047-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	27	2047-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	27	2047-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	27	2048-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	27	2048-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	28	2048-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Passive Closure	25	2045-07-01	0.000002	0.00057	0.0023
Passive Closure	25	2045-08-01	0.000001	0.0004	0.003
Passive Closure	25	2045-09-01	0.000001	0.00052	0.0029
Passive Closure	25	2045-10-01	0.000001	0.00065	0.0021
Passive Closure	25	2045-11-01	0.000002	0.00078	0.0024
Passive Closure	25	2045-12-01	0.000001	0.00094	0.0037
Passive Closure	25	2046-01-01	0.000001	0.0014	0.0029
Passive Closure	25	2046-02-01	0.000001	0.0012	0.0035
Passive Closure	26	2046-03-01	0.000002	0.0017	0.0031
Passive Closure	26	2046-04-01	0.000001	0.002	0.0018
Passive Closure	26	2046-05-01	0.0000023	0.00033	0.0017
Passive Closure	26	2046-06-01	0.000002	0.0004	0.0018
Passive Closure	26	2046-07-01	0.000002	0.00057	0.0023
Passive Closure	26	2046-08-01	0.000001	0.0004	0.003
Passive Closure	26	2046-09-01	0.000001	0.00052	0.0029
Passive Closure	26	2046-10-01	0.000001	0.00065	0.0021
Passive Closure	26	2046-11-01	0.000002	0.00078	0.0024
Passive Closure	26	2046-12-01	0.000001	0.00094	0.0037
Passive Closure	26	2047-01-01	0.000001	0.0014	0.0029
Passive Closure	26	2047-02-01	0.000001	0.0012	0.0035
Passive Closure	27	2047-03-01	0.000002	0.0017	0.0031
Passive Closure	27	2047-04-01	0.000001	0.002	0.0018
Passive Closure	27	2047-05-01	0.0000023	0.00033	0.0017
Passive Closure	27	2047-06-01	0.000002	0.0004	0.0018
Passive Closure	27	2047-07-01	0.000002	0.00057	0.0023
Passive Closure	27	2047-08-01	0.000001	0.0004	0.003
Passive Closure	27	2047-09-01	0.000001	0.00052	0.0029
Passive Closure	27	2047-10-01	0.000001	0.00065	0.0021
Passive Closure	27	2047-11-01	0.000002	0.00078	0.0024
Passive Closure	27	2047-12-01	0.000001	0.00094	0.0037
Passive Closure	27	2048-01-01	0.000001	0.0014	0.0029
Passive Closure	27	2048-02-01	0.000001	0.0012	0.0035
Passive Closure	28	2048-03-01	0.000002	0.0017	0.0031

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	28	2048-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	28	2048-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	28	2048-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	28	2048-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	28	2048-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	28	2048-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	28	2048-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	28	2048-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	28	2048-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	28	2049-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	28	2049-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	29	2049-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Passive Closure	29	2049-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	29	2049-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	29	2049-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	29	2049-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	29	2049-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	29	2049-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	29	2049-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	29	2049-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	29	2049-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	29	2050-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	29	2050-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	30	2050-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Passive Closure	30	2050-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	30	2050-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	30	2050-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	30	2050-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	30	2050-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	30	2050-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	30	2050-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	30	2050-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	30	2050-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	28	2048-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	28	2048-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	28	2048-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	28	2048-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	28	2048-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	28	2048-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	28	2048-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	28	2048-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	28	2048-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	28	2049-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	28	2049-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	29	2049-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Passive Closure	29	2049-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	29	2049-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	29	2049-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	29	2049-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	29	2049-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	29	2049-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	29	2049-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	29	2049-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	29	2049-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	29	2050-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	29	2050-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	30	2050-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Passive Closure	30	2050-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	30	2050-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	30	2050-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	30	2050-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	30	2050-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	30	2050-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	30	2050-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	30	2050-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	30	2050-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	28	2048-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	28	2048-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	28	2048-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	28	2048-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	28	2048-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	28	2048-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	28	2048-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	28	2048-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	28	2048-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	28	2049-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	28	2049-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	29	2049-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Passive Closure	29	2049-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	29	2049-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	29	2049-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	29	2049-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	29	2049-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	29	2049-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	29	2049-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	29	2049-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	29	2049-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	29	2050-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	29	2050-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	30	2050-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Passive Closure	30	2050-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	30	2050-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	30	2050-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	30	2050-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	30	2050-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	30	2050-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	30	2050-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	30	2050-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	30	2050-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	28	2048-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	28	2048-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	28	2048-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	28	2048-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	28	2048-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	28	2048-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	28	2048-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	28	2048-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	28	2048-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	28	2049-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	28	2049-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	29	2049-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Passive Closure	29	2049-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	29	2049-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	29	2049-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	29	2049-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	29	2049-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	29	2049-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	29	2049-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	29	2049-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	29	2049-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	29	2050-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	29	2050-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	30	2050-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Passive Closure	30	2050-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	30	2050-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	30	2050-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	30	2050-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	30	2050-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	30	2050-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	30	2050-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	30	2050-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	30	2050-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Passive Closure	28	2048-04-01	0.000001	0.002	0.0018
Passive Closure	28	2048-05-01	0.0000023	0.00033	0.0017
Passive Closure	28	2048-06-01	0.000002	0.0004	0.0018
Passive Closure	28	2048-07-01	0.000002	0.00057	0.0023
Passive Closure	28	2048-08-01	0.000001	0.0004	0.003
Passive Closure	28	2048-09-01	0.000001	0.00052	0.0029
Passive Closure	28	2048-10-01	0.000001	0.00065	0.0021
Passive Closure	28	2048-11-01	0.000002	0.00078	0.0024
Passive Closure	28	2048-12-01	0.000001	0.00094	0.0037
Passive Closure	28	2049-01-01	0.000001	0.0014	0.0029
Passive Closure	28	2049-02-01	0.000001	0.0012	0.0035
Passive Closure	29	2049-03-01	0.000002	0.0017	0.0031
Passive Closure	29	2049-04-01	0.000001	0.002	0.0018
Passive Closure	29	2049-05-01	0.0000023	0.00033	0.0017
Passive Closure	29	2049-06-01	0.000002	0.0004	0.0018
Passive Closure	29	2049-07-01	0.000002	0.00057	0.0023
Passive Closure	29	2049-08-01	0.000001	0.0004	0.003
Passive Closure	29	2049-09-01	0.000001	0.00052	0.0029
Passive Closure	29	2049-10-01	0.000001	0.00065	0.0021
Passive Closure	29	2049-11-01	0.000002	0.00078	0.0024
Passive Closure	29	2049-12-01	0.000001	0.00094	0.0037
Passive Closure	29	2050-01-01	0.000001	0.0014	0.0029
Passive Closure	29	2050-02-01	0.000001	0.0012	0.0035
Passive Closure	30	2050-03-01	0.000002	0.0017	0.0031
Passive Closure	30	2050-04-01	0.000001	0.002	0.0018
Passive Closure	30	2050-05-01	0.0000023	0.00033	0.0017
Passive Closure	30	2050-06-01	0.000002	0.0004	0.0018
Passive Closure	30	2050-07-01	0.000002	0.00057	0.0023
Passive Closure	30	2050-08-01	0.000001	0.0004	0.003
Passive Closure	30	2050-09-01	0.000001	0.00052	0.0029
Passive Closure	30	2050-10-01	0.000001	0.00065	0.0021
Passive Closure	30	2050-11-01	0.000002	0.00078	0.0024
Passive Closure	30	2050-12-01	0.000001	0.00094	0.0037

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	30	2051-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	30	2051-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	31	2051-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Passive Closure	31	2051-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	31	2051-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	31	2051-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	31	2051-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	31	2051-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	31	2051-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	31	2051-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	31	2051-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	31	2051-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	31	2052-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	31	2052-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	32	2052-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Passive Closure	32	2052-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	32	2052-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	32	2052-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	32	2052-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	32	2052-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	32	2052-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	32	2052-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	32	2052-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	32	2052-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	32	2053-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	32	2053-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	33	2053-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Passive Closure	33	2053-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	33	2053-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	33	2053-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	33	2053-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	33	2053-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	33	2053-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	30	2051-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	30	2051-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	31	2051-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Passive Closure	31	2051-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	31	2051-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	31	2051-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	31	2051-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	31	2051-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	31	2051-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	31	2051-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	31	2051-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	31	2051-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	31	2052-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	31	2052-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	32	2052-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Passive Closure	32	2052-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	32	2052-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	32	2052-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	32	2052-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	32	2052-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	32	2052-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	32	2052-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	32	2052-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	32	2052-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	32	2053-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	32	2053-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	33	2053-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Passive Closure	33	2053-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	33	2053-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	33	2053-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	33	2053-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	33	2053-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	33	2053-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	30	2051-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	30	2051-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	31	2051-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Passive Closure	31	2051-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	31	2051-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	31	2051-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	31	2051-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	31	2051-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	31	2051-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	31	2051-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	31	2051-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	31	2051-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	31	2052-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	31	2052-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	32	2052-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Passive Closure	32	2052-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	32	2052-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	32	2052-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	32	2052-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	32	2052-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	32	2052-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	32	2052-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	32	2052-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	32	2052-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	32	2053-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	32	2053-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	33	2053-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Passive Closure	33	2053-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	33	2053-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	33	2053-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	33	2053-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	33	2053-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	33	2053-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	30	2051-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	30	2051-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	31	2051-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Passive Closure	31	2051-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	31	2051-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	31	2051-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	31	2051-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	31	2051-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	31	2051-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	31	2051-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	31	2051-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	31	2051-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	31	2052-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	31	2052-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	32	2052-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Passive Closure	32	2052-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	32	2052-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	32	2052-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	32	2052-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	32	2052-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	32	2052-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	32	2052-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	32	2052-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	32	2052-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	32	2053-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	32	2053-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	33	2053-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Passive Closure	33	2053-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	33	2053-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	33	2053-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	33	2053-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	33	2053-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	33	2053-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Passive Closure	30	2051-01-01	0.000001	0.0014	0.0029
Passive Closure	30	2051-02-01	0.000001	0.0012	0.0035
Passive Closure	31	2051-03-01	0.000002	0.0017	0.0031
Passive Closure	31	2051-04-01	0.000001	0.002	0.0018
Passive Closure	31	2051-05-01	0.0000023	0.00033	0.0017
Passive Closure	31	2051-06-01	0.000002	0.0004	0.0018
Passive Closure	31	2051-07-01	0.000002	0.00057	0.0023
Passive Closure	31	2051-08-01	0.000001	0.0004	0.003
Passive Closure	31	2051-09-01	0.000001	0.00052	0.0029
Passive Closure	31	2051-10-01	0.000001	0.00065	0.0021
Passive Closure	31	2051-11-01	0.000002	0.00078	0.0024
Passive Closure	31	2051-12-01	0.000001	0.00094	0.0037
Passive Closure	31	2052-01-01	0.000001	0.0014	0.0029
Passive Closure	31	2052-02-01	0.000001	0.0012	0.0035
Passive Closure	32	2052-03-01	0.000002	0.0017	0.0031
Passive Closure	32	2052-04-01	0.000001	0.002	0.0018
Passive Closure	32	2052-05-01	0.0000023	0.00033	0.0017
Passive Closure	32	2052-06-01	0.000002	0.0004	0.0018
Passive Closure	32	2052-07-01	0.000002	0.00057	0.0023
Passive Closure	32	2052-08-01	0.000001	0.0004	0.003
Passive Closure	32	2052-09-01	0.000001	0.00052	0.0029
Passive Closure	32	2052-10-01	0.000001	0.00065	0.0021
Passive Closure	32	2052-11-01	0.000002	0.00078	0.0024
Passive Closure	32	2052-12-01	0.000001	0.00094	0.0037
Passive Closure	32	2053-01-01	0.000001	0.0014	0.0029
Passive Closure	32	2053-02-01	0.000001	0.0012	0.0035
Passive Closure	33	2053-03-01	0.000002	0.0017	0.0031
Passive Closure	33	2053-04-01	0.000001	0.002	0.0018
Passive Closure	33	2053-05-01	0.0000023	0.00033	0.0017
Passive Closure	33	2053-06-01	0.000002	0.0004	0.0018
Passive Closure	33	2053-07-01	0.000002	0.00057	0.0023
Passive Closure	33	2053-08-01	0.000001	0.0004	0.003
Passive Closure	33	2053-09-01	0.000001	0.00052	0.0029

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Passive Closure	33	2053-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	33	2053-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	33	2053-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	33	2054-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	33	2054-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	34	2054-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Passive Closure	34	2054-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	34	2054-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	34	2054-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	34	2054-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	34	2054-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	34	2054-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	34	2054-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	34	2054-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	34	2054-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	34	2055-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	34	2055-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	35	2055-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Passive Closure	35	2055-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	35	2055-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	35	2055-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	35	2055-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	35	2055-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	35	2055-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	35	2055-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	35	2055-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	35	2055-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	35	2056-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	35	2056-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	36	2056-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Passive Closure	36	2056-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	36	2056-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	36	2056-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	33	2053-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	33	2053-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	33	2053-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	33	2054-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	33	2054-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	34	2054-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Passive Closure	34	2054-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	34	2054-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	34	2054-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	34	2054-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	34	2054-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	34	2054-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	34	2054-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	34	2054-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	34	2054-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	34	2055-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	34	2055-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	35	2055-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Passive Closure	35	2055-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	35	2055-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	35	2055-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	35	2055-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	35	2055-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	35	2055-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	35	2055-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	35	2055-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	35	2055-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	35	2056-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	35	2056-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	36	2056-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Passive Closure	36	2056-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	36	2056-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	36	2056-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	33	2053-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	33	2053-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	33	2053-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	33	2054-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	33	2054-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	34	2054-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Passive Closure	34	2054-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	34	2054-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	34	2054-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	34	2054-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	34	2054-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	34	2054-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	34	2054-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	34	2054-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	34	2054-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	34	2055-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	34	2055-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	35	2055-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Passive Closure	35	2055-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	35	2055-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	35	2055-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	35	2055-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	35	2055-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	35	2055-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	35	2055-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	35	2055-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	35	2055-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	35	2056-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	35	2056-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	36	2056-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Passive Closure	36	2056-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	36	2056-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	36	2056-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	33	2053-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	33	2053-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	33	2053-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	33	2054-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	33	2054-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	34	2054-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Passive Closure	34	2054-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	34	2054-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	34	2054-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	34	2054-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	34	2054-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	34	2054-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	34	2054-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	34	2054-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	34	2054-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	34	2055-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	34	2055-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	35	2055-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Passive Closure	35	2055-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	35	2055-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	35	2055-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	35	2055-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	35	2055-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	35	2055-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	35	2055-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	35	2055-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	35	2055-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	35	2056-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	35	2056-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	36	2056-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Passive Closure	36	2056-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	36	2056-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	36	2056-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Passive Closure	33	2053-10-01	0.000001	0.00065	0.0021
Passive Closure	33	2053-11-01	0.000002	0.00078	0.0024
Passive Closure	33	2053-12-01	0.000001	0.00094	0.0037
Passive Closure	33	2054-01-01	0.000001	0.0014	0.0029
Passive Closure	33	2054-02-01	0.000001	0.0012	0.0035
Passive Closure	34	2054-03-01	0.000002	0.0017	0.0031
Passive Closure	34	2054-04-01	0.000001	0.002	0.0018
Passive Closure	34	2054-05-01	0.0000023	0.00033	0.0017
Passive Closure	34	2054-06-01	0.000002	0.0004	0.0018
Passive Closure	34	2054-07-01	0.000002	0.00057	0.0023
Passive Closure	34	2054-08-01	0.000001	0.0004	0.003
Passive Closure	34	2054-09-01	0.000001	0.00052	0.0029
Passive Closure	34	2054-10-01	0.000001	0.00065	0.0021
Passive Closure	34	2054-11-01	0.000002	0.00078	0.0024
Passive Closure	34	2054-12-01	0.000001	0.00094	0.0037
Passive Closure	34	2055-01-01	0.000001	0.0014	0.0029
Passive Closure	34	2055-02-01	0.000001	0.0012	0.0035
Passive Closure	35	2055-03-01	0.000002	0.0017	0.0031
Passive Closure	35	2055-04-01	0.000001	0.002	0.0018
Passive Closure	35	2055-05-01	0.0000023	0.00033	0.0017
Passive Closure	35	2055-06-01	0.000002	0.0004	0.0018
Passive Closure	35	2055-07-01	0.000002	0.00057	0.0023
Passive Closure	35	2055-08-01	0.000001	0.0004	0.003
Passive Closure	35	2055-09-01	0.000001	0.00052	0.0029
Passive Closure	35	2055-10-01	0.000001	0.00065	0.0021
Passive Closure	35	2055-11-01	0.000002	0.00078	0.0024
Passive Closure	35	2055-12-01	0.000001	0.00094	0.0037
Passive Closure	35	2056-01-01	0.000001	0.0014	0.0029
Passive Closure	35	2056-02-01	0.000001	0.0012	0.0035
Passive Closure	36	2056-03-01	0.000002	0.0017	0.0031
Passive Closure	36	2056-04-01	0.000001	0.002	0.0018
Passive Closure	36	2056-05-01	0.0000023	0.00033	0.0017
Passive Closure	36	2056-06-01	0.000002	0.0004	0.0018

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	36	2056-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	36	2056-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	36	2056-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	36	2056-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	36	2056-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	36	2056-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	36	2057-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	36	2057-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	37	2057-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Passive Closure	37	2057-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	37	2057-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	37	2057-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	37	2057-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	37	2057-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	37	2057-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	37	2057-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	37	2057-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	37	2057-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	37	2058-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	37	2058-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	38	2058-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Passive Closure	38	2058-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	38	2058-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	38	2058-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	38	2058-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	38	2058-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	38	2058-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	38	2058-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	38	2058-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	38	2058-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	38	2059-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	38	2059-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	39	2059-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	36	2056-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	36	2056-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	36	2056-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	36	2056-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	36	2056-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	36	2056-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	36	2057-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	36	2057-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	37	2057-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Passive Closure	37	2057-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	37	2057-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	37	2057-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	37	2057-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	37	2057-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	37	2057-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	37	2057-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	37	2057-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	37	2057-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	37	2058-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	37	2058-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	38	2058-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Passive Closure	38	2058-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	38	2058-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	38	2058-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	38	2058-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	38	2058-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	38	2058-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	38	2058-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	38	2058-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	38	2058-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	38	2059-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	38	2059-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	39	2059-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	36	2056-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	36	2056-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	36	2056-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	36	2056-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	36	2056-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	36	2056-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	36	2057-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	36	2057-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	37	2057-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Passive Closure	37	2057-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	37	2057-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	37	2057-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	37	2057-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	37	2057-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	37	2057-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	37	2057-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	37	2057-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	37	2057-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	37	2058-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	37	2058-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	38	2058-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Passive Closure	38	2058-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	38	2058-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	38	2058-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	38	2058-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	38	2058-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	38	2058-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	38	2058-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	38	2058-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	38	2058-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	38	2059-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	38	2059-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	39	2059-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	36	2056-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	36	2056-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	36	2056-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	36	2056-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	36	2056-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	36	2056-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	36	2057-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	36	2057-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	37	2057-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Passive Closure	37	2057-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	37	2057-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	37	2057-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	37	2057-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	37	2057-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	37	2057-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	37	2057-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	37	2057-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	37	2057-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	37	2058-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	37	2058-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	38	2058-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Passive Closure	38	2058-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	38	2058-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	38	2058-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	38	2058-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	38	2058-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	38	2058-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	38	2058-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	38	2058-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	38	2058-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	38	2059-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	38	2059-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	39	2059-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Passive Closure	36	2056-07-01	0.000002	0.00057	0.0023
Passive Closure	36	2056-08-01	0.000001	0.0004	0.003
Passive Closure	36	2056-09-01	0.000001	0.00052	0.0029
Passive Closure	36	2056-10-01	0.000001	0.00065	0.0021
Passive Closure	36	2056-11-01	0.000002	0.00078	0.0024
Passive Closure	36	2056-12-01	0.000001	0.00094	0.0037
Passive Closure	36	2057-01-01	0.000001	0.0014	0.0029
Passive Closure	36	2057-02-01	0.000001	0.0012	0.0035
Passive Closure	37	2057-03-01	0.000002	0.0017	0.0031
Passive Closure	37	2057-04-01	0.000001	0.002	0.0018
Passive Closure	37	2057-05-01	0.0000023	0.00033	0.0017
Passive Closure	37	2057-06-01	0.000002	0.0004	0.0018
Passive Closure	37	2057-07-01	0.000002	0.00057	0.0023
Passive Closure	37	2057-08-01	0.000001	0.0004	0.003
Passive Closure	37	2057-09-01	0.000001	0.00052	0.0029
Passive Closure	37	2057-10-01	0.000001	0.00065	0.0021
Passive Closure	37	2057-11-01	0.000002	0.00078	0.0024
Passive Closure	37	2057-12-01	0.000001	0.00094	0.0037
Passive Closure	37	2058-01-01	0.000001	0.0014	0.0029
Passive Closure	37	2058-02-01	0.000001	0.0012	0.0035
Passive Closure	38	2058-03-01	0.000002	0.0017	0.0031
Passive Closure	38	2058-04-01	0.000001	0.002	0.0018
Passive Closure	38	2058-05-01	0.0000023	0.00033	0.0017
Passive Closure	38	2058-06-01	0.000002	0.0004	0.0018
Passive Closure	38	2058-07-01	0.000002	0.00057	0.0023
Passive Closure	38	2058-08-01	0.000001	0.0004	0.003
Passive Closure	38	2058-09-01	0.000001	0.00052	0.0029
Passive Closure	38	2058-10-01	0.000001	0.00065	0.0021
Passive Closure	38	2058-11-01	0.000002	0.00078	0.0024
Passive Closure	38	2058-12-01	0.000001	0.00094	0.0037
Passive Closure	38	2059-01-01	0.000001	0.0014	0.0029
Passive Closure	38	2059-02-01	0.000001	0.0012	0.0035
Passive Closure	39	2059-03-01	0.000002	0.0017	0.0031

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	39	2059-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	39	2059-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	39	2059-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	39	2059-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	39	2059-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	39	2059-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	39	2059-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	39	2059-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	39	2059-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	39	2060-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	39	2060-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	40	2060-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Passive Closure	40	2060-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	40	2060-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	40	2060-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	40	2060-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	40	2060-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	40	2060-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	40	2060-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	40	2060-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015
Passive Closure	40	2060-12-01	83	16	0.11	0.001	0.0068	0.0039	0.044	0.58	0.00025	0.00025	0.019
Passive Closure	40	2061-01-01	110	17	0.11	0.001	0.014	0.0035	0.051	0.57	0.00025	0.00025	0.014
Passive Closure	40	2061-02-01	97	19	0.14	0.001	0.035	0.0044	0.056	0.61	0.00025	0.00025	0.024
Passive Closure	41	2061-03-01	110	18	0.11	0.001	0.051	0.0053	0.061	0.25	0.00069	0.00054	0.0084
Passive Closure	41	2061-04-01	110	14	0.12	0.001	0.0099	0.0042	0.061	0.59	0.0005	0.00038	0.014
Passive Closure	41	2061-05-01	46	2.6	0.032	0.0021	0.0072	0.022	0.036	0.59	0.00079	0.00075	0.29
Passive Closure	41	2061-06-01	57	9.4	0.033	0.001	0.0078	0.0062	0.042	0.57	0.00067	0.00038	0.07
Passive Closure	41	2061-07-01	66	11	0.019	0.001	0.014	0.0044	0.043	0.25	0.00056	0.00062	0.035
Passive Closure	41	2061-08-01	64	9.1	0.034	0.0018	0.0025	0.0045	0.042	0.25	0.0005	0.0005	0.028
Passive Closure	41	2061-09-01	66	12	0.049	0.001	0.007	0.005	0.046	0.25	0.0005	0.0005	0.026
Passive Closure	41	2061-10-01	71	14	0.062	0.001	0.012	0.0029	0.044	0.57	0.00025	0.00025	0.027
Passive Closure	41	2061-11-01	80	16	0.097	0.001	0.007	0.0029	0.046	0.25	0.00057	0.00025	0.015

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	39	2059-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	39	2059-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	39	2059-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	39	2059-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	39	2059-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	39	2059-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	39	2059-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	39	2059-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	39	2059-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	39	2060-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	39	2060-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	40	2060-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Passive Closure	40	2060-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	40	2060-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	40	2060-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	40	2060-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	40	2060-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	40	2060-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	40	2060-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	40	2060-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039
Passive Closure	40	2060-12-01	0.000034	0.00022	0.000034	28	0.000045	0.00048	0.13	0.00005	0.052	0.0004
Passive Closure	40	2061-01-01	0.000035	0.00024	0.000049	36	0.000051	0.00036	0.17	0.000042	0.084	0.00037
Passive Closure	40	2061-02-01	0.000035	0.0003	0.000048	33	0.000074	0.00059	0.29	0.000083	0.12	0.00048
Passive Closure	41	2061-03-01	0.000042	0.00023	0.00006	37	0.00005	0.0005	0.16	0.000023	0.093	0.00048
Passive Closure	41	2061-04-01	0.000025	0.00018	0.000024	36	0.000068	0.00048	0.14	0.00011	0.06	0.00045
Passive Closure	41	2061-05-01	0.000025	0.00037	0.000054	15	0.00028	0.0017	0.22	0.00011	0.086	0.0015
Passive Closure	41	2061-06-01	0.000031	0.00024	0.000023	19	0.000066	0.00084	0.18	0.00014	0.019	0.00057
Passive Closure	41	2061-07-01	0.000028	0.00024	0.000027	22	0.000059	0.00071	0.11	0.000067	0.029	0.00053
Passive Closure	41	2061-08-01	0.000025	0.00023	0.000031	22	0.00012	0.0008	0.088	0.000078	0.021	0.0005
Passive Closure	41	2061-09-01	0.000026	0.0002	0.000028	23	0.000037	0.00058	0.088	0.000045	0.019	0.00047
Passive Closure	41	2061-10-01	0.00003	0.00021	0.000026	24	0.000035	0.0005	0.078	0.000058	0.023	0.00048
Passive Closure	41	2061-11-01	0.000033	0.00018	0.000031	27	0.000038	0.00047	0.1	0.000077	0.041	0.00039

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	39	2059-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	39	2059-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	39	2059-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	39	2059-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	39	2059-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	39	2059-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	39	2059-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	39	2059-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	39	2059-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	39	2060-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	39	2060-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	40	2060-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Passive Closure	40	2060-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	40	2060-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	40	2060-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	40	2060-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	40	2060-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	40	2060-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	40	2060-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	40	2060-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021
Passive Closure	40	2060-12-01	0.0000025	0.0003	0.000001	0.0011	0.0038	3.1	0.0047	0.000029	0.00016	0.000034
Passive Closure	40	2061-01-01	0.0000025	0.00029	0.000001	0.0014	0.0039	2.3	0.0038	0.000035	0.00019	0.00004
Passive Closure	40	2061-02-01	0.0000025	0.00031	0.000001	0.0012	0.0046	2.4	0.0035	0.00003	0.00018	0.000052
Passive Closure	41	2061-03-01	0.0000025	0.00032	0.000002	0.0017	0.0032	3.3	0.0035	0.000039	0.00019	0.00003
Passive Closure	41	2061-04-01	0.0000038	0.00024	0.000002	0.0019	0.0032	3.4	0.0059	0.000032	0.00019	0.00002
Passive Closure	41	2061-05-01	0.000005	0.00015	0.0000047	0.0004	0.0078	9.7	0.035	0.00001	0.0002	0.000016
Passive Closure	41	2061-06-01	0.0000055	0.00014	0.000003	0.00043	0.0043	3.8	0.013	0.000027	0.00018	0.000013
Passive Closure	41	2061-07-01	0.0000038	0.00016	0.0000023	0.00057	0.0037	3.9	0.0083	0.000032	0.00022	0.000013
Passive Closure	41	2061-08-01	0.0000038	0.00012	0.000001	0.00046	0.0045	4.6	0.009	0.000028	0.00019	0.000012
Passive Closure	41	2061-09-01	0.0000025	0.00014	0.000002	0.00054	0.004	4	0.0092	0.000027	0.00016	0.00002
Passive Closure	41	2061-10-01	0.0000025	0.00017	0.000001	0.00068	0.0032	3.5	0.0067	0.000027	0.00019	0.000019
Passive Closure	41	2061-11-01	0.0000025	0.00024	0.000001	0.0008	0.0035	2.5	0.0055	0.00003	0.00015	0.000021

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Passive Closure	39	2059-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	39	2059-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	39	2059-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	39	2059-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	39	2059-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	39	2059-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	39	2059-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	39	2059-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	39	2059-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	39	2060-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	39	2060-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	40	2060-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Passive Closure	40	2060-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	40	2060-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	40	2060-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	40	2060-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	40	2060-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	40	2060-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	40	2060-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	40	2060-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025
Passive Closure	40	2060-12-01	28	0.000032	0.0004	0.044	0.000024	0.039	0.0004	0.0000025	0.00031
Passive Closure	40	2061-01-01	36	0.000043	0.00034	0.059	0.0000064	0.083	0.00044	0.0000025	0.00028
Passive Closure	40	2061-02-01	34	0.000045	0.00046	0.052	0.00003	0.089	0.00037	0.0000025	0.0003
Passive Closure	41	2061-03-01	40	0.000043	0.00042	0.07	0.000012	0.081	0.00042	0.0000025	0.00029
Passive Closure	41	2061-04-01	38	0.000024	0.00036	0.066	0.0000056	0.034	0.00044	0.0000025	0.00026
Passive Closure	41	2061-05-01	14	0.000033	0.00085	0.1	0.000016	0.026	0.00074	0.0000038	0.00011
Passive Closure	41	2061-06-01	19	0.000018	0.0007	0.036	0.000014	0.0064	0.00048	0.0000038	0.00012
Passive Closure	41	2061-07-01	22	0.000021	0.00054	0.033	0.0000078	0.011	0.0005	0.0000025	0.00014
Passive Closure	41	2061-08-01	22	0.00011	0.0005	0.03	0.000035	0.013	0.0005	0.0000038	0.00013
Passive Closure	41	2061-09-01	22	0.000023	0.0005	0.035	0.000014	0.012	0.00044	0.0000025	0.00015
Passive Closure	41	2061-10-01	23	0.000015	0.00044	0.02	0.000005	0.0097	0.00039	0.0000025	0.00017
Passive Closure	41	2061-11-01	27	0.000025	0.00042	0.031	0.000046	0.025	0.00036	0.0000025	0.00025

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	Year	Date	mg/L	mg/L	mg/L
Passive Closure	39	2059-04-01	0.000001	0.002	0.0018
Passive Closure	39	2059-05-01	0.0000023	0.00033	0.0017
Passive Closure	39	2059-06-01	0.000002	0.0004	0.0018
Passive Closure	39	2059-07-01	0.000002	0.00057	0.0023
Passive Closure	39	2059-08-01	0.000001	0.0004	0.003
Passive Closure	39	2059-09-01	0.000001	0.00052	0.0029
Passive Closure	39	2059-10-01	0.000001	0.00065	0.0021
Passive Closure	39	2059-11-01	0.000002	0.00078	0.0024
Passive Closure	39	2059-12-01	0.000001	0.00094	0.0037
Passive Closure	39	2060-01-01	0.000001	0.0014	0.0029
Passive Closure	39	2060-02-01	0.000001	0.0012	0.0035
Passive Closure	40	2060-03-01	0.000002	0.0017	0.0031
Passive Closure	40	2060-04-01	0.000001	0.002	0.0018
Passive Closure	40	2060-05-01	0.0000023	0.00033	0.0017
Passive Closure	40	2060-06-01	0.000002	0.0004	0.0018
Passive Closure	40	2060-07-01	0.000002	0.00057	0.0023
Passive Closure	40	2060-08-01	0.000001	0.0004	0.003
Passive Closure	40	2060-09-01	0.000001	0.00052	0.0029
Passive Closure	40	2060-10-01	0.000001	0.00065	0.0021
Passive Closure	40	2060-11-01	0.000002	0.00078	0.0024
Passive Closure	40	2060-12-01	0.000001	0.00094	0.0037
Passive Closure	40	2061-01-01	0.000001	0.0014	0.0029
Passive Closure	40	2061-02-01	0.000001	0.0012	0.0035
Passive Closure	41	2061-03-01	0.000002	0.0017	0.0031
Passive Closure	41	2061-04-01	0.000001	0.002	0.0018
Passive Closure	41	2061-05-01	0.0000023	0.00033	0.0017
Passive Closure	41	2061-06-01	0.000002	0.0004	0.0018
Passive Closure	41	2061-07-01	0.000002	0.00057	0.0023
Passive Closure	41	2061-08-01	0.000001	0.0004	0.003
Passive Closure	41	2061-09-01	0.000001	0.00052	0.0029
Passive Closure	41	2061-10-01	0.000001	0.00065	0.0021
Passive Closure	41	2061-11-01	0.000002	0.00078	0.0024

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Receiving Environment Water Quality Model - KZ-13 - Dry Year -1 Model													
Construction	-1	2020-03-01	130	27	0.13	0.001	0.038	0.0041	0.062	0.34	0.00055	0.00043	0.0076
Construction	-1	2020-04-01	130	21	0.13	0.0013	0.011	0.0033	0.061	0.63	0.00047	0.00033	0.015
Construction	-1	2020-05-01	57	7.7	0.035	0.0018	0.0076	0.019	0.04	0.68	0.00074	0.00065	0.21
Construction	-1	2020-06-01	72	16	0.033	0.001	0.0078	0.0047	0.042	0.55	0.00066	0.00044	0.049
Construction	-1	2020-07-01	88	19	0.024	0.001	0.015	0.0039	0.045	0.29	0.00043	0.00058	0.028
Construction	-1	2020-08-01	87	17	0.037	0.0017	0.0041	0.0044	0.044	0.33	0.00049	0.00048	0.024
Construction	-1	2020-09-01	85	19	0.054	0.0011	0.0065	0.0042	0.048	0.34	0.00052	0.00051	0.023
Construction	-1	2020-10-01	90	20	0.072	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00027	0.023
Construction	-1	2020-11-01	100	24	0.11	0.0011	0.0088	0.0032	0.052	0.32	0.0005	0.00029	0.013
Construction	-1	2020-12-01	110	24	0.12	0.001	0.0085	0.0032	0.049	0.49	0.00025	0.00025	0.016
Construction	-1	2021-01-01	130	26	0.13	0.001	0.017	0.0031	0.055	0.49	0.00027	0.00028	0.019
Construction	-1	2021-02-01	120	28	0.15	0.001	0.028	0.0051	0.06	0.55	0.00027	0.00029	0.018
Receiving Environment Water Quality Model - KZ-13 - Wet Year -1 Model													
Construction	-1	2020-03-01	130	27	0.13	0.001	0.039	0.0041	0.062	0.33	0.00055	0.00044	0.0076
Construction	-1	2020-04-01	130	21	0.13	0.0013	0.011	0.0033	0.061	0.63	0.00047	0.00033	0.015
Construction	-1	2020-05-01	54	6.6	0.035	0.0019	0.0075	0.019	0.039	0.66	0.00075	0.00067	0.23
Construction	-1	2020-06-01	70	15	0.033	0.001	0.0078	0.0049	0.042	0.56	0.00066	0.00043	0.051
Construction	-1	2020-07-01	84	18	0.023	0.001	0.015	0.004	0.045	0.28	0.00045	0.00058	0.03
Construction	-1	2020-08-01	85	16	0.037	0.0017	0.004	0.0044	0.044	0.33	0.00049	0.00049	0.024
Construction	-1	2020-09-01	86	19	0.054	0.0011	0.0065	0.0041	0.048	0.34	0.00052	0.00052	0.023
Construction	-1	2020-10-01	90	20	0.072	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Construction	-1	2020-11-01	100	23	0.11	0.0011	0.0087	0.0032	0.051	0.32	0.0005	0.00029	0.013
Construction	-1	2020-12-01	110	24	0.12	0.001	0.0084	0.0032	0.049	0.5	0.00025	0.00025	0.016
Construction	-1	2021-01-01	130	26	0.13	0.001	0.017	0.0031	0.055	0.49	0.00027	0.00028	0.019
Construction	-1	2021-02-01	120	28	0.15	0.001	0.028	0.0051	0.06	0.55	0.00027	0.00029	0.018
Receiving Environment Water Quality Model - KZ-13 - Dry Year 2 Model													
Production	2	2022-03-01	130	27	0.14	0.001	0.038	0.0041	0.063	0.34	0.00054	0.00043	0.0076
Production	2	2022-04-01	130	21	0.13	0.0013	0.011	0.0034	0.061	0.63	0.00047	0.00033	0.015
Production	2	2022-05-01	57	7.6	0.035	0.0018	0.0076	0.019	0.039	0.68	0.00074	0.00065	0.22

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Receiving Environment Water Quality Model - KZ-13 - Dry Year -1 Model												**Receiving Environm**
Construction	-1	2020-03-01	0.000037	0.0002	0.000096	43	0.000044	0.00043	0.15	0.000042	0.069	0.00041
Construction	-1	2020-04-01	0.000029	0.00018	0.000058	42	0.000062	0.00054	0.16	0.00013	0.048	0.00045
Construction	-1	2020-05-01	0.000029	0.00034	0.000078	19	0.00021	0.0018	0.22	0.00019	0.064	0.0012
Construction	-1	2020-06-01	0.000033	0.00021	0.000062	24	0.000057	0.0009	0.15	0.00015	0.016	0.00054
Construction	-1	2020-07-01	0.000038	0.00021	0.00009	30	0.000046	0.00077	0.12	0.000084	0.022	0.00045
Construction	-1	2020-08-01	0.000033	0.00021	0.000075	29	0.00012	0.00077	0.094	0.000091	0.018	0.00047
Construction	-1	2020-09-01	0.00003	0.00018	0.000066	29	0.000044	0.00067	0.097	0.00007	0.018	0.00046
Construction	-1	2020-10-01	0.000029	0.0002	0.000072	31	0.000035	0.00052	0.093	0.000077	0.022	0.00044
Construction	-1	2020-11-01	0.000032	0.00018	0.000078	35	0.000041	0.00045	0.13	0.000085	0.042	0.00037
Construction	-1	2020-12-01	0.000033	0.0002	0.000079	37	0.000047	0.00043	0.15	0.000066	0.048	0.00038
Construction	-1	2021-01-01	0.000032	0.00027	0.000099	43	0.000064	0.00042	0.28	0.00011	0.075	0.00039
Construction	-1	2021-02-01	0.00003	0.00025	0.000095	41	0.000061	0.0005	0.25	0.000085	0.087	0.00042
Receiving Environment Water Quality Model - KZ-13 - Wet Year -1 Model												**Receiving Environm**
Construction	-1	2020-03-01	0.000037	0.0002	0.000095	43	0.000045	0.00044	0.15	0.000042	0.069	0.00041
Construction	-1	2020-04-01	0.000029	0.00018	0.000057	42	0.000062	0.00054	0.16	0.00013	0.048	0.00045
Construction	-1	2020-05-01	0.000028	0.00035	0.000073	18	0.00022	0.0018	0.22	0.00017	0.069	0.0013
Construction	-1	2020-06-01	0.000033	0.00021	0.000058	24	0.000058	0.00089	0.16	0.00014	0.016	0.00054
Construction	-1	2020-07-01	0.000036	0.00022	0.000079	29	0.000048	0.00076	0.11	0.000081	0.023	0.00047
Construction	-1	2020-08-01	0.000032	0.00021	0.000072	29	0.00012	0.00077	0.094	0.00009	0.018	0.00048
Construction	-1	2020-09-01	0.00003	0.00018	0.000068	29	0.000045	0.00067	0.097	0.000071	0.018	0.00046
Construction	-1	2020-10-01	0.000029	0.0002	0.000071	30	0.000035	0.00052	0.092	0.000076	0.022	0.00044
Construction	-1	2020-11-01	0.000032	0.00018	0.000076	34	0.000041	0.00045	0.13	0.000085	0.042	0.00037
Construction	-1	2020-12-01	0.000033	0.0002	0.000078	37	0.000047	0.00044	0.15	0.000065	0.048	0.00038
Construction	-1	2021-01-01	0.000032	0.00027	0.000099	43	0.000064	0.00042	0.28	0.00011	0.075	0.00039
Construction	-1	2021-02-01	0.00003	0.00025	0.000096	41	0.000061	0.0005	0.25	0.000085	0.086	0.00042
Receiving Environment Water Quality Model - KZ-13 - Dry Year 2 Model												**Receiving Environn**
Production	2	2022-03-01	0.000036	0.0002	0.000097	43	0.000044	0.00043	0.15	0.000043	0.068	0.00041
Production	2	2022-04-01	0.000029	0.00018	0.000057	42	0.000062	0.00054	0.16	0.00013	0.048	0.00045
Production	2	2022-05-01	0.000029	0.00034	0.000078	19	0.00021	0.0018	0.22	0.00018	0.065	0.0012

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Receiving Environment Water Quality Model - KZ-13 - Dry Year -1 Model			**ıent Water Quality Model - KZ-13 - Dry Year -1 Model**									
Construction	-1	2020-03-01	0.0000025	0.00083	0.000002	0.0021	0.012	2.2	0.0031	0.000036	0.00015	0.000078
Construction	-1	2020-04-01	0.0000036	0.00076	0.0000019	0.0022	0.01	2.8	0.0059	0.000034	0.00015	0.000052
Construction	-1	2020-05-01	0.0000047	0.00035	0.0000043	0.00059	0.012	8.3	0.029	0.000018	0.0002	0.000044
Construction	-1	2020-06-01	0.0000043	0.00028	0.0000031	0.00056	0.011	3.1	0.011	0.00003	0.00015	0.000052
Construction	-1	2020-07-01	0.0000051	0.00035	0.0000028	0.00073	0.013	3.1	0.0064	0.000037	0.00018	0.000068
Construction	-1	2020-08-01	0.0000036	0.00023	0.0000018	0.00065	0.0094	3.7	0.0082	0.000034	0.00017	0.000052
Construction	-1	2020-09-01	0.0000026	0.00027	0.0000023	0.00075	0.0097	3.3	0.0078	0.00003	0.00015	0.000049
Construction	-1	2020-10-01	0.0000025	0.00041	0.0000013	0.00093	0.01	3	0.0056	0.000027	0.00016	0.000055
Construction	-1	2020-11-01	0.0000025	0.00058	0.0000012	0.0011	0.013	2	0.0046	0.000029	0.00013	0.000051
Construction	-1	2020-12-01	0.0000025	0.00067	0.0000014	0.0015	0.015	2.4	0.0036	0.000028	0.00013	0.000061
Construction	-1	2021-01-01	0.0000027	0.00074	0.0000016	0.0018	0.016	1.8	0.0032	0.000032	0.00015	0.000063
Construction	-1	2021-02-01	0.0000025	0.00082	0.0000012	0.0017	0.014	1.7	0.003	0.000028	0.00014	0.000076
Receiving Environment Water Quality Model - KZ-13 - Wet Year -1 Model			**ent Water Quality Model - KZ-13 - Wet Year -1 Model**									
Construction	-1	2020-03-01	0.0000025	0.00082	0.000002	0.0021	0.012	2.2	0.0031	0.000036	0.00016	0.000077
Construction	-1	2020-04-01	0.0000036	0.00075	0.0000019	0.0022	0.0099	2.9	0.0059	0.000034	0.00015	0.000051
Construction	-1	2020-05-01	0.0000048	0.00031	0.0000044	0.00055	0.011	8.6	0.03	0.000016	0.0002	0.000038
Construction	-1	2020-06-01	0.0000045	0.00027	0.0000031	0.00055	0.011	3.1	0.012	0.000029	0.00016	0.000048
Construction	-1	2020-07-01	0.0000049	0.00031	0.0000027	0.0007	0.012	3.2	0.0067	0.000036	0.00019	0.000059
Construction	-1	2020-08-01	0.0000036	0.00023	0.0000018	0.00064	0.0092	3.7	0.0082	0.000034	0.00017	0.00005
Construction	-1	2020-09-01	0.0000026	0.00027	0.0000023	0.00076	0.0099	3.3	0.0077	0.00003	0.00015	0.00005
Construction	-1	2020-10-01	0.0000025	0.00041	0.0000013	0.00093	0.01	3	0.0056	0.000027	0.00016	0.000054
Construction	-1	2020-11-01	0.0000025	0.00057	0.0000012	0.0011	0.012	2.1	0.0047	0.000029	0.00013	0.000049
Construction	-1	2020-12-01	0.0000025	0.00066	0.0000013	0.0015	0.014	2.5	0.0036	0.000028	0.00013	0.00006
Construction	-1	2021-01-01	0.0000027	0.00074	0.0000016	0.0018	0.016	1.8	0.0032	0.000032	0.00015	0.000063
Construction	-1	2021-02-01	0.0000025	0.00083	0.0000012	0.0017	0.014	1.6	0.0029	0.000028	0.00014	0.000077
Receiving Environment Water Quality Model - KZ-13 - Dry Year 2 Model			**ıent Water Quality Model - KZ-13 - Dry Year 2 Model**									
Production	2	2022-03-01	0.0000025	0.00084	0.000002	0.0021	0.012	2.2	0.0031	0.000036	0.00015	0.000079
Production	2	2022-04-01	0.0000036	0.00075	0.0000019	0.0022	0.0098	2.9	0.0059	0.000034	0.00015	0.000051
Production	2	2022-05-01	0.0000047	0.00035	0.0000043	0.00059	0.012	8.3	0.029	0.000018	0.0002	0.000043

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Calcium (Ca), dissolved mg/L	Cobalt (Co), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Manganese (Mn), dissolved mg/L	Nickel (Ni), dissolved mg/L	Silver (Ag), dissolved mg/L	Selenium (Se), dissolved mg/L
Receiving Environment Water Quality Model - KZ-13 - Dry Year -1 Model											
Construction	-1	2020-03-01	46	0.000037	0.00038	0.047	0.000013	0.064	0.0004	0.0000025	0.00084
Construction	-1	2020-04-01	44	0.000026	0.00044	0.052	0.0000099	0.029	0.0004	0.0000025	0.00078
Construction	-1	2020-05-01	18	0.000033	0.0012	0.099	0.000031	0.022	0.00069	0.0000042	0.0003
Construction	-1	2020-06-01	24	0.000017	0.00078	0.033	0.000021	0.005	0.00048	0.0000036	0.00027
Construction	-1	2020-07-01	30	0.000016	0.00054	0.029	0.000022	0.0071	0.00042	0.0000025	0.00035
Construction	-1	2020-08-01	29	0.0001	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00023
Construction	-1	2020-09-01	29	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00027
Construction	-1	2020-10-01	29	0.000015	0.00042	0.02	0.0000081	0.0087	0.00036	0.0000025	0.0004
Construction	-1	2020-11-01	34	0.000029	0.00039	0.026	0.000035	0.029	0.00035	0.0000025	0.00057
Construction	-1	2020-12-01	37	0.000034	0.00036	0.038	0.000019	0.038	0.00037	0.0000025	0.00069
Construction	-1	2021-01-01	43	0.000038	0.00031	0.04	0.000013	0.064	0.00038	0.0000025	0.00073
Construction	-1	2021-02-01	42	0.000037	0.00041	0.033	0.000025	0.064	0.00035	0.0000025	0.00081
Receiving Environment Water Quality Model - KZ-13 - Wet Year -1 Model											
Construction	-1	2020-03-01	46	0.000037	0.00038	0.048	0.000013	0.064	0.0004	0.0000025	0.00083
Construction	-1	2020-04-01	43	0.000026	0.00044	0.052	0.0000098	0.029	0.0004	0.0000025	0.00077
Construction	-1	2020-05-01	17	0.000033	0.0012	0.099	0.000028	0.022	0.0007	0.0000041	0.00026
Construction	-1	2020-06-01	24	0.000017	0.00077	0.033	0.000021	0.0051	0.00048	0.0000036	0.00026
Construction	-1	2020-07-01	29	0.000017	0.00054	0.03	0.00002	0.0078	0.00043	0.0000025	0.00031
Construction	-1	2020-08-01	29	0.00011	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00022
Construction	-1	2020-09-01	29	0.000029	0.00052	0.035	0.00002	0.011	0.00042	0.0000026	0.00027
Construction	-1	2020-10-01	29	0.000015	0.00042	0.02	0.000008	0.0087	0.00036	0.0000025	0.00039
Construction	-1	2020-11-01	34	0.000029	0.00039	0.026	0.000036	0.028	0.00035	0.0000025	0.00055
Construction	-1	2020-12-01	36	0.000033	0.00036	0.038	0.000019	0.038	0.00037	0.0000025	0.00068
Construction	-1	2021-01-01	43	0.000038	0.00031	0.04	0.000013	0.064	0.00038	0.0000025	0.00073
Construction	-1	2021-02-01	42	0.000037	0.00041	0.033	0.000025	0.064	0.00035	0.0000025	0.00082
Receiving Environment Water Quality Model - KZ-13 - Dry Year 2 Model											
Production	2	2022-03-01	46	0.000037	0.00038	0.046	0.000013	0.063	0.00039	0.0000025	0.00085
Production	2	2022-04-01	43	0.000026	0.00044	0.052	0.0000098	0.029	0.0004	0.0000025	0.00076
Production	2	2022-05-01	18	0.000033	0.0012	0.099	0.000031	0.022	0.00069	0.0000041	0.0003

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Thallium (Tl), dissolved mg/L	Uranium (U), dissolved mg/L	Zinc (Zn), dissolved mg/L
Receiving Environment Water Quality Model - KZ-13 - Dry Year -1 Model					
Construction	-1	2020-03-01	0.0000023	0.0023	0.015
Construction	-1	2020-04-01	0.0000013	0.0022	0.0082
Construction	-1	2020-05-01	0.000003	0.00055	0.0064
Construction	-1	2020-06-01	0.0000025	0.00053	0.0089
Construction	-1	2020-07-01	0.0000022	0.00072	0.011
Construction	-1	2020-08-01	0.0000017	0.0006	0.0072
Construction	-1	2020-09-01	0.0000013	0.00071	0.0076
Construction	-1	2020-10-01	0.0000014	0.00091	0.0077
Construction	-1	2020-11-01	0.0000022	0.0011	0.011
Construction	-1	2020-12-01	0.0000013	0.0014	0.012
Construction	-1	2021-01-01	0.0000012	0.0018	0.011
Construction	-1	2021-02-01	0.0000012	0.0017	0.011
Receiving Environment Water Quality Model - KZ-13 - Wet Year -1 Model					
Construction	-1	2020-03-01	0.0000023	0.0023	0.014
Construction	-1	2020-04-01	0.0000013	0.0022	0.0081
Construction	-1	2020-05-01	0.0000029	0.00051	0.0054
Construction	-1	2020-06-01	0.0000024	0.00052	0.0082
Construction	-1	2020-07-01	0.0000022	0.00069	0.0092
Construction	-1	2020-08-01	0.0000017	0.00059	0.007
Construction	-1	2020-09-01	0.0000013	0.00072	0.0078
Construction	-1	2020-10-01	0.0000014	0.0009	0.0076
Construction	-1	2020-11-01	0.0000022	0.0011	0.01
Construction	-1	2020-12-01	0.0000013	0.0014	0.012
Construction	-1	2021-01-01	0.0000012	0.0018	0.011
Construction	-1	2021-02-01	0.0000012	0.0017	0.011
Receiving Environment Water Quality Model - KZ-13 - Dry Year 2 Model					
Production	2	2022-03-01	0.0000023	0.0023	0.015
Production	2	2022-04-01	0.0000013	0.0022	0.008
Production	2	2022-05-01	0.000003	0.00055	0.0063

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Hardness (from total) mg/L	Sulphate, dissolved mg/L	Nitrate (N) mg/L	Nitrite (N) mg/L	Ammonia (N) mg/L	Phosphorus (P) mg/L	Fluoride (F) mg/L	Chloride (Cl) mg/L	Cyanide, total mg/L	Cyanide, Weak Acid Dissociable mg/L	Aluminum (Al), total mg/L
Production	2	2022-06-01	72	15	0.033	0.001	0.0078	0.0047	0.042	0.56	0.00066	0.00044	0.05
Production	2	2022-07-01	87	19	0.024	0.001	0.015	0.0039	0.045	0.29	0.00043	0.00058	0.028
Production	2	2022-08-01	86	16	0.037	0.0017	0.0041	0.0044	0.044	0.33	0.00049	0.00048	0.024
Production	2	2022-09-01	85	19	0.054	0.0011	0.0065	0.0042	0.048	0.33	0.00052	0.00051	0.023
Production	2	2022-10-01	90	20	0.072	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Production	2	2022-11-01	100	23	0.11	0.0011	0.0087	0.0031	0.051	0.32	0.0005	0.00029	0.013
Production	2	2022-12-01	110	23	0.12	0.001	0.0083	0.0033	0.048	0.5	0.00025	0.00025	0.017
Production	2	2023-01-01	130	25	0.12	0.001	0.016	0.0031	0.055	0.5	0.00027	0.00027	0.018
Production	2	2023-02-01	120	26	0.15	0.001	0.029	0.005	0.059	0.56	0.00027	0.00028	0.019
Receiving Environment Water Quality Model - KZ-13 - Wet Year 2 Model													
Production	2	2022-03-01	130	27	0.13	0.001	0.038	0.0041	0.062	0.34	0.00055	0.00043	0.0076
Production	2	2022-04-01	120	21	0.13	0.0013	0.011	0.0034	0.061	0.63	0.00047	0.00033	0.015
Production	2	2022-05-01	54	6.5	0.035	0.0019	0.0075	0.019	0.039	0.66	0.00075	0.00067	0.23
Production	2	2022-06-01	70	15	0.033	0.001	0.0078	0.0049	0.042	0.56	0.00066	0.00043	0.051
Production	2	2022-07-01	84	18	0.023	0.001	0.015	0.004	0.045	0.28	0.00045	0.00058	0.029
Production	2	2022-08-01	86	16	0.037	0.0017	0.0041	0.0044	0.044	0.33	0.00049	0.00049	0.024
Production	2	2022-09-01	86	19	0.054	0.0011	0.0065	0.0041	0.048	0.34	0.00052	0.00052	0.023
Production	2	2022-10-01	90	20	0.072	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Production	2	2022-11-01	100	23	0.11	0.0011	0.0086	0.0031	0.051	0.32	0.0005	0.00029	0.013
Production	2	2022-12-01	110	23	0.12	0.001	0.0083	0.0033	0.048	0.5	0.00025	0.00025	0.017
Production	2	2023-01-01	130	25	0.13	0.001	0.016	0.0031	0.055	0.5	0.00027	0.00027	0.018
Production	2	2023-02-01	120	26	0.15	0.001	0.029	0.005	0.059	0.56	0.00027	0.00028	0.019
Receiving Environment Water Quality Model - KZ-13 - Dry Year 9 Model													
Production	9	2029-03-01	130	26	0.13	0.001	0.04	0.0042	0.062	0.33	0.00056	0.00044	0.0077
Production	9	2029-04-01	120	20	0.13	0.0012	0.01	0.0035	0.061	0.62	0.00047	0.00033	0.015
Production	9	2029-05-01	56	7.5	0.035	0.0018	0.0076	0.019	0.039	0.68	0.00074	0.00065	0.22
Production	9	2029-06-01	72	16	0.033	0.001	0.0078	0.0047	0.042	0.55	0.00066	0.00044	0.049
Production	9	2029-07-01	88	19	0.024	0.001	0.015	0.0039	0.045	0.29	0.00043	0.00058	0.028
Production	9	2029-08-01	86	16	0.037	0.0017	0.0041	0.0044	0.044	0.33	0.00049	0.00048	0.024
Production	9	2029-09-01	85	19	0.054	0.0011	0.0065	0.0042	0.048	0.33	0.00052	0.00051	0.023
Production	9	2029-10-01	89	20	0.071	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Antimony (Sb), total	Arsenic (As), total	Cadmium (Cd), total	Calcium (Ca), total	Cobalt (Co), total	Copper (Cu), total	Iron (Fe), total	Lead (Pb), total	Manganese (Mn), total	Nickel (Ni), total
Phase	**Year**	**Date**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Production	2	2022-06-01	0.000033	0.00021	0.000061	24	0.000057	0.0009	0.15	0.00015	0.016	0.00054
Production	2	2022-07-01	0.000038	0.00021	0.000089	30	0.000046	0.00077	0.12	0.000084	0.022	0.00045
Production	2	2022-08-01	0.000033	0.00021	0.000074	29	0.00012	0.00077	0.094	0.000091	0.018	0.00048
Production	2	2022-09-01	0.00003	0.00018	0.000065	29	0.000044	0.00067	0.096	0.00007	0.018	0.00046
Production	2	2022-10-01	0.000029	0.0002	0.000071	30	0.000035	0.00052	0.092	0.000076	0.022	0.00044
Production	2	2022-11-01	0.000032	0.00018	0.000075	34	0.000041	0.00045	0.13	0.000085	0.042	0.00037
Production	2	2022-12-01	0.000033	0.0002	0.000075	36	0.000047	0.00044	0.15	0.000064	0.049	0.00038
Production	2	2023-01-01	0.000033	0.00027	0.000093	42	0.000062	0.00041	0.27	0.000098	0.076	0.00038
Production	2	2023-02-01	0.000031	0.00026	0.000087	40	0.000063	0.00052	0.26	0.000085	0.092	0.00043
Receiving Environment Water Quality Model - KZ-13 - Wet Year 2 Model												**Receiving Environm**
Production	2	2022-03-01	0.000037	0.0002	0.000096	43	0.000044	0.00043	0.15	0.000042	0.069	0.00041
Production	2	2022-04-01	0.000029	0.00018	0.000056	42	0.000063	0.00054	0.16	0.00013	0.049	0.00045
Production	2	2022-05-01	0.000028	0.00035	0.000073	18	0.00022	0.0018	0.22	0.00017	0.069	0.0013
Production	2	2022-06-01	0.000033	0.00021	0.000058	24	0.000058	0.00089	0.16	0.00014	0.016	0.00054
Production	2	2022-07-01	0.000036	0.00022	0.000079	29	0.000048	0.00076	0.11	0.000081	0.023	0.00046
Production	2	2022-08-01	0.000032	0.00021	0.000073	29	0.00012	0.00077	0.094	0.00009	0.018	0.00048
Production	2	2022-09-01	0.00003	0.00018	0.000068	29	0.000045	0.00067	0.097	0.000071	0.018	0.00046
Production	2	2022-10-01	0.000029	0.0002	0.000071	30	0.000035	0.00052	0.092	0.000076	0.022	0.00044
Production	2	2022-11-01	0.000032	0.00018	0.000075	34	0.000041	0.00045	0.13	0.000085	0.042	0.00037
Production	2	2022-12-01	0.000033	0.0002	0.000075	36	0.000047	0.00044	0.15	0.000064	0.049	0.00038
Production	2	2023-01-01	0.000033	0.00027	0.000094	42	0.000062	0.00042	0.27	0.0001	0.076	0.00038
Production	2	2023-02-01	0.000031	0.00026	0.000089	40	0.000063	0.00052	0.26	0.000085	0.091	0.00043
Receiving Environment Water Quality Model - KZ-13 - Dry Year 9 Model												**Receiving Environn**
Production	9	2029-03-01	0.000037	0.0002	0.000092	42	0.000045	0.00044	0.15	0.00004	0.071	0.00042
Production	9	2029-04-01	0.000028	0.00018	0.000052	41	0.000063	0.00053	0.16	0.00013	0.05	0.00045
Production	9	2029-05-01	0.000029	0.00034	0.000078	19	0.00021	0.0018	0.22	0.00018	0.065	0.0012
Production	9	2029-06-01	0.000033	0.00021	0.000062	24	0.000057	0.0009	0.15	0.00015	0.016	0.00054
Production	9	2029-07-01	0.000038	0.00021	0.00009	30	0.000046	0.00077	0.12	0.000084	0.022	0.00045
Production	9	2029-08-01	0.000033	0.00021	0.000074	29	0.00012	0.00077	0.094	0.000091	0.018	0.00048
Production	9	2029-09-01	0.00003	0.00018	0.000065	29	0.000044	0.00067	0.096	0.000069	0.018	0.00046
Production	9	2029-10-01	0.000029	0.0002	0.000069	30	0.000035	0.00052	0.092	0.000075	0.022	0.00045

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Silver (Ag), total mg/L	Selenium (Se), total mg/L	Thallium (Tl), total mg/L	Uranium (U), total mg/L	Zinc (Zn), total mg/L	Dissolved Organic Carbon mg/L	Aluminum (Al), dissolved mg/L	Antimony (Sb), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L
Production	2	2022-06-01	0.0000043	0.00028	0.0000031	0.00056	0.011	3.1	0.011	0.00003	0.00015	0.000052
Production	2	2022-07-01	0.0000051	0.00034	0.0000028	0.00073	0.013	3.1	0.0064	0.000037	0.00018	0.000067
Production	2	2022-08-01	0.0000036	0.00023	0.0000018	0.00065	0.0094	3.7	0.0082	0.000034	0.00017	0.000052
Production	2	2022-09-01	0.0000026	0.00027	0.0000023	0.00074	0.0095	3.3	0.0078	0.00003	0.00015	0.000048
Production	2	2022-10-01	0.0000025	0.0004	0.0000013	0.00093	0.01	3	0.0056	0.000027	0.00017	0.000054
Production	2	2022-11-01	0.0000025	0.00056	0.0000011	0.0011	0.012	2.1	0.0047	0.000029	0.00013	0.000049
Production	2	2022-12-01	0.0000025	0.00064	0.0000013	0.0014	0.014	2.5	0.0037	0.000028	0.00013	0.000058
Production	2	2023-01-01	0.0000026	0.00068	0.0000015	0.0017	0.014	1.9	0.0033	0.000033	0.00016	0.00006
Production	2	2023-02-01	0.0000025	0.00074	0.0000012	0.0017	0.013	1.8	0.003	0.000028	0.00015	0.000072
Receiving Environment Water Quality Model - KZ-13 - Wet Year 2 Model			**ıent Water Quality Model - KZ-13 - Wet Year 2 Model**									
Production	2	2022-03-01	0.0000025	0.00083	0.000002	0.0021	0.012	2.2	0.0031	0.000036	0.00015	0.000078
Production	2	2022-04-01	0.0000036	0.00073	0.0000019	0.0022	0.0097	2.9	0.0059	0.000034	0.00016	0.00005
Production	2	2022-05-01	0.0000048	0.0003	0.0000044	0.00055	0.011	8.6	0.03	0.000016	0.0002	0.000037
Production	2	2022-06-01	0.0000045	0.00027	0.0000031	0.00055	0.011	3.1	0.012	0.000029	0.00016	0.000048
Production	2	2022-07-01	0.0000049	0.00032	0.0000027	0.0007	0.012	3.2	0.0067	0.000036	0.00019	0.000059
Production	2	2022-08-01	0.0000036	0.00023	0.0000018	0.00065	0.0093	3.7	0.0082	0.000034	0.00017	0.000051
Production	2	2022-09-01	0.0000026	0.00027	0.0000023	0.00076	0.0099	3.3	0.0077	0.00003	0.00015	0.00005
Production	2	2022-10-01	0.0000025	0.0004	0.0000013	0.00093	0.01	3	0.0056	0.000027	0.00017	0.000054
Production	2	2022-11-01	0.0000025	0.00056	0.0000011	0.0011	0.012	2.1	0.0047	0.000029	0.00013	0.000048
Production	2	2022-12-01	0.0000025	0.00064	0.0000013	0.0014	0.014	2.5	0.0037	0.000028	0.00013	0.000058
Production	2	2023-01-01	0.0000026	0.0007	0.0000015	0.0017	0.015	1.9	0.0032	0.000033	0.00016	0.000061
Production	2	2023-02-01	0.0000025	0.00076	0.0000012	0.0017	0.013	1.8	0.003	0.000028	0.00015	0.000073
Receiving Environment Water Quality Model - KZ-13 - Dry Year 9 Model			**ıent Water Quality Model - KZ-13 - Dry Year 9 Model**									
Production	9	2029-03-01	0.0000025	0.00077	0.000002	0.002	0.011	2.3	0.0031	0.000036	0.00016	0.000073
Production	9	2029-04-01	0.0000036	0.00067	0.0000019	0.0021	0.0088	2.9	0.0059	0.000033	0.00016	0.000046
Production	9	2029-05-01	0.0000047	0.00034	0.0000043	0.00059	0.012	8.3	0.029	0.000018	0.0002	0.000043
Production	9	2029-06-01	0.0000043	0.00028	0.0000031	0.00056	0.011	3.1	0.011	0.00003	0.00015	0.000052
Production	9	2029-07-01	0.0000051	0.00035	0.0000028	0.00073	0.013	3.1	0.0064	0.000037	0.00018	0.000068
Production	9	2029-08-01	0.0000036	0.00023	0.0000018	0.00065	0.0094	3.7	0.0082	0.000034	0.00017	0.000052
Production	9	2029-09-01	0.0000026	0.00026	0.0000023	0.00074	0.0095	3.3	0.0078	0.00003	0.00015	0.000048
Production	9	2029-10-01	0.0000025	0.00039	0.0000013	0.00092	0.0099	3	0.0057	0.000027	0.00017	0.000052

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	**Year**	**Date**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Production	2	2022-06-01	24	0.000017	0.00078	0.033	0.000021	0.005	0.00048	0.0000036	0.00027
Production	2	2022-07-01	30	0.000016	0.00054	0.029	0.000022	0.0072	0.00042	0.0000025	0.00035
Production	2	2022-08-01	29	0.0001	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00023
Production	2	2022-09-01	28	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00027
Production	2	2022-10-01	29	0.000015	0.00042	0.02	0.000008	0.0087	0.00036	0.0000025	0.00039
Production	2	2022-11-01	34	0.000029	0.00039	0.026	0.000036	0.028	0.00035	0.0000025	0.00055
Production	2	2022-12-01	36	0.000033	0.00036	0.038	0.00002	0.038	0.00037	0.0000025	0.00065
Production	2	2023-01-01	42	0.000038	0.00032	0.043	0.000012	0.066	0.00039	0.0000025	0.00067
Production	2	2023-02-01	40	0.000039	0.00042	0.036	0.000026	0.068	0.00035	0.0000025	0.00073
Receiving Environment Water Quality Model - KZ-13 - Wet Year 2 Model											
Production	2	2022-03-01	46	0.000037	0.00038	0.047	0.000013	0.063	0.00039	0.0000025	0.00084
Production	2	2022-04-01	43	0.000026	0.00043	0.052	0.0000097	0.029	0.0004	0.0000025	0.00075
Production	2	2022-05-01	17	0.000033	0.0011	0.099	0.000028	0.023	0.0007	0.0000041	0.00026
Production	2	2022-06-01	24	0.000017	0.00077	0.033	0.000021	0.0051	0.00048	0.0000036	0.00026
Production	2	2022-07-01	29	0.000017	0.00054	0.029	0.00002	0.0078	0.00043	0.0000025	0.00032
Production	2	2022-08-01	29	0.0001	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00023
Production	2	2022-09-01	29	0.000029	0.00052	0.035	0.00002	0.011	0.00042	0.0000026	0.00027
Production	2	2022-10-01	29	0.000015	0.00042	0.02	0.000008	0.0087	0.00036	0.0000025	0.00039
Production	2	2022-11-01	34	0.000029	0.00039	0.027	0.000036	0.028	0.00035	0.0000025	0.00054
Production	2	2022-12-01	36	0.000033	0.00036	0.038	0.00002	0.038	0.00037	0.0000025	0.00065
Production	2	2023-01-01	42	0.000038	0.00032	0.042	0.000012	0.066	0.00039	0.0000025	0.00068
Production	2	2023-02-01	41	0.000038	0.00042	0.036	0.000026	0.067	0.00035	0.0000025	0.00075
Receiving Environment Water Quality Model - KZ-13 - Dry Year 9 Model											
Production	9	2029-03-01	46	0.000038	0.00039	0.049	0.000012	0.065	0.0004	0.0000025	0.00078
Production	9	2029-04-01	43	0.000026	0.00043	0.054	0.0000092	0.029	0.00041	0.0000025	0.00069
Production	9	2029-05-01	18	0.000033	0.0012	0.099	0.000031	0.022	0.00069	0.0000041	0.0003
Production	9	2029-06-01	24	0.000017	0.00078	0.033	0.000022	0.005	0.00048	0.0000036	0.00028
Production	9	2029-07-01	30	0.000016	0.00054	0.029	0.000022	0.0071	0.00042	0.0000025	0.00035
Production	9	2029-08-01	29	0.0001	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00023
Production	9	2029-09-01	28	0.000029	0.00051	0.035	0.000019	0.011	0.00042	0.0000026	0.00026
Production	9	2029-10-01	29	0.000015	0.00043	0.02	0.0000079	0.0088	0.00036	0.0000025	0.00038

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	**Year**	**Date**	**mg/L**	**mg/L**	**mg/L**
Production	2	2022-06-01	0.0000024	0.00053	0.0089
Production	2	2022-07-01	0.0000022	0.00072	0.011
Production	2	2022-08-01	0.0000017	0.0006	0.0072
Production	2	2022-09-01	0.0000013	0.00071	0.0075
Production	2	2022-10-01	0.0000014	0.0009	0.0075
Production	2	2022-11-01	0.0000021	0.0011	0.01
Production	2	2022-12-01	0.0000013	0.0013	0.011
Production	2	2023-01-01	0.0000012	0.0017	0.0098
Production	2	2023-02-01	0.0000012	0.0017	0.01
Receiving Environment Water Quality Model - KZ-13 - Wet Year 2 Model					
Production	2	2022-03-01	0.0000023	0.0023	0.015
Production	2	2022-04-01	0.0000013	0.0022	0.0079
Production	2	2022-05-01	0.0000028	0.0005	0.0053
Production	2	2022-06-01	0.0000024	0.00052	0.0082
Production	2	2022-07-01	0.0000022	0.00069	0.0092
Production	2	2022-08-01	0.0000017	0.0006	0.0071
Production	2	2022-09-01	0.0000013	0.00072	0.0079
Production	2	2022-10-01	0.0000014	0.0009	0.0075
Production	2	2022-11-01	0.0000021	0.0011	0.0099
Production	2	2022-12-01	0.0000013	0.0013	0.011
Production	2	2023-01-01	0.0000012	0.0018	0.01
Production	2	2023-02-01	0.0000012	0.0017	0.01
Receiving Environment Water Quality Model - KZ-13 - Dry Year 9 Model					
Production	9	2029-03-01	0.0000023	0.0022	0.014
Production	9	2029-04-01	0.0000013	0.0022	0.0071
Production	9	2029-05-01	0.000003	0.00055	0.0062
Production	9	2029-06-01	0.0000025	0.00053	0.0089
Production	9	2029-07-01	0.0000022	0.00072	0.011
Production	9	2029-08-01	0.0000017	0.0006	0.0072
Production	9	2029-09-01	0.0000013	0.00071	0.0075
Production	9	2029-10-01	0.0000014	0.00089	0.0073

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Hardness (from total)	Sulphate, dissolved	Nitrate (N)	Nitrite (N)	Ammonia (N)	Phosphorus (P)	Fluoride (F)	Chloride (Cl)	Cyanide, total	Cyanide, Weak Acid Dissociable	Aluminum (Al), total
Phase	**Year**	**Date**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Production	9	2029-11-01	100	23	0.11	0.0011	0.0086	0.0031	0.051	0.31	0.00051	0.00029	0.013
Production	9	2029-12-01	110	22	0.12	0.001	0.0081	0.0033	0.048	0.51	0.00025	0.00025	0.017
Production	9	2030-01-01	120	24	0.12	0.001	0.016	0.0032	0.054	0.51	0.00027	0.00027	0.018
Production	9	2030-02-01	110	25	0.15	0.001	0.03	0.0049	0.058	0.57	0.00027	0.00028	0.02
Receiving Environment Water Quality Model - KZ-13 - Wet Year 9 Model													
Production	9	2029-03-01	130	26	0.13	0.001	0.04	0.0043	0.062	0.33	0.00057	0.00045	0.0077
Production	9	2029-04-01	120	20	0.12	0.0012	0.01	0.0035	0.061	0.62	0.00047	0.00034	0.015
Production	9	2029-05-01	54	6.5	0.035	0.0019	0.0075	0.019	0.039	0.66	0.00075	0.00067	0.23
Production	9	2029-06-01	70	15	0.033	0.001	0.0078	0.0049	0.042	0.56	0.00066	0.00044	0.051
Production	9	2029-07-01	84	18	0.023	0.001	0.015	0.004	0.045	0.28	0.00045	0.00058	0.03
Production	9	2029-08-01	86	16	0.037	0.0017	0.004	0.0044	0.044	0.33	0.00049	0.00049	0.024
Production	9	2029-09-01	86	19	0.054	0.0011	0.0065	0.0041	0.048	0.34	0.00052	0.00052	0.023
Production	9	2029-10-01	90	20	0.072	0.001	0.011	0.0031	0.048	0.55	0.00026	0.00026	0.023
Production	9	2029-11-01	100	23	0.11	0.0011	0.0087	0.0031	0.051	0.32	0.0005	0.00029	0.013
Production	9	2029-12-01	110	24	0.12	0.001	0.0084	0.0033	0.049	0.5	0.00025	0.00025	0.016
Production	9	2030-01-01	130	26	0.13	0.001	0.017	0.0031	0.055	0.5	0.00027	0.00028	0.019
Production	9	2030-02-01	120	27	0.15	0.001	0.028	0.0051	0.059	0.55	0.00027	0.00029	0.018

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Antimony (Sb), total mg/L	Arsenic (As), total mg/L	Cadmium (Cd), total mg/L	Calcium (Ca), total mg/L	Cobalt (Co), total mg/L	Copper (Cu), total mg/L	Iron (Fe), total mg/L	Lead (Pb), total mg/L	Manganese (Mn), total mg/L	Nickel (Ni), total mg/L
Production	9	2029-11-01	0.000032	0.00018	0.000072	34	0.00004	0.00045	0.12	0.000084	0.042	0.00038
Production	9	2029-12-01	0.000033	0.0002	0.000071	36	0.000047	0.00044	0.15	0.000063	0.049	0.00039
Production	9	2030-01-01	0.000033	0.00026	0.000086	41	0.00006	0.00041	0.26	0.00009	0.077	0.00038
Production	9	2030-02-01	0.000031	0.00027	0.00008	38	0.000065	0.00053	0.27	0.000085	0.097	0.00044
Receiving Environment Water Quality Model - KZ-13 - Wet Year 9 Model												**Receiving Environm**
Production	9	2029-03-01	0.000037	0.0002	0.000091	42	0.000045	0.00044	0.15	0.00004	0.072	0.00042
Production	9	2029-04-01	0.000028	0.00018	0.000051	41	0.000063	0.00053	0.16	0.00013	0.05	0.00045
Production	9	2029-05-01	0.000028	0.00035	0.000073	18	0.00022	0.0018	0.22	0.00017	0.069	0.0013
Production	9	2029-06-01	0.000033	0.00021	0.000058	24	0.000057	0.00089	0.16	0.00014	0.016	0.00054
Production	9	2029-07-01	0.000036	0.00022	0.000079	29	0.000048	0.00076	0.11	0.000081	0.023	0.00046
Production	9	2029-08-01	0.000032	0.00021	0.000072	29	0.00012	0.00077	0.094	0.00009	0.018	0.00048
Production	9	2029-09-01	0.00003	0.00018	0.000068	29	0.000045	0.00067	0.097	0.000071	0.018	0.00046
Production	9	2029-10-01	0.000029	0.0002	0.000071	30	0.000035	0.00052	0.092	0.000076	0.022	0.00044
Production	9	2029-11-01	0.000032	0.00018	0.000075	34	0.000041	0.00045	0.13	0.000085	0.042	0.00037
Production	9	2029-12-01	0.000033	0.0002	0.000077	37	0.000047	0.00044	0.15	0.000065	0.048	0.00038
Production	9	2030-01-01	0.000032	0.00027	0.000097	42	0.000063	0.00042	0.28	0.0001	0.075	0.00039
Production	9	2030-02-01	0.00003	0.00025	0.000094	41	0.000061	0.00051	0.25	0.000085	0.088	0.00042

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

Phase	Year	Date	Silver (Ag), total	Selenium (Se), total	Thallium (Tl), total	Uranium (U), total	Zinc (Zn), total	Dissolved Organic Carbon	Aluminum (Al), dissolved	Antimony (Sb), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Production	9	2029-11-01	0.0000025	0.00054	0.0000011	0.0011	0.011	2.1	0.0047	0.000029	0.00014	0.000047
Production	9	2029-12-01	0.0000025	0.0006	0.0000013	0.0014	0.013	2.6	0.0038	0.000028	0.00014	0.000056
Production	9	2030-01-01	0.0000026	0.00063	0.0000014	0.0017	0.013	2	0.0033	0.000033	0.00016	0.000057
Production	9	2030-02-01	0.0000025	0.00066	0.0000012	0.0016	0.011	1.9	0.0031	0.000028	0.00015	0.000068
Receiving Environment Water Quality Model - KZ-13 - Wet Year 9 Model			**ıent Water Quality Model - KZ-13 - Wet Year 9 Model**									
Production	9	2029-03-01	0.0000025	0.00076	0.000002	0.002	0.011	2.3	0.0032	0.000036	0.00016	0.000072
Production	9	2029-04-01	0.0000036	0.00066	0.0000019	0.0021	0.0087	3	0.0059	0.000033	0.00016	0.000046
Production	9	2029-05-01	0.0000048	0.0003	0.0000044	0.00055	0.011	8.6	0.03	0.000016	0.0002	0.000037
Production	9	2029-06-01	0.0000044	0.00027	0.0000031	0.00055	0.011	3.1	0.011	0.000029	0.00016	0.000048
Production	9	2029-07-01	0.0000049	0.00031	0.0000027	0.0007	0.012	3.2	0.0067	0.000036	0.00019	0.000059
Production	9	2029-08-01	0.0000036	0.00023	0.0000018	0.00064	0.0092	3.7	0.0082	0.000034	0.00017	0.00005
Production	9	2029-09-01	0.0000026	0.00027	0.0000023	0.00076	0.0099	3.3	0.0077	0.00003	0.00015	0.00005
Production	9	2029-10-01	0.0000025	0.00041	0.0000013	0.00093	0.01	3	0.0056	0.000027	0.00016	0.000054
Production	9	2029-11-01	0.0000025	0.00056	0.0000011	0.0011	0.012	2.1	0.0047	0.000029	0.00013	0.000049
Production	9	2029-12-01	0.0000025	0.00065	0.0000013	0.0014	0.014	2.5	0.0036	0.000028	0.00013	0.000059
Production	9	2030-01-01	0.0000026	0.00072	0.0000016	0.0018	0.016	1.8	0.0032	0.000032	0.00016	0.000062
Production	9	2030-02-01	0.0000025	0.0008	0.0000012	0.0017	0.014	1.7	0.003	0.000028	0.00014	0.000075

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Calcium (Ca), dissolved	Cobalt (Co), dissolved	Copper (Cu), dissolved	Iron (Fe), dissolved	Lead (Pb), dissolved	Manganese (Mn), dissolved	Nickel (Ni), dissolved	Silver (Ag), dissolved	Selenium (Se), dissolved
Phase	**Year**	**Date**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Production	9	2029-11-01	33	0.000029	0.00039	0.027	0.000037	0.028	0.00035	0.0000025	0.00053
Production	9	2029-12-01	35	0.000033	0.00037	0.039	0.00002	0.038	0.00037	0.0000025	0.00061
Production	9	2030-01-01	41	0.000039	0.00032	0.045	0.000011	0.069	0.0004	0.0000025	0.00061
Production	9	2030-02-01	39	0.00004	0.00043	0.039	0.000027	0.072	0.00035	0.0000025	0.00064
Receiving Environment Water Quality Model - KZ-13 - Wet Year 9 Model											
Production	9	2029-03-01	45	0.000038	0.00039	0.05	0.000012	0.066	0.0004	0.0000025	0.00077
Production	9	2029-04-01	42	0.000026	0.00042	0.054	0.0000091	0.03	0.00041	0.0000025	0.00067
Production	9	2029-05-01	17	0.000033	0.0011	0.099	0.000028	0.023	0.0007	0.0000041	0.00026
Production	9	2029-06-01	24	0.000017	0.00077	0.033	0.000021	0.0051	0.00048	0.0000036	0.00026
Production	9	2029-07-01	29	0.000017	0.00054	0.03	0.00002	0.0078	0.00043	0.0000025	0.00032
Production	9	2029-08-01	29	0.00011	0.00053	0.028	0.000033	0.01	0.00047	0.0000036	0.00022
Production	9	2029-09-01	29	0.000029	0.00052	0.035	0.00002	0.011	0.00042	0.0000026	0.00027
Production	9	2029-10-01	29	0.000015	0.00042	0.02	0.000008	0.0087	0.00036	0.0000025	0.00039
Production	9	2029-11-01	34	0.000029	0.00039	0.027	0.000036	0.028	0.00035	0.0000025	0.00055
Production	9	2029-12-01	36	0.000033	0.00036	0.038	0.000019	0.038	0.00037	0.0000025	0.00066
Production	9	2030-01-01	42	0.000038	0.00031	0.041	0.000013	0.064	0.00038	0.0000025	0.00071
Production	9	2030-02-01	41	0.000038	0.00041	0.034	0.000025	0.065	0.00035	0.0000025	0.00079

Appendix F4: Receiving Environment Water Quality Model Results - South Creek (KZ-13)

			Thallium (Tl), dissolved	Uranium (U), dissolved	Zinc (Zn), dissolved
Phase	**Year**	**Date**	**mg/L**	**mg/L**	**mg/L**
Production	9	2029-11-01	0.0000021	0.0011	0.0095
Production	9	2029-12-01	0.0000012	0.0013	0.011
Production	9	2030-01-01	0.0000012	0.0017	0.0088
Production	9	2030-02-01	0.0000011	0.0016	0.0088
Receiving Environment Water Quality Model - KZ-13 - Wet Year 9 Model					
Production	9	2029-03-01	0.0000023	0.0022	0.013
Production	9	2029-04-01	0.0000013	0.0022	0.0069
Production	9	2029-05-01	0.0000028	0.0005	0.0053
Production	9	2029-06-01	0.0000024	0.00052	0.0083
Production	9	2029-07-01	0.0000022	0.00069	0.0092
Production	9	2029-08-01	0.0000017	0.00059	0.007
Production	9	2029-09-01	0.0000013	0.00072	0.0079
Production	9	2029-10-01	0.0000014	0.0009	0.0076
Production	9	2029-11-01	0.0000021	0.0011	0.01
Production	9	2029-12-01	0.0000013	0.0013	0.012
Production	9	2030-01-01	0.0000012	0.0018	0.011
Production	9	2030-02-01	0.0000012	0.0017	0.011