Appendix 6.3-C

Water Quality Model Report

KGHM AJAX MINING INC.
AJAX PROJECT





WATER QUALITY MODEL REPORT

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KGHM AJAX MINING INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
VA101-246/31-4

Rev	Description	Date
0	Issued in Final	July 20, 2015

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EXECUTIVE SUMMARY

Knight Piésold Ltd. (KP) was retained by KGHM Ajax Mining Inc. (KAM) to complete a water quality model to support the application for an Environmental Assessment Certificate for the Ajax Project (the Project). KAM proposed to develop an open pit copper-gold mine, located in south-central interior of British Columbia, south of the City of Kamloops, in a brownfield site near the historical Afton, Ajax East and Ajax West open pits.

A mass balance water quality model was developed for the Project to assist in the assessment of potential changes in water quality as a result of runoff and seepage of contact water from mine facilities and mine rock sources and dustfall. The model was developed iteratively, with feedback to Project design and water management, to reduce the potential effects of the mine on receiving water quality. The water quality model builds on the results of hydrological, hydrogeological, geochemical, and air quality models developed for the Project, as well as on the baseline water quality dataset that is representative of data collected since 2007. The Base Case model was developed using the life of mine water balance for average conditions and median baseline water quality inputs. Thirteen sensitivity models were also run to assess the sensitivity of the predicted concentrations to variation in climate conditions and to variation of some of the key input assumptions specific to baseline water quality inputs, hydrogeological assumptions, dustfall assumptions, and assumptions regarding the timing of seepage.

The water quality model was run for a period of 123 years including all mine phases: Construction (2 years), Operations (23 years), Decommissioning and Closure (5 years), and Post Closure (97+ years). The model domain is entirely within the Peterson Creek watershed as seepage and runoff and dustfall from all of the proposed facilities and infrastructure is limited to this watershed. Five receiving water quality assessment locations were implemented in the model, including assessment locations in Jacko Lake, Peterson Creek (Peterson Creek Downstream Pond (PCDP), PC02.3, and PC02), and Humphrey Creek, as well as seven water quality assessment locations in the mine area. Parameters modelled include major ions, nutrients, and metals.

The predicted parameters were screened against baseline concentrations ranges and generic BC water quality guidelines, the most sensitive of which are those for the protection of aquatic life and wildlife (molybdenum and selenium); the wildlife guideline for molybdenum is the same for livestock water sources. Parameters that are predicted to exceed the generic water quality guidelines at multiple assessment locations or over multiple mine phases are sulphate, chloride, copper, molybdenum, and selenium. A science based environmental benchmark (SBEB) was developed for sulphate for the characterization of the baseline water quality in the project area because baseline hardness typically exceeded the 250 mg/L $CaCO_3$ hardness threshold for the BC aquatic life guideline and sulphate is naturally elevated in surface waters in the Peterson Creek watershed. Protective water quality benchmarks (WQBs) were researched and prepared for chloride, arsenic, copper, molybdenum, and selenium based on the most sensitive species specific to the project area, and although aquatic life guideline exceedances for molybdenum are not predicted, a WQB was developed for wildlife and livestock.

The Base Case model results are a conservative representation of the expected parameter concentrations for the Project. The Base Case predicted parameters concentrations for Jacko Lake and the PDCP were below the water quality guidelines, WQBs, and the sulphate SBEB. Sulphate

concentrations are predicted to remain below the SBEB at all assessment locations except PC02 in the Base Case; however, it is important to note that at PC02 the maximum monthly baseline sulphate concentration when the SBEB is predicted to be exceeded is higher than the predicted concentrations in the Base Case and most sensitivity case models, indicating that concentrations are within the natural range for this site. Base Case selenium concentrations for Humphrey Creek were predicted to exceed the WQB and were also above this benchmark under baseline conditions.

Primary load contributions vary by parameter, mine phase, and location, but for most parameters the natural catchment runoff and baseflow contributions account for the largest proportion of total loading. The primary loading sources are background catchment contributions for chloride, sulphate, and selenium; seepage from mine facilities is the second important loading source for sulphate and selenium, whereas mine loading for chloride is low. Copper is primarily loaded through dustfall during Construction, Operations, and Decommissioning and Closure, but loading is dominantly from natural catchment contributions in Post Closure, with minor loading from seepage. Molybdenum loading proportions change in Post Closure, with loading dominated by mine seepage sources at most assessment locations in Post Closure, as opposed to natural catchment sources in earlier mine phases.

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Appendix I Mine Site Water Quality Predictions

ABBREVIATIONS

5^{th} P	5^{th} percentile
25^{th} P	25^{th} percentile
50^{th} P	50^{th} percentile (median)
75^{th} P	75^{th} percentile
95^{th} P	95^{th} percentile
Ajax Project	the Project
EMRSF	East Mine Rock Storage Facility
High HC SC	High Hydraulic Conductivity Sensitivity Case
KAM	KGHM Ajax Mining Inc.
KP	Knight Piésold Ltd.
LOM	Life-of-mine
MRSF	Mine Rock Storage Facility
PAG	potentially acid generating
SMRSF	South Mine Rock Storage Facility
TSF	Tailings Storage Facility
tpd	tonnes per day
VCC	Variable Climate Conditions
WMRSF	West Mine Rock Storage Facility

1 – INTRODUCTION

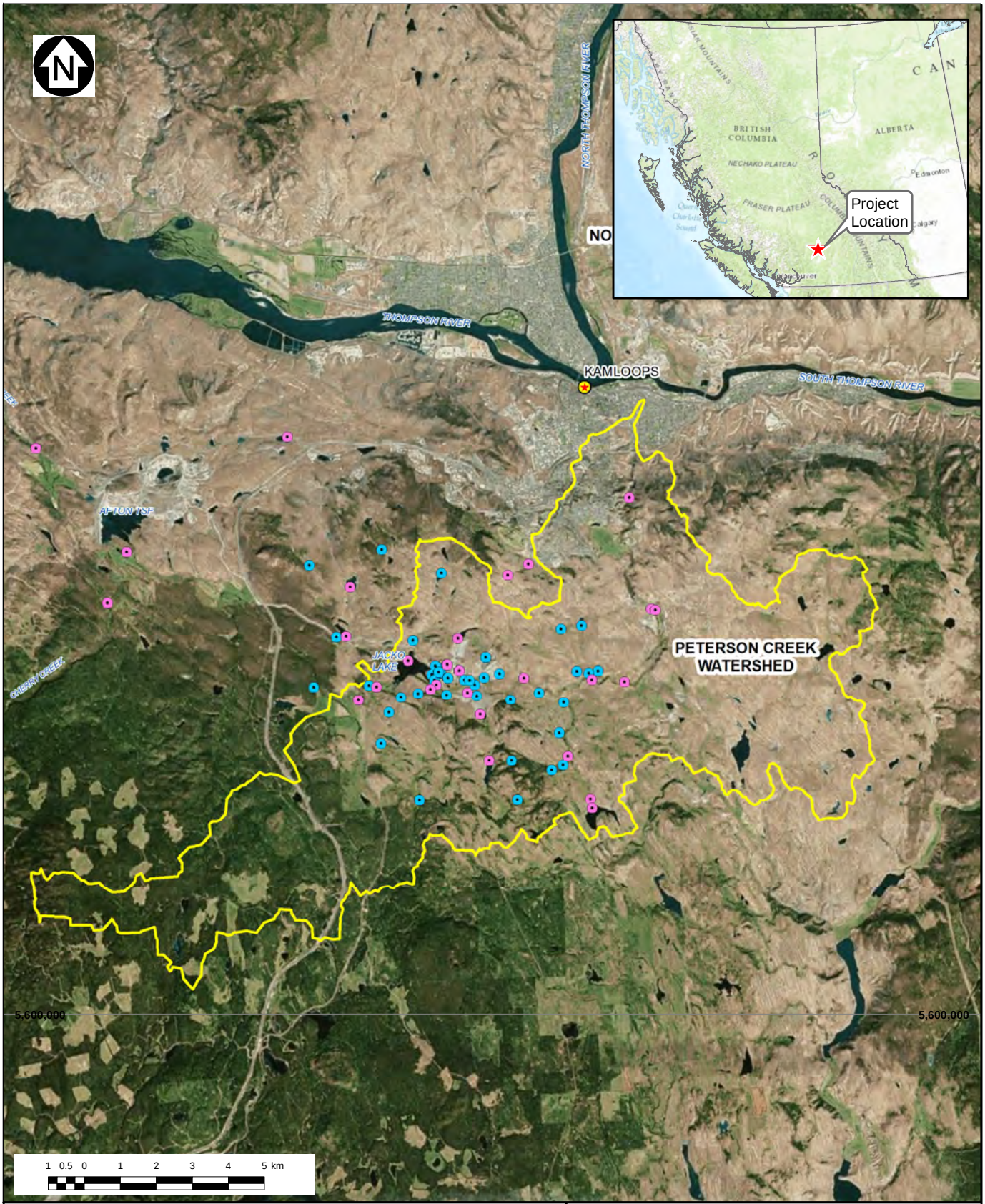
1.1 PROJECT DESCRIPTION AND BACKGROUND

KGHM Ajax Mining Inc. (KAM) proposes to develop the Ajax Project (the Project), an open pit copper-gold mine with a planned processing rate of 65,000 t/d, near the City of Kamloops, British Columbia. The Project location and facility footprints are shown on Figure 1.1, in relation to the city of Kamloops and the major watershed boundaries.

The proposed Project is partially located on a historical mine site and mining activities in the immediate project area began in 1989. Mining operations ceased under Teck Cominco in the Afton, Ajax East and Ajax West open pits in 1997. Previously mined areas on site include the partially backfilled Ajax East open pit and the two Ajax West open pits, and two reclaimed waste rock piles. Historical-mined rock has been stored to the east of the open pit, adjacent to Peterson Creek. After mining operations terminated, reclamation was carried out. The proposed open pit will further develop and encompass the previously mined Ajax East and Ajax West open pits east of Jacko Lake.

1.2 SCOPE OF WORK

Knight Piésold Ltd. (KP) was retained by KAM to complete a water quality model to support the application for an Environmental Assessment Certificate for the Project. This model builds on the results of hydrologic, hydrogeologic, geochemical, and air quality models developed by other consultants for the Project, for the purpose of assessing water quality within mine facilities and in the receiving environment. The inputs and assumptions are formally presented in this report, along with water quality predictions for the base case scenario, and sensitivity scenarios related to climate conditions, hydraulic conductivity, groundwater recharge, baseline model inputs, dustfall, and timing of seepage.



LEGEND:

- PROJECT LOCATION
- SURFACE WATER QUALITY SITE
- GROUNDWATER QUALITY SITE
- COMMUNITY
- CATCHMENT BOUNDARY

NOTES:

1. BASE MAP: (C) MICROSOFT BING MAPS.
2. COORDINATE GRID IS IN METRES. COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.
3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:25,552,957 FOR 8.5x11 (LETTER) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	REVIEWED
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KGHM AJAX MINING INC.

AJAX PROJECT

Project Location and Watershed Boundaries

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF NO. 4

FIGURE 1.1

REV 0

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2 – MINE DEVELOPMENT AND MINE WATER MANAGEMENT

2.1 GENERAL

The sequence of mine development, mine rock production and management, and associated mine water management is essential to the design of water management systems and the modelling of predicted water quantity and quality effects. The following terminology will be used consistently through the report to describe the phases of the Project development:

- Construction
- Operations
- Decommissioning and Closure, and
- Post Closure.

The water management plan is designed to limit generation of contact water (i.e., water that comes into contact with and may pick up a geochemical load from a Project facility) and to prevent sediment laden runoff from leaving the site. Key aspects of the water management plan discussed in this report include:

- Water transfers (water pumped from Kamloops Lake)
- Surface water diversions (e.g., collection ditches)
- Site water transfers (e.g., spillways, water pumped from one location to another)
- Tailings slurry (i.e., tailings solids and water)
- Seepage collection ponds (SCPs) at the Tailings Storage Facility (TSF) embankments and at the Mine Rock Storage Facilities (MRSFs), and
- Central Pond.

A general overview of the water management plan, as described in the draft report of the Water Balance Model (BGC, 2105b), is presented below.

2.2 CONSTRUCTION (TWO YEARS PRIOR TO OPERATIONS)

The construction of the Project will extend over a period of approximately 18 months, divided in three phases, and will include the following development activities:

- Phase 1: Development of access and haul roads, seepage dams, collection ponds, TSF initial starter embankment, reclamation stockpiles, ore stockpile, plant site, crusher, truck shop, and Peterson Creek diversion outlet footprints.
- Phase 2: Pre-stripping of the pits, explosives magazine and batch plant, Central Pond, the West and South MRSFs foundation works, the TSF starter area and starter embankment, the Peterson Creek diversion system, and two diversion ditches associated with the East MRSF.
- Phase 3: Construction of the haul road and East MRSF foundation preparation.

Water management activities that will take place during this period include:

- Open pit dewatering: since the current water level in the open pit is below the elevation that the open pit is expected to reach during construction, water management for this activity will be limited mainly to direct groundwater inflows and incident runoff to the open pit to the base of the West East Pit.
- Decommissioning of the existing Jacko Lake dam: this dam will be removed using either a “wet” approach, which refers to discharging Jacko Lake water between the locations of the new and

old dams, or a “dry” approach, which refers to installing a temporary dam upstream of the old dam while construction works are performed for the new dam.

- Peterson Creek Downstream Pond (PCDP): civil works required for water impoundment at this location will be performed during construction, for components such as creek diversion, embankments, basin excavation, impoundment, and spillways.
- TSF: seepage collection ponds, diversion ditches and French drains will be used for water management during construction to either store water within the TSF or divert water, while the TSF pond confined by an initial starter dam will store water required by the mill up to three months.

2.3 OPERATIONS – ACTIVE MINING (YEAR 1 THROUGH YEAR 23)

The operational phase will include the active mining and ore processing period and will be approximately 23 years long. This period includes the following water management activities:

- Maintenance and operation of the Peterson Creek diversion system (PCDS) and PCDP.
- Pumping of the runoff to the plant site pond to the process water tank.
- Collection and recirculation of contact water from the open pit, MRSFs, embankments, and ore stockpiles at the various water management ponds around the mine site.
- Reclaim of TSF water for process water requirements.
- Supply of make-up fresh water from Kamloops Lake.

Additional water management activities in mine facilities include:

- MRSFs: runoff and seepage from the TSF, WMRSF, and TSF North Embankment will be managed in the North Embankment Pond 1 and North Embankment Pond 2. Runoff and seepage from the southern portion of the SMRSF will be managed in the SMRSF Pond and to the north in the Central Pond and open pit. Runoff and seepage from the EMRSF will be managed in the EMRSF Pond, to the south and the open pit (seepage) to the west. Water intercepted in the North Embankment Pond 1 and 2 and the EMRSF will be pumped to the Central Pond and then directed to the mill for process during operations and water intercepted at the SMRSF Pond will be routed to the Plant Site Pond.
- TSF: the embankments for this facility, which are constructed of non-potentially acid generating (NPAG) mine rock, will be expanded in stages, while runoff from undisturbed areas will be routed to and collected in the TSF pond, reclaimed tailings supernatant will be pumped back to the mill, and seepage and runoff collected in the South and Southeast embankment ponds will be pumped back to the TSF pond.
- Open pit: water from various sources that reaches the pit, and is not absorbed by broken rock hauled out of the pit, will be contained by a large collection system of ditches, pipes, sumps, pumps, and booster pumps, and will be directed to the Central Pond.

2.4 DECOMMISSIONING AND CLOSURE (YEAR 24 THROUGH YEAR 28)

After completion of active mining, reclamation and closure initiatives have the objective of transforming the mine site into an integrated component of the surrounding ecosystem. The following water management activities will occur during this phase:

- Removal of culverts and water crossings and restoring of natural drainage.

- Re-establishment of Peterson Creek to the natural Peterson Creek route, while maintaining and operating the PCDS to maintain downstream flows from Jacko Lake.
- Retaining of PCDP with no structural changes intended.
- Modification of the Southeast Dam (JLD3) to reduce the operational crest elevation.
- Purge, dismantling, and disposal of pipelines in an approved facility.
- Pumping of water in the TSF pond to the open pit to initiate pit filling and allow for reclamation of the TSF.
- Site grading and reclamation of the TSF, along with construction of a spillway, to allow for surface runoff to be diverted to the Humphrey Creek drainage.
- Decommissioning of the Central Pond, although a pond feature may still be maintained as part of the Post Closure landscape.
- Site grading and reclamation of the MRSFs.
- Continued operation of the Kamloops Lake fresh water pipeline to provide a clean source of water for closure activities, including dust control and demolition of site infrastructure.
- Routing contact runoff to the open pit during infrastructure removal.
- Reclamation of the MSRFs and continued operation of their associated water management ponds (pumping to open pit) until water quality objectives are met.
- Ongoing water quantity and quality monitoring.

2.5 POST CLOSURE (FROM YEAR 29)

The following are assumed during the Post Closure period:

- The Kamloops Lake fresh water pipeline is decommissioned.
- The Peterson Creek closure channel is functional.
- The PCDS is decommissioned.
- The Southeast Dam (JLD3) functions in a similar fashion to the existing Jacko Lake Dam.
- The PCDP is retained in perpetuity.
- The TSF reclamation is complete with surface flows discharging into Humphrey Creek.
- The MRSFs reclamation is complete with surface runoff from these facilities suitable for release to the environment.
- The modified downstream ponds associated with the EMRSF, SMRSF, and North Embankment are retained in perpetuity.
- The open pit continues to fill passively until reaching a relatively static location.

3 – MASS BALANCE WATER QUALITY MODEL DESCRIPTION

3.1 MODEL OVERVIEW

The water quality model combines four major inputs: (1) mine site and receiving environment surface water and groundwater hydrology data from the water balance model, (2) baseline water quality data, (3) geochemical source term data, and (4) dustfall deposition data. The model time-frame extends over 123 years. The 123-year period includes two years of Construction, 23 years of Operations, five years of Closure, and a Post Closure period of up to 95 years, and can be extended to match the modelling period of the water balance model, if required.

3.2 MASS BALANCE EQUATIONS

The water quality model for the Project was developed using a mass balance calculation approach in Excel to predict monthly water quality for dissolved parameters at select locations within and downstream of the Project area. The generalized mass balance equation is as follows:

$$C_{New} = \frac{C_A \times Q_A + C_B \times Q_B}{(Q_A + Q_B)}$$

Where C_{New} = mixed concentration (mg/L)
C_A = concentration of stream A (mg/L)
Q_A = flow rate of stream A (m^3/s)
C_B = concentration of stream B (mg/L)
Q_B = flow rate of stream B (m^3/s)

Reservoir components in the model include the Tailings Storage Facility (TSF), Central Pond, Peterson Creek Downstream Pond (PCDP), and Jacko Lake, in addition to the water management ponds located at the TSF south and southeast embankments, West Mine Rock Storage Facility (WMRSF), South Mine Rock Storage Facility (SMRSF), and East Mine Rock Storage Facility (EMRSF). Calculations for these components factor in direct precipitation and evaporation on the stored waterbodies.

The monthly reservoir concentrations are a function of the volumes and constituent mass loads (load) associated with storage and inflowing/outflowing components of the system, and are based on the integration of three basic calculations:

1. The monthly reservoir concentrations are equal to the sum of the previous months' stored load and the input loads from the current time step (monthly loading), divided by the previous months' stored volume plus the new incoming volume, minus evaporation.
2. Loads removed from each reservoir (for example by pumping or infiltration to groundwater) are determined using the monthly reservoir concentration multiplied by the volume of water being removed from the reservoir in that time step.
3. The stored load for each monthly time step is calculated as the sum of the previous months' load plus new loads, minus the outgoing loads.

Solubility constraints were applied in the model as a load capping mechanism, whereby loads in excess of the constraining solubility concentration are removed from the available monthly stored load in the reservoir. This excess load was assumed to precipitate out of solution and no longer be

mobile in seepage or runoff and the resultant concentration was equal to the solubility constraint. Sources and assumptions associated with solubility constraints are described in Section 4.3 of the report.

3.3 MODEL BOUNDARIES AND ASSESSMENT LOCATIONS

The boundaries of the model include Jacko Lake to the west, the TSF and Humphrey Creek downstream of Edith Lake to the south, the East Mine Rock Storage Facility (EMRSF) to the north, and Peterson Creek in the limits of the city of Kamloops to the east. Water quality model assessment locations are shown on Figure 3.1 and are described below.

3.3.1 Mine Site Model Assessment Locations

Mine site model assessment locations were established for the following locations within the immediate mine site area:

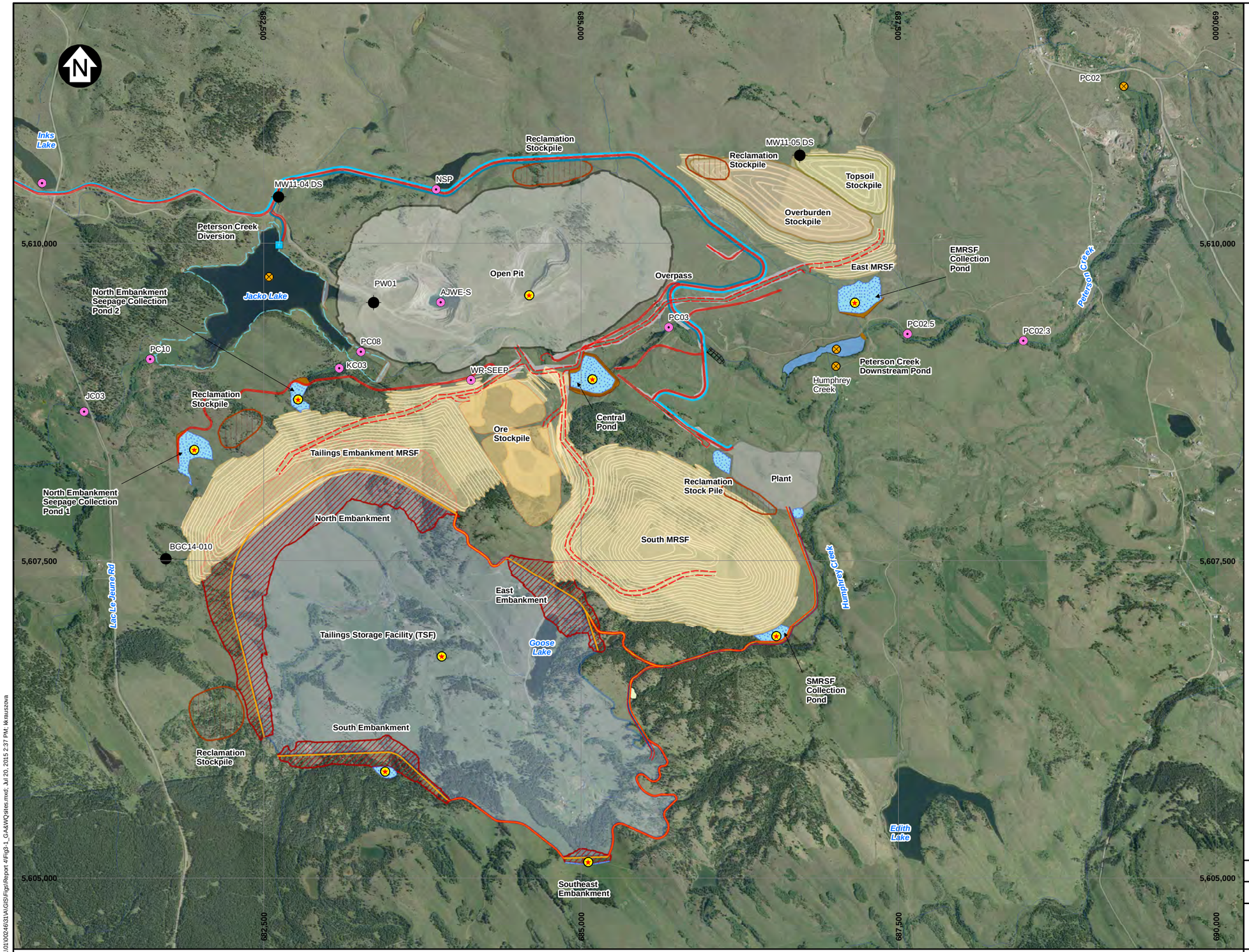
- TSF
- TSF South Embankment Collection Pond
- TSF Southeast Embankment Collection Pond
- West MRSF Seepage Collection Pond (SCP) 1
- West MRSF SCP 2
- South MRSF Collection Pond, and
- East MRSF Collection Pond.

3.3.2 Receiving Water Quality Model Assessment Locations

There are five receiving water quality model assessment locations in the Peterson Creek watershed, as follows:

- Jacko Lake
- PCDP – Peterson Creek, corresponding to the future location of the PCDP, just upstream of the baseline monitoring site PC02.5
- Humphrey Creek – Lower Humphrey Creek, upstream of the confluence with Peterson Creek, which is located downstream of baseline water quality monitoring site PC03 and upstream of PC02.5
- PC02.3 – Peterson Creek, approximately 1.3 km downstream of the PCDP, and
- PC02 – Peterson Creek, located in the Knutsford area, approximately 3 km downstream of PC02.3.

An additional model assessment location in Peterson Creek is PC08, immediately downstream of the southeast arm of Jacko Lake; however, only baseline water quality was assessed at this assessment location since Peterson Creek will be diverted during Operations and this assessment location will no longer exist.



LEGEND:

- SURFACE WATER QUALITY SITE
- MINE SITE WATER QUALITY MODEL ASSESSMENT LOCATION
- RECEIVING WATER QUALITY MODEL ASSESSMENT LOCATION
- MONITORING WELL
- RIVER/CREEK

PROPOSED STRUCTURES

- RECLAIM WATERLINE
- WATERLINE
- TAILINGS LINE
- ROAD
- ROAD - HAUL
- MINE ROCK STORAGE FACILITY (MRSF)
- PIT OUTLINE
- TAILINGS STORAGE FACILITY (TSF)
- TSF EMBANKMENT
- CUT / FILL
- OTHER INFRASTRUCTURE
- ORE STOCKPILE
- OVERBURDEN STOCKPILE
- RECLAMATION STOCKPILE
- TOPSOIL STOCKPILE

WATER MANAGEMENT

- WATER MANAGEMENT POND
- WATER MANAGEMENT BERM

JACKO LAKE

- DAM OUTLINE
- PROPOSED 894M WATER LEVEL

PETERSON CREEK

- DIVERSION INTAKE
- PETERSON CREEK DIVERSION
- DOWNSTREAM POND
- DIVERSION DISCHARGE

NOTES:

1. BASE MAP: ORTHO IMAGERY SUPPLIED BY ABACUS.
2. COORDINATE GRID IS IN METRES.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.
3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:30,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.
4. MINE LAYOUT PROVIDED BY KGHM AJAX MINING INC.

SCALE 300 150 0 300 600 900 1,200 1,500 m

KGHM AJAX MINING INC.

AJAX PROJECT

GENERAL ARRANGEMENT SOUTH OPTION AND WATER QUALITY SITES

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	REVIEWED
0	20JUL'15	ISSUED WITH REPORT	MZP	AMD	JEM

Knight Piésold CONSULTING

P/A NO. VA101-246/31 | REF NO. 4

FIGURE 3.1 | REV 0

SAVED: M:\1\101\00246\31\A\GIS\Figs\Report #\Fig3-1_GA&WQsites.mxd: Jul 20, 2015 2:37 PM: kkrauszova

3.4 PARAMETERS MODELLED

A total of 37 parameters were modelled, including hardness, major ions, nutrients, and dissolved metals. Modelled ions include bromide, chloride, fluoride, sulphate, calcium, magnesium, potassium, and sodium. Modelled nutrients include ammonia, nitrate, nitrite, and dissolved phosphorus. Dissolved metals modelled include aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, selenium, silicon, silver, strontium, thallium, tin, uranium, vanadium, and zinc.

Total parameters concentrations and pH were not modelled, although dustfall was accounted for in the predicted parameter concentrations whether dissolved or not. Source terms were developed as inputs to models with loading in the dissolved form only (total = dissolved) and as such particulate loads are not generated from mine sources and therefore total concentrations cannot be modelled. The baseline environment in the project area is dominated by parameters in the dissolved form that are typically associated with groundwater discharge in local creeks. Some particulate matter is generated in the spring freshet due to higher energy flows, and for a brief period of the year (May) particulate loading at creek sample locations is higher for a small subset of parameters (aluminum, copper, iron). Aside from dustfall, all Project inputs that could potentially contribute to changes in water quality were accounted for in the dissolved form. Mass balance models are appropriate for the prediction of concentrations of most parameters, but are not appropriate for predicting hydrogen ion concentrations, which are the basis of pH. Hydrogen ion concentrations can be influenced by alkalinity and the presence of other ions. Geochemical models can provide more realistic predictions of pH than mass-balance modelling and a qualitative analysis of the buffering capacity of the receiving water can provide an indication of the susceptibility to pH changes as a result of Project inputs. There are no acidic inputs from mine contact water sources and pH is assumed to remain similar to existing conditions, which are basic due to the naturally alkaline conditions.

Beryllium and mercury were modelled but have been excluded from the discussion and results tables, as false exceedances predicted for these two parameters are a result of scaling of detection limit values from humidity cell data to predict field scale source term concentrations. The analytical results for both beryllium and mercury in humidity cell tests for mine source materials were consistently below the MDL, and the MDLs for both parameters are similar to the aquatic life guidelines; therefore any scaling results in source term concentrations that are artificially higher and may falsely exceed guidelines. In addition, baseline beryllium and mercury data were consistently below guidelines, and similar to the geochemistry samples, the MDLs were just below the guidelines. This model approach is considered conservative, and guideline exceedances are therefore not expected. Beryllium and mercury results have been excluded from all summary tables.

Hardness was modelled by calculating the stoichiometric contributions of calcium and magnesium, as expressed in Equation 3.1:

$$\text{Hardness} = 2.5*[\text{Ca}] + 4.1*[\text{Mg}] \quad (3.1)$$

Where:

Hardness = dissolved hardness, expressed as mg/L of CaCO3 (calcium carbonate)

[Ca] = modelled calcium concentration in mg/L, and

[Mg] = modelled magnesium concentration in mg/L.

3.5 MODELLED SCENARIOS

Water quality predictions were generated at the model assessment nodes under multiple scenarios. The Base Case water quality predictions were generated using median baseline water quality and average climate conditions as inputs to the water balance model. Sensitivity scenarios related to climate conditions, hydrogeological conditions, baseline water quality inputs, dustfall, and timing of seepage were also assessed, as presented in Table 3.1 and described below. Geochemical source terms were not varied for any scenario.

3.5.1 Sensitivity Analyses

The range of predicted downstream water chemistry was assessed by conducting 13 sensitivity scenarios: one based on variation of precipitation; one based on the quality of the cover material in the MRSFs footprints; five based on the variation of hydrogeologic assumptions; three based on variation of baseline input chemistry; two based on dustfall assumptions; and one based on the timing of mine seepage. The sensitivity analyses were completed according to the combination of scenarios presented in Table 3.1.

Sensitivity analyses were conducted in order to assess the differences in predicted water quality due to changes to a single model input assumption. A single change may not result in the same variation in downstream concentrations for all parameters modelled and through the assessment of changes to multiple variables it can be determined which parameters are more sensitive to specific assumptions and which are not. Sensitivity analyses tend to represent extremes in model input assumptions in order to reliably quantify the sensitivity to variation in the model input assumptions and that the resulting predicted concentrations tend to exceed the expected ranges and are not representative of expected water quality.

Table 3.1 Sensitivity Analysis Scenarios for the Water Quality Model

Group No.	Scenario No.	Scenario	Abbreviated Nomenclature	Precipitation (1)	MRSF Infiltration (2)	Hydraulic Conductivity (3)	TSF Conductance (4)	WMP Seepage Bypass (5)	Dustfall Solubility (6)	Dustfall - Width Contributing to Linear Features (7)	Baseline WQ Input Concentrations (8)	Timing of Seepage (9)
0	0	Base Case	Base Case	Average	Base	Base	Base	Base	100% Soluble	50 m	Median	Base
1	**Climate Inputs**											
	1	Variable Climate Case	VCC	**Historical Precipitation**	Base	Base	Base	Base	100% Soluble	50 m	Median	Base
2	**Mine Rock Storage Facilities (MRSFs)**											
	1	MRSF Recharge - Higher	MRSF SC	Average	**2x higher**	Base	Base	Base	100% Soluble	50 m	Median	Base
3	**Groundwater Assumptions (GW)**											
	1	Hydraulic Conductivity - Higher	High HC SC	Average	Base	**5x higher**	Base	Base	100% Soluble	50 m	Median	Base
	2	Hydraulic Conductivity - Lower	Low HC SC	Average	Base	**5x lower**	Base	Base	100% Soluble	50 m	Median	Base
	3	TSF Conductance - Higher	High TSF Cond SC	Average	Base	Base	**10x higher**	Base	100% Soluble	50 m	Median	Base
	4	Seepage bypass of WMP's	WMP SB SC	Average	Base	Base	Base	**2x higher**	100% Soluble	50 m	Median	Base
	5	Edith Lake Thrust Fault Zone	ELTFZ	Average	Base	Base	Base	**Base**	100% Soluble	50 m	Median	Base
4	**Dustfall Assumptions (DF)**											
	1	Dustfall Solubility/Availability	DF-SSC	Average	Base	Base	Base	Base	**Insoluble**	50 m	Median	Base
	2	Dustfall - Area Contributing to	DF-ASC	Average	Base	Base	Base	Base	100% Soluble	**25 m**	Median	Base
5	**Baseline Water Quality Inputs (BSC)**											
	1	95th P Baseline Inputs	95th P BSC	Average	Base	Base	Base	Base	100% Soluble	50 m	**95th P**	Base
	2	Mean Baseline Inputs	Mean BSC	Average	Base	Base	Base	Base	100% Soluble	50 m	**Mean**	Base
	3	5th P Baseline Inputs	5th P BSC	Average	Base	Base	Base	Base	100% Soluble	50 m	**5th P**	Base
6	**Timing of Seepage (SD)**											
	1	Timing of Seepage	SD-SC	Average	Base	Base	Base	Base	100% Soluble	50 m	Median	**Longer**

NOTES:

1. AVERAGE MONTHLY PRECIPITATION BASED ON THE 115-YEAR CLIMATE RECORD (1897-2011). VARIABLE CLIMATE CONDITIONS INCLUDE STEPPING THE WATER QUALITY MODEL THROUGH THE HISTORIC CLIMATE RECORD ON 5 YR INCREMENTS.
2. UNSATURATED FLOW MODELLING PREDICTS THAT 7.6 MM OF WATER INFILTRATES THE ENGINEERED COVER ON ANNUAL BASIS. THIS SCENARIO ASSESSES THIS BASE CASE PREDICTION.
3. INCREASING AND DECREASING THE HYDRAULIC CONDUCTIVITY BY A FACTOR OF 5 BASED ON BGC GROUNDWATER MODELLING RESULTS. THESE TWO SCENARIOS RESULT IN AN INCREASE/DECREASE IN GROUNDWATER FLOWS.
4. INCREASING THE TSF CONDUCTANCE BY A FACTOR OF 10 INCREASES THE TSF SEEPAGE ESTIMATES. RESULTS ARE BASED ON GROUNDWATER MODELLING BY BGC.
5. THE BASE CASE ASSUMPTION IS THAT 20% OF THE MACRO FLOW IN THE MRSF'S REPORTS TO THE GROUNDWATER TABLE AND BYPASSES THE DOWNSTREAM WATER MANAGEMENT POND (IF PRESENT).
6. DUSTFALL FOR THE BASE CASE HAS BEEN CONSERVATIVELY ASSUMED TO BE 100% SOLUBLE FOR ALL PARAMETERS.
7. DUSTFALL AVAILABILITY FOR SURFACE WATER QUALITY PREDICTIONS - BASE ASSUMPTION THAT ALL DUSTFALL THAT FALLS WITHIN 100 m OF A CREEK (50 m ON EITHER SIDE OF THE CREEK) IS AVAILABLE FOR MIXING IN THE SURFACE WATER QUALITY MODEL.
8. BASE INPUTS ARE MEDIAN MONTHLY/SEASONAL CONCENTRATIONS. SENSITIVITY ANALYSES WILL BE CONDUCTED THROUGH THE APPLICATION OF BASELINE MONTHLY/SEASONAL INPUTS FOR THE 95TH PERCENTILE (P), AVERAGE, AND 5TH P.
9. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.

3.5.1.1 Variable Climate Case (VCC)

The precipitation inputs to the Base Case water quality model were based on the average monthly temperature and precipitation calculated from the 115-year climate record (1897 through 2011) for the Project. Variable climate case (VCC) conditions include stepping the water quality model through the historical climate record on 5 year increments to evaluate the sensitivity of water quality predictions to climatic variation. Baseline water chemistry loading in the models are calibrated to the average conditions baseline water balance and as a result can be under or over represented in the variable climate case model outputs.

3.5.1.2 Mine Rock Storage Facilities (MRSFs)

Unsaturated flow modelling predictions indicate that 7.6 mm of water infiltrates the engineered closure cover on the footprints of the MRSFs on an annual basis, which was assigned as the base case value for groundwater recharge (BGC 2015b). MRSF groundwater recharge values evaluated for sensitivity analysis were two times higher than base case values and the sensitivity case was run to assess the effects of inconsistencies in waste rock closure cover effectiveness on water quality predictions.

3.5.1.3 Groundwater Assumptions

The Base Case hydraulic conductivity values used as inputs to the water balance model were obtained from BGC Engineering Inc. (BGC) groundwater modelling results (BGC 2015a). Increasing and decreasing the hydraulic conductivity by a factor of 5 should result in an increase/decrease in groundwater flows, and should be reflected in the sensitivity of water quality predictions.

The base case TSF conductance used as input to the water balance model was calculated based on groundwater modelling by BGC (BGC 2015a). Increasing the TSF conductance by a factor of 10 increases the TSF seepage estimates; this sensitivity assessment was undertaken to assess the sensitivity of the predicted concentrations to increased TSF seepage.

Another base case model groundwater assumption is that 20% of the macro flow in the MRSFs reports to the groundwater table and bypasses the downstream water management pond, if present. The sensitivity assessment around this assumption included an increase of 20% in the macro flow bypassing the water management pond.

3.5.1.4 Dustfall Assumptions

Dustfall for the base case was determined from the air quality model results at peak Operations during the combined Years 4 and 8 of mining (Stantec 2015a). The two main assumptions for the incorporation of dustfall into the base case of the water quality model are that dustfall is 100% available (soluble) for all the parameters modelled, and that all dustfall that falls within 100 m of a creek (50 m on either side of the creek) reports as loading to the first downstream water quality model assessment location. The sensitivity of the water quality predictions to dustfall assumptions was assessed by assuming that dustfall is not available for all the parameters modelled, and the second sensitivity assessment reduced the area contributing to surface loading by half to within 50 m of the creeks (25 m on either side of the creek). In narrow creeks like Peterson and Humphrey, the amount of dustfall that directly reaches the creek surface is little compared to what reaches the

sides of the creek. However, all dustfall reaching the sides of the creek may not report to the creek surface as its mobility can be influenced by factors including vegetation, soil type, slope, and others. Therefore, the Base Case assumption that all the dustfall reaching a strip of land of 50 m on either side of the creek will report to the creek is considered conservative and the purpose of these sensitivity scenarios were to quantify the conservatism in the dustfall assumptions.

3.5.1.5 Baseline Water Quality Inputs

Base case water quality predictions were generated using median monthly baseline water quality inputs. Baseline monthly inputs were varied to better constrain the potential effects of natural variability in baseline conditions on predicted water quality. Baseline monthly inputs to the model were incorporated at the 95th percentile (P), average (mean), and 5th P. The baseline calibration model was re-calibrated with the data associated with each of these statistics and the results were used in the corresponding Life of Mine (LOM) water quality models.

3.5.1.6 Seepage Timing

Seepage timing was adjusted to fit within a shorter model time frame. Predictions obtained from particle tracking from groundwater hydrological modelling (BGC, 2015a) show that the timing of a portion of seepage from mine facilities is in the order of several hundreds of years. Therefore, Base Case model seepage timing was input to the water quality model as follows:

- Modelled flow lines less than or equal to 20 years were assigned a seepage timing of 0 years.
- Modelled flow lines greater than 20 years but less than or equal to 200 years were assigned a seepage timing of 30 years.
- Modelled flow lines greater than 200 years were assigned a seepage timing of 80 years.

The sensitivity of the water quality predictions to the timing of seepage from mine facilities was evaluated on a longer time-frame to account for loading along seepage pathways that was closer to that predicted in the groundwater modelling. Seepage timing inputs to the sensitivity case were adjusted as follows.

- Modelled flow lines less than or equal to 20 years were assigned a seepage timing of 10 years.
- Modelled flow lines greater than 20 years but less than or equal to 200 years were assigned a seepage timing of 110 years.
- Modelled flow lines greater than 200 years were excluded from the model.

4 – MODEL INPUTS, SOURCES, AND ASSUMPTIONS

4.1 CLIMATE, HYDROLOGY, AND FLOW INPUTS

The LOM water balance model developed by BGC was used as the basis for all flows for the development of the LOM water quality model. The water balance model development is documented in the Water Balance Model report (BGC 2015b); the following is an overview of the development of this model.

The BGC water balance model is based on the Vanderwiele et al. monthly model and is implemented in an Excel spreadsheet for predicting existing and future conditions in the Project area. Inputs to the model include monthly precipitation and potential evapotranspiration, and outputs include monthly runoff. Stream discharge is divided into slow runoff and fast runoff. Slow runoff depends on the storage in the catchment in the previous month and is approximately similar to baseflow/groundwater flow, whereas fast runoff is similar to surface runoff and interflow in the unsaturated zone (BGC 2015b). The study area of the baseline water balance model included areas of the Peterson Creek watershed (including Jacko Lake), as well as areas of the Keynes Creek watershed (including Goose Lake), and the existing open pit and central collection pond. Modelled flows were calibrated to historic and synthetic streamflow records based on historical temperature and precipitation inputs.

The LOM water balance model was developed considering the water management plan, including areas representing proposed mine infrastructure in addition to the natural hydrologic processes of the Project area. An overview of the water management plan is presented in the following section. Water flow through Project facilities was explicitly modelled in the LOM water balance model. For example, precipitation on a facility was modelled as runoff or infiltration to the facility, with infiltration further separated into discharge at the base and recharge to groundwater.

4.1.1 Water Management Plan

The LOM water balance model developed by BGC is consistent with the water management plan (BGC 2015b). A brief overview is presented below.

Contact water for the site will be generated from the various MRSFs, the open pit and the TSF. The majority of this contact water is expected to be collected at a number of water management ponds around the site, including:

- North Embankment Pond 1 and 2 – collect runoff from TSF seepage and a portion of the West MRSF
- South and Southeast Embankment Ponds – collect runoff from TSF seepage and undisturbed areas located up-gradient
- SMRSF Pond – collects seepage and surface runoff from the southeast portion of the South MRSF
- EMRSF Pond – collects seepage and surface runoff from the southeast portion of the South MRSF
- Plant Site Pond, and
- Central Pond – all of the above ponds are routed to the Central Pond, which also receives runoff from a portion of the West MRSF and South MRSF. Groundwater inflows and surface runoff to the open pit are also collected and pumped to the Central Pond.

Runoff to the Central Pond will be used as a source of water for the process plant, which will also receive water from the TSF reclaim and Kamloops Lake. The TSF will be operated as a conventional tailings facility, receiving flotation tailings from the process plant. Inputs to the TSF include:

- Direct precipitation and catchment runoff
- Water in the tailings slurry, and
- Pump-back water from the South and Southeast Embankment Ponds.

Water collected in the TSF is managed by the reclaim water system that provides water to the mill for mineral processing. Due to high evaporative losses, low runoff volumes within the site and void losses to tailings, the Project is expected to be operated with a water deficit. Therefore, make-up water for the process plant will be sourced from Kamloops Lake. The lake water will also be used as a source for dust control and potable water.

At Decommissioning and Closure, a reclamation cover will be placed over the MRSFs and the TSF. Active management of the open pit is not anticipated for the Post Closure period and this facility will be allowed to slowly fill due to groundwater inflows, surface runoff and direct precipitation. The TSF supernatant pond remaining at the end of Operations will be pumped to the open pit during the Decommissioning and Closure phase to facilitate a drier base for the closure cover.

4.2 GEOCHEMICAL SOURCE TERMS FOR MINE MATERIALS

Lorax Environmental Ltd. (Lorax) provided the following geochemical source terms for mine material contact loading:

- Mine Rock Storage Facilities (MRSFs):
  - West MRSF (WMRSF) and Main Dam: for Years 5, 10, and 20 of mining, and Post Closure.
  - South MRSF (SMRSF) and East Dam: for Years 5, 10, and 20 of mining, and Post Closure.
  - East MRSF (EMRSF): for Years 5, 10, and 20 of mining, and Post Closure.
- Open Pit backfill: for Year 20 of mining and thereon.
- Open Pit walls: with the exception of Sugarloaf Diorite, these source terms were applied to water in contact with both mine rock and ore, and include the following geochemical units:
  - Iron Mask Hybrid (IMH) unit: for Operations.
  - Mafic Volcanic (MAFV) unit: for Operations.
  - Picrite (PICR) unit: for Operations.
  - Sugarloaf Diorite (SLD) unit: for Operations and water in contact with mine rock. Other geochemical units grouped under this unit include Sugarloaf Diorite weak albite alteration (SLDWA), Sugarloaf Diorite moderate albite alteration (SLDMA), Sugarloaf Diorite strong albite alteration (SLDSA), Pyroxene Plagioclase Porphyry (PXPP), and Sugarloaf Volcanic Hybrid (SVHYB).
  - Pit wall ore: this unit has the same geochemical characteristics as SLD, with the difference that the source term was applied to water in contact with ore.
- Ore stockpile: for maximum extent and for Year 17 of mining and thereon.
- Tailings Storage Facility (TSF):
  - Beach runoff active
  - Beach runoff inactive
  - Saturated pore-water seepage active
  - Saturated pore-water seepage inactive

- Process water, and
- Base concentration.

Details regarding the development of the contact water source terms are provided under separate cover in the Ajax Project Derivation of Geochemical Source Terms report (Lorax 2015a). The geochemical source terms have been developed based on the full footprint of the mine facilities and are therefore more conservative in the early years of the model due to the smaller size of all of the facilities. The geochemical source terms were developed based on the infiltration rates and source loading expected under average precipitation conditions and represent concentrations of parameters in contact water that would likely occur under such conditions. The intended use of the source terms is for the Base Case (average climate case) water quality model; however, the same source terms were applied to VCC models for the purposes of understanding the sensitivity of the predicted parameter concentrations to potential changes in the expected climate. Modelled parameter concentrations may be over-predicted when the source terms are applied for unusually wet conditions and represent concentrations beyond the upper bound of concentrations likely to occur; the reverse is true for drier conditions. More realistic VCC model results would be predicted by developing source terms directly applicable to each climate scenario; however, the current conservative assumptions used in source term application are sufficient for the intent of the VCC sensitivity analysis.

Runoff source terms for the seepage from the historical mine rock piles were estimated using the water quality analysis data obtained from the baseline monitoring site WR-Seep.

The geochemistry source terms for mine materials are provided in Appendix A.

4.3 SOLUBILITY CONSTRAINTS

Natural solubility constraints were assessed by Lorax. The solubility constraints limit the concentrations for specific parameters reducing the stored load in a facility to that which is equivalent to the solubility limit. Loads in excess of these constraints are assumed to settle out of solution as insoluble solids within the given facility. The solubility constraints are summarized in Table 4.1.

Table 4.1 Solubility Constraints Applied in the Water Quality Model

Parameter	Concentration Cap
Bromide	2
Chloride	2,010
Fluoride	1.4
Sulphate	30,170
Ammonia	N/A
Nitrate	21
Nitrite	2.8
Phosphorus	0.0042
Aluminum	0.0053
Antimony	0.021
Arsenic	0.022
Barium	0.054
Beryllium	0.000053
Boron	N/A
Cadmium	0.000035
Calcium	653
Chromium	0.1
Cobalt	0.014
Copper	0.042
Iron	0.089
Lead	0.000074
Lithium	N/A
Magnesium	3,675
Manganese	0.77
Molybdenum	N/A
Nickel	0.026
Potassium	393
Selenium	N/A
Silicon	23
Silver	0.000046
Sodium	8,496
Strontium	22
Thallium	0.00019
Tin	0.00084
Uranium	0.13
Vanadium	0.0053
Zinc	0.14

NOTES:
1. UNITS ARE mg/L.
2. N/A = NOT AVAILABLE.
3. DL = DETECTION LIMIT.

4.4 BASELINE WATER CHEMISTRY INPUTS

Baseline surface water and groundwater quality source terms were developed from the database of baseline water quality inclusive of samples collected through September 2014. The baseline water quality sites used in the development of the water quality model are shown on Figure 3.1. The baseline water quality datasets were first grouped by season, in order to increase the statistical power of the data, and then were reduced to monthly inputs (95th P, average, median, and 5th P), with months within a season having identical values. Seasons were defined as winter (December, January, February, and March), spring (April and May), summer (June, July, and August), and fall (September, October, and November). The baseline water quality data were reviewed against the MOE Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (2012). High non-detect values were excluded from the baseline summary statistics for input to the model. All included non-detect values were reduced to half the method detection limit (MDL) value for inclusion in the monthly summary statistics generated for each baseline chemistry input node.

The baseline water chemistry model inputs are provided in Appendix B. A detailed description of the baseline surface and groundwater quality data that were used as inputs to the water quality model can be found in the Baseline Water Quality Report (KP 2015), and a brief summary is presented below.

4.4.1 Peterson Creek Watershed Water Quality Sites

Baseline monitoring surface and ground water sites that were used as inputs to the water quality model are shown on Figure 3.1. Refer to the Baseline Water Quality Report (KP 2015) for a detailed discussion on surface and ground water quality in the Project area.

Baseline surface water quality sites within the Peterson Creek watershed are as follows (listed from upstream to downstream):

- JC03 – Peterson Creek, approximately 1.5 km upstream of Jacko Lake, below the confluence of Jacko Creek and Peterson Creek. Although this site is no longer active, it served as an upstream reference site as it is located upstream of all the historical mine workings and planned project facilities. Water quality data from this site were combined with data from PC10, described below.
- PC10 – Peterson Creek, approximately 1 km upstream of Jacko Lake, this site was established to replace JC03 and to serve as an upstream reference site. Monthly 95th P, average, median, and 5th P concentrations were applied to the base case and sensitivity models to represent background upstream water quality in the Peterson Creek watershed, as well as water quality of the runoff from some reclaimed mine areas during Decommissioning and Closure and Post Closure.
- JACL – Jacko Lake, approximately at the surface projection of the deepest part of the lake. The monthly water quality data for this site, determined from samples collected at shallow (JACL-S) and deep (JACL-D) lake depths were not directly applied to the model, but were used as inputs to the baseline water quality calibration model. The determined baseline 95th P, average, median, and 5th P concentrations of tributaries to the lake were applied to the base case and sensitivity models.
- KC03 – Keynes Creek, immediately upstream of the confluence with Peterson Creek. Monthly 95th P, average, median, and 5th P concentrations were applied to the baseline water quality calibration model to represent water quality in Keynes Creek.

- PC08 – Peterson Creek, immediately downstream of the Jacko Lake Spillway. The monthly water quality data for this site were not directly applied to the model, but were used as inputs to the baseline water quality calibration model. The determined baseline 95th P, average, median, and 5th P concentrations of the inflows between Jacko Lake and PC08 were applied to the base case and sensitivity models.
- PC03 – Peterson Creek, downstream of all historical mine features. The monthly water quality data for this site were not directly applied to the model, but were used as inputs to the baseline water quality calibration model. The determined baseline 95th P, average, median, and 5th P concentrations of the runoff from the historical mine features, including the open pits and waste rock pile to the south of Peterson Creek and the natural catchment in that reach of the creek, were applied to the base case and sensitivity models.
- HUMPH-02: Humphrey Creek, tributary to Peterson Creek. Monthly 95th P, average, median, and 5th P concentrations were applied to the base case and sensitivity models to represent loading associated with non-mine related runoff and baseflow in Humphrey Creek.
- PC02.5 – Peterson Creek, along Goose Lake Road between PC02 and PC03. The monthly water quality data for this site were not directly applied to the model, but were used as inputs to the baseline water quality calibration model. The determined baseline 95th P, average, median, and 5th P concentrations of the runoff from the south west extent of the EMRSF were applied to the base case and sensitivity models.
- PC02.3 – Peterson Creek, downstream of PC02.5. The determined 95th P, average, median, and 5th P concentrations of the surface drainages that may be influenced by runoff from project facilities were applied to the base case and sensitivity models.
- PC02 – Peterson Creek, downstream of a trailer park, a rock quarry/gravel pit operation, agricultural lands, and adjacent to the Princeton-Kamloops Highway. The monthly water quality data for this site were not directly applied to the model, but were used as inputs to the baseline water quality calibration model. The determined baseline 95th P, average, median, and 5th P concentrations of the non-mine related water sources between PC02.5 and PC02 were applied to the base case and sensitivity models.

There are 51 groundwater quality monitoring sites in the project area and baseline groundwater inputs to the water quality model were selected based on the proximity of the monitoring wells to the proposed project facility,. The baseline groundwater quality data sets that were selected for inclusion in the water quality model are as follows:

- MW11-05D/S baseline groundwater quality data were reduced to average, 95th P, and 5th P concentrations and applied to the base case and sensitivity models to represent background groundwater inputs in the region of the SMRSF and EMRSF.
- BGC14-010 baseline groundwater quality data were reduced to average, 95th P, and 5th P concentrations and applied to the base case and sensitivity models to represent background groundwater inputs in the region of the TSF and the WMRSF.
- MW11-04DS baseline groundwater quality data were reduced to average, 95th P, and 5th P concentrations and applied to the base case and sensitivity models to represent background groundwater inputs in the region of the Upper Pond.
- PW01 baseline water quality data, collected from pumping tests conducted at the pumping well at the western extent of the historical open pit, were reduced to average, 95th P, and 5th P

concentrations and applied to the base case and sensitivity models to represent groundwater inputs in the open pit area.

4.4.2 Cherry Creek Watershed Baseline Water Quality Sites

Baseline surface water quality sites within the Cherry Creek watershed are as follows:

- INKS – Inks Lake, south end of the lake along Lac Le Jeune road, east of the TSF, and southwest of the historic north mine rock pile. Because of the limited water quality dataset available for Watering Lake, which is an input to Keynes Creek, monthly 95th P, average, median, and 5th P concentrations determined for Inks Lake were applied to the baseline water quality calibration model to represent water quality in Watering Lake.

4.4.3 Kamloops Lake

Baseline surface water quality data collected in Kamloops Lake from June 2011 through November 2013 were used to determine 95th P, average, median, and 5th P concentrations, which were used as inputs to the LOM water quality model to characterize the freshwater source for the process plant and dust control in the mine.

4.4.4 Historical Mine Site Features Water Quality Sites

Historic mining activities in the Peterson Creek watershed are evident with the three existing open pits. The two western open pits have lakes formed in them with no surface discharge points, and the eastern open pit was backfilled with mine rock during reclamation of the former mine. In addition to the open pits there are two mine rock piles, one to the south of Peterson Creek and one to the north of the open pits. The following water quality sites were established within or down-gradient of these features:

- WR-Seep – Established in 2011 at the old mine rock seepage collection pond to the south of Peterson Creek between the toe of the waste rock pile and creek.
- North Seepage Pond (NSP) – Established in 2010, this site is at the south end of the pond. Other than the open pits, this site is a seepage collection point for the historic mine rock pile located north of the exiting open pits.
- Ajax West-West Pit (AJWW) – Established in 2007 in the westernmost historic open pit, this site is sampled at two discrete depths. A shallow depth sample (S) and deeper sample (D) are collected at this site, from approximately 1 m below surface and above the bottom, respectively.
- Ajax West-East Pit (AJWE) – Established in 2007 in the eastern historic open pit (that contains water), this site is sampled at three discrete depths. A shallow depth sample (S), medium depth sample (M), and deeper sample (D) are collected at this site, from approximately 1 m below surface, half way between the surface and the bottom, and 1 m above the bottom, respectively.

4.4.5 Baseline Calibration Water Quality Model

A baseline calibration water quality model was developed using the existing conditions water balance provided by BGC (average climate inputs). The model was used to quantify the loads contributing between points where the surface water quality is well quantified (baseline water quality monitoring locations), independent of whether the flow pathway was associated with surface water or groundwater inflows. These loads were then back-calculated to concentrations based on the volume of flow between two model nodes and these concentrations were used to calculate loading from non-

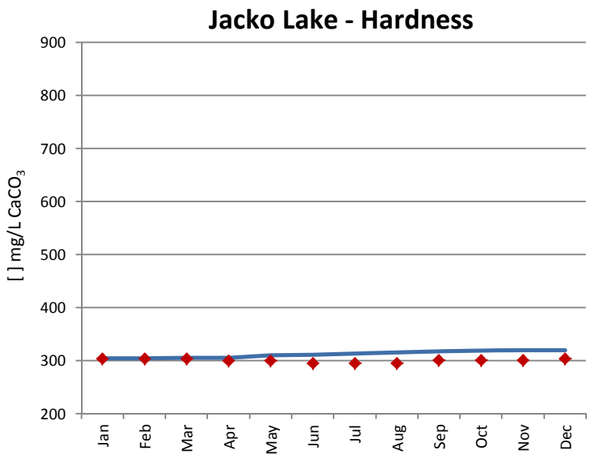
mining related flow pathways at the same points in the LOM water quality model. The inputs to the baseline calibration model included median (base case), 95th P, average, and 5th P concentrations, resulting in four unique sets of baseline chemistry inputs for the water quality models. Concentrations associated with these natural catchments for the median (base case) are provided in summary tables in Appendix B.

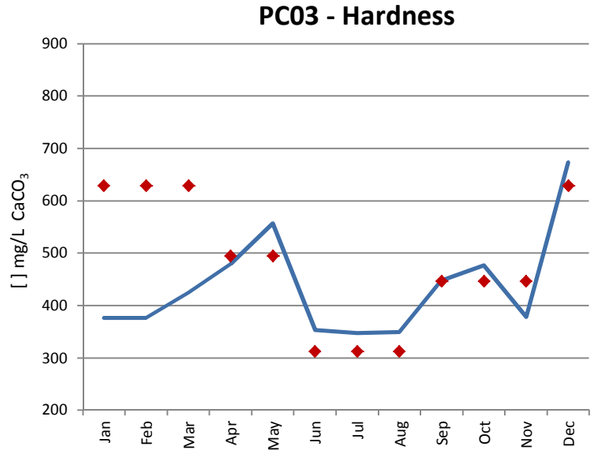
Conservative factors have been incorporated into the baseline calibration model that resulted in the potential over-estimation of concentrations for some parameters. Negative concentrations were calculated when the total load at a downstream node was less than the load at the next upstream node. These negative concentrations account for loads that are being lost between nodes in the model and if directly applied to the water quality model these factors would remove mine generated loads, prior to resulting in increased concentrations at downstream nodes. To prevent the attenuation of mine loads in the LOM water quality model, a conservative assumption was applied by setting negative concentrations to zero. As a result modelled baseline concentrations were higher for some parameters, and subsequent LOM concentrations are also higher.

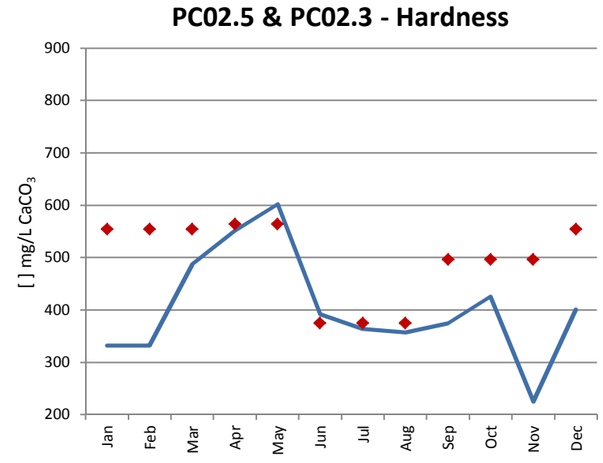
These load losses, or negative concentrations, are expected results for baseline calibration models and may represent actual attenuation, chemical reactions or conversion to particulate form between baseline sample locations, or they may be due to inequities in the number of samples contributing to the monthly baseline concentrations used as inputs to the model. These negative loading results tended to be most common between Peterson Creek model nodes PC03 and PC02.5 and lower Humphrey Creek, and are most likely representative of losing reaches along the lower Humphrey Creek and Peterson Creek channels in the vicinity of the Peterson Creek Aquifer. The complexity of the interconnection between Peterson Creek and the underlying Peterson Creek Aquifer is discussed in the Ajax Project *Baseline Groundwater Hydrology Assessment* report (BGC 2015a).

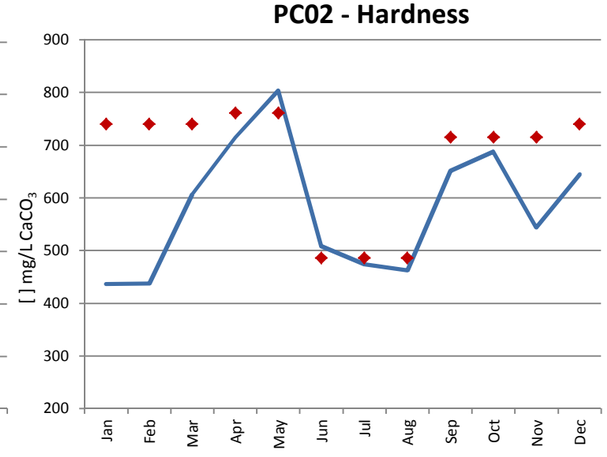
Examples of the calibration of the baseline water quality model are presented in Figures 4.1 to 4.5 for hardness, sulphate, antimony, arsenic, cadmium, copper, chromium, molybdenum, selenium, vanadium, and zinc. There is a closer agreement between measured and modelled values for ions (i.e., hardness and sulphate) than for the other parameters. In general, concentrations obtained with the calibrated baseline model are higher than measured concentrations, especially in the water quality site PC02.5, and the calibration results for model node PC02, further downstream.

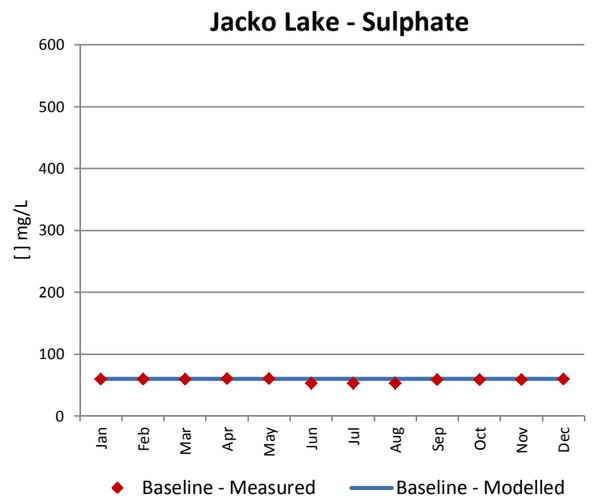
There are a few parameters in the baseline sensitivity model that are predicted to have lower receiving water concentrations when the 95th P baseline inputs were used compared to the median case. This occurs as a result of the baseline calibration model inputs to the LOM model. When the difference in load is small between two adjacent baseline model nodes, the load determined for the catchment between these two nodes is also small, or smaller than the median case, resulting in lower overall predictions.

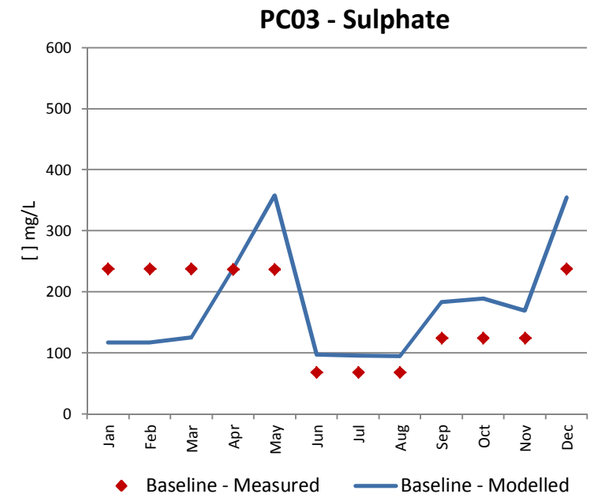


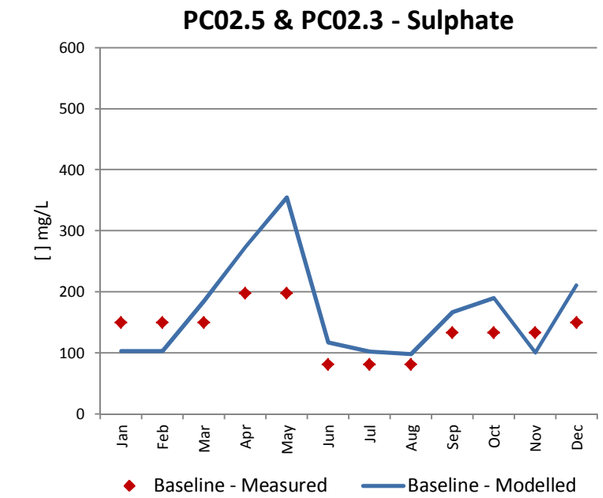


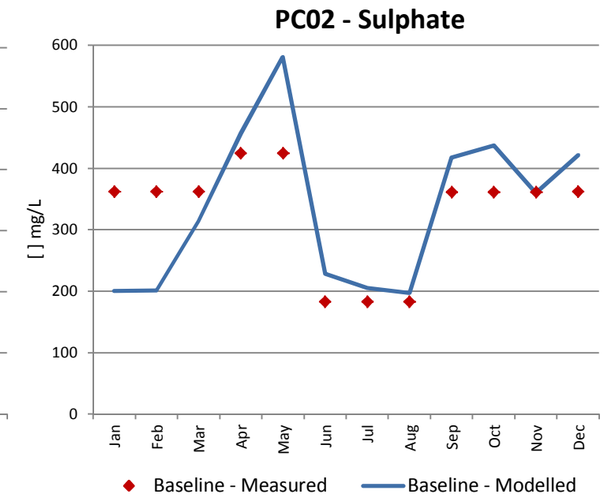












NOTES:
1. MODEL RESULTS DISPLAYED FOR DISSOLVED HARDNESS AND SULPHATE.
2. BASELINE - MEASURED ARE MEDIAN SEASONAL CONCENTRATIONS.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
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CALIBRATED BASELINE HARDNESS AND SULPHATE CONCENTRATIONS

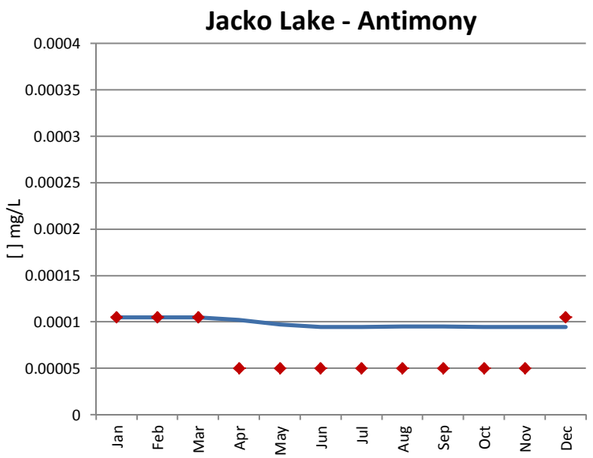
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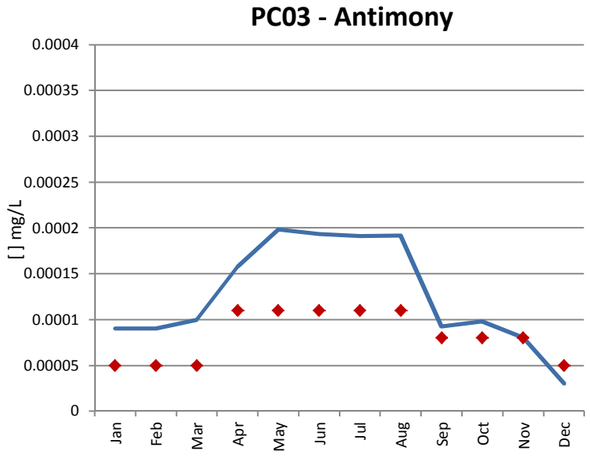
P/A NO. VA101-246/31

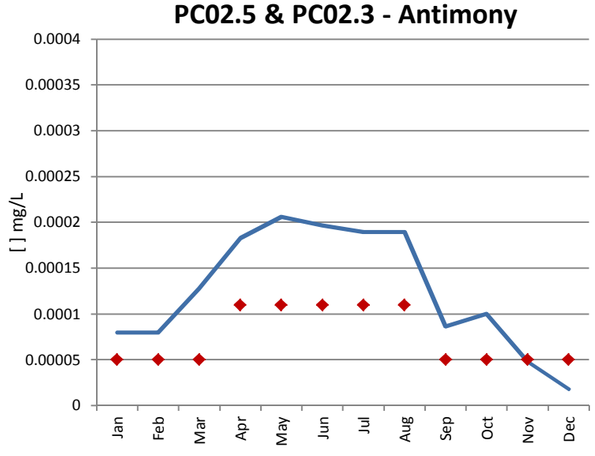
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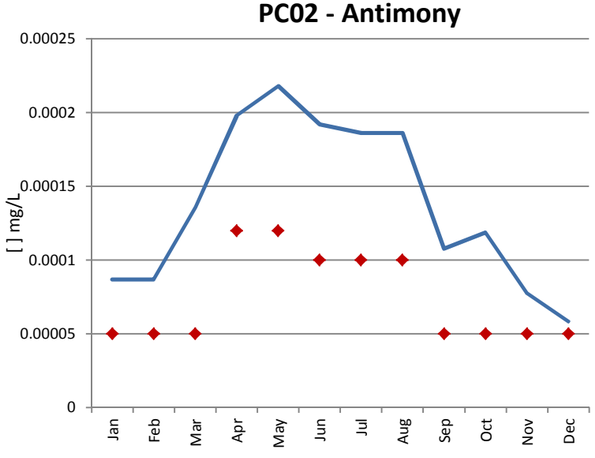
FIGURE 4.1

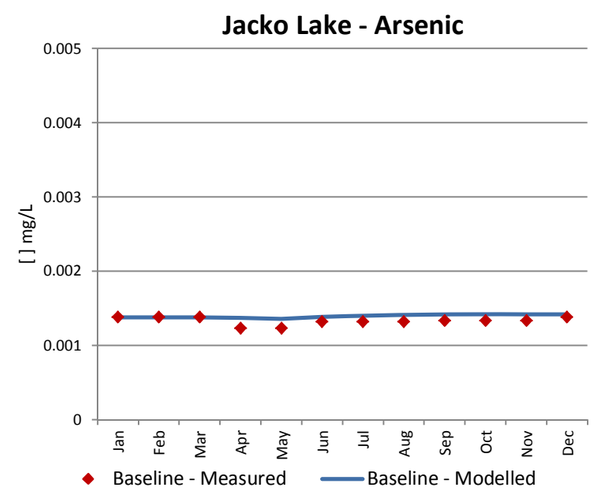
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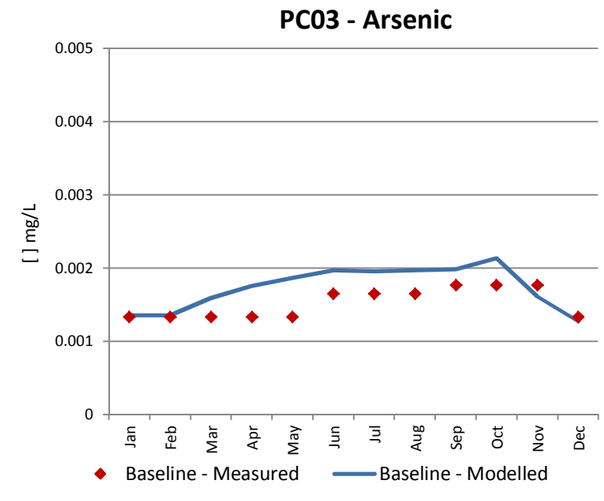


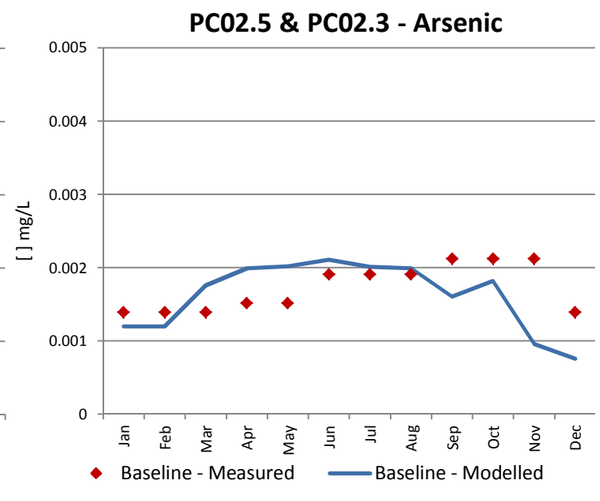


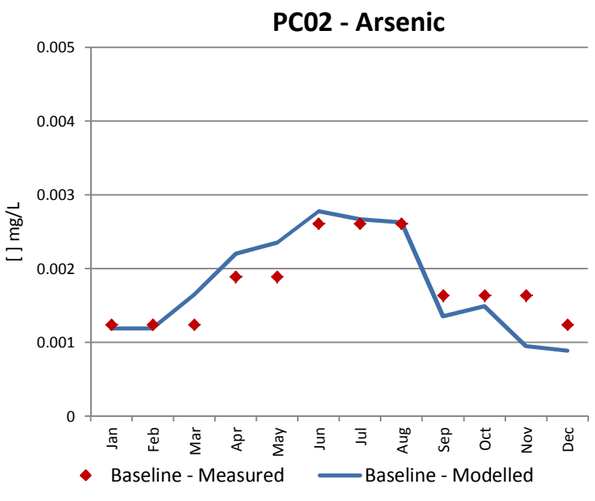












NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED ANTIMONY AND ARSENIC .
2. BASELINE - MEASURED ARE MEDIAN SEASONAL CONCENTRATIONS.

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CALIBRATED BASELINE ANTIMONY AND ARSENIC CONCENTRATIONS

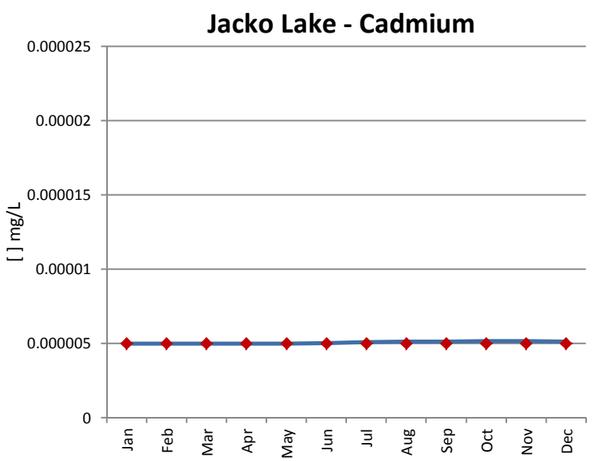
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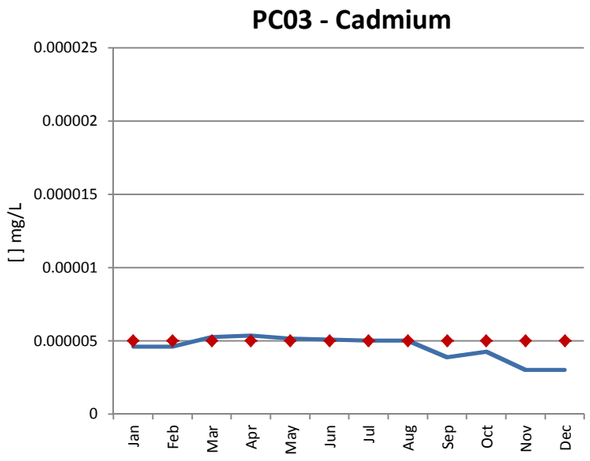
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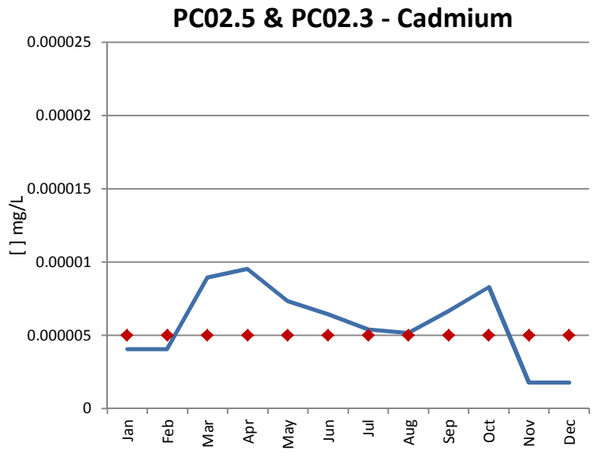
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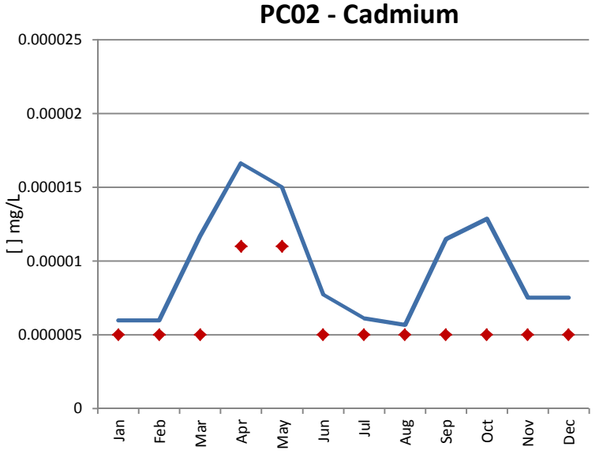
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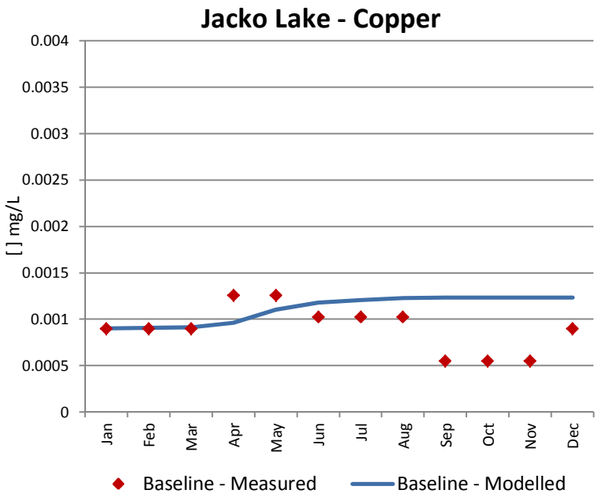
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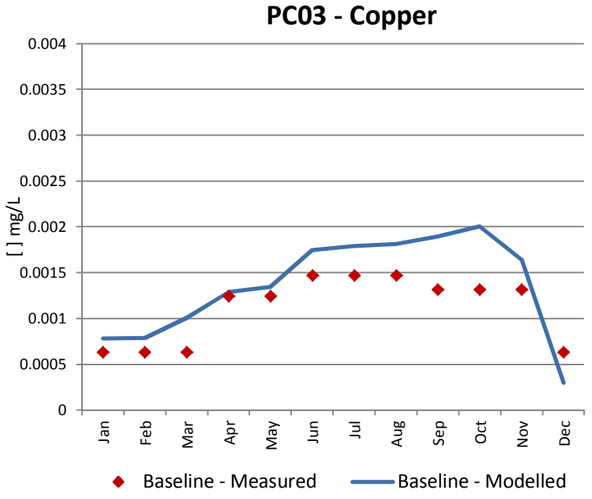


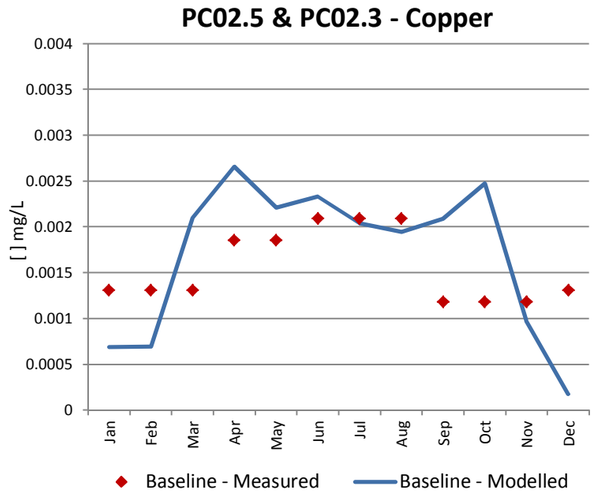


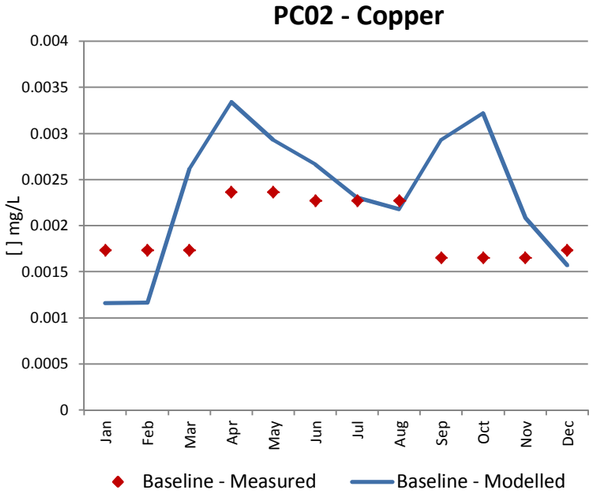












NOTES:
1. MODEL RESULTS DISPLAYED FOR DISSOLVED CADMIUM AND COPPER.
2. BASELINE - MEASURED ARE MEDIAN SEASONAL CONCENTRATIONS.

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KGHM AJAX INC.

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CALIBRATED BASELINE CADMIUM AND COPPER CONCENTRATIONS

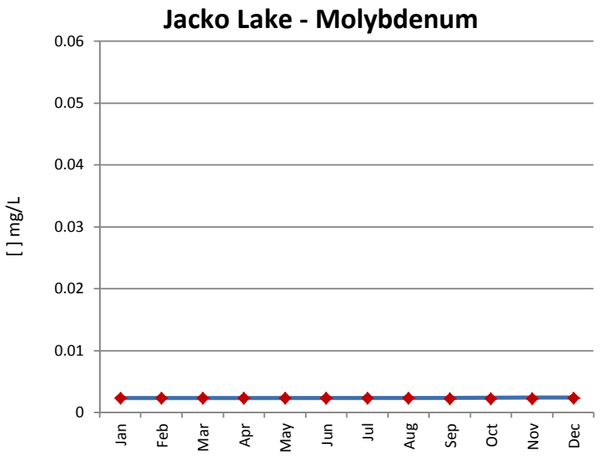
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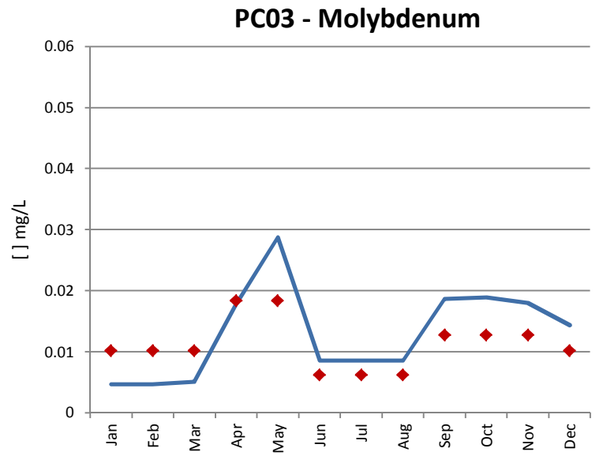
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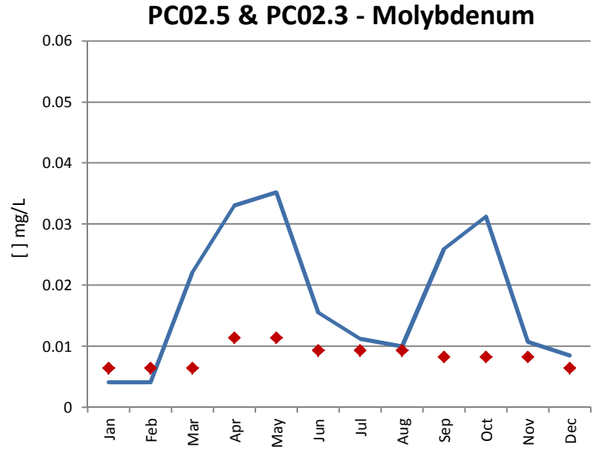
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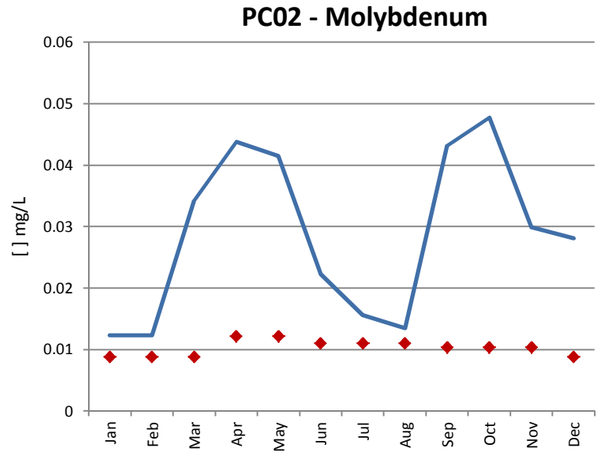
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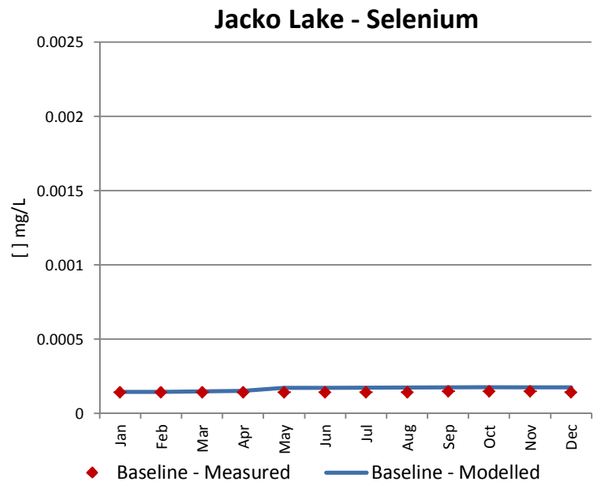
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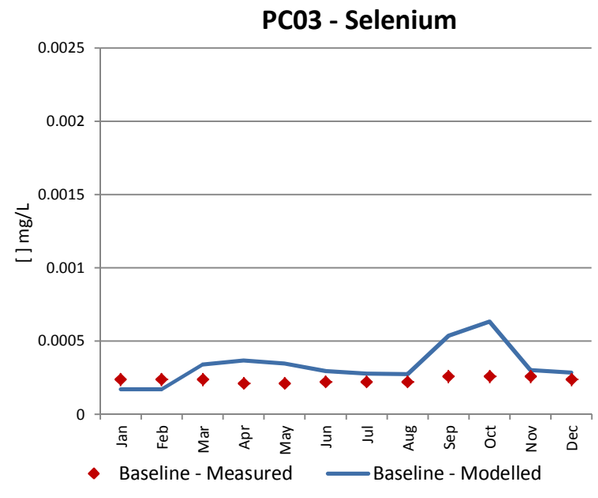


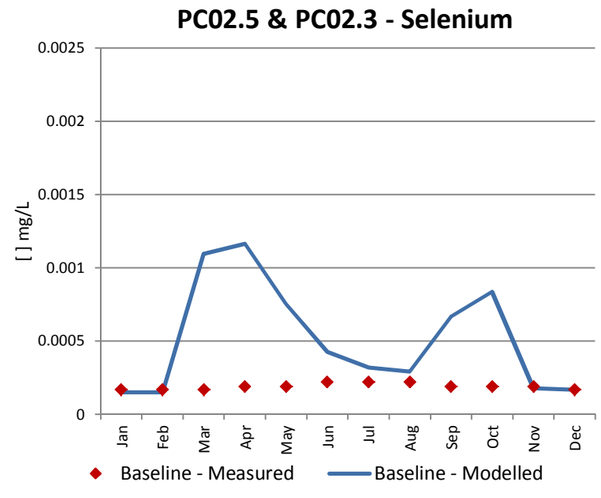


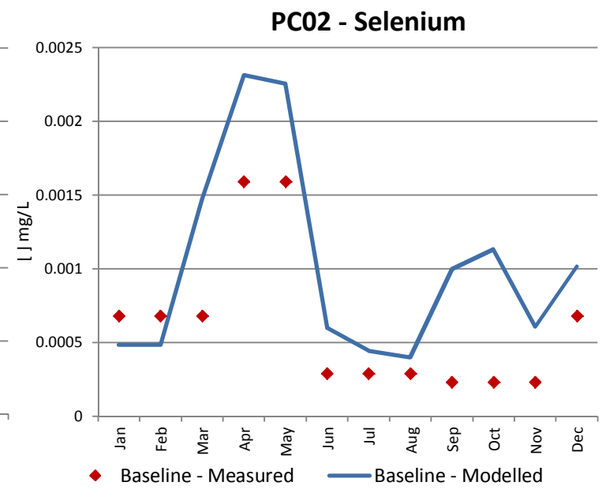












NOTES:
1. MODEL RESULTS DISPLAYED FOR DISSOLVED MOLYBDENUM.AND SELENIUM.
2. BASELINE - MEASURED ARE MEDIAN SEASONAL CONCENTRATIONS.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
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CALIBRATED BASELINE MOLYBDENUM AND SELENIUM CONCENTRATIONS

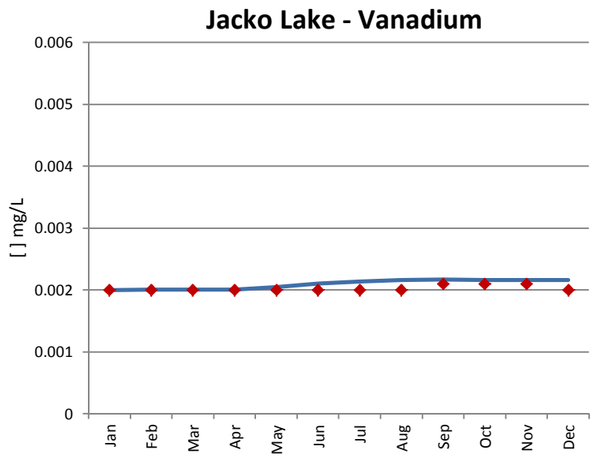
Knight Piésold CONSULTING

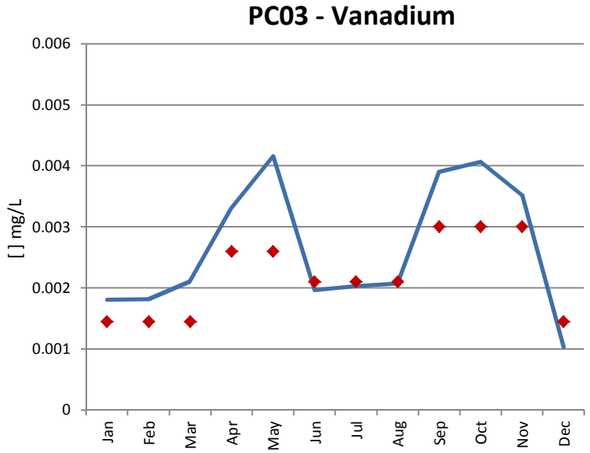
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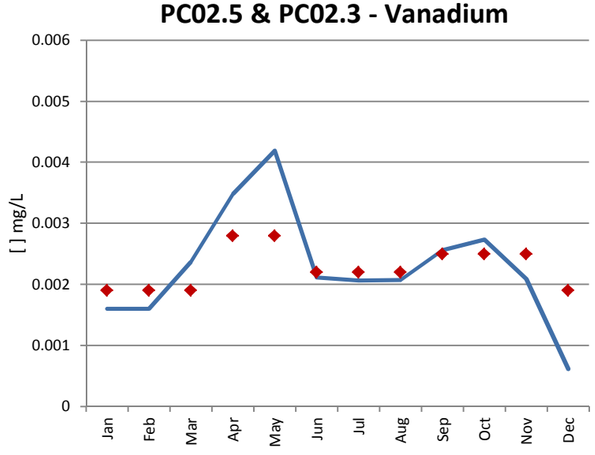
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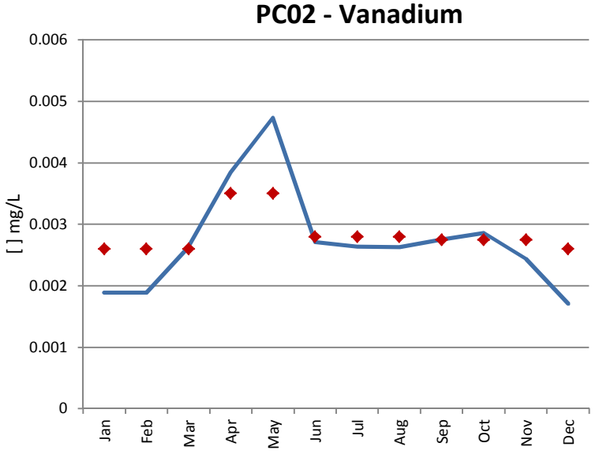
FIGURE 4.4

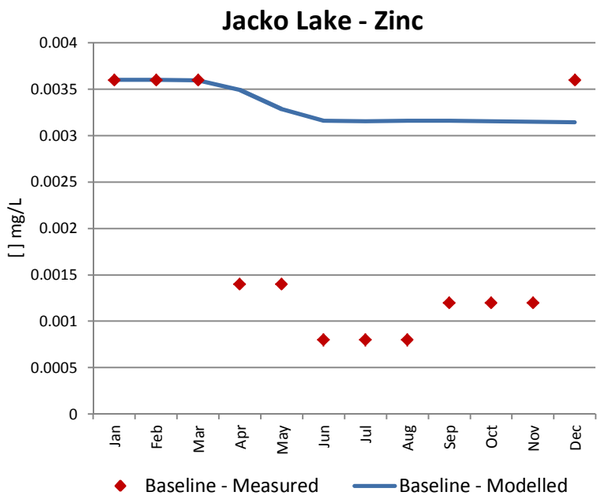
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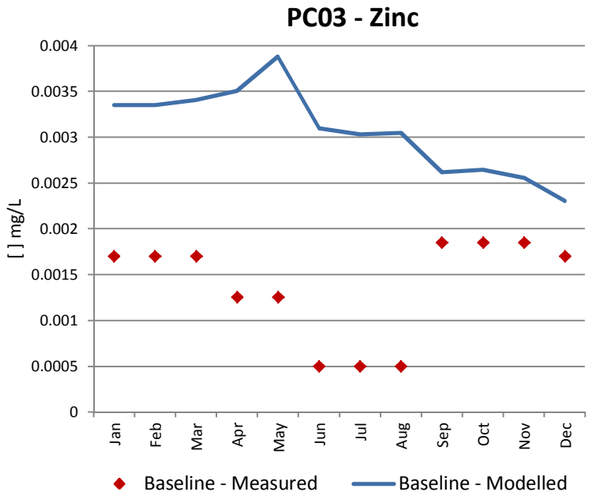


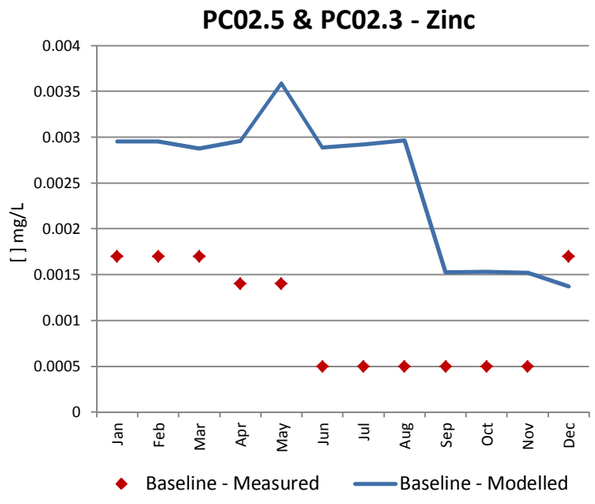


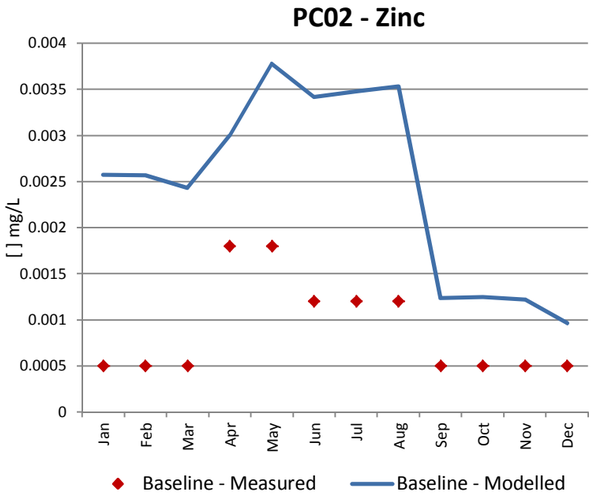












NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED VANADIUM AND ZINC.
2. BASELINE - MEASURED ARE MEDIAN SEASONAL CONCENTRATIONS.

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CALIBRATED BASELINE VANADIUM AND ZINC CONCENTRATIONS

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P/A NO. VA101-246/31

REF. NO. 3

FIGURE 4.5

REV 0

4.5 DUSTFALL INPUTS

Stantec Inc. (Stantec) developed the air quality model for the Project that the dustfall inputs for the water quality model were extracted from. Dustfall inputs for the water quality model included average monthly deposition rates (in units of $\mu g/m^2/s$) in grid points located as follows:

- Peterson Creek: From about 10 km upstream of Jacko Lake to Jacko Lake, on a strip of land of 50 m at each side of the creek channel (for the base case water quality model), and a combined grid spacing of 50 m and 100 m.
- Jacko Lake: Over Jacko Lake, on a combined grid spacing of 50 m and 100 m.
- Humphrey Creek: From the headwaters of Humphrey Creek at Edith Lake to its confluence with Peterson Creek, on a strip of land of 50 m at each side of the creek channel (for the base case water quality model), and a grid spacing of 100 m.
- Peterson Creek Downstream Pond (PCDP): Over the area of the proposed water management pond to be built on Peterson Creek, downstream of the PC03 site, on a grid spacing of 100 m.

Dust deposition rates were discriminated for the following sources:

- Diesel: Total particulate matter (PM) deposition resulting from diesel emission sources only.
- Ore: Total PM deposition resulting from ore sources only.
- Tailings: Total PM deposition resulting from tailings sources only.
- Other: All other emissions that are not diesel, ore, or tailings, including mine rock, overburden, and others.

Different chemical compositions were assigned to each of these sources. The speciation profiles of ore, tailings, and other sources were determined from the geochemical characterization of drill hole data, while the speciation profile of diesel was determined from California Air Resources Board (CARB) data and the U.S. Environmental Protection Agency (US EPA, 2002). Further details on the air quality model are presented in the Ajax Mine Project – Air Quality Technical Data Report (Stantec 2015a).

4.6 MODEL ASSUMPTIONS

The following general assumptions were applied to the water quality model:

- No chemical loads are associated with precipitation and evaporation.
- Mixing for each model component is instantaneous and complete.
- Thermal stratification and the effects that would result on surface water reservoirs were not modelled.
- Dissolved components remain in solution, with the exception of those parameters for which solubility limits were applied.
- Baseline water quality data that were below the MDL were applied to the model as background concentrations equal to half the detection limit.
- The overburden stockpile on the EMRSF was assumed to load according to the EMRSF source terms; a conservative assumption.

Surface water quality related assumptions:

- Model input data for baseline site KC03 were limited and missing seasonal data were assumed equal to the maximum values from the seasons for which data were available.

- Baseline water quality data from assessment locations PC02.3 and PC02.5 were combined to form one single dataset that represents baseline water quality at both locations, given their proximity, similar water quality characteristics, and due to the short-term data set available for PC02.3 at the time the model was created.
- Parameter concentrations in the runoff from the historic mine features draining to the water quality site PC03 are three times higher than the parameter concentrations in the runoff from the south slopes draining to PC03.
- Loading for runoff from undisturbed and reclaimed areas is represented by the combined dataset of the upstream sites JC03 and PC10.
- Jacko Lake is a fully mixed system and the combined dataset of water quality samples collected at shallow and deep locations is representative of the initial water quality of the entire lake.
- The initial water quality of Peterson Creek Downstream Pond (PCDP) is identical to the water quality represented by the combined baseline dataset for water quality sites PC02.5 and PC02.3.
- Monthly parameter concentrations in the Upper Pond are identical to monthly parameter concentrations in the North Seepage Pond (NSP).

Groundwater quality related assumptions:

- Parameter loads corresponding to existing Keynes Creek baseflow by-pass the mouth of Keynes Creek and reach the water quality site PC03 instead of reaching PC08; this is a required assumption for baseline calibration based on differences in baseline concentrations at PC08 and KC03.
- Chemistry of the undisturbed groundwater intercepted in the seepage collection ponds for the EMRSF and SMRSF areas is based on the baseline dataset for the groundwater monitoring well MW11-05DS.
- Chemistry of the undisturbed groundwater intercepted in the seepage collection ponds for the TSF and West MRSF areas is based on the baseline dataset for the groundwater monitoring well BGC14-010.

TSF related assumptions:

- The chemistry associated with ore moisture is characterized by the quality of the groundwater inflows to the open pit (MW11-05D/S).
- The initial water quality of the TSF pond is based on the water quality of the existing pit lake in the historical east pit.
- The mill throughput and water balance requirements are based on 65,000 tpd.
- The TSF pond is a fully mixed system.
- Two geochemical source terms are provided for seepage chemistry from the TSF, one assuming there is no cover (applied during Operations) and one assuming there is a closure cover. The transition between these two terms is not instantaneous at Closure, when active tailings deposition ceases; it is a linear change between the end of Operations and the end of the modelling period.
- Tailings consolidation water chemistry is represented by the Operations Seepage source term.
- TSF closure cover conveys runoff from that facility to the Humphrey Creek watershed; the phreatic surface of the underlying TSF is below the elevation of the cover system and as a result, drainage towards the Humphrey Creek watershed is not affected by TSF seepage.

Open pit related assumptions:

- In terms of water quality, the Open Pit is a flow-through system during Operations when it is actively dewatered (i.e. the concentration within the pit is assumed to equal the combined concentration of the pit inflows from all loading sources in any given time-step).
- Pit wall areas determined for each rock type change linearly between each time step (month) during Operations, and remain unchanged after Closure.
- Mine rock storage (backfill) begins in the open pit in Operations (year 14).

Dustfall related assumptions:

- Dustfall contributions from mining activities are accounted for in the water quality model in Operations and Decommissioning and Closure and ceases when the reclamation is complete (end of Closure).
- Dustfall is assumed to contribute to loading in lakes and creeks if deposited directly on it or if deposited in a strip of land that extends to 50 m on each side of a watercourse.
- Dustfall loads are 100% available and solubility of each individual parameter was not considered. However, a sensitivity analysis was performed to consider predicted water quality if dustfall was not available as a surface water loading source.
- Dustfall accumulates during winter and spring (Dec thru May) and reaches the open water as in May when spring conditions are modelled.

Seepage related assumptions:

- Seepage delays and the percentage of total seepage losses predicted to arrive in the fast, medium, or slow categories were informed by groundwater modelling inputs from BGC.
- Seepage delays between the TSF, SMRSF, WMRSF, and EMRSF and the seepage collection ponds for these facilities were predicted in the groundwater modelling but were not included as inputs to the water quality model (conservative assumption).
- Seepage delays between the PCDP and next downstream node PC02.3 were provided but were not applied to the water quality model.
- Seepage delays incorporated into the water quality model were between facilities and seepage collection ponds and the receiving environment water quality model nodes (including the open pit). The delay time frames between source facility and receiving model node are summarized in Table 4.2.

Table 4.2 Assumptions for Timing of Seepage Arrival to Water Quality Assessment Locations

Receiving Node	Source Facility	Fast		Medium		Slow	
		%	time (yrs)	%	time (yrs)	%	time (yrs)
Open Pit	Jacko Lake	100%	<20	0%	20 to 200	0%	>200
Open Pit	TSF	13%	<20	87%	20 to 200	0%	>200
Open Pit	West MRSF	98%	<20	2%	20 to 200	0%	>200
Open Pit	EMRSF (W Trib)	84%	<20	10%	20 to 200	6%	>200
Humphrey Creek	SMRSF	0%	<20	44%	20 to 200	56%	>200
PC02.3	EMRSF (E Trib)	2%	<20	14%	20 to 200	84%	>200
PC02.3	EMRSF Pond	2%	<20	98%	20 to 200	0%	>200
PC02	EMRSF (E Trib)	2%	<20	14%	20 to 200	84%	>200

NOTES:

1. FAST, MEDIUM, AND SLOW CATEGORIES FOR TIME WERE GROUPED BY BGC BASED ON OBSERVATIONS FOR PARTICLE TRACKING IN GROUNDWATER MODELLING.
2. FAST, MEDIUM, AND SLOW CATEGORIES FOR TIME WERE INPUT TO THE BASE CASE MODEL AS FAST – INSTANTENEOUS ARRIVAL, MEDIUM – 30 YEAR ARRIVAL, AND SLOW – 80 YEAR ARRIVAL.
3. FAST, MEDIUM AND SLOW CATEGORIES FOR TIME WERE INPUT TO THE SEEPAGE SENSITIVTY CASE MODEL AS FAST – 10 YEAR ARRIVAL, MEDIUM – 110 YEAR ARRIVAL, AND SLOW – EXCEEDS TIMELINE OF MODEL.

5 – WATER QUALITY PREDICTIONS

5.1 OVERVIEW

Water quality predictions were determined for the Base Case and all the sensitivity scenarios from Year -2 (Construction) through Year 123 (Post Closure). The historical climate (precipitation and temperature) record used as input to the water balance model extends over 115 years. The focus of the discussion on predicted water quality is on the receiving environment downstream of the mining Operations, at the water quality assessment locations Jacko Lake, PCDP, PC02.3, PC02, and Humphrey Creek, during Construction, Operations, Decommissioning and Closure, and Post Closure. The primary focus of the results discussion is on parameters that are predicted to exceed generic water quality guidelines and parameters that affect toxicity (*i.e*. hardness).

Detailed time-series figures of predicted parameters concentrations were created for all parameters that were predicted to exceed water quality guidelines in the Base Case model, and a single year was selected for each mine phase to highlight the seasonal trends. The following years were selected:

- Operations – Year 13: Typical Operations year with open pit development in progress and MRSFs are near maximum extent.
- Decommissioning and Closure – Year 25: Runoff from reclaimed surfaces in the SMRSF and EMRSF, resulting in concentrations increases with respect to the Operations phase for those parameters that are affected by seepage from these facilities.
- Post Closure – Year 43: Typical Post Closure year with reclamation activities complete and parameter concentrations stable for a number of years.
- Post Closure – Year 95: Peak concentrations for some water quality parameters following the assumed arrival of seepage associated to longer flow pathways from mine rock storage facilities and the TSF.

The parameters that are discussed for the receiving water and the mine facilities are those that are predicted to exceed guidelines in the receiving water, under any of the sensitivity scenarios. Many of these parameters are not expected to exceed guidelines and the exceedances predicted are related to unlikely interactions that were modelled as a result of assumptions that are necessary for water quality modelling. The specific details of the conditions resulting in the predicted guideline exceedances for each parameter are assessed in detail in this report, which identify the likelihood of occurrence. The discussion for each of the individual parameters may seem repetitive when read as a complete document as the discussion for each parameter was written under the assumption that a given reader may only be interested in reading about a specific parameter. Themes that are repetitive are specific to the interpretation of the VCC model results in combination with the seepage loading associated with long flow pathways.

Beryllium and mercury have been excluded from the discussion, as exceedances predicted for these two parameters are a result of scaling of detection limit values from humidity cell data to predict field scale source term concentrations. The analytical results for both beryllium and mercury in humidity cell tests for mine source materials were consistently below the MDL, and the MDLs for both parameters are similar to the aquatic life guidelines; therefore any scaling results in source term concentrations that are artificially higher and may falsely exceed guidelines. In addition, baseline beryllium and mercury data were consistently below guidelines, and similar to the geochemistry

samples, the MDLs were just below the guidelines. This model approach is considered conservative, and guideline exceedances are therefore not expected. Beryllium and mercury results have been excluded from all summary tables.

5.2 WATER QUALITY GUIDELINES

Guidelines and standards for comparison with the model output data were determined with respect to the most sensitive receptors in the downstream environment and where regulations were applicable. The guidelines are as follows:

- British Columbia Ministry of Environment (BC MOE) Approved and Working Water Quality Guidelines (BCWQG) (BC MOE 2015a and BC MOE 2015b):
  - Fresh Water Aquatic Life Guidelines
    - Maximum (BCWQG–Max)
    - 30 Day Average (BCWQG–30 D)
  - Wildlife Water Supply (BCWQG–Wildlife) Guidelines

Guidelines for some parameters are hardness or pH dependent. In these cases, the guideline was assessed based on the baseline monthly hardness or neutral pH (pH 7.0). Hardness dependent guidelines were calculated based on the baseline median monthly hardness concentrations. Hardness, throughout the baseline study area was elevated and guidelines that were hardness dependent tended to be at their maximum values, based on the hardness ranges specified for each parameter. The chronic water quality guidelines (BCWQG-30 D) are considered the most suitable guidelines for comparison with the water chemistry results generated from a monthly time-step model; priority has been given to the discussion related to these guidelines. The water quality predictions have been screened against the CEQG; however, these guidelines are superseded in the discussion if they are lower than the BCWQGs. Model results were not screened against effluent regulations (MMER Schedule 4 - Authorized Limits of Deleterious Substances), as contact water discharges are not anticipated from any of the mine facilities. The water quality guidelines are summarized in Table 5.1.

The water quality predictions were also screened against the following guidelines and these results, although not discussed in this report, are provided in Appendix C:

- BCWQGs (BC MOE 2015a and BC MOE 2015b):
  - Drinking Water Supply (BCWQG-DW)
  - Livestock Water Supply (BCWQG-Livestock)
  - Irrigation (BCWQG-Irrigation)
  - Recreation (BCWQG-Rec)
- Canadian Council of Ministers of the Environment (CCME), Canadian Environmental Quality Guidelines (CCME 2014):
  - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater) (CEQG-PAL)
  - Water Quality Guidelines for the Protection of Agriculture (Livestock) (CEQG-Livestock)
  - Water Quality Guidelines for the Protection of Agriculture (Irrigation) (CEQG-Irrigation)
  - Water Quality Guidelines for the Protection of Wildlife (CEQG-Wildlife)
- Health Canada (Health Canada 2012):
  - Guidelines for Canadian Drinking Water Quality (HC-DW), and
  - Guidelines for Canadian Recreational Water Quality (HC-Rec).

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TABLE 5.1

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AJAX PROJECT

WATER QUALITY MODEL REPORT
WATER QUALITY GUIDELINE OVERVIEW

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	BCWQG-30 D [2]	BCWQG-MAX [3]	BCWQG-Wildlife
Physical Tests			
pH		6.5 to 9	
Dissolved Anions			
Chloride	150	600	600
Fluoride		0.4 to 0.01*(-51.73+92.57(Log(H))) [5]	1 (average); 1.5 (max)
Sulphate	128 to 429 [5]		
Nutrients			
Ammonia (Total)	0.102 to 2.08 [6,7]	0.681 to 28.7 [6,7]	
Nitrate (as N)	3	32.8	
Nitrite (as N)	0.02 to 0.2	0.06 to 0.6 [8]	
Dissolved Metals			
Aluminum	0.05 to $e^{(1.6-3.327*[pH]+0.402*([pH]\ ^{[\ (2)\ ]}))}$ (6,9)	0.1 to $e^{(1.209-2.426*[pH]+0.286*[pH]\ ^{[\ (2)\ ]})}$ (6,9)	5
Antimony	0.009		
Arsenic		0.005	0.025
Barium	1		
Beryllium	0.00013		
Boron		1.2	5
Cadmium	0.0000176 to $e^{(0.762*ln(H)-6.07)}$/1000 to 0.000457 [5]	0.000038 to $e^{(1.04*ln(H)-5.87)}$/1000 to 0.0028 [5]	
Chromium	0.0089/0.001 [9]		
Cobalt	0.004	0.11	
Copper	(0.04*H)/1000 to 0.010 [5]	(0.094*H+2)/1000 to 0.026 [5]	0.3
Iron		0.35	
Lead	(3.31+$e^{1.273*ln(H)-4.704}$)/1000 to 0.016 [5]	0.003 to $e^{(1.273*ln(H)-1.460)}$/1000 to 0.33 [5]	0.1
Manganese	0.0044*H+0.605 [5]	(0.01102*H)+0.54 [5]	
Mercury	0.00002		0.00002 (average)
Molybdenum	1	2	0.05
Nickel		$e^{((0.76*ln(H)+1.06))}$ /1000 to 0.15 [5]	
Selenium	0.002		0.002
Silver	0.00005 to 0.0015 [5]	0.0001 to 0.003 [5]	
Thallium	0.0008		
Uranium	0.0085		
Zinc	0.0075 to (7.5+0.75*(H-90))/1000 to 0.24 [5]	0.033 to (33+0.75*(H-90))/1000 to 0.265 [5]	

M:\1\01\00246\31\A\Report\4 - Water Quality Model\Rev0\Tables\[Tables 4.2 5.1.xlsx]Table 5.1

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - 30 DAY AVERAGE (BCWQG 30 D) - FRESHWATER AQUATIC LIFE.
3. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM LIMITS (BCWQG MAX) - FRESHWATER AQUATIC LIFE.
4. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES - WATER QUALITY GUIDELINE FOR THE PROTECTION OF AQUATIC LIFE (CEQG) - FRESHWATER.
5. HARDNESS (H) DEPENDENT GUIDELINE LIMIT (DISSOLVED).
6. pH DEPENDENT GUIDELINE LIMIT.
7. TEMPERATURE DEPENDENT GUIDELINE LIMIT.
8. CHLORIDE (DISSOLVED) DEPENDENT GUIDELINE LIMIT.
9. Cr(VI) GUIDELINE LIMIT IS 0.001 mg/L, Cr(III) GUIDELINE LIMIT IS 0.0089 mg/L.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	17JUL'15	ISSUED WITH REPORT VA101-246/31-4	MZP	JEM

5.3 RECEIVING WATER QUALITY PREDICTIONS

All parameters for which predicted changes in water quality result in guideline exceedances are described in this section, which has been divided into subsections for the purposes of identifying the parameters and assessment locations for which guideline exceedances are most probable. The first sub-section includes an overview of the main sources contributing to water quality changes at each of the model assessment locations. This is followed by detailed sub-sections dedicated to each of the parameters predicted to exceed guidelines under the most probable cases. Such parameters include those that were predicted to exceed guidelines at multiple assessment locations, during multiple phases, under the Base Case water quality model scenario. A final sub-section summarizes a grouping of other parameters, for which guideline exceedances have been predicted under less probable circumstances (i.e. those for which guideline exceedances were predicted under sensitivity scenarios only, at only one assessment location, or during only one phase of the Project).

5.3.1 Overview

Predicted changes in parameter concentrations in the downstream environment are attributed primarily to seepage from proposed mine facilities and dustfall. To facilitate the discussion of changes in the water quality of the receiving environment, summary tables of predicted guideline exceedances have been created, summarized by project phase and provided for the Base Case and sensitivity case models in Table 5.2 and organized by site in Table 5.3. Maximum concentrations the Base Case and sensitivity scenarios have been summarized by assessment location in Table 5.4 through Table 5.8, for Jacko Lake, the PCDP, PC02.3, PC02, and Humphrey Creek, respectively.

Time-series concentration graphs for sulphate, chloride, copper, molybdenum, and selenium have been compiled for the five receiving water quality model assessment locations for the Base Case and sensitivity analysis cases. Graphs with Base Case predictions are provided in the main body of the report. Concentration comparison figures have been created for each of the above listed parameters, to provide a quick reference of predicted concentrations and seasonality in the Peterson Creek watershed at specified time intervals in the model time-frame; these figures are provided in the main body of the report.

Loading pie charts for the Base Case model results for each of the downstream assessment locations were created for the parameters that were predicted to exceed guidelines in the main body of the report and annual flow proportion charts are provided for reference on Figure 5.1 (Operations) and Figure 5.2 (Post Closure).

For all model assessment locations the first several months of results have been excluded from the discussion and overall water quality predictions as these results are not representative of expected water quality. These values may be artificially high or low, and do not account for the adjustments that takes place in later time steps of the model as flows at most assessment locations require several time-steps to equilibrate in the model.

5.3.1.1 Jacko Lake

Source contributions to Jacko Lake include loading from the natural catchment, which include Peterson Creek surface water and baseflows, and drainage from the upstream catchment; mining sources include dustfall on Peterson Creek, upstream of the lake, and Jacko Lake, and seepage from the North Embankment Water Management Pond 1 of the West MRSF. Jacko Lake load losses

include surface discharge (managed through pumping in Operations and Decommissioning and Closure until the outlet channel is re-constructed and through natural outflow in Post Closure) and seepage to the open pit. Water quality predictions for the lake are based on these sources, since no other sources were identified by the hydrological and hydrogeological studies. Loading associated with Peterson Creek surface and baseflow, and the natural upstream catchment was determined in the baseline calibration model as the difference in loads in Jacko Lake (considering the combined water quality dataset at shallow and deep locations) and the incoming loads (based on the combined datasets for baseline sites JC03 and PC10). Jacko Lake water quality predictions are provided in summary table format in Appendix C1 and in time-series graphical format for sulphate, chloride, copper, molybdenum, and selenium in Appendix D.

5.3.1.2 Peterson Creek – PCDP

Water quality predictions at Peterson Creek in the PCDP are based on the following source contributions to the assessment location: Jacko Lake; natural catchment contributions, including surface and baseflows; Humphrey Creek (which includes natural catchment contributions, mine loading from the SMRSF and the SMRSF WMP, and runoff from the TSF area in Post Closure); and mining sources including seepage and runoff from the SMRSF, and direct deposition of dustfall on the pond. Load losses from the pond include outflows through the spillway. Seepage and reclaimed runoff from the EMRSF are assumed to reach Peterson Creek downstream of the PCDP, in accordance with the water balance model. The PCDP water quality predictions are provided in summary table format in Appendix C2 and in time-series graphical format for sulphate, chloride, copper, molybdenum, and selenium in Appendix E.

5.3.1.3 Peterson Creek – PC02.3

Water quality predictions at the Peterson Creek PC02.3 model assessment location include loading from the following sources: the PCDP; seepage and reclaimed runoff from the EMRSF (west and east tributaries in the vicinity of that facility); and natural catchment. Loads associated with the natural catchment between PC02.5 and PC02.3 were assessed in the baseline calibration model. Water quality predictions for model assessment location PC02.3 are provided in summary table format in Appendix C3 and in time-series graphical format for sulphate, chloride, arsenic, chromium, copper, molybdenum, and selenium in Appendix F.

5.3.1.4 Peterson Creek – PC02

Source contributions to the Peterson Creek PC02.3 model assessment location considered for water quality predictions include: Predicted water quality at PC02.3; seepage from the EMRSF; and natural catchment, including surface and baseflows from undisturbed areas, and baseflow from Separation Lake. Loading associated with the natural catchment between PC02.3 and PC02 was assessed in the baseline calibration model as the difference in loads in Peterson Creek between these two sites. Water quality predictions for model assessment location PC02 are provided in summary table format in Appendix C4 and in time-series graphical format for sulphate, chloride, copper, molybdenum, and selenium in Appendix G.

5.3.1.5 Humphrey Creek

Water quality predictions at Humphrey Creek are based on the following source contributions: Natural catchment, including the surface and baseflows from the upstream catchment; seepage and reclaimed runoff from the SMRSF, reclaimed runoff from the TSF, and dustfall on the creek. Humphrey Creek water quality predictions are provide in summary table format in Appendix C5 and in time-series graphical format for sulphate, chloride, copper, molybdenum, and selenium in Appendix H.

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TABLE 5.2

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WATER QUALITY MODEL REPORT
SUMMARY TABLE OF PARAMETERS EXCEEDING WATER QUALITY GUIDELINES BY PROJECT PHASE
ORGANIZED BY CASE

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Model Nodes	British Columbia Water Quality Guidelines for the Protection of Freshwater Aquatic Life [1]			Wildlife Water Quality Guidelines [2]		
	Operations	Decommissioning and Closure	Post-Closure	Operations	Decommissioning and Closure	Post-Closure
BASE CASE						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	-	-	-	-
PC02.3	SO4	-	Fe	-	-	-
PC02	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
Humphrey Creek	Cu, Se	Cu, **Se**	SO4, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
VARIABLE CLIMATE CASES						
95th Percentile						
Jacko Lake	-	-	-	-	-	-
PCDP	Al, Cu, Se	**SO4**, Al, Cu, Se	**SO4**, As, Cu, Se	Se	Mo, Se	Mo, Se
PC02.3	**SO4**, Cu, Se	SO4, Al, As, Cu, Se	**SO4**, NH3, NO3, Sb, **As**, Cu, Fe, Mn, **Se**, U	Se	Mo, Se	F, **Mo**, **Se**
PC02	**SO4**, **Cl**, NO3, As, **Se**, U	**SO4**, **Cl**, NO3, As, **Se**, U	**SO4**, **Cl**, NO3, Sb, As, Fe, **Se**, U	**Se**	**Se**	Mo, **Se**
Humphrey Creek	Al, As, Co, **Cu**, Fe, Se	Al, As, Cd, Co, **Cu**, Fe, **Se**	**SO4**, NH3, NO3, Al, Sb, As, Co, **Cu**, Fe, **Se**	Se	Mo, **Se**	**Mo**, **Se**
75th Percentile						
Jacko Lake	-	-	-	-	-	-
PCDP	Cu	**SO4**, Cu	**SO4**, Cu	-	-	Mo
PC02.3	SO4, Cu	SO4, Cu	SO4, As, Fe, Mn, Se, U	-	-	Mo, Se
PC02	**SO4**, **Cl**, As, **Se**, U	**SO4**, **Cl**, As, **Se**, U	**SO4**, Cl, As, Fe, **Se**, U	**Se**	**Se**	**Se**
Humphrey Creek	Al, Cu, Se	Al, Cu, Fe, **Se**	SO4, NH3, Al, As, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
50th Percentile (Median)						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	-	-	-	-
PC02.3	SO4	-	SO4, As, Fe, Mn, Se, U	-	-	Se
PC02	**SO4**, Cl, Se	**SO4**, Cl, Se	**SO4**, Cl, Se	Se	Se	Se
Humphrey Creek	Al, Cu, Se	Al, Cu, Se	SO4, Al, Cu, **Se**	Se	Se	Mo, **Se**
Mean						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	-	-	-	-
PC02.3	SO4	-	**SO4**, NH3, NO3, Sb, As, Fe, Mn, **Se**, U	-	-	Mo, **Se**
PC02	**SO4**, Cl, **Se**	**SO4**, Cl, **Se**	**SO4**, Cl, As, **Se**	**Se**	**Se**	**Se**
Humphrey Creek	Al, Cu, Se	Al, Cu, Fe, Se	SO4, NH3, As, Cu, **Se**	Se	Se	Mo, **Se**
25th Percentile						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	-	-	-	-
PC02.3	-	-	Fe	-	-	-
PC02	**SO4**, Cl, Se	SO4, Cl, Se	**SO4**, Cl, Se	Se	Se	Se
Humphrey Creek	Al, Cu, Se	Al, Cu, Se	SO4, Cu, **Se**	Se	Se	Mo, **Se**
5th Percentile						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	-	-	-	-
PC02.3	-	-	Fe	-	-	-
PC02	**SO4**, Se	SO4, Se	SO4, Se	Se	Se	Se
Humphrey Creek	Al, Cu, Se	Cu, Se	SO4, Cu, **Se**	Se	Se	Mo, **Se**
MINE ROCK STORAGE FACILITIES (MRSF)						
Higher MRSF Recharge						
Jacko Lake	-	-	-	-	-	-
PCDP	-	Se	As, Se	-	Mo, Se	Mo, Se
PC02.3	SO4	As, Se	As, Fe, Se	-	Mo, Se	Mo, Se
PC02	**SO4**, Cl, Se	SO4, Cl, Se	SO4, As, Se	Se	Se	Mo, Se
Humphrey Creek	Cu, Se	As, Cu, **Se**	SO4, As, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
GROUNDWATER ASSUMPTIONS SENSITIVITY CASES						
Higher Hydraulic Conductivity						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	-	-	-	-
PC02.3	SO4	-	Fe	-	-	-
PC02	**SO4**, Cl, Se	**SO4**, Cl, Se	SO4, Cl, Se	Se	Se	Se
Humphrey Creek	Cu, Se	Cu, **Se**	SO4, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
Lower Hydraulic Conductivity						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	**Se**	-	Mo	Mo, **Se**
PC02.3	SO4	-	As, Fe, Se	-	-	Mo, Se
PC02	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Mo, Se
Humphrey Creek	Cu, Se	Cu, **Se**	SO4, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
Higher TSF Conductance						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	-	-	-	-
PC02.3	SO4	-	Fe	-	-	-
PC02	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
Humphrey Creek	Cu, Se	Cu, **Se**	SO4, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
Seepage Bypass of WMPs						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	-	-	-	-
PC02.3	SO4	-	Fe	-	-	-
PC02	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
Humphrey Creek	Cu, Se	Cu, **Se**	SO4, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
Edith Lake Thrust Fault Zone						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	-	-	-	-
PC02.3	SO4	-	Fe	-	-	-
PC02	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
Humphrey Creek	Cu, Se	Cu, **Se**	SO4, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
DUSTFALL ASSUMPTIONS SENSITIVITY CASES						
Insoluble/Unavailable Dustfall						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	-	-	-	-
PC02.3	SO4	-	Fe	-	-	-
PC02	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
Humphrey Creek	Se	**Se**	SO4, **Se**	Se	Mo, **Se**	Mo, **Se**
Dustfall Contributing Width of 25 m						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	-	-	-	-
PC02.3	SO4	-	Fe	-	-	-
PC02	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
Humphrey Creek	Se	**Se**	SO4, **Se**	Se	Mo, **Se**	Mo, **Se**
BASELINE SENSITIVITY CASES						
95th Percentile Baseline Inputs						
Jacko Lake	-	-	-	-	-	-
PCDP	-	**SO4**, NH3, Se	**SO4**, NH3, Se	-	Mo, Se	Mo, Se
PC02.3	SO4, NH3	SO4, NH3, Se	SO4, As, Fe, Se	-	Mo, Se	Mo, Se
PC02	**SO4**, NH3, Cl, **Se**	**SO4**, NH3, Cl, **Se**	**SO4**, NH3, Cl, As, Fe, Se	**Se**	Mo, **Se**	Mo, Se
Humphrey Creek	SO4, Cu, **Se**	SO4, As, Cu, **Se**	SO4, Cu, Fe, **Se**	**Se**	Mo, **Se**	Mo, **Se**
Mean Baseline Inputs						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	-	-	-	-
PC02.3	SO4	-	Fe	-	-	-
PC02	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
Humphrey Creek	Cu, Se	Cu, Se	SO4, Cu, **Se**	Se	Mo, Se	Mo, **Se**
5th Percentile Baseline Inputs						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	-	-	-	-
PC02.3	SO4	-	-	-	-	-
PC02	**SO4**	SO4	SO4	-	-	-
Humphrey Creek	Cu, Se	Cu, Se	SO4, Cu, Se	Se	Mo, Se	Mo, Se
SEEPAGE SENSITIVITY CASES						
Long Delayed Seepage						
Jacko Lake	-	-	-	-	-	-
PCDP	-	-	-	-	-	-
PC02.3	SO4	-	-	-	-	-
PC02	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
Humphrey Creek	Cu, Se	Cu, **Se**	SO4, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**

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NOTES:

1. WATER QUALITY GUIDELINES FOR THE PROTECTION OF FRESHWATER AQUATIC LIFE - BC WATER QUALITY GUIDELINES (BCWQG) MAXIMUM AND 30 DAY AVERAGE; APPROVED AND WORKING WATER QUALITY GUIDELINES.
2. WILDLIFE WATER QUALITY GUIDELINES WERE ONLY EXCEEDED FOR MOLYBDENUM (0.05 mg/L) AND SELENIUM (0.002 mg/L).
3. BOLD INDICATES THAT AT LEAST ONE PREDICTED CONCENTRATION IN THE MINE PHASE SPECIFIED EXCEEDS THE WATER QUATITY BENCHMARK (WQB) OR SCIENCE BASE ENVIRONMENTAL BENCHMARK (SBEB).

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	16JUL'15	ISSUED WITH REPORT VA101-246/31-4	MZP	JEM

Knight Piésold CONSULTING

TABLE 5.3

KGHM AJAX MINING INC
AJAX PROJECT

WATER QUALITY MODEL REPORT
SUMMARY TABLE OF PARAMETERS EXCEEDING WATER QUALITY GUIDELINES BY PROJECT PHASE
ORGANIZED BY SITE

Print Jul/20/15 9:57:40

		British Columbia Water Quality Guidelines for the Protection of Freshwater Aquatic Life [1]			Wildlife Water Quality Guidelines [2]		
Model Nodes	Case	Operations	Decommissioning and Closure	Post-Closure	Operations	Decommissioning and Closure	Post-Closure
Jacko Lake	Base Case	-	-	-	-	-	-
Jacko Lake	VCC - 95th Percentile	-	-	-	-	-	-
Jacko Lake	VCC - 75th Percentile	-	-	-	-	-	-
Jacko Lake	VCC - 50th Percentile	-	-	-	-	-	-
Jacko Lake	VCC - Mean	-	-	-	-	-	-
Jacko Lake	VCC - 25th Percentile	-	-	-	-	-	-
Jacko Lake	VCC - 5th Percentile	-	-	-	-	-	-
Jacko Lake	Higher MRSF Recharge	-	-	-	-	-	-
Jacko Lake	Higher Hydraulic Conductivity	-	-	-	-	-	-
Jacko Lake	Lower Hydraulic Conductivity	-	-	-	-	-	-
Jacko Lake	Higher TSF Conductance	-	-	-	-	-	-
Jacko Lake	Seepage Bypass of WMPs	-	-	-	-	-	-
Jacko Lake	Edith Lake Thrust Fault Zone	-	-	-	-	-	-
Jacko Lake	Insoluble/Unavailable Dustfall	-	-	-	-	-	-
Jacko Lake	Dustfall Contributing Width of 25 m	-	-	-	-	-	-
Jacko Lake	95th Percentile Baseline Inputs	-	-	-	-	-	-
Jacko Lake	Mean Baseline Inputs	-	-	-	-	-	-
Jacko Lake	5th Percentile Baseline Inputs	-	-	-	-	-	-
Jacko Lake	Long Delayed Seepage	-	-	-	-	-	-
PCDP	Base Case	-	-	-	-	-	-
PCDP	VCC - 95th Percentile	Al, Cu, Se	**SO4**, Al, Cu, Se	**SO4**, As, Cu, Se	Se	Mo, Se	Mo, Se
PCDP	VCC - 75th Percentile	Cu	**SO4**, Cu	**SO4**, Cu	-	-	Mo
PCDP	VCC - 50th Percentile	-	-	-	-	-	-
PCDP	VCC - Mean	-	-	-	-	-	-
PCDP	VCC - 25th Percentile	-	-	-	-	-	-
PCDP	VCC - 5th Percentile	-	-	-	-	-	-
PCDP	Higher MRSF Recharge	-	Se	As, Se	-	Mo, Se	Mo, Se
PCDP	Higher Hydraulic Conductivity	-	-	-	-	-	-
PCDP	Lower Hydraulic Conductivity	-	-	**Se**	-	Mo	Mo, **Se**
PCDP	Higher TSF Conductance	-	-	-	-	-	-
PCDP	Seepage Bypass of WMPs	-	-	-	-	-	-
PCDP	Edith Lake Thrust Fault Zone	-	-	-	-	-	-
PCDP	Insoluble/Unavailable Dustfall	-	-	-	-	-	-
PCDP	Dustfall Contributing Width of 25 m	-	-	-	-	-	-
PCDP	95th Percentile Baseline Inputs	-	**SO4**, NH3, Se	**SO4**, NH3, Se	-	Mo, Se	Mo, Se
PCDP	Mean Baseline Inputs	-	-	-	-	-	-
PCDP	5th Percentile Baseline Inputs	-	-	-	-	-	-
PCDP	Long Delayed Seepage	-	-	-	-	-	-
PC02.3	Base Case	SO4	-	Fe	-	-	-
PC02.3	VCC - 95th Percentile	**SO4**, Cu, Se	SO4, Al, As, Cu, Se	**SO4**, NH3, NO3, Sb, **As**, Co, Cu, Fe, Mn, **Se**, U	Se	Mo, Se	F, **Mo**, **Se**
PC02.3	VCC - 75th Percentile	SO4, Cu	SO4, Cu	SO4, As, Fe, Mn, Se, U	-	-	Mo, Se
PC02.3	VCC - 50th Percentile	SO4	-	SO4, As, Fe, Mn, Se, U	-	-	Se
PC02.3	VCC - Mean	SO4	-	**SO4**, NH3, NO3, Sb, **As**, Fe, Mn, **Se**, U	-	-	Mo, **Se**
PC02.3	VCC - 25th Percentile	-	-	Fe	-	-	-
PC02.3	VCC - 5th Percentile	-	-	Fe	-	-	-
PC02.3	Higher MRSF Recharge	SO4	As, Se	As, Fe, Se	-	Mo, Se	Mo, Se
PC02.3	Higher Hydraulic Conductivity	SO4	-	Fe	-	-	-
PC02.3	Lower Hydraulic Conductivity	SO4	-	As, Fe, Se	-	-	Mo, Se
PC02.3	Higher TSF Conductance	SO4	-	Fe	-	-	-
PC02.3	Seepage Bypass of WMPs	SO4	-	Fe	-	-	-
PC02.3	Edith Lake Thrust Fault Zone	SO4	-	Fe	-	-	-
PC02.3	Insoluble/Unavailable Dustfall	SO4	-	Fe	-	-	-
PC02.3	Dustfall Contributing Width of 25 m	SO4	-	Fe	-	-	-
PC02.3	95th Percentile Baseline Inputs	SO4, NH3	SO4, NH3, Se	SO4, As, Fe, Se	-	Mo, Se	Mo, Se
PC02.3	Mean Baseline Inputs	SO4	-	Fe	-	-	-
PC02.3	5th Percentile Baseline Inputs	SO4	-	-	-	-	-
PC02.3	Long Delayed Seepage	SO4	-	-	-	-	-
PC02	Base Case	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
PC02	VCC - 95th Percentile	**SO4**, **Cl**, NO3, As, **Se**, U	**SO4**, **Cl**, NO3, As, **Se**, U	**SO4**, **Cl**, NO3, Sb, As, Fe, **Se**, U	**Se**	**Se**	Mo, **Se**
PC02	VCC - 75th Percentile	**SO4**, **Cl**, As, **Se**, U	**SO4**, **Cl**, As, **Se**, U	**SO4**, Cl, As, Fe, **Se**, U	**Se**	**Se**	**Se**
PC02	VCC - 50th Percentile	**SO4**, Cl, Se	**SO4**, Cl, Se	**SO4**, Cl, Se	Se	Se	Se
PC02	VCC - Mean	**SO4**, Cl, **Se**	**SO4**, Cl, **Se**	**SO4**, Cl, As, **Se**	**Se**	**Se**	**Se**
PC02	VCC - 25th Percentile	**SO4**, Cl, Se	SO4, Cl, Se	**SO4**, Cl, Se	Se	Se	Se
PC02	VCC - 5th Percentile	**SO4**, Se	SO4, Se	SO4, Se	Se	Se	Se
PC02	Higher MRSF Recharge	**SO4**, Cl, Se	SO4, Cl, Se	SO4, As, Se	Se	Se	Mo, Se
PC02	Higher Hydraulic Conductivity	**SO4**, Cl, Se	**SO4**, Cl, Se	SO4, Cl, Se	Se	Se	Se
PC02	Lower Hydraulic Conductivity	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Mo, Se
PC02	Higher TSF Conductance	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
PC02	Seepage Bypass of WMPs	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
PC02	Edith Lake Thrust Fault Zone	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
PC02	Insoluble/Unavailable Dustfall	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
PC02	Dustfall Contributing Width of 25 m	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
PC02	95th Percentile Baseline Inputs	**SO4**, NH3, Cl, **Se**	**SO4**, NH3, Cl, **Se**	**SO4**, NH3, Cl, As, Fe, Se	**Se**	Mo, **Se**	Mo, Se
PC02	Mean Baseline Inputs	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
PC02	5th Percentile Baseline Inputs	**SO4**	SO4	SO4	-	-	-
PC02	Long Delayed Seepage	**SO4**, Cl, Se	SO4, Cl, Se	SO4, Se	Se	Se	Se
Humphrey Creek	Base Case	Cu, Se	Cu, **Se**	**SO4**, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
Humphrey Creek	VCC - 95th Percentile	Al, As, Co, **Cu**, Fe, Se	Al, As, Cd, Co, **Cu**, Fe, **Se**	**SO4**, NH3, NO3, Al, Sb, As, **Cu**, Fe, **Se**	Se	Mo, **Se**	**Mo**, **Se**
Humphrey Creek	VCC - 75th Percentile	Al, Cu, Se	Al, Cu, Fe, **Se**	SO4, NH3, Al, As, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
Humphrey Creek	VCC - 50th Percentile	Al, Cu, Se	Al, Cu, Se	SO4, Al, Cu, **Se**	Se	Se	Mo, **Se**
Humphrey Creek	VCC - Mean	Al, Cu, Se	Al, Cu, Fe, Se	SO4, NH3, As, Cu, **Se**	Se	Se	Mo, **Se**
Humphrey Creek	VCC - 25th Percentile	Al, Cu, Se	Al, Cu, Se	SO4, Cu, **Se**	Se	Se	Mo, **Se**
Humphrey Creek	VCC - 5th Percentile	Al, Cu, Se	Cu, Se	SO4, Cu, **Se**	Se	Se	Mo, **Se**
Humphrey Creek	Higher MRSF Recharge	Cu, Se	As, Cu, **Se**	SO4, As, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
Humphrey Creek	Higher Hydraulic Conductivity	Cu, Se	Cu, **Se**	SO4, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
Humphrey Creek	Lower Hydraulic Conductivity	Cu, Se	Cu, **Se**	SO4, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
Humphrey Creek	Higher TSF Conductance	Cu, Se	Cu, **Se**	SO4, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
Humphrey Creek	Seepage Bypass of WMPs	Cu, Se	Cu, **Se**	SO4, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
Humphrey Creek	Edith Lake Thrust Fault Zone	Cu, Se	Cu, **Se**	SO4, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**
Humphrey Creek	Insoluble/Unavailable Dustfall	Se	**Se**	SO4, **Se**	Se	Mo, **Se**	Mo, **Se**
Humphrey Creek	Dustfall Contributing Width of 25 m	Se	**Se**	SO4, **Se**	Se	Mo, **Se**	Mo, **Se**
Humphrey Creek	95th Percentile Baseline Inputs	SO4, Cu, **Se**	SO4, As, Cu, **Se**	SO4, Cu, Fe, **Se**	**Se**	Mo, **Se**	Mo, **Se**
Humphrey Creek	Mean Baseline Inputs	Cu, Se	Cu, Se	SO4, Cu, **Se**	Se	Mo, Se	Mo, **Se**
Humphrey Creek	5th Percentile Baseline Inputs	Cu, Se	Cu, Se	SO4, Cu, Se	Se	Mo, Se	Mo, Se
Humphrey Creek	Long Delayed Seepage	Cu, Se	Cu, **Se**	SO4, Cu, **Se**	Se	Mo, **Se**	Mo, **Se**

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NOTES:

1. WATER QUALITY GUIDELINES FOR THE PROTECTION OF FRESHWATER AQUATIC LIFE - BC WATER QUALITY GUIDELINES (BCWQG) MAXIMUM AND 30 DAY AVERAGE; APPROVED AND WORKING WATER QUALITY GUIDELINES.
2. WILDLIFE WATER QUALITY GUIDELINES WERE ONLY EXCEEDED FOR MOLYBDENUM (0.05 mg/L) AND SELENIUM (0.002 mg/L).
3. BOLD INDICATES THAT AT LEAST ONE PREDICTED CONCENTRATION IN THE MINE PHASE SPECIFIED EXCEEDS THE WATER QUATITY BENCHMARK (WQB) OR SCIENCE BASE ENVIRONMENTAL BENCHMARK (SBEB).

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	16JUL'15	ISSUED WITH REPORT VA101-246/31-4	MZP	JEM

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TABLE 5.4

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
JACKO LAKE - MAXIMUM PREDICTED CONCENTRATIONS FOR ALL MODEL SCENARIOS BY MINE PHASE

Print Jul/20/15 10:03:02

		BASE CASE	VARIABLE CLIMATE CASE						MINE ROCK STORAGE FACILITY	GROUNDWATER ASSUMPTIONS						DUSTFALL ASSUMPTIONS		BASELINE SENSITIVITY CASES			SEEPAGE DELAYS
			95TH P	75TH P	50TH P	MEAN	25TH P	5TH P	HIGHER RECHARGE	Higher Hydraulic Conductivity	Lower Hydraulic Conductivity	TSF Conductance - Higher	WMP Seepage Bypass	Edith Lake Thrust Fault Zone		Dustfall Availability/ Solubility	Dustfall Area	95TH P	MEAN	5TH P	Extended Seepage Delays
Naming Convention on Graphs			95th P VCC	75th P VCC	50th P VCC	MEAN VCC	25th P VCC	5th P VCC	MRSF SC	High HC SC	Low HC SC	High TSF Cond SC	WMP SB SC	ELTFZ		DF-SSC	DF-ASC	95th P BSC	Mean BSC	5th P BSC	SD-SC
		OPERATIONS I (YEAR 1 THROUGH 23)																			
Conventional Parameters and Major Ions																					
Hardness - Dissolved	mg/L $CaCO_3$	418	462	417	392	385	352	315	418	419	418	418	419	418		418	418	492	403	324	418
Bromide (Br^-)	mg/L	0.13	0.16	0.15	0.13	0.13	0.12	0.10	0.13	0.13	0.13	0.13	0.13	0.13		0.13	0.13	0.27	0.15	0.07	0.13
Chloride (Cl^-)	mg/L	66	83	71	66	66	60	54	66	66	66	66	66	66		66	66	99	66	56	66
Fluoride (F^-)	mg/L	0.25	0.30	0.28	0.25	0.25	0.23	0.21	0.25	0.25	0.25	0.25	0.25	0.25		0.25	0.25	0.30	0.24	0.20	0.25
Sulphate (SO_4^{2-})	mg/L	65	82	69	63	64	59	52	65	65	65	65	65	65		65	65	88	67	52	65
Calcium (Ca)	mg/L	94	116	102	96	94	86	77	94	94	94	94	94	94		94	94	111	88	67	94
Magnesium (Mg)	mg/L	45	55	49	45	44	41	36	45	45	45	45	45	45		45	45	52	45	38	45
Potassium (K)	mg/L	13	16	14	13	13	12	11	13	13	13	13	13	13		13	13	15	13	11	13
Sodium (Na)	mg/L	41	50	44	41	40	37	33	41	41	41	41	41	41		41	41	46	41	36	41
Nutrients																					
Ammonia	mg/L N	0.098	0.117	0.105	0.099	0.095	0.087	0.068	0.098	0.098	0.098	0.098	0.098	0.098		0.098	0.098	0.451	0.163	0.016	0.098
Nitrate	mg/L N	0.192	0.252	0.211	0.198	0.190	0.171	0.119	0.192	0.192	0.192	0.192	0.192	0.192		0.192	0.192	0.441	0.227	0.047	0.192
Nitrite	mg/L	0.0050	0.0065	0.0056	0.0049	0.0050	0.0046	0.0041	0.0050	0.0050	0.0050	0.0050	0.0055	0.0050		0.0050	0.0050	0.0262	0.0075	0.0019	0.0050
Phosphorus - Dissolved (P)	mg/L	0.096	0.123	0.103	0.097	0.096	0.091	0.082	0.096	0.096	0.096	0.096	0.096	0.096		0.095	0.096	0.230	0.102	0.058	0.096
Dissolved Metals																					
Aluminum (Al)	mg/L	0.006	0.009	0.008	0.007	0.007	0.006	0.005	0.006	0.006	0.006	0.006	0.006	0.006		0.003	0.005	0.010	0.007	0.005	0.006
Antimony (Sb)	mg/L	0.00010	0.00013	0.00011	0.00010	0.00010	0.00010	0.00009	0.00010	0.00010	0.00010	0.00010	0.00012	0.00010		0.00009	0.00010	0.00016	0.00012	0.00010	0.00010
Arsenic (As)	mg/L	0.0016	0.0019	0.0018	0.0016	0.0016	0.0015	0.0014	0.0016	0.0016	0.0016	0.0016	0.0017	0.0016		0.0016	0.0016	0.0021	0.0016	0.0014	0.0016
Barium (Ba)	mg/L	0.082	0.098	0.088	0.083	0.081	0.074	0.067	0.082	0.082	0.081	0.082	0.082	0.082		0.081	0.081	0.098	0.080	0.066	0.082
Boron (B)	mg/L	0.023	0.029	0.025	0.022	0.022	0.021	0.019	0.023	0.023	0.023	0.023	0.023	0.023		0.023	0.023	0.026	0.023	0.020	0.023
Cadmium (Cd)	mg/L	0.000009	0.000012	0.000011	0.000009	0.000009	0.000008	0.000007	0.000009	0.000009	0.000009	0.000009	0.000009	0.000009		0.000006	0.000008	0.000018	0.000010	0.000009	0.000009
Chromium (Cr)	mg/L	0.00046	0.00069	0.00061	0.00050	0.00050	0.00044	0.00035	0.00046	0.00046	0.00046	0.00046	0.00046	0.00046		0.00014	0.00038	0.00078	0.00050	0.00039	0.00046
Cobalt (Co)	mg/L	0.00022	0.00029	0.00025	0.00023	0.00023	0.00020	0.00017	0.00022	0.00022	0.00022	0.00022	0.00022	0.00022		0.00016	0.00020	0.00043	0.00025	0.00016	0.00022
Copper (Cu)	mg/L	0.0031	0.0038	0.0035	0.0032	0.0031	0.0028	0.0025	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031		0.0024	0.0029	0.0048	0.0033	0.0024	0.0031
Iron (Fe)	mg/L	0.060	0.076	0.068	0.062	0.061	0.055	0.049	0.060	0.060	0.060	0.060	0.060	0.060		0.053	0.058	0.143	0.070	0.034	0.060
Lead (Pb)	mg/L	0.000070	0.000102	0.000091	0.000077	0.000076	0.000066	0.000055	0.000070	0.000071	0.000070	0.000070	0.000071	0.000070		0.000029	0.000060	0.000070	0.000070	0.000070	0.000070
Lithium (Li)	mg/L	0.0064	0.0080	0.0070	0.0063	0.0064	0.0059	0.0052	0.0064	0.0064	0.0064	0.0064	0.0064	0.0064		0.0064	0.0064	0.0072	0.0064	0.0055	0.0064
Manganese (Mn)	mg/L	0.044	0.056	0.050	0.045	0.045	0.040	0.035	0.044	0.044	0.044	0.044	0.044	0.044		0.043	0.043	0.109	0.053	0.022	0.044
Molybdenum (Mo)	mg/L	0.003	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.003		0.003	0.003	0.004	0.004	0.003	0.003
Nickel (Ni)	mg/L	0.0016	0.0021	0.0018	0.0017	0.0017	0.0015	0.0013	0.0016	0.0016	0.0016	0.0016	0.0017	0.0016		0.0013	0.0015	0.0028	0.0018	0.0015	0.0016
Selenium (Se)	mg/L	0.00034	0.00044	0.00038	0.00033	0.00034	0.00032	0.00028	0.00034	0.00034	0.00034	0.00034	0.00038	0.00034		0.00034	0.00034	0.00053	0.00036	0.00027	0.00034
Silicon (Si)		9.6	11.1	10.3	9.7	9.6	8.9	8.0	9.6	9.6	9.6	9.6	9.6	9.6		9.6	9.6	11.9	9.8	8.2	9.6
Silver (Ag)	mg/L	0.000006	0.000007	0.000006	0.000006	0.000006	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006		0.000006	0.000006	0.000006	0.000006	0.000006	0.000006
Strontium (Sr)	mg/L	0.43	0.52	0.47	0.44	0.43	0.39	0.35	0.43	0.43	0.43	0.43	0.44	0.43		0.43	0.43	0.50	0.43	0.40	0.43
Thallium (Tl)	mg/L	0.000007	0.000009	0.000008	0.000008	0.000008	0.000007	0.000006	0.000007	0.000007	0.000007	0.000007	0.000008	0.000007		0.000006	0.000007	0.000007	0.000007	0.000007	0.000007
Tin (Sn)		0.000071	0.000087	0.000079	0.000073	0.000072	0.000065	0.000057	0.000071	0.000071	0.000071	0.000071	0.000071	0.000071		0.000058	0.000068	0.000071	0.000071	0.000071	0.000071
Uranium (U)	mg/L	0.00144	0.00176	0.00157	0.00146	0.00145	0.00132	0.00118	0.00144	0.00145	0.00144	0.00144	0.00145	0.00144		0.00144	0.00144	0.00261	0.00164	0.00120	0.00144
Vanadium (V)	mg/L	0.0031	0.0037	0.0034	0.0032	0.0031	0.0029	0.0025	0.0031	0.0031	0.0031	0.0031	0.0032	0.0031		0.0028	0.0030	0.0041	0.0032	0.0025	0.0031
Zinc (Zn)	mg/L	0.0029	0.0036	0.0031	0.0030	0.0028	0.0026	0.0020	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029		0.0029	0.0029	0.0288	0.0086	0.0011	0.0029
		DECOMMISSIONING AND CLOSURE (YEAR 24 THROUGH 29)																			
Conventional Parameters and Major Ions																					
Hardness - Dissolved	mg/L $CaCO_3$	421	466	422	392	388	352	319	420	443	421	421	421	421		421	421	495	406	327	421
Bromide (Br^-)	mg/L	0.13	0.16	0.14	0.13	0.13	0.11	0.10	0.13	0.13	0.13	0.13	0.13	0.13		0.13	0.13	0.27	0.15	0.07	0.13
Chloride (Cl^-)	mg/L	66	83	71	65	66	60	54	66	68	66	66	66	66		66	66	100	66	56	66
Fluoride (F^-)	mg/L	0.25	0.30	0.28	0.25	0.25	0.23	0.21	0.25	0.26	0.25	0.25	0.25	0.25		0.25	0.25	0.30	0.24	0.20	0.25
Sulphate (SO_4^{2-})	mg/L	65	82	69	63	64	58	52	65	83	65	65	65	65		65	65	89	68	53	65
Calcium (Ca)	mg/L	95	117	103	95	95	86	77	95	102	95	95	95	95		95	95	112	89	68	95
Magnesium (Mg)	mg/L	45	55	49	44	45	40	36	45	46	45	45	45	45		45	45	52	45	38	45
Potassium (K)	mg/L	13	16	14	13	13	12	11	13	14	13	13	13	13		13	13	15	13	11	13
Sodium (Na)	mg/L	41	50	44	40	41	37	33	41	42	41	41	41	41		41	41	46	41	36	41
Nutrients																					
Ammonia	mg/L N	0.065	0.084	0.073	0.063	0.066	0.059	0.052	0.065	0.066	0.065	0.065	0.067	0.065		0.065	0.065	0.418	0.138	0.015	0.065
Nitrate	mg/L N	0.106	0.133	0.121	0.109	0.110	0.104	0.086	0.106	0.112	0.106	0.106	0.117	0.106		0.106	0.106	0.276	0.141	0.039	0.106
Nitrite	mg/L	0.0049	0.0065	0.0055	0.0048	0.0050	0.0045	0.0038	0.0048	0.0050	0.0048	0.0049	0.0051	0.0049		0.0049	0.0049	0.0261	0.0069	0.0018	0.0049
Phosphorus - Dissolved (P)	mg/L	0.096	0.112	0.102	0.097	0.096	0.092	0.082	0.096	0.096	0.096	0.096	0.096	0.096		0.095	0.096	0.230	0.102	0.057	0.096
Dissolved Metals																					
Aluminum (Al)	mg/L	0.006	0.009	0.008	0.007	0.007	0.006	0.005	0.006	0.006	0.006	0.006	0.006	0.006		0.003	0.005	0.010	0.007	0.005	0.006
Antimony (Sb)	mg/L	0.00009	0.00012	0.00011	0.00010	0.00010	0.00009	0.00007	0.00010	0.00015	0.00009	0.00009	0.00010	0.00009		0.00008	0.00009	0.00015	0.00011	0.00009	0.00009
Arsenic (As)	mg/L	0.0017	0.0019	0.0018	0.0016	0.0016	0.0015	0.0014	0.0017	0.0018	0.0017	0.0017	0.0017	0.0017		0.0016	0.0017	0.0021	0.0017	0.0014	0.0017
Barium (Ba)	mg/L	0.082	0.099	0.089	0.083	0.082	0.074	0.067	0.082	0.082	0.082	0.082	0.082	0.082		0.082	0.082	0.099	0.080	0.066	0.082
Boron (B)	mg/L	0.023	0.029	0.025	0.022	0.023	0.021	0.018	0.023	0.024	0.023	0.023	0.023	0.023		0.023	0.023	0.026	0.023	0.019	0.023
Cadmium (Cd)	mg/L	0.000009	0.000012	0.000010	0.000009	0.000009	0.000008	0.000007	0.000009	0.000010	0.000009	0.000009	0.000009	0.000009		0.000006	0.000008	0.000014	0.000010	0.000009	0.000009
Chromium (Cr)	mg/L	0.00046	0.00069	0.00060	0.00050	0.00050	0.00044	0.00035	0.00046	0.00047	0.00046	0.00046	0.00046	0.00046		0.00014	0.00038	0.00078	0.00051	0.00039	0.00046
Cobalt (Co)	mg/L	0.00022	0.00029	0.00025	0.00023	0.00022	0.00020	0.00018	0.00022	0.00023	0.00022	0.00022	0.00022	0.00022		0.00016	0.00020	0.00044	0.00025	0.00016	0.00022
Copper (Cu)	mg/L	0.0031	0.0038	0.0035	0.0032	0.0032	0.0029	0.0025	0.0031	0.0032	0.0031	0.0031	0.0031	0.0031		0.0024	0.0029	0.0048	0.0034	0.0024	0.0031
Iron (Fe)	mg/L	0.060	0.076	0.067	0.063	0.061	0.056	0.050	0.060	0.060	0.060	0.060	0.060	0.060		0.054	0.058	0.144	0.070	0.034	0.060
Lead (Pb)	mg/L	0.000071	0.000102	0.000089	0.000077	0.000075	0.000066	0.000055	0.000071	0.000072	0.000071	0.000071	0.000071	0.000071		0.000029	0.000060	0.000071	0.000071	0.000071	0.000071
Lithium (Li)	mg/L	0.0064	0.0079	0.0070	0.0063	0.0064	0.0058	0.0052	0.0064	0.0065	0.0064	0.0064	0.0064	0.0064		0.0064	0.0064	0.0073	0.0064	0.0055	0.0064
Manganese (Mn)	mg/L	0.044	0.056	0.050	0.046	0.045	0.040	0.036	0.044	0.045	0.044	0.044	0.044	0.044		0.043	0.044	0.109	0.054	0.022	0.044
Molybdenum (Mo)	mg/L	0.004	0.005	0.004	0.004	0.004	0.003	0.003	0.004	0.008	0.004	0.004	0.004	0.004		0.004	0.004	0.005	0.004	0.003	0.004
Nickel (Ni)	mg/L	0.0016	0.0020	0.0018	0.0017	0.0017	0.0015	0.0013	0.0016	0.0017	0.0016	0.0016	0.0016	0.0016		0.0013	0.0015	0.0028	0.0018	0.0015	0.0016
Selenium (Se)	mg/L	0.00035	0.00045	0.00038	0.00034	0.00034	0.00030	0.00028	0.00036	0.00039	0.00035	0.00035	0.00036	0.00035		0.00034	0.00035	0.00053	0.00036	0.00028	0.00035
Silicon (Si)		9.7	11.2	10.4	9.9	9.7	9.0	8.0	9.7	9.8	9.7	9.7	9.7	9.7		9.7	9.7	12.0	9.8	8.3	9.7
Silver (Ag)	mg/L	0.000006	0.000007	0.000007	0.000006	0.000006	0.000005	0.000005	0.000006	0.000007	0.000006	0.000006	0.000006	0.000006		0.000006	0.000006	0.000006	0.000006	0.000006	0.000006
Strontium (Sr)	mg/L	0.44	0.53	0.47	0.44	0.44	0.39	0.36	0.44	0.48	0.44	0.44	0.44	0.44		0.44	0.44	0.51	0.44	0.40	0.44
Thallium (Tl)	mg/L	0.000008	0.000009	0.000009	0.000008	0.000008	0.000007	0.000006	0.000008	0.000008	0.000008	0.000008	0.000008	0.000008		0.000006	0.000007	0.000008	0.000008	0.000008	0.000008
Tin (Sn)		0.000071	0.000087	0.000081	0.000074	0.000073	0.000065	0.000058	0.000071	0.000078	0.000071	0.000071	0.000072	0.000071		0.000058	0.000068	0.000072	0.000071	0.000071	0.000071
Uranium (U)	mg/L	0.00146	0.00177	0.00158	0.00147	0.00146	0.00132	0.00119	0.00145	0.00157	0.00145	0.00145	0.00146	0.00145		0.00145	0.00145	0.00263	0.00165	0.00121	0.00146
Vanadium (V)	mg/L	0.0031	0.0037	0.0035	0.0032	0.0032	0.0029	0.0026	0.0031	0.0032	0.0031	0.0031	0.0032	0.0031		0.0028	0.0030	0.0041	0.0032	0.0025	0.0031
Zinc (Zn)	mg/L	0.0019	0.0022	0.0021	0.0019	0.0019	0.0018	0.0016	0.0019	0.0021	0.0019	0.0019	0.0019	0.0019		0.0018	0.0019	0.0162	0.0047	0.0008	0.0019
		POST-CLOSURE (YEAR 29+)																			
Conventional Parameters and Major Ions																					
Hardness - Dissolved	mg/L $CaCO_3$	424	506	427	397	398	363	340	426	454	424	424	424	424		424	424	498	408	328	424
Bromide (Br^-)	mg/L	0.13	0.17	0.15	0.13	0.13	0.12	0.10	0.13	0.14	0.13	0.13	0.13	0.13		0.13	0.13	0.27	0.16	0.07	0.13
Chloride (Cl^-)	mg/L	67	88	72	67	68	62	58	67	69	67	67	67	67		67	67	100	67	56	67
Fluoride (F^-)	mg/L	0.25	0.32	0.28	0.26	0.26	0.24	0.22	0.26	0.26	0.25	0.25	0.25	0.25		0.25	0.25	0.30	0.25	0.20	0.25
Sulphate (SO_4^{2-})	mg/L	66	86	72	65	66	60	55	68	92	65	65	66	65		66	66	90	68	53	66
Calcium (Ca)	mg/L	96	126	105	97	98	89	82	96	106	95	95	96	95		96	96	113	89	68	96
Magnesium (Mg)	mg/L	45	59	50	45	46	41	39	45	46	45	45	45	45		45	45	53	45	38	45
Potassium (K)	mg/L	13	17	15	13	13	12	11	13	14	13	13	13	13		13	13	15	13	11	13
Sodium (Na)	mg/L	41	53	44	41	42	38	35	41	43	41	41	41	41		41	41	46	41	36	41
Nutrients																					
Ammonia	mg/L N	0.065	0.087	0.074	0.063	0.065	0.059	0.054	0.065	0.065	0.065	0.065	0.065	0.065		0.065	0.065	0.418	0.138	0.015	0.065
Nitrate	mg/L N	0.104	0.132	0.118	0.105	0.105	0.093	0.082	0.105	0.104	0.104	0.104	0.106	0.104		0.104	0.104	0.274	0.139	0.036	0.104
Nitrite	mg/L	0.0048	0.0065	0.0054	0.0047	0.0049	0.0043	0.0039	0.0048	0.0048	0.0048	0.0048	0.0049	0.0048		0.0048	0.0048	0.0260	0.0069	0.0017	0.0048
Phosphorus - Dissolved (P)	mg/L	0.096	0.119	0.102	0.096	0.096	0.091	0.081	0.096	0.096	0.096	0.096	0.096	0.096		0.095	0.095	0.230	0.102	0.057	0.096
Dissolved Metals																					
Aluminum (Al)	mg/L	0.006	0.008	0.007	0.006	0.006	0.005	0.004	0.006	0.006	0.006	0.006	0.006	0.006		0.003	0.005	0.010	0.006	0.004	0.006
Antimony (Sb)	mg/L	0.00009	0.00011	0.00010	0.00009	0.00009	0.00008	0.00007	0.00012	0.00024	0.00009	0.00009	0.00009	0.00009		0.00008	0.00009	0.00015	0.00010	0.00009	0.00009
Arsenic (As)	mg/L	0.0017	0.0021	0.0018	0.0016	0.0017	0.0016	0.0014	0.0018	0.0022	0.0017	0.0017	0.0017	0.0017		0.0017	0.0017	0.0022	0.0017	0.0014	0.0017
Barium (Ba)	mg/L	0.082	0.106	0.090	0.083	0.083	0.076	0.071	0.082	0.083	0.082	0.082	0.082	0.082		0.082	0.082	0.099	0.080	0.066	0.082
Boron (B)	mg/L	0.023	0.030	0.026	0.022	0.023	0.021	0.019	0.024	0.030	0.023	0.023	0.023	0.023		0.023	0.023	0.026	0.023	0.020	0.023
Cadmium (Cd)	mg/L	0.000009	0.000011	0.000010	0.000009	0.000009	0.000008	0.000006	0.000009	0.000009	0.000009	0.000009	0.000009	0.000009		0.000006	0.000008	0.000014	0.000009	0.000009	0.000009
Chromium (Cr)	mg/L	0.00042	0.00062	0.00053	0.00046	0.00045	0.00038	0.00028	0.00042	0.00043	0.00042	0.00042	0.00042	0.00042		0.00014	0.00034	0.00074	0.00046	0.00035	0.00042
Cobalt (Co)	mg/L	0.00021	0.00027	0.00024	0.00022	0.00021	0.00019	0.00016	0.00021	0.00024	0.00021	0.00021	0.00021	0.00021		0.00016	0.00020	0.00043	0.00024	0.00015	0.00021
Copper (Cu)	mg/L	0.0030	0.0036	0.0034	0.0031	0.0031	0.0028	0.0023	0.0030	0.0031	0.0030	0.0030	0.0030	0.0030		0.0024	0.0028	0.0047	0.0032	0.0023	0.0030
Iron (Fe)	mg/L	0.059	0.071	0.066	0.062	0.060	0.054	0.048	0.059	0.059	0.059	0.059	0.059	0.059		0.054	0.058	0.143	0.069	0.033	0.059
Lead (Pb)	mg/L	0.000064	0.000092	0.000079	0.000070	0.000069	0.000059	0.000046	0.000064	0.000066	0.000064	0.000064	0.000064	0.000064		0.000030	0.000055	0.000064	0.000064	0.000064	0.000064
Lithium (Li)	mg/L	0.0064	0.0084	0.0072	0.0063	0.0065	0.0059	0.0055	0.0065	0.0070	0.0064	0.0064	0.0064	0.0064		0.0064	0.0064	0.0073	0.0064	0.0055	0.0064
Manganese (Mn)	mg/L	0.044	0.058	0.050	0.046	0.045	0.041	0.036	0.044	0.047	0.044	0.044	0.044	0.044		0.044	0.044	0.109	0.054	0.022	0.044
Molybdenum (Mo)	mg/L	0.004	0.006	0.005	0.004	0.004	0.004	0.004	0.007	0.020	0.004	0.004	0.004	0.004		0.004	0.004	0.005	0.004	0.004	0.004
Nickel (Ni)	mg/L	0.0016	0.0019	0.0018	0.0016	0.0016	0.0014	0.0013	0.0016	0.0017	0.0016	0.0016	0.0016	0.0016		0.0013	0.0015	0.0027	0.0018	0.0014	0.0016
Selenium (Se)	mg/L	0.00036	0.00048	0.00039	0.00034	0.00036	0.00032	0.00030	0.00045	0.00077	0.00035	0.00035	0.00036	0.00035		0.00036	0.00036	0.00054	0.00037	0.00029	0.00036
Silicon (Si)		9.7	12.1	10.6	10.0	9.9	9.3	8.4	9.7	9.9	9.7	9.7	9.7	9.7		9.7	9.7	12.0	9.9	8.3	9.7
Silver (Ag)	mg/L	0.000006	0.000008	0.000007	0.000006	0.000006	0.000005	0.000005	0.000006	0.000007	0.000006	0.000006	0.000006	0.000006		0.000006	0.000006	0.000006	0.000006	0.000006	0.000006
Strontium (Sr)	mg/L	0.44	0.56	0.48	0.44	0.45	0.41	0.38	0.45	0.53	0.44	0.44	0.44	0.44		0.44	0.44	0.51	0.44	0.41	0.44
Thallium (Tl)	mg/L	0.000007	0.000009	0.000008	0.000008	0.000007	0.000007	0.000006	0.000007	0.000009	0.000007	0.000007	0.000007	0.000007		0.000006	0.000007	0.000007	0.000007	0.000007	0.000007
Tin (Sn)		0.000070	0.000083	0.000079	0.000072	0.000071	0.000064	0.000055	0.000070	0.000082	0.000070	0.000070	0.000070	0.000070		0.000060	0.000067	0.000070	0.000070	0.000070	0.000070
Uranium (U)	mg/L	0.00146	0.00192	0.00159	0.00148	0.00149	0.00137	0.00125	0.00147	0.00164	0.00146	0.00146	0.00146	0.00146		0.00146	0.00146	0.00264	0.00166	0.00121	0.00146
Vanadium (V)	mg/L	0.0031	0.0036	0.0034	0.0031	0.0031	0.0029	0.0025	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031		0.0028	0.0030	0.0041	0.0032	0.0024	0.0031
Zinc (Zn)	mg/L	0.0019	0.0024	0.0021	0.0019	0.0019	0.0018	0.0016	0.0019	0.0022	0.0019	0.0019	0.0019	0.0019		0.0019	0.0019	0.0162	0.0047	0.0008	0.0019

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Knight Piésold CONSULTING

TABLE 5.5

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PCDP - MAXIMUM PREDICTED CONCENTRATIONS FOR ALL MODEL SCENARIOS BY MINE PHASE

Print Jul/20/15 10:05:04

		BASE CASE	VARIABLE CLIMATE CASE						MINE ROCK STORAGE FACILITY	GROUNDWATER ASSUMPTIONS					DUSTFALL ASSUMPTIONS		BASELINE SENSITIVITY CASES			SEEPAGE DELAYS
			95TH P	75TH P	50TH P	MEAN	25TH P	5TH P	HIGHER RECHARGE	Higher Hydraulic Conductivity	Lower Hydraulic Conductivity	TSF Conductance - Higher	WMP Seepage Bypass	Edith Lake Thrust Fault Zone	Dustfall Availability/ Solubility	Dustfall Area	95TH P	MEAN	5TH P	Extended Seepage Delays
Naming Convention on Graphs			95th P VCC	75th P VCC	50th P VCC	MEAN VCC	25th P VCC	5th P VCC	MRSF SC	High HC SC	Low HC SC	High TSF Cond SC	WMP SB SC	ELTFZ	DF-SSC	DF-ASC	95th P BSC	Mean BSC	5th P BSC	SD-SC
		OPERATIONS I (YEAR 1 THROUGH 23)																		
Conventional Parameters and Major Ions																				
Hardness - Dissolved	mg/L $CaCO_3$	637	847	728	624	601	559	493	632	701	611	637	631	633	637	637	660	599	464	637
Bromide (Br^-)	mg/L	0.26	0.46	0.33	0.25	0.26	0.22	0.21	0.26	0.27	0.26	0.26	0.26	0.26	0.26	0.26	0.28	0.24	0.26	0.26
Chloride (Cl^-)	mg/L	70	85	78	74	73	69	64	70	70	70	70	70	70	70	70	93	68	58	70
Fluoride (F^-)	mg/L	0.31	0.46	0.37	0.32	0.32	0.30	0.27	0.31	0.32	0.30	0.31	0.30	0.31	0.31	0.31	0.40	0.29	0.24	0.31
Sulphate (SO_4^{2-})	mg/L	170	216	188	168	162	143	117	168	200	167	170	169	168	170	170	198	185	144	170
Calcium (Ca)	mg/L	117	156	135	120	121	110	98	116	125	114	117	117	117	117	117	120	107	82	117
Magnesium (Mg)	mg/L	84	113	96	84	80	74	63	83	95	81	84	83	83	84	84	88	81	63	84
Potassium (K)	mg/L	17	22	20	17	17	16	15	17	18	17	17	17	17	17	17	19	17	15	17
Sodium (Na)	mg/L	61	81	71	61	60	57	49	61	67	59	61	61	61	61	61	69	59	49	61
Nutrients																				
Ammonia	mg/L N	0.091	0.109	0.098	0.092	0.089	0.085	0.065	0.091	0.091	0.091	0.091	0.090	0.091	0.091	0.091	0.422	0.156	0.036	0.091
Nitrate	mg/L N	0.226	0.311	0.227	0.199	0.195	0.177	0.146	0.226	0.227	0.226	0.226	0.271	0.226	0.226	0.226	0.415	0.240	0.157	0.226
Nitrite	mg/L	0.0099	0.0142	0.0107	0.0087	0.0085	0.0078	0.0069	0.0099	0.0099	0.0099	0.0099	0.0107	0.0099	0.0099	0.0099	0.0323	0.0115	0.0072	0.0099
Phosphorus - Dissolved (P)	mg/L	0.162	0.273	0.206	0.149	0.159	0.143	0.134	0.162	0.162	0.162	0.162	0.162	0.162	0.158	0.162	0.409	0.189	0.107	0.162
Dissolved Metals																				
Aluminum (Al)	mg/L	0.021	0.065	0.041	0.023	0.025	0.021	0.019	0.021	0.021	0.021	0.021	0.020	0.021	0.003	0.018	0.024	0.021	0.019	0.021
Antimony (Sb)	mg/L	0.00043	0.00074	0.00060	0.00040	0.00037	0.00029	0.00023	0.00043	0.00048	0.00043	0.00043	0.00054	0.00043	0.00040	0.00043	0.00048	0.00044	0.00043	0.00043
Arsenic (As)	mg/L	0.0026	0.0040	0.0034	0.0026	0.0025	0.0024	0.0021	0.0026	0.0030	0.0026	0.0026	0.0028	0.0026	0.0026	0.0026	0.0032	0.0026	0.0024	0.0026
Barium (Ba)	mg/L	0.081	0.095	0.086	0.081	0.081	0.077	0.074	0.081	0.081	0.081	0.081	0.081	0.081	0.080	0.080	0.093	0.079	0.071	0.081
Boron (B)	mg/L	0.030	0.037	0.034	0.029	0.029	0.028	0.026	0.030	0.030	0.030	0.030	0.030	0.030	0.029	0.030	0.031	0.030	0.028	0.030
Cadmium (Cd)	mg/L	0.000015	0.000041	0.000028	0.000017	0.000019	0.000014	0.000013	0.000015	0.000015	0.000015	0.000015	0.000015	0.000015	0.000007	0.000013	0.000024	0.000016	0.000015	0.000015
Chromium (Cr)	mg/L	0.00137	0.00438	0.00282	0.00151	0.00174	0.00134	0.00124	0.00137	0.00137	0.00137	0.00137	0.00137	0.00137	0.00018	0.00121	0.00158	0.00139	0.00129	0.00137
Cobalt (Co)	mg/L	0.00038	0.00094	0.00067	0.00041	0.00046	0.00037	0.00034	0.00038	0.00038	0.00038	0.00038	0.00039	0.00038	0.00018	0.00036	0.00057	0.00041	0.00033	0.00038
Copper (Cu)	mg/L	0.0059	0.0147	0.0115	0.0070	0.0075	0.0057	0.0055	0.0059	0.0059	0.0059	0.0059	0.0059	0.0059	0.0039	0.0056	0.0078	0.0061	0.0052	0.0059
Iron (Fe)	mg/L	0.090	0.192	0.127	0.096	0.096	0.087	0.083	0.090	0.090	0.090	0.090	0.090	0.090	0.057	0.085	0.163	0.099	0.064	0.090
Lead (Pb)	mg/L	0.000171	0.000550	0.000357	0.000191	0.000224	0.000168	0.000155	0.000171	0.000171	0.000171	0.000171	0.000172	0.000171	0.000032	0.000152	0.000307	0.000185	0.000171	0.000171
Lithium (Li)	mg/L	0.0077	0.0104	0.0091	0.0078	0.0078	0.0075	0.0068	0.0077	0.0081	0.0077	0.0077	0.0077	0.0077	0.0077	0.0077	0.0085	0.0075	0.0064	0.0077
Manganese (Mn)	mg/L	0.110	0.188	0.113	0.094	0.104	0.091	0.084	0.110	0.110	0.110	0.110	0.110	0.110	0.108	0.110	0.272	0.123	0.034	0.110
Molybdenum (Mo)	mg/L	0.014	0.022	0.016	0.012	0.012	0.010	0.009	0.014	0.016	0.014	0.014	0.016	0.014	0.014	0.014	0.017	0.014	0.013	0.014
Nickel (Ni)	mg/L	0.0031	0.0068	0.0060	0.0035	0.0038	0.0029	0.0027	0.0031	0.0031	0.0031	0.0031	0.0032	0.0031	0.0024	0.0030	0.0042	0.0033	0.0029	0.0031
Selenium (Se)	mg/L	0.00159	0.00216	0.00183	0.00154	0.00146	0.00113	0.00088	0.00156	0.00199	0.00145	0.00159	0.00161	0.00157	0.00158	0.00158	0.00184	0.00147	0.00105	0.00159
Silicon (Si)		12.3	18.6	15.2	12.1	12.8	11.7	10.7	12.3	12.5	12.3	12.3	12.3	12.3	12.3	12.3	12.9	11.3	9.4	12.3
Silver (Ag)	mg/L	0.000007	0.000010	0.000008	0.000007	0.000007	0.000007	0.000006	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000006	0.000007	0.000007	0.000007	0.000007	0.000007
Strontium (Sr)	mg/L	0.80	1.11	0.94	0.80	0.77	0.70	0.61	0.79	0.90	0.76	0.80	0.80	0.80	0.80	0.80	0.87	0.76	0.60	0.80
Thallium (Tl)	mg/L	0.000012	0.000026	0.000018	0.000012	0.000013	0.000011	0.000010	0.000012	0.000012	0.000012	0.000012	0.000012	0.000012	0.000007	0.000011	0.000012	0.000012	0.000012	0.000012
Tin (Sn)		0.000108	0.000242	0.000167	0.000112	0.000123	0.000103	0.000097	0.000108	0.000108	0.000108	0.000108	0.000108	0.000108	0.000060	0.000101	0.000108	0.000108	0.000108	0.000108
Uranium (U)	mg/L	0.00217	0.00274	0.00239	0.00218	0.00211	0.00196	0.00173	0.00215	0.00242	0.00208	0.00217	0.00216	0.00216	0.00216	0.00217	0.00306	0.00239	0.00188	0.00217
Vanadium (V)	mg/L	0.0044	0.0084	0.0070	0.0050	0.0052	0.0043	0.0038	0.0044	0.0047	0.0044	0.0044	0.0045	0.0044	0.0040	0.0043	0.0050	0.0043	0.0037	0.0044
Zinc (Zn)	mg/L	0.0028	0.0035	0.0030	0.0028	0.0027	0.0026	0.0021	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0027	0.0028	0.0266	0.0078	0.0012	0.0028
		DECOMMISSIONING AND CLOSURE (YEAR 24 THROUGH 29)																		
Conventional Parameters and Major Ions																				
Hardness - Dissolved	mg/L $CaCO_3$	736	1,152	871	711	735	623	559	758	783	748	737	735	736	736	736	988	736	502	736
Bromide (Br^-)	mg/L	0.33	0.76	0.43	0.32	0.35	0.28	0.24	0.34	0.35	0.34	0.33	0.33	0.33	0.33	0.33	0.49	0.33	0.29	0.33
Chloride (Cl^-)	mg/L	66	80	70	69	67	64	62	66	68	69	66	66	66	66	66	95	65	56	66
Fluoride (F^-)	mg/L	0.29	0.38	0.32	0.29	0.30	0.28	0.25	0.30	0.30	0.30	0.29	0.29	0.29	0.29	0.29	0.40	0.28	0.23	0.29
Sulphate (SO_4^{2-})	mg/L	319	698	466	297	345	254	198	336	345	333	321	320	319	319	319	564	334	174	319
Calcium (Ca)	mg/L	127	165	140	127	127	118	104	131	130	144	128	126	127	127	127	162	125	93	127
Magnesium (Mg)	mg/L	103	183	130	100	107	86	74	106	112	102	103	102	102	103	103	144	104	66	103
Potassium (K)	mg/L	20	31	24	20	21	18	16	20	21	20	20	20	20	20	20	25	20	16	20
Sodium (Na)	mg/L	71	115	88	70	74	64	56	73	76	71	71	72	71	71	71	94	72	51	71
Nutrients																				
Ammonia	mg/L N	0.119	0.186	0.127	0.096	0.102	0.077	0.068	0.125	0.119	0.135	0.119	0.119	0.119	0.119	0.119	0.612	0.232	0.060	0.119
Nitrate	mg/L N	0.263	0.274	0.192	0.165	0.170	0.152	0.138	0.275	0.285	0.388	0.268	0.251	0.263	0.263	0.263	0.562	0.315	0.211	0.263
Nitrite	mg/L	0.0135	0.0150	0.0114	0.0099	0.0099	0.0083	0.0077	0.0130	0.0143	0.0146	0.0137	0.0149	0.0135	0.0135	0.0135	0.0301	0.0181	0.0114	0.0135
Phosphorus - Dissolved (P)	mg/L	0.155	0.260	0.170	0.148	0.155	0.130	0.122	0.157	0.155	0.152	0.155	0.155	0.155	0.152	0.155	0.412	0.192	0.097	0.155
Dissolved Metals																				
Aluminum (Al)	mg/L	0.020	0.064	0.037	0.023	0.022	0.021	0.019	0.020	0.020	0.020	0.020	0.020	0.020	0.003	0.018	0.024	0.021	0.019	0.020
Antimony (Sb)	mg/L	0.00047	0.00059	0.00042	0.00034	0.00034	0.00026	0.00024	0.00063	0.00052	0.00070	0.00048	0.00042	0.00047	0.00046	0.00047	0.00055	0.00048	0.00041	0.00047
Arsenic (As)	mg/L	0.0034	0.0050	0.0034	0.0030	0.0030	0.0027	0.0025	0.0042	0.0034	0.0035	0.0034	0.0032	0.0034	0.0034	0.0034	0.0041	0.0034	0.0030	0.0034
Barium (Ba)	mg/L	0.090	0.112	0.102	0.096	0.095	0.091	0.083	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.100	0.089	0.087	0.090
Boron (B)	mg/L	0.045	0.072	0.051	0.041	0.043	0.037	0.033	0.049	0.046	0.047	0.046	0.045	0.045	0.045	0.045	0.053	0.046	0.039	0.045
Cadmium (Cd)	mg/L	0.000015	0.000041	0.000027	0.000016	0.000019	0.000014	0.000013	0.000015	0.000015	0.000016	0.000015	0.000015	0.000015	0.000008	0.000013	0.000073	0.000026	0.000015	0.000015
Chromium (Cr)	mg/L	0.00134	0.00441	0.00258	0.00151	0.00155	0.00136	0.00125	0.00136	0.00135	0.00134	0.00134	0.00134	0.00134	0.00029	0.00119	0.00158	0.00137	0.00127	0.00134
Cobalt (Co)	mg/L	0.00040	0.00094	0.00061	0.00040	0.00043	0.00037	0.00035	0.00041	0.00041	0.00042	0.00040	0.00040	0.00040	0.00022	0.00037	0.00059	0.00042	0.00032	0.00040
Copper (Cu)	mg/L	0.0060	0.0149	0.0105	0.0062	0.0071	0.0057	0.0054	0.0061	0.0061	0.0061	0.0060	0.0060	0.0060	0.0039	0.0056	0.0078	0.0062	0.0052	0.0060
Iron (Fe)	mg/L	0.093	0.194	0.116	0.095	0.094	0.089	0.080	0.093	0.093	0.092	0.093	0.093	0.093	0.064	0.089	0.160	0.097	0.067	0.093
Lead (Pb)	mg/L	0.000168	0.000553	0.000328	0.000189	0.000202	0.000168	0.000154	0.000170	0.000169	0.000167	0.000168	0.000168	0.000168	0.000037	0.000150	0.000256	0.000179	0.000168	0.000168
Lithium (Li)	mg/L	0.0086	0.0112	0.0093	0.0086	0.0085	0.0079	0.0071	0.0089	0.0086	0.0086	0.0086	0.0086	0.0086	0.0085	0.0086	0.0104	0.0085	0.0068	0.0086
Manganese (Mn)	mg/L	0.169	0.244	0.180	0.131	0.139	0.097	0.066	0.171	0.169	0.169	0.169	0.169	0.169	0.168	0.169	0.497	0.218	0.055	0.169
Molybdenum (Mo)	mg/L	0.045	0.067	0.044	0.029	0.034	0.025	0.020	0.052	0.049	0.051	0.046	0.044	0.045	0.045	0.045	0.087	0.051	0.037	0.045
Nickel (Ni)	mg/L	0.0031	0.0065	0.0050	0.0031	0.0035	0.0028	0.0026	0.0035	0.0032	0.0037	0.0031	0.0031	0.0031	0.0026	0.0030	0.0042	0.0033	0.0029	0.0031
Selenium (Se)	mg/L	0.00183	0.00216	0.00185	0.00150	0.00150	0.00119	0.00100	0.00205	0.00186	0.00196	0.00184	0.00182	0.00183	0.00182	0.00182	0.00237	0.00181	0.00136	0.00183
Silicon (Si)		12.3	14.5	12.6	11.5	11.7	11.0	10.3	12.3	12.3	12.2	12.3	12.2	12.2	12.3	12.3	14.1	11.6	9.3	12.3
Silver (Ag)	mg/L	0.000007	0.000010	0.000008	0.000007	0.000007	0.000007	0.000006	0.000007	0.000008	0.000011	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007
Strontium (Sr)	mg/L	0.97	1.54	1.13	0.91	0.94	0.76	0.71	1.01	1.02	1.00	0.97	0.97	0.97	0.97	0.97	1.25	0.97	0.70	0.97
Thallium (Tl)	mg/L	0.000012	0.000026	0.000019	0.000012	0.000014	0.000011	0.000011	0.000013	0.000012	0.000015	0.000012	0.000012	0.000012	0.000010	0.000011	0.000012	0.000012	0.000012	0.000012
Tin (Sn)		0.000108	0.000244	0.000162	0.000113	0.000119	0.000104	0.000100	0.000109	0.000113	0.000144	0.000108	0.000108	0.000108	0.000067	0.000102	0.000108	0.000108	0.000108	0.000108
Uranium (U)	mg/L	0.00288	0.00498	0.00359	0.00283	0.00302	0.00253	0.00217	0.00294	0.00305	0.00295	0.00289	0.00290	0.00288	0.00287	0.00288	0.00542	0.00330	0.00231	0.00288
Vanadium (V)	mg/L	0.0057	0.0106	0.0085	0.0064	0.0068	0.0052	0.0047	0.0067	0.0061	0.0056	0.0057	0.0055	0.0056	0.0054	0.0056	0.0068	0.0058	0.0050	0.0057
Zinc (Zn)	mg/L	0.0027	0.0034	0.0028	0.0027	0.0027	0.0025	0.0022	0.0028	0.0029	0.0030	0.0027	0.0027	0.0027	0.0027	0.0027	0.0163	0.0049	0.0016	0.0027
		POST-CLOSURE (YEAR 29+)																		
Conventional Parameters and Major Ions																				
Hardness - Dissolved	mg/L $CaCO_3$	655	1,058	809	677	708	600	529	693	664	665	655	656	655	655	655	876	652	456	652
Bromide (Br^-)	mg/L	0.29	0.78	0.49	0.31	0.37	0.27	0.24	0.32	0.30	0.30	0.29	0.29	0.29	0.29	0.29	0.48	0.29	0.25	0.29
Chloride (Cl^-)	mg/L	65	83	70	68	67	63	61	65	67	67	65	66	65	65	65	95	64	55	65
Fluoride (F^-)	mg/L	0.29	0.38	0.32	0.29	0.29	0.28	0.26	0.29	0.29	0.31	0.29	0.29	0.29	0.29	0.29	0.38	0.28	0.23	0.29
Sulphate (SO_4^{2-})	mg/L	269	649	441	296	335	244	195	311	278	283	270	271	269	269	269	495	281	156	268
Calcium (Ca)	mg/L	119	164	140	126	125	116	107	128	122	145	119	119	119	119	119	149	115	85	118
Magnesium (Mg)	mg/L	88	165	120	95	101	82	72	91	88	88	87	88	88	87	88	123	89	60	87
Potassium (K)	mg/L	17	28	23	19	20	18	16	18	18	18	17	18	17	17	17	22	18	15	17
Sodium (Na)	mg/L	63	106	82	69	71	61	55	64	63	63	63	63	63	63	63	82	63	45	63
Nutrients																				
Ammonia	mg/L N	0.142	0.205	0.151	0.135	0.132	0.116	0.094	0.142	0.141	0.137	0.142	0.154	0.142	0.142	0.142	0.578	0.241	0.090	0.128
Nitrate	mg/L N	0.220	0.834	0.312	0.225	0.284	0.151	0.137	0.219	0.219	0.212	0.220	0.274	0.220	0.220	0.220	0.502	0.231	0.146	0.196
Nitrite	mg/L	0.0168	0.0275	0.0153	0.0123	0.0123	0.0107	0.0084	0.0168	0.0168	0.0155	0.0168	0.0171	0.0168	0.0168	0.0168	0.0373	0.0187	0.0134	0.0135
Phosphorus - Dissolved (P)	mg/L	0.145	0.241	0.178	0.136	0.150	0.127	0.116	0.146	0.145	0.136	0.145	0.145	0.145	0.142	0.144	0.391	0.180	0.095	0.145
Dissolved Metals																				
Aluminum (Al)	mg/L	0.019	0.023	0.022	0.021	0.020	0.020	0.014	0.019	0.019	0.018	0.019	0.019	0.019	0.003	0.017	0.023	0.020	0.018	0.019
Antimony (Sb)	mg/L	0.00058	0.00296	0.00086	0.00054	0.00078	0.00045	0.00029	0.00103	0.00062	0.00119	0.00058	0.00068	0.00058	0.00058	0.00058	0.00065	0.00058	0.00053	0.00054
Arsenic (As)	mg/L	0.0036	0.0065	0.0046	0.0037	0.0036	0.0030	0.0026	0.0051	0.0037	0.0047	0.0036	0.0035	0.0036	0.0036	0.0036	0.0043	0.0036	0.0032	0.0035
Barium (Ba)	mg/L	0.088	0.108	0.097	0.091	0.091	0.088	0.081	0.088	0.088	0.087	0.088	0.088	0.088	0.088	0.088	0.098	0.086	0.084	0.088
Boron (B)	mg/L	0.038	0.078	0.059	0.042	0.044	0.036	0.030	0.049	0.041	0.080	0.039	0.039	0.038	0.038	0.038	0.046	0.039	0.033	0.038
Cadmium (Cd)	mg/L	0.000014	0.000017	0.000016	0.000015	0.000015	0.000013	0.000012	0.000014	0.000014	0.000016	0.000014	0.000014	0.000014	0.000009	0.000013	0.000067	0.000023	0.000014	0.000014
Chromium (Cr)	mg/L	0.00126	0.00161	0.00148	0.00142	0.00134	0.00127	0.00092	0.00128	0.00127	0.00122	0.00126	0.00126	0.00126	0.00026	0.00112	0.00149	0.00129	0.00119	0.00126
Cobalt (Co)	mg/L	0.00039	0.00045	0.00042	0.00039	0.00038	0.00036	0.00032	0.00039	0.00039	0.00071	0.00039	0.00039	0.00039	0.00026	0.00036	0.00057	0.00040	0.00030	0.00038
Copper (Cu)	mg/L	0.0059	0.0067	0.0063	0.0061	0.0059	0.0056	0.0051	0.0060	0.0060	0.0066	0.0059	0.0059	0.0059	0.0035	0.0056	0.0078	0.0061	0.0050	0.0059
Iron (Fe)	mg/L	0.094	0.109	0.102	0.097	0.094	0.090	0.076	0.094	0.095	0.088	0.094	0.094	0.094	0.069	0.090	0.157	0.097	0.065	0.090
Lead (Pb)	mg/L	0.000159	0.000202	0.000187	0.000178	0.000169	0.000159	0.000122	0.000161	0.000160	0.000152	0.000159	0.000159	0.000159	0.000037	0.000141	0.000241	0.000169	0.000159	0.000159
Lithium (Li)	mg/L	0.0078	0.0112	0.0094	0.0081	0.0080	0.0075	0.0069	0.0084	0.0080	0.0108	0.0078	0.0079	0.0078	0.0078	0.0078	0.0093	0.0076	0.0065	0.0077
Manganese (Mn)	mg/L	0.161	0.238	0.181	0.127	0.138	0.100	0.077	0.162	0.162	0.165	0.161	0.161	0.161	0.161	0.161	0.454	0.203	0.054	0.160
Molybdenum (Mo)	mg/L	0.039	0.088	0.060	0.040	0.042	0.030	0.023	0.070	0.043	0.122	0.040	0.039	0.039	0.039	0.039	0.073	0.044	0.033	0.037
Nickel (Ni)	mg/L	0.0031	0.0058	0.0036	0.0029	0.0029	0.0028	0.0025	0.0039	0.0031	0.0035	0.0031	0.0031	0.0031	0.0027	0.0029	0.0041	0.0032	0.0028	0.0031
Selenium (Se)	mg/L	0.00159	0.00242	0.00189	0.00171	0.00162	0.00127	0.00105	0.00236	0.00173	0.00401	0.00161	0.00158	0.00159	0.00159	0.00159	0.00205	0.00158	0.00120	0.00159
Silicon (Si)		11.7	14.0	12.4	11.3	11.4	11.0	10.5	11.7	11.8	11.5	11.7	11.7	11.7	11.7	11.7	13.6	11.2	9.4	11.6
Silver (Ag)	mg/L	0.000007	0.000008	0.000007	0.000007	0.000007	0.000006	0.000006	0.000007	0.000007	0.000011	0.000007	0.000007	0.000007	0.000006	0.000007	0.000007	0.000007	0.000007	0.000007
Strontium (Sr)	mg/L	0.85	1.43	1.12	0.87	0.90	0.74	0.66	0.94	0.88	1.07	0.85	0.85	0.85	0.85	0.85	1.09	0.84	0.62	0.84
Thallium (Tl)	mg/L	0.000011	0.000018	0.000012	0.000012	0.000012	0.000011	0.000010	0.000017	0.000012	0.000027	0.000011	0.000011	0.000011	0.000010	0.000011	0.000012	0.000011	0.000011	0.000011
Tin (Sn)		0.000105	0.000122	0.000115	0.000109	0.000107	0.000101	0.000091	0.000106	0.000109	0.000155	0.000105	0.000105	0.000105	0.000062	0.000099	0.000105	0.000105	0.000105	0.000104
Uranium (U)	mg/L	0.00257	0.00459	0.00343	0.00279	0.00292	0.00244	0.00215	0.00272	0.00263	0.00266	0.00257	0.00258	0.00257	0.00257	0.00257	0.00494	0.00294	0.00202	0.00255
Vanadium (V)	mg/L	0.0054	0.0099	0.0068	0.0059	0.0059	0.0048	0.0043	0.0074	0.0054	0.0055	0.0054	0.0056	0.0054	0.0054	0.0054	0.0065	0.0055	0.0049	0.0053
Zinc (Zn)	mg/L	0.0024	0.0041	0.0028	0.0027	0.0026	0.0023	0.0021	0.0032	0.0026	0.0039	0.0024	0.0024	0.0024	0.0024	0.0024	0.0163	0.0047	0.0014	0.0024

M:\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Tables 5.4 to 5.8 Max Concentration by Project Phase Receiving Water (linked).xlsx]T5.5 PCDP Max by Phase

NOTES:
1. SENSITIVITY CASE WATER QUALITY MODEL RESULTS CAN REPRESENT EXTREME OVER OR UNDER PREDICTIONS FOR PARAMETER CHEMISTRY AND DO NOT

Knight Piésold CONSULTING

TABLE 5.6

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PC02.3 - MAXIMUM PREDICTED CONCENTRATIONS FOR ALL MODEL SCENARIOS BY MINE PHASE

Print Jul/20/15 10:05:48

		BASE CASE	VARIABLE CLIMATE CASE						MINE ROCK STORAGE FACILITY	GROUNDWATER ASSUMPTIONS					DUSTFALL ASSUMPTIONS		BASELINE SENSITIVITY CASES			SEEPAGE DELAYS
			95TH P	75TH P	50TH P	MEAN	25TH P	5TH P	HIGHER RECHARGE	Higher Hydraulic Conductivity	Lower Hydraulic Conductivity	TSF Conductance - Higher	WMP Seepage Bypass	Edith Lake Thrust Fault Zone	Dustfall Availability/ Solubility	Dustfall Area	95TH P	MEAN	5TH P	Extended Seepage Delays
Naming Convention on Graphs			95th P VCC	75th P VCC	50th P VCC	MEAN VCC	25th P VCC	5th P VCC	MRSF SC	High HC SC	Low HC SC	High TSF Cond SC	WMP SB SC	ELTFZ	DF-SSC	DF-ASC	95th P BSC	Mean BSC	5th P BSC	SD-SC
		OPERATIONS I (YEAR 1 THROUGH 23)																		
Conventional Parameters and Major Ions																				
Hardness - Dissolved	mg/L $CaCO_3$	689	909	746	696	662	604	517	681	772	680	687	680	683	689	689	729	652	521	688
Bromide (Br^-)	mg/L	0.29	0.47	0.29	0.27	0.26	0.24	0.21	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.26	0.28	0.29
Chloride (Cl^-)	mg/L	70	85	78	73	72	68	62	70	70	70	70	70	70	70	70	93	68	58	70
Fluoride (F^-)	mg/L	0.31	0.44	0.34	0.32	0.32	0.30	0.27	0.31	0.33	0.30	0.31	0.31	0.31	0.31	0.31	0.40	0.28	0.24	0.31
Sulphate (SO_4^{2-})	mg/L	295	474	326	290	266	239	145	293	320	293	293	293	293	295	295	326	294	268	295
Calcium (Ca)	mg/L	115	150	129	116	117	109	97	114	122	112	115	114	114	115	115	118	105	80	115
Magnesium (Mg)	mg/L	103	142	114	104	98	89	70	103	114	103	103	102	103	103	103	108	100	83	103
Potassium (K)	mg/L	20	26	22	20	19	18	16	20	21	20	20	20	20	20	20	22	20	19	20
Sodium (Na)	mg/L	83	117	90	85	78	72	57	83	88	83	83	83	83	83	83	89	82	69	83
Nutrients																				
Ammonia	mg/L N	0.168	0.373	0.178	0.170	0.149	0.134	0.098	0.167	0.168	0.167	0.167	0.171	0.167	0.168	0.168	0.475	0.227	0.129	0.168
Nitrate	mg/L N	0.225	0.296	0.220	0.197	0.193	0.171	0.147	0.224	0.225	0.224	0.224	0.265	0.224	0.225	0.225	0.415	0.239	0.156	0.225
Nitrite	mg/L	0.0103	0.0131	0.0097	0.0091	0.0088	0.0081	0.0067	0.0103	0.0103	0.0103	0.0103	0.0110	0.0103	0.0103	0.0103	0.0306	0.0118	0.0076	0.0103
Phosphorus - Dissolved (P)	mg/L	0.175	0.286	0.201	0.166	0.162	0.153	0.139	0.174	0.175	0.174	0.174	0.174	0.174	0.172	0.175	0.425	0.209	0.128	0.175
Dissolved Metals																				
Aluminum (Al)	mg/L	0.019	0.045	0.037	0.021	0.023	0.019	0.018	0.019	0.019	0.019	0.019	0.019	0.019	0.003	0.017	0.022	0.020	0.018	0.019
Antimony (Sb)	mg/L	0.00047	0.00076	0.00058	0.00043	0.00039	0.00033	0.00024	0.00047	0.00052	0.00047	0.00047	0.00057	0.00047	0.00044	0.00047	0.00053	0.00048	0.00047	0.00046
Arsenic (As)	mg/L	0.0031	0.0045	0.0034	0.0031	0.0029	0.0027	0.0022	0.0030	0.0034	0.0030	0.0030	0.0032	0.0030	0.0030	0.0031	0.0034	0.0031	0.0028	0.0031
Barium (Ba)	mg/L	0.079	0.094	0.084	0.079	0.078	0.076	0.068	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.092	0.078	0.070	0.079
Boron (B)	mg/L	0.029	0.036	0.030	0.029	0.028	0.027	0.025	0.029	0.030	0.029	0.029	0.029	0.029	0.029	0.029	0.031	0.029	0.027	0.029
Cadmium (Cd)	mg/L	0.000014	0.000031	0.000027	0.000017	0.000019	0.000013	0.000012	0.000014	0.000014	0.000014	0.000014	0.000014	0.000014	0.000007	0.000013	0.000022	0.000015	0.000014	0.000014
Chromium (Cr)	mg/L	0.00128	0.00304	0.00253	0.00143	0.00163	0.00122	0.00113	0.00125	0.00128	0.00125	0.00125	0.00125	0.00125	0.00018	0.00113	0.00149	0.00130	0.00121	0.00128
Cobalt (Co)	mg/L	0.00037	0.00070	0.00063	0.00041	0.00044	0.00035	0.00032	0.00036	0.00037	0.00036	0.00036	0.00036	0.00036	0.00018	0.00034	0.00054	0.00039	0.00031	0.00037
Copper (Cu)	mg/L	0.0056	0.0114	0.0103	0.0069	0.0071	0.0052	0.0050	0.0055	0.0056	0.0055	0.0055	0.0055	0.0055	0.0038	0.0053	0.0074	0.0058	0.0049	0.0056
Iron (Fe)	mg/L	0.090	0.145	0.120	0.093	0.092	0.085	0.081	0.088	0.090	0.088	0.088	0.088	0.088	0.056	0.086	0.162	0.098	0.060	0.093
Lead (Pb)	mg/L	0.000161	0.000388	0.000324	0.000189	0.000212	0.000153	0.000143	0.000156	0.000161	0.000156	0.000156	0.000157	0.000156	0.000035	0.000143	0.000291	0.000175	0.000161	0.000161
Lithium (Li)	mg/L	0.0076	0.0099	0.0081	0.0077	0.0076	0.0074	0.0068	0.0076	0.0079	0.0076	0.0076	0.0076	0.0076	0.0076	0.0076	0.0083	0.0074	0.0062	0.0076
Manganese (Mn)	mg/L	0.110	0.179	0.110	0.093	0.102	0.090	0.083	0.107	0.110	0.107	0.107	0.107	0.107	0.109	0.110	0.265	0.123	0.036	0.115
Molybdenum (Mo)	mg/L	0.014	0.020	0.014	0.012	0.012	0.010	0.009	0.014	0.016	0.014	0.014	0.015	0.014	0.014	0.014	0.017	0.014	0.013	0.014
Nickel (Ni)	mg/L	0.0030	0.0062	0.0054	0.0035	0.0036	0.0027	0.0026	0.0029	0.0030	0.0029	0.0029	0.0029	0.0029	0.0023	0.0028	0.0040	0.0031	0.0027	0.0030
Selenium (Se)	mg/L	0.00157	0.00204	0.00178	0.00149	0.00142	0.00111	0.00088	0.00155	0.00195	0.00144	0.00157	0.00160	0.00155	0.00157	0.00157	0.00183	0.00146	0.00105	0.00157
Silicon (Si)		12.0	17.8	13.8	12.0	12.4	11.3	10.4	12.0	12.3	12.0	12.0	12.0	12.0	12.0	12.0	12.6	11.0	9.4	12.0
Silver (Ag)	mg/L	0.000007	0.000009	0.000008	0.000007	0.000007	0.000007	0.000006	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000006	0.000007	0.000007	0.000007	0.000007	0.000007
Strontium (Sr)	mg/L	0.88	1.22	0.99	0.91	0.86	0.77	0.65	0.87	1.01	0.86	0.88	0.87	0.87	0.88	0.88	0.98	0.85	0.69	0.88
Thallium (Tl)	mg/L	0.000011	0.000020	0.000018	0.000012	0.000013	0.000010	0.000010	0.000011	0.000011	0.000011	0.000011	0.000011	0.000011	0.000007	0.000011	0.000011	0.000011	0.000011	0.000011
Tin (Sn)		0.000102	0.000184	0.000162	0.000110	0.000120	0.000095	0.000089	0.000099	0.000102	0.000099	0.000099	0.000099	0.000099	0.000065	0.000096	0.000102	0.000102	0.000101	0.000102
Uranium (U)	mg/L	0.00224	0.00274	0.00241	0.00227	0.00219	0.00200	0.00177	0.00222	0.00252	0.00218	0.00223	0.00222	0.00222	0.00224	0.00224	0.00312	0.00245	0.00196	0.00224
Vanadium (V)	mg/L	0.0043	0.0068	0.0065	0.0049	0.0050	0.0041	0.0037	0.0042	0.0046	0.0042	0.0042	0.0044	0.0042	0.0039	0.0042	0.0049	0.0042	0.0036	0.0043
Zinc (Zn)	mg/L	0.0028	0.0034	0.0029	0.0027	0.0027	0.0026	0.0021	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0027	0.0028	0.0266	0.0078	0.0012	0.0028
		DECOMMISSIONING AND CLOSURE (YEAR 24 THROUGH 29)																		
Conventional Parameters and Major Ions																				
Hardness - Dissolved	mg/L $CaCO_3$	756	1,075	860	740	729	637	570	782	805	747	755	751	753	756	756	992	755	532	756
Bromide (Br^-)	mg/L	0.33	0.66	0.42	0.33	0.34	0.28	0.24	0.35	0.36	0.33	0.33	0.33	0.33	0.33	0.33	0.49	0.33	0.29	0.33
Chloride (Cl^-)	mg/L	66	80	70	66	66	64	58	66	67	67	66	66	66	66	66	96	65	54	66
Fluoride (F^-)	mg/L	0.29	0.35	0.30	0.29	0.28	0.27	0.25	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.39	0.28	0.22	0.29
Sulphate (SO_4^{2-})	mg/L	358	660	471	349	358	266	222	384	400	359	358	354	356	358	358	584	371	244	358
Calcium (Ca)	mg/L	126	159	136	127	125	116	102	133	130	137	126	125	126	126	126	157	123	92	126
Magnesium (Mg)	mg/L	108	167	130	108	106	88	77	112	117	104	108	108	108	108	108	146	109	81	108
Potassium (K)	mg/L	21	30	24	21	21	19	17	22	22	21	21	21	21	21	21	26	21	18	21
Sodium (Na)	mg/L	81	115	93	81	80	71	60	82	86	81	81	81	81	81	81	101	80	64	81
Nutrients																				
Ammonia	mg/L N	0.195	0.316	0.178	0.152	0.144	0.120	0.098	0.205	0.195	0.195	0.195	0.195	0.195	0.195	0.195	0.682	0.304	0.127	0.196
Nitrate	mg/L N	0.255	0.272	0.194	0.171	0.175	0.152	0.143	0.278	0.275	0.362	0.259	0.245	0.255	0.255	0.255	0.545	0.304	0.201	0.256
Nitrite	mg/L	0.0128	0.0147	0.0110	0.0098	0.0097	0.0084	0.0076	0.0127	0.0135	0.0137	0.0130	0.0140	0.0128	0.0128	0.0128	0.0293	0.0166	0.0106	0.0128
Phosphorus - Dissolved (P)	mg/L	0.170	0.232	0.164	0.144	0.143	0.137	0.117	0.172	0.170	0.170	0.170	0.170	0.170	0.167	0.170	0.419	0.205	0.113	0.170
Dissolved Metals																				
Aluminum (Al)	mg/L	0.019	0.045	0.029	0.020	0.019	0.018	0.016	0.018	0.019	0.018	0.018	0.018	0.018	0.003	0.017	0.022	0.019	0.017	0.019
Antimony (Sb)	mg/L	0.00054	0.00070	0.00054	0.00045	0.00042	0.00034	0.00027	0.00079	0.00058	0.00066	0.00055	0.00050	0.00054	0.00054	0.00054	0.00062	0.00055	0.00049	0.00055
Arsenic (As)	mg/L	0.0042	0.0057	0.0046	0.0039	0.0038	0.0032	0.0028	0.0058	0.0043	0.0045	0.0041	0.0041	0.0041	0.0041	0.0042	0.0048	0.0042	0.0038	0.0042
Barium (Ba)	mg/L	0.089	0.103	0.097	0.093	0.090	0.086	0.078	0.089	0.089	0.089	0.089	0.089	0.089	0.088	0.089	0.098	0.087	0.086	0.089
Boron (B)	mg/L	0.044	0.063	0.049	0.040	0.041	0.036	0.032	0.050	0.045	0.045	0.044	0.044	0.044	0.044	0.044	0.052	0.045	0.038	0.044
Cadmium (Cd)	mg/L	0.000013	0.000031	0.000023	0.000015	0.000017	0.000013	0.000012	0.000013	0.000014	0.000015	0.000013	0.000013	0.000013	0.000008	0.000012	0.000071	0.000025	0.000013	0.000013
Chromium (Cr)	mg/L	0.00123	0.00306	0.00207	0.00131	0.00137	0.00120	0.00107	0.00121	0.00123	0.00124	0.00119	0.00119	0.00119	0.00031	0.00108	0.00144	0.00125	0.00116	0.00123
Cobalt (Co)	mg/L	0.00037	0.00070	0.00052	0.00037	0.00040	0.00034	0.00032	0.00037	0.00038	0.00040	0.00036	0.00036	0.00036	0.00022	0.00035	0.00055	0.00039	0.00029	0.00037
Copper (Cu)	mg/L	0.0055	0.0110	0.0089	0.0056	0.0065	0.0051	0.0049	0.0054	0.0056	0.0057	0.0053	0.0053	0.0053	0.0038	0.0052	0.0073	0.0057	0.0047	0.0055
Iron (Fe)	mg/L	0.091	0.142	0.099	0.091	0.089	0.084	0.077	0.088	0.091	0.088	0.088	0.088	0.088	0.062	0.087	0.156	0.095	0.062	0.091
Lead (Pb)	mg/L	0.000154	0.000392	0.000265	0.000164	0.000180	0.000149	0.000133	0.000151	0.000155	0.000154	0.000149	0.000149	0.000149	0.000039	0.000137	0.000235	0.000164	0.000154	0.000154
Lithium (Li)	mg/L	0.0082	0.0103	0.0090	0.0083	0.0081	0.0076	0.0069	0.0088	0.0084	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0100	0.0082	0.0065	0.0082
Manganese (Mn)	mg/L	0.164	0.221	0.156	0.123	0.127	0.097	0.066	0.164	0.164	0.163	0.163	0.163	0.163	0.163	0.164	0.487	0.214	0.055	0.164
Molybdenum (Mo)	mg/L	0.043	0.060	0.042	0.030	0.033	0.025	0.020	0.052	0.046	0.047	0.043	0.041	0.043	0.043	0.043	0.078	0.048	0.036	0.043
Nickel (Ni)	mg/L	0.0031	0.0054	0.0045	0.0030	0.0034	0.0027	0.0026	0.0037	0.0031	0.0034	0.0031	0.0030	0.0031	0.0026	0.0030	0.0039	0.0032	0.0028	0.0031
Selenium (Se)	mg/L	0.00175	0.00207	0.00185	0.00152	0.00144	0.00118	0.00102	0.00207	0.00178	0.00186	0.00176	0.00173	0.00174	0.00174	0.00174	0.00223	0.00173	0.00133	0.00175
Silicon (Si)		12.0	13.1	12.0	11.1	11.2	10.8	10.0	11.9	12.0	11.9	11.9	11.9	11.9	12.0	12.0	13.5	11.3	8.8	12.0
Silver (Ag)	mg/L	0.000007	0.000009	0.000008	0.000007	0.000007	0.000007	0.000006	0.000008	0.000008	0.000010	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007
Strontium (Sr)	mg/L	0.99	1.44	1.12	0.96	0.94	0.81	0.75	1.05	1.07	1.00	0.99	0.98	0.99	0.99	0.99	1.25	0.98	0.73	0.99
Thallium (Tl)	mg/L	0.000014	0.000021	0.000019	0.000013	0.000014	0.000011	0.000010	0.000019	0.000014	0.000016	0.000014	0.000014	0.000014	0.000012	0.000014	0.000014	0.000014	0.000014	0.000014
Tin (Sn)		0.000099	0.000187	0.000145	0.000103	0.000113	0.000093	0.000089	0.000097	0.000104	0.000135	0.000096	0.000096	0.000096	0.000070	0.000093	0.000099	0.000099	0.000099	0.000099
Uranium (U)	mg/L	0.00278	0.00433	0.00342	0.00279	0.00287	0.00250	0.00216	0.00286	0.00296	0.00280	0.00277	0.00276	0.00276	0.00277	0.00277	0.00519	0.00317	0.00222	0.00278
Vanadium (V)	mg/L	0.0056	0.0093	0.0077	0.0061	0.0064	0.0052	0.0047	0.0064	0.0059	0.0055	0.0056	0.0054	0.0055	0.0053	0.0055	0.0065	0.0057	0.0050	0.0056
Zinc (Zn)	mg/L	0.0028	0.0034	0.0028	0.0027	0.0026	0.0025	0.0021	0.0031	0.0029	0.0029	0.0028	0.0027	0.0028	0.0027	0.0027	0.0162	0.0049	0.0017	0.0028
		POST-CLOSURE (YEAR 29+)																		
Conventional Parameters and Major Ions																				
Hardness - Dissolved	mg/L $CaCO_3$	675	3,234	892	869	1,367	616	550	724	676	686	675	676	675	675	675	879	671	503	665
Bromide (Br^-)	mg/L	0.30	2.16	0.53	0.46	0.84	0.35	0.24	0.33	0.30	0.31	0.30	0.30	0.30	0.30	0.30	0.48	0.30	0.25	0.29
Chloride (Cl^-)	mg/L	65	83	70	68	68	63	62	65	67	66	65	65	65	65	65	95	64	53	65
Fluoride (F^-)	mg/L	0.32	1.18	0.55	0.54	0.52	0.32	0.27	0.32	0.33	0.32	0.31	0.31	0.31	0.32	0.32	0.43	0.32	0.26	0.28
Sulphate (SO_4^{2-})	mg/L	307	3393	671	654	975	312	211	363	309	319	307	308	307	307	307	499	317	225	299
Calcium (Ca)	mg/L	122	912	150	129	362	119	108	135	122	137	122	122	122	122	122	150	118	90	119
Magnesium (Mg)	mg/L	91	231	134	131	118	83	73	95	90	91	90	91	91	91	91	123	92	68	90
Potassium (K)	mg/L	19	80	25	21	40	18	16	20	19	19	19	19	19	19	19	23	19	17	18
Sodium (Na)	mg/L	69	395	153	149	127	76	57	70	70	71	69	70	69	69	69	87	69	60	68
Nutrients																				
Ammonia	mg/L N	0.179	0.845	0.268	0.185	0.738	0.152	0.118	0.181	0.177	0.174	0.178	0.188	0.178	0.179	0.179	0.563	0.264	0.127	0.162
Nitrate	mg/L N	0.255	6.093	0.729	0.272	5.299	0.160	0.136	0.254	0.254	0.248	0.255	0.295	0.254	0.255	0.255	0.501	0.267	0.180	0.200
Nitrite	mg/L	0.0162	0.1470	0.0223	0.0133	0.1269	0.0104	0.0083	0.0157	0.0162	0.0150	0.0157	0.0160	0.0157	0.0162	0.0162	0.0359	0.0180	0.0128	0.0136
Phosphorus - Dissolved (P)	mg/L	0.137	0.284	0.181	0.134	0.181	0.127	0.116	0.137	0.137	0.131	0.134	0.134	0.134	0.137	0.137	0.341	0.164	0.087	0.135
Dissolved Metals																				
Aluminum (Al)	mg/L	0.018	0.021	0.020	0.019	0.018	0.018	0.013	0.017	0.018	0.017	0.017	0.017	0.017	0.003	0.016	0.021	0.018	0.016	0.017
Antimony (Sb)	mg/L	0.00104	0.14007	0.00530	0.00160	0.03129	0.00066	0.00043	0.00154	0.00106	0.00143	0.00104	0.00112	0.00104	0.00104	0.00104	0.00111	0.00105	0.00103	0.00063
Arsenic (As)	mg/L	0.0047	0.1507	0.0103	0.0086	0.0436	0.0053	0.0034	0.0071	0.0048	0.0057	0.0047	0.0048	0.0047	0.0047	0.0047	0.0053	0.0047	0.0044	0.0042
Barium (Ba)	mg/L	0.086	0.128	0.094	0.093	0.099	0.087	0.081	0.086	0.087	0.086	0.086	0.086	0.086	0.086	0.086	0.098	0.085	0.083	0.086
Boron (B)	mg/L	0.040	0.774	0.075	0.073	0.223	0.045	0.032	0.054	0.041	0.078	0.040	0.040	0.040	0.040	0.040	0.048	0.041	0.035	0.038
Cadmium (Cd)	mg/L	0.000013	0.000154	0.000018	0.000018	0.000039	0.000012	0.000011	0.000013	0.000013	0.000015	0.000013	0.000013	0.000013	0.000009	0.000012	0.000065	0.000022	0.000013	0.000013
Chromium (Cr)	mg/L	0.00116	0.00855	0.00133	0.00127	0.00220	0.00114	0.00082	0.00114	0.00117	0.00113	0.00113	0.00112	0.00113	0.00031	0.00103	0.00138	0.00119	0.00109	0.00115
Cobalt (Co)	mg/L	0.00074	0.00590	0.00471	0.00463	0.00338	0.00116	0.00067	0.00073	0.00078	0.00085	0.00072	0.00072	0.00072	0.00074	0.00074	0.00129	0.00076	0.00030	0.00036
Copper (Cu)	mg/L	0.0054	0.0214	0.0056	0.0054	0.0092	0.0050	0.0046	0.0053	0.0055	0.0061	0.0053	0.0053	0.0053	0.0035	0.0051	0.0072	0.0056	0.0046	0.0054
Iron (Fe)	mg/L	0.545	4.275	4.205	4.142	2.979	0.896	0.510	0.528	0.545	0.361	0.528	0.528	0.528	0.545	0.545	0.893	0.548	0.064	0.134
Lead (Pb)	mg/L	0.000147	0.001658	0.000168	0.000160	0.000387	0.000143	0.000110	0.000144	0.000148	0.000142	0.000142	0.000142	0.000143	0.000045	0.000131	0.000228	0.000156	0.000146	0.000145
Lithium (Li)	mg/L	0.0088	0.0708	0.0153	0.0150	0.0247	0.0090	0.0072	0.0088	0.0091	0.0107	0.0085	0.0085	0.0085	0.0088	0.0088	0.0101	0.0087	0.0071	0.0076
Manganese (Mn)	mg/L	0.690	5.261	5.175	5.096	3.670	1.097	0.645	0.669	0.692	0.471	0.669	0.669	0.669	0.690	0.690	1.014	0.695	0.368	0.186
Molybdenum (Mo)	mg/L	0.040	0.427	0.064	0.043	0.209	0.031	0.025	0.071	0.043	0.115	0.040	0.040	0.040	0.040	0.040	0.070	0.044	0.034	0.037
Nickel (Ni)	mg/L	0.0030	0.0568	0.0076	0.0075	0.0152	0.0040	0.0024	0.0042	0.0030	0.0035	0.0029	0.0029	0.0029	0.0029	0.0029	0.0047	0.0031	0.0027	0.0028
Selenium (Se)	mg/L	0.00188	0.11249	0.00448	0.00227	0.02523	0.00161	0.00118	0.00264	0.00193	0.00376	0.00187	0.00191	0.00187	0.00188	0.00188	0.00227	0.00185	0.00150	0.00160
Silicon (Si)		12.7	23.1	18.5	18.2	16.2	12.2	10.7	12.3	12.8	11.8	12.3	12.3	12.3	12.7	12.7	15.2	12.4	10.1	11.3
Silver (Ag)	mg/L	0.000007	0.000051	0.000009	0.000008	0.000019	0.000007	0.000006	0.000007	0.000007	0.000010	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007
Strontium (Sr)	mg/L	0.89	7.36	1.29	0.96	2.59	0.81	0.72	1.02	0.90	1.06	0.90	0.90	0.89	0.89	0.89	1.11	0.88	0.70	0.87
Thallium (Tl)	mg/L	0.000014	0.000397	0.000029	0.000026	0.000132	0.000016	0.000010	0.000022	0.000014	0.000026	0.000014	0.000014	0.000014	0.000014	0.000014	0.000024	0.000014	0.000014	0.000012
Tin (Sn)		0.000098	0.000534	0.000147	0.000143	0.000193	0.000093	0.000084	0.000096	0.000103	0.000146	0.000095	0.000095	0.000095	0.000072	0.000093	0.000103	0.000098	0.000097	0.000096
Uranium (U)	mg/L	0.00318	0.01658	0.01351	0.01330	0.01000	0.00398	0.00283	0.00312	0.00329	0.00317	0.00308	0.00308	0.00308	0.00318	0.00318	0.00610	0.00331	0.00197	0.00249
Vanadium (V)	mg/L	0.0060	0.2007	0.0097	0.0069	0.0593	0.0056	0.0044	0.0076	0.0059	0.0060	0.0059	0.0061	0.0060	0.0060	0.0060	0.0069	0.0061	0.0055	0.0053
Zinc (Zn)	mg/L	0.0028	0.0730	0.0057	0.0056	0.0175	0.0032	0.0022	0.0036	0.0028	0.0038	0.0028	0.0028	0.0028	0.0028	0.0028	0.0163	0.0048	0.0018	0.0025

M:\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Tables 5.4 to 5.8 Max Concentration by Project Phase Receiving Water (linked).xlsx]T5.6 PC02.3 Max by Phase

NOTES:

1. SENSITIVITY CASE WATER QUALITY MODEL RESULTS CAN REPRESENT EXTREME OVER OR UNDER PREDICTIONS FOR PARAMETER CHEMISTRY

Knight Piésold CONSULTING

TABLE 5.7

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PC02 - MAXIMUM PREDICTED CONCENTRATIONS FOR ALL MODEL SCENARIOS BY MINE PHASE

Print Jul/20/15 10:06:45

		BASE CASE	VARIABLE CLIMATE CASE						MINE ROCK STORAGE FACILITY	GROUNDWATER ASSUMPTIONS					DUSTFALL ASSUMPTIONS		BASELINE SENSITIVITY CASES			SEEPAGE DELAYS
			95TH P	75TH P	50TH P	MEAN	25TH P	5TH P	HIGHER RECHARGE	Higher Hydraulic Conductivity	Lower Hydraulic Conductivity	TSF Conductance - Higher	WMP Seepage Bypass	Edith Lake Thrust Fault Zone	Dustfall Availability/ Solubility	Dustfall Area	95TH P	MEAN	5TH P	Extended Seepage Delays
Naming Convention on Graphs			95th P VCC	75th P VCC	50th P VCC	MEAN VCC	25th P VCC	5th P VCC	MRSF SC	High HC SC	Low HC SC	High TSF Cond SC	WMP SB SC	ELTFZ	DF-SSC	DF-ASC	95th P BSC	Mean BSC	5th P BSC	SD-SC
		OPERATIONS I (YEAR 1 THROUGH 23)																		
Conventional Parameters and Major Ions																				
Hardness - Dissolved	mg/L $CaCO_3$	1,056	2,597	1,896	1,121	1,262	997	852	978	1,121	978	978	977	978	1,056	1,056	1,210	1,034	895	1,056
Bromide (Br^-)	mg/L	0.82	2.82	1.82	0.88	1.10	0.81	0.65	0.73	0.85	0.73	0.73	0.73	0.73	0.82	0.82	0.84	0.63	0.32	0.82
Chloride (Cl^-)	mg/L	182	606	395	202	256	178	149	163	183	163	163	163	163	182	182	203	177	144	182
Fluoride (F^-)	mg/L	0.27	0.33	0.29	0.27	0.26	0.25	0.22	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.87	0.32	0.34	0.27
Sulphate (SO_4^{2-})	mg/L	696	2578	1661	827	983	703	547	636	791	636	636	635	636	696	696	931	737	627	696
Calcium (Ca)	mg/L	159	361	276	176	200	152	137	150	166	146	151	150	151	159	159	185	161	135	158
Magnesium (Mg)	mg/L	161	424	301	176	193	161	134	150	173	150	150	149	150	161	161	185	154	136	161
Potassium (K)	mg/L	30	58	42	31	30	30	26	28	30	28	28	28	28	30	30	30	28	25	30
Sodium (Na)	mg/L	166	473	320	180	201	166	135	154	166	154	154	154	154	166	166	180	164	143	166
Nutrients																				
Ammonia	mg/L N	0.093	0.108	0.095	0.089	0.087	0.084	0.078	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.403	0.147	0.063	0.093
Nitrate	mg/L N	1.160	3.559	2.248	1.064	1.351	0.930	0.902	0.960	1.160	0.960	0.960	0.977	0.960	1.160	1.160	2.305	1.233	0.535	1.160
Nitrite	mg/L	0.0240	0.0258	0.0255	0.0255	0.0236	0.0234	0.0189	0.0214	0.0240	0.0214	0.0214	0.0214	0.0214	0.0240	0.0240	0.0443	0.0175	0.0084	0.0240
Phosphorus - Dissolved (P)	mg/L	0.158	0.499	0.384	0.164	0.238	0.155	0.141	0.151	0.158	0.150	0.151	0.151	0.151	0.157	0.157	0.272	0.155	0.116	0.158
Dissolved Metals																				
Aluminum (Al)	mg/L	0.008	0.026	0.018	0.015	0.014	0.010	0.007	0.008	0.008	0.008	0.008	0.008	0.008	0.003	0.007	0.030	0.012	0.007	0.008
Antimony (Sb)	mg/L	0.00033	0.00045	0.00039	0.00029	0.00029	0.00025	0.00022	0.00033	0.00035	0.00031	0.00033	0.00042	0.00033	0.00032	0.00032	0.00035	0.00034	0.00033	0.00032
Arsenic (As)	mg/L	0.0031	0.0119	0.0085	0.0034	0.0050	0.0030	0.0025	0.0030	0.0034	0.0029	0.0031	0.0032	0.0030	0.0031	0.0031	0.0040	0.0032	0.0027	0.0031
Barium (Ba)	mg/L	0.073	0.086	0.080	0.074	0.073	0.070	0.063	0.074	0.073	0.074	0.074	0.074	0.074	0.072	0.073	0.087	0.072	0.066	0.073
Boron (B)	mg/L	0.158	0.244	0.170	0.170	0.157	0.155	0.122	0.138	0.158	0.138	0.138	0.138	0.138	0.158	0.158	0.178	0.158	0.129	0.158
Cadmium (Cd)	mg/L	0.000019	0.000067	0.000052	0.000030	0.000034	0.000019	0.000015	0.000018	0.000021	0.000017	0.000018	0.000018	0.000018	0.000017	0.000018	0.000147	0.000038	0.000010	0.000019
Chromium (Cr)	mg/L	0.00067	0.00188	0.00148	0.00115	0.00114	0.00085	0.00055	0.00067	0.00068	0.00067	0.00067	0.00068	0.00067	0.00023	0.00058	0.00099	0.00074	0.00063	0.00067
Cobalt (Co)	mg/L	0.00032	0.00070	0.00065	0.00034	0.00041	0.00031	0.00030	0.00032	0.00032	0.00032	0.00032	0.00032	0.00032	0.00027	0.00031	0.00043	0.00029	0.00033	0.00032
Copper (Cu)	mg/L	0.0046	0.0092	0.0089	0.0071	0.0067	0.0050	0.0042	0.0046	0.0047	0.0046	0.0046	0.0046	0.0046	0.0040	0.0044	0.0059	0.0048	0.0043	0.0046
Iron (Fe)	mg/L	0.057	0.092	0.074	0.063	0.063	0.057	0.048	0.058	0.057	0.058	0.058	0.058	0.058	0.047	0.055	0.125	0.064	0.040	0.057
Lead (Pb)	mg/L	0.000090	0.000235	0.000169	0.000148	0.000137	0.000105	0.000073	0.000090	0.000090	0.000090	0.000090	0.000091	0.000090	0.000030	0.000077	0.000208	0.000119	0.000090	0.000090
Lithium (Li)	mg/L	0.0131	0.0248	0.0185	0.0133	0.0134	0.0126	0.0110	0.0119	0.0131	0.0119	0.0119	0.0119	0.0119	0.0131	0.0131	0.0148	0.0130	0.0113	0.0131
Manganese (Mn)	mg/L	0.063	0.253	0.169	0.064	0.104	0.057	0.055	0.055	0.063	0.055	0.055	0.055	0.055	0.063	0.063	0.115	0.056	0.214	0.063
Molybdenum (Mo)	mg/L	0.014	0.032	0.028	0.014	0.015	0.013	0.011	0.014	0.016	0.014	0.014	0.015	0.014	0.014	0.014	0.009	0.011	0.015	0.014
Nickel (Ni)	mg/L	0.0068	0.0145	0.0107	0.0071	0.0066	0.0066	0.0055	0.0061	0.0068	0.0061	0.0061	0.0061	0.0061	0.0067	0.0068	0.0094	0.0071	0.0059	0.0068
Selenium (Se)	mg/L	0.00360	0.01461	0.00964	0.00470	0.00576	0.00344	0.00206	0.00347	0.00436	0.00322	0.00351	0.00349	0.00348	0.00360	0.00360	0.00549	0.00330	0.00121	0.00360
Silicon (Si)		11.2	16.3	13.6	12.1	12.3	11.7	10.5	11.2	11.3	11.2	11.2	11.2	11.2	12.2	11.2	12.2	11.3	11.0	11.2
Silver (Ag)	mg/L	0.000006	0.000007	0.000007	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006
Strontium (Sr)	mg/L	1.53	4.29	3.02	1.68	1.93	1.51	1.25	1.40	1.66	1.40	1.40	1.40	1.40	1.53	1.53	1.75	1.55	1.34	1.53
Thallium (Tl)	mg/L	0.000008	0.000013	0.000011	0.000010	0.000010	0.000009	0.000008	0.000008	0.000008	0.000008	0.000008	0.000009	0.000008	0.000006	0.000008	0.000021	0.000010	0.000008	0.000008
Tin (Sn)		0.000077	0.000123	0.000104	0.000096	0.000093	0.000081	0.000073	0.000077	0.000077	0.000077	0.000077	0.000077	0.000077	0.000059	0.000073	0.000077	0.000077	0.000077	0.000077
Uranium (U)	mg/L	0.00504	0.01911	0.01255	0.00630	0.00787	0.00494	0.00411	0.00487	0.00599	0.00458	0.00493	0.00486	0.00488	0.00504	0.00504	0.00663	0.00510	0.00419	0.00504
Vanadium (V)	mg/L	0.0050	0.0104	0.0091	0.0063	0.0065	0.0049	0.0042	0.0049	0.0054	0.0048	0.0049	0.0051	0.0049	0.0048	0.0049	0.0057	0.0051	0.0049	0.0050
Zinc (Zn)	mg/L	0.0035	0.0103	0.0067	0.0033	0.0044	0.0031	0.0026	0.0032	0.0035	0.0032	0.0032	0.0032	0.0032	0.0034	0.0035	0.0253	0.0074	0.0018	0.0035
		DECOMMISSIONING AND CLOSURE (YEAR 24 THROUGH 29)																		
Conventional Parameters and Major Ions																				
Hardness - Dissolved	mg/L $CaCO_3$	1,027	2,554	1,705	1,135	1,238	1,002	851	1,014	1,061	963	987	983	984	1,027	1,027	1,333	1,012	870	1,028
Bromide (Br^-)	mg/L	0.80	2.77	1.55	0.87	1.02	0.82	0.65	0.71	0.80	0.70	0.70	0.70	0.70	0.80	0.80	0.81	0.64	0.32	0.80
Chloride (Cl^-)	mg/L	176	596	313	188	217	179	149	158	176	156	156	156	156	176	176	201	171	140	176
Fluoride (F^-)	mg/L	0.27	0.30	0.28	0.27	0.26	0.24	0.22	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.84	0.32	0.31	0.27
Sulphate (SO_4^{2-})	mg/L	667	2533	1469	815	955	712	553	663	713	615	635	630	632	667	667	1035	705	598	667
Calcium (Ca)	mg/L	156	356	248	178	193	153	137	159	162	156	154	153	154	156	156	200	158	132	156
Magnesium (Mg)	mg/L	156	417	271	174	191	162	133	151	160	143	147	146	146	156	156	203	152	131	156
Potassium (K)	mg/L	29	58	39	31	30	29	25	27	29	27	27	27	27	29	29	31	28	24	29
Sodium (Na)	mg/L	161	464	269	178	184	168	136	148	161	146	146	146	146	161	161	174	159	138	161
Nutrients																				
Ammonia	mg/L N	0.108	0.150	0.115	0.099	0.098	0.082	0.078	0.119	0.108	0.116	0.116	0.116	0.116	0.108	0.108	0.438	0.170	0.071	0.109
Nitrate	mg/L N	1.173	3.497	1.718	0.937	1.118	0.932	0.928	0.935	1.173	0.935	0.935	0.938	0.935	1.173	1.173	2.338	1.246	0.535	1.173
Nitrite	mg/L	0.0231	0.0256	0.0255	0.0252	0.0235	0.0237	0.0191	0.0205	0.0231	0.0202	0.0202	0.0202	0.0202	0.0231	0.0231	0.0438	0.0186	0.0090	0.0231
Phosphorus - Dissolved (P)	mg/L	0.159	0.494	0.273	0.165	0.225	0.153	0.144	0.154	0.159	0.153	0.153	0.153	0.153	0.157	0.158	0.304	0.163	0.117	0.159
Dissolved Metals																				
Aluminum (Al)	mg/L	0.008	0.021	0.016	0.014	0.013	0.009	0.007	0.008	0.008	0.009	0.008	0.008	0.008	0.003	0.007	0.025	0.011	0.007	0.008
Antimony (Sb)	mg/L	0.00044	0.00052	0.00040	0.00035	0.00033	0.00029	0.00024	0.00061	0.00047	0.00049	0.00045	0.00041	0.00044	0.00043	0.00044	0.00049	0.00045	0.00041	0.00045
Arsenic (As)	mg/L	0.0039	0.0118	0.0064	0.0039	0.0050	0.0033	0.0031	0.0050	0.0040	0.0040	0.0039	0.0038	0.0039	0.0039	0.0039	0.0049	0.0040	0.0034	0.0039
Barium (Ba)	mg/L	0.080	0.094	0.086	0.078	0.074	0.070	0.064	0.081	0.081	0.081	0.081	0.081	0.081	0.080	0.080	0.089	0.079	0.084	0.080
Boron (B)	mg/L	0.152	0.240	0.171	0.168	0.155	0.157	0.124	0.133	0.152	0.130	0.130	0.130	0.130	0.152	0.152	0.171	0.152	0.124	0.152
Cadmium (Cd)	mg/L	0.000018	0.000066	0.000044	0.000024	0.000030	0.000018	0.000016	0.000018	0.000019	0.000017	0.000017	0.000017	0.000017	0.000016	0.000017	0.000151	0.000039	0.000011	0.000018
Chromium (Cr)	mg/L	0.00067	0.00172	0.00136	0.00108	0.00106	0.00075	0.00055	0.00070	0.00068	0.00068	0.00067	0.00067	0.00067	0.00031	0.00059	0.00100	0.00074	0.00064	0.00067
Cobalt (Co)	mg/L	0.00032	0.00070	0.00056	0.00035	0.00042	0.00032	0.00031	0.00033	0.00032	0.00034	0.00032	0.00032	0.00032	0.00028	0.00031	0.00052	0.00032	0.00032	0.00032
Copper (Cu)	mg/L	0.0046	0.0089	0.0083	0.0059	0.0064	0.0048	0.0042	0.0047	0.0047	0.0046	0.0046	0.0046	0.0046	0.0039	0.0044	0.0063	0.0049	0.0041	0.0046
Iron (Fe)	mg/L	0.062	0.097	0.077	0.067	0.067	0.059	0.052	0.062	0.062	0.062	0.062	0.063	0.063	0.054	0.060	0.125	0.064	0.046	0.062
Lead (Pb)	mg/L	0.000087	0.000196	0.000155	0.000132	0.000131	0.000099	0.000072	0.000090	0.000088	0.000088	0.000088	0.000088	0.000088	0.000035	0.000076	0.000162	0.000116	0.000087	0.000087
Lithium (Li)	mg/L	0.0128	0.0244	0.0166	0.0132	0.0129	0.0126	0.0111	0.0117	0.0128	0.0116	0.0116	0.0116	0.0116	0.0128	0.0128	0.0144	0.0127	0.0111	0.0128
Manganese (Mn)	mg/L	0.088	0.251	0.136	0.082	0.114	0.077	0.066	0.092	0.088	0.094	0.094	0.094	0.094	0.087	0.088	0.261	0.115	0.205	0.088
Molybdenum (Mo)	mg/L	0.035	0.046	0.038	0.027	0.029	0.024	0.020	0.042	0.037	0.039	0.036	0.034	0.035	0.035	0.035	0.063	0.034	0.029	0.035
Nickel (Ni)	mg/L	0.0066	0.0144	0.0074	0.0070	0.0066	0.0067	0.0055	0.0059	0.0066	0.0058	0.0058	0.0058	0.0058	0.0065	0.0066	0.0091	0.0069	0.0058	0.0066
Selenium (Se)	mg/L	0.00327	0.01436	0.00761	0.00388	0.00486	0.00304	0.00204	0.00347	0.00360	0.00326	0.00320	0.00317	0.00318	0.00327	0.00327	0.00506	0.00307	0.00137	0.00328
Silicon (Si)		10.6	14.0	12.8	11.4	11.5	11.1	10.0	10.6	10.7	10.5	10.6	10.6	10.6	10.6	10.6	13.7	11.1	11.3	10.6
Silver (Ag)	mg/L	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000006	0.000007	0.000007	0.000008	0.000007	0.000006	0.000007	0.000006	0.000006	0.000007	0.000007	0.000007	0.000007
Strontium (Sr)	mg/L	1.48	4.22	2.65	1.63	1.85	1.52	1.26	1.46	1.53	1.38	1.41	1.40	1.40	1.48	1.48	1.79	1.50	1.30	1.48
Thallium (Tl)	mg/L	0.000011	0.000014	0.000013	0.000011	0.000011	0.000010	0.000009	0.000014	0.000011	0.000012	0.000011	0.000011	0.000011	0.000010	0.000011	0.000021	0.000012	0.000011	0.000011
Tin (Sn)		0.000079	0.000115	0.000104	0.000089	0.000093	0.000083	0.000074	0.000081	0.000084	0.000091	0.000079	0.000079	0.000079	0.000064	0.000075	0.000079	0.000079	0.000079	0.000079
Uranium (U)	mg/L	0.00504	0.01880	0.01084	0.00625	0.00737	0.00476	0.00418	0.00496	0.00532	0.00469	0.00483	0.00480	0.00481	0.00504	0.00504	0.00646	0.00493	0.00403	0.00504
Vanadium (V)	mg/L	0.0058	0.0103	0.0092	0.0074	0.0073	0.0057	0.0051	0.0064	0.0060	0.0057	0.0058	0.0057	0.0057	0.0056	0.0057	0.0067	0.0060	0.0056	0.0058
Zinc (Zn)	mg/L	0.0029	0.0102	0.0048	0.0033	0.0042	0.0029	0.0025	0.0031	0.0030	0.0030	0.0029	0.0029	0.0029	0.0029	0.0029	0.0154	0.0049	0.0021	0.0029
		POST-CLOSURE (YEAR 29+)																		
Conventional Parameters and Major Ions																				
Hardness - Dissolved	mg/L $CaCO_3$	1,029	2,185	1,491	1,113	1,172	1,049	887	937	1,033	902	935	935	935	1,029	1,029	1,179	1,010	872	1,003
Bromide (Br^-)	mg/L	0.79	1.74	1.33	0.91	0.95	0.83	0.66	0.68	0.79	0.64	0.68	0.68	0.68	0.79	0.79	0.82	0.65	0.33	0.78
Chloride (Cl^-)	mg/L	175	361	267	190	201	175	149	147	175	141	147	147	147	175	175	201	167	136	174
Fluoride (F^-)	mg/L	0.27	0.33	0.28	0.27	0.28	0.26	0.23	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.86	0.34	0.28	0.27
Sulphate (SO_4^{2-})	mg/L	658	1823	1236	813	890	744	580	592	662	550	578	578	578	658	658	871	695	585	640
Calcium (Ca)	mg/L	158	304	233	173	187	161	141	157	159	149	146	146	146	158	158	187	160	135	154
Magnesium (Mg)	mg/L	155	342	231	180	179	165	139	140	155	133	140	140	140	155	155	174	149	131	151
Potassium (K)	mg/L	29	63	41	32	30	30	26	27	29	26	26	26	26	29	29	30	27	24	28
Sodium (Na)	mg/L	159	303	231	189	173	173	142	143	160	135	143	143	143	159	159	174	157	136	155
Nutrients																				
Ammonia	mg/L N	0.121	0.385	0.149	0.127	0.149	0.112	0.096	0.128	0.121	0.125	0.128	0.135	0.128	0.121	0.121	0.414	0.177	0.087	0.109
Nitrate	mg/L N	1.174	3.774	1.542	0.938	1.045	0.929	0.923	0.943	1.173	0.808	0.943	0.948	0.943	1.174	1.174	2.329	1.247	0.542	1.178
Nitrite	mg/L	0.0239	0.0653	0.0283	0.0261	0.0257	0.0249	0.0195	0.0211	0.0239	0.0200	0.0211	0.0212	0.0211	0.0239	0.0239	0.0411	0.0185	0.0098	0.0236
Phosphorus - Dissolved (P)	mg/L	0.156	0.501	0.339	0.164	0.231	0.153	0.139	0.150	0.156	0.148	0.148	0.148	0.148	0.155	0.155	0.295	0.158	0.116	0.155
Dissolved Metals																				
Aluminum (Al)	mg/L	0.006	0.013	0.011	0.010	0.009	0.008	0.005	0.007	0.006	0.008	0.007	0.007	0.007	0.003	0.006	0.021	0.008	0.006	0.006
Antimony (Sb)	mg/L	0.00094	0.01316	0.00306	0.00154	0.00355	0.00055	0.00039	0.00137	0.00096	0.00118	0.00095	0.00102	0.00095	0.00094	0.00094	0.00099	0.00095	0.00091	0.00054
Arsenic (As)	mg/L	0.0045	0.0251	0.0090	0.0050	0.0096	0.0041	0.0033	0.0063	0.0046	0.0047	0.0045	0.0045	0.0045	0.0045	0.0045	0.0054	0.0046	0.0041	0.0040
Barium (Ba)	mg/L	0.079	0.097	0.084	0.076	0.076	0.072	0.067	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.087	0.078	0.081	0.079
Boron (B)	mg/L	0.150	0.261	0.175	0.173	0.161	0.161	0.125	0.126	0.151	0.120	0.124	0.124	0.124	0.150	0.150	0.169	0.150	0.123	0.148
Cadmium (Cd)	mg/L	0.000016	0.000044	0.000031	0.000020	0.000023	0.000015	0.000012	0.000018	0.000016	0.000016	0.000015	0.000015	0.000015	0.000016	0.000016	0.000151	0.000039	0.000009	0.000015
Chromium (Cr)	mg/L	0.00048	0.00103	0.00075	0.00066	0.00064	0.00054	0.00039	0.00056	0.00048	0.00057	0.00050	0.00050	0.00050	0.00032	0.00043	0.00075	0.00049	0.00042	0.00048
Cobalt (Co)	mg/L	0.00045	0.00126	0.00065	0.00062	0.00054	0.00054	0.00053	0.00054	0.00046	0.00065	0.00054	0.00054	0.00054	0.00045	0.00045	0.00052	0.00042	0.00032	0.00031
Copper (Cu)	mg/L	0.0039	0.0069	0.0054	0.0043	0.0046	0.0041	0.0033	0.0041	0.0040	0.0041	0.0039	0.0039	0.0039	0.0037	0.0039	0.0057	0.0042	0.0035	0.0039
Iron (Fe)	mg/L	0.164	0.376	0.349	0.275	0.274	0.272	0.276	0.164	0.239	0.276	0.276	0.276	0.276	0.164	0.164	0.267	0.165	0.042	0.058
Lead (Pb)	mg/L	0.000070	0.000176	0.000102	0.000092	0.000089	0.000077	0.000058	0.000076	0.000070	0.000080	0.000072	0.000072	0.000072	0.000041	0.000064	0.000143	0.000100	0.000069	0.000070
Lithium (Li)	mg/L	0.0131	0.0275	0.0156	0.0142	0.0137	0.0138	0.0116	0.0120	0.0132	0.0116	0.0120	0.0120	0.0120	0.0131	0.0131	0.0149	0.0131	0.0113	0.0127
Manganese (Mn)	mg/L	0.207	0.577	0.465	0.431	0.346	0.341	0.339	0.347	0.207	0.308	0.347	0.347	0.347	0.207	0.207	0.297	0.208	0.303	0.095
Molybdenum (Mo)	mg/L	0.035	0.095	0.050	0.039	0.048	0.029	0.023	0.058	0.037	0.063	0.035	0.035	0.035	0.035	0.035	0.061	0.034	0.030	0.032
Nickel (Ni)	mg/L	0.0066	0.0191	0.0093	0.0076	0.0071	0.0072	0.0056	0.0058	0.0066	0.0054	0.0057	0.0057	0.0057	0.0066	0.0066	0.0093	0.0069	0.0056	0.0064
Selenium (Se)	mg/L	0.00322	0.01458	0.00664	0.00416	0.00502	0.00297	0.00202	0.00382	0.00327	0.00338	0.00317	0.00316	0.00316	0.00322	0.00322	0.00466	0.00306	0.00160	0.00293
Silicon (Si)		10.6	15.7	13.5	11.2	12.0	10.8	10.3	10.4	10.7	10.4	10.5	10.5	10.4	10.6	10.6	13.6	11.2	11.3	10.6
Silver (Ag)	mg/L	0.000006	0.000010	0.000007	0.000007	0.000007	0.000006	0.000006	0.000007	0.000007	0.000008	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006
Strontium (Sr)	mg/L	1.48	3.88	2.28	1.67	1.74	1.58	1.30	1.36	1.49	1.30	1.31	1.31	1.31	1.48	1.48	1.69	1.50	1.29	1.45
Thallium (Tl)	mg/L	0.000012	0.000042	0.000016	0.000013	0.000021	0.000010	0.000009	0.000018	0.000012	0.000018	0.000012	0.000012	0.000012	0.000012	0.000012	0.000026	0.000013	0.000012	0.000010
Tin (Sn)		0.000072	0.000115	0.000082	0.000078	0.000079	0.000072	0.000065	0.000076	0.000081	0.000099	0.000073	0.000073	0.000073	0.000063	0.000070	0.000072	0.000072	0.000072	0.000072
Uranium (U)	mg/L	0.00549	0.01206	0.00930	0.00628	0.00690	0.00551	0.00493	0.00504	0.00552	0.00470	0.00503	0.00503	0.00503	0.00549	0.00549	0.00730	0.00525	0.00400	0.00508
Vanadium (V)	mg/L	0.0063	0.0283	0.0102	0.0071	0.0116	0.0058	0.0050	0.0075	0.0062	0.0063	0.0063	0.0063	0.0063	0.0063	0.0063	0.0072	0.0064	0.0061	0.0056
Zinc (Zn)	mg/L	0.0029	0.0166	0.0065	0.0032	0.0055	0.0028	0.0025	0.0036	0.0030	0.0031	0.0029	0.0029	0.0029	0.0029	0.0029	0.0155	0.0048	0.0021	0.0027

M:\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Tables 5.4 to 5.8 Max Concentration by Project Phase Receiving Water (linked).xlsx]T5.7 PC02 Max by Phase

NOTES:
1. SENSITIVITY

Knight Piésold CONSULTING

TABLE 5.8

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
HUMPHREY CREEK - MAXIMUM PREDICTED CONCENTRATIONS FOR ALL MODEL SCENARIOS BY MINE PHASE

Print Jul/20/15 10:19:50

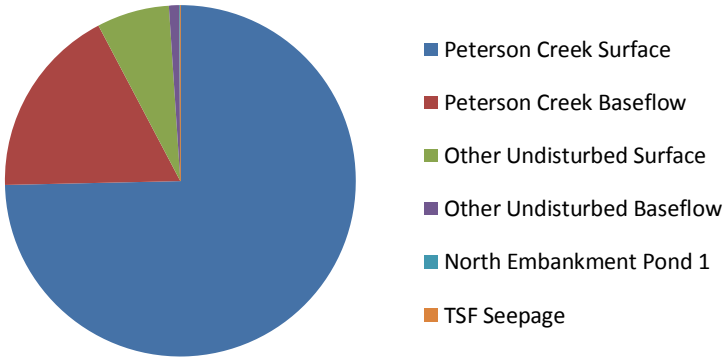
		BASE CASE	VARIABLE CLIMATE CASE						MINE ROCK STORAGE FACILITY	GROUNDWATER ASSUMPTIONS						DUSTFALL ASSUMPTIONS		BASELINE SENSITIVITY CASES			SEEPAGE DELAYS
			95TH P	75TH P	50TH P	MEAN	25TH P	5TH P	HIGHER RECHARGE	Higher Hydraulic Conductivity	Lower Hydraulic Conductivity	TSF Conductance - Higher	WMP Seepage Bypass	Edith Lake Thrust Fault Zone		Dustfall Availability/ Solubility	Dustfall Area	95TH P	MEAN	5TH P	Extended Seepage Delays
Naming Convention on Graphs			95th P VCC	75th P VCC	50th P VCC	MEAN VCC	25th P VCC	5th P VCC	MRSF SC	High HC SC	Low HC SC	High TSF Cond SC	WMP SB SC	ELTFZ		DF-SSC	DF-ASC	95th P BSC	Mean BSC	5th P BSC	SD-SC
		OPERATIONS I (YEAR 1 THROUGH 23)																			
Conventional Parameters and Major Ions																					
Hardness - Dissolved	mg/L $CaCO_3$	770	775	773	770	767	766	755	770	770	770	770	762	770	770	770	827	783	748	770
Bromide (Br^-)	mg/L	0.25	0.25	0.25	0.25	0.25	0.25	0.24	0.25	0.25	0.25	0.25	0.24	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Chloride (Cl^-)	mg/L	43	44	44	44	43	43	43	43	43	43	43	43	43	43	43	48	41	37	43
Fluoride (F^-)	mg/L	0.28	0.28	0.28	0.28	0.28	0.28	0.27	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.37	0.29	0.26	0.28
Sulphate (SO_4^{2-})	mg/L	380	382	381	380	379	378	373	380	380	380	380	376	380	380	380	461	404	365	380
Calcium (Ca)	mg/L	119	120	120	119	119	118	117	119	119	119	119	118	119	119	119	129	120	112	119
Magnesium (Mg)	mg/L	115	116	116	115	115	115	113	115	115	115	115	114	115	115	115	123	118	114	115
Potassium (K)	mg/L	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	17	15	15	15
Sodium (Na)	mg/L	65	65	65	65	64	64	63	65	65	65	65	64	65	65	65	67	65	63	65
Nutrients																					
Ammonia	mg/L N	0.018	0.018	0.018	0.018	0.018	0.018	0.017	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.023	0.018	0.012	0.018
Nitrate	mg/L N	0.127	0.128	0.127	0.127	0.127	0.126	0.125	0.127	0.127	0.127	0.127	0.126	0.127	0.127	0.127	0.172	0.119	0.060	0.127
Nitrite	mg/L	0.0049	0.0050	0.0050	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049
Phosphorus - Dissolved (P)	mg/L	0.133	0.213	0.141	0.139	0.137	0.135	0.133	0.133	0.133	0.133	0.133	0.134	0.133	0.124	0.127	0.158	0.133	0.125	0.133
Dissolved Metals																					
Aluminum (Al)	mg/L	0.049	0.419	0.111	0.064	0.088	0.063	0.053	0.049	0.049	0.049	0.049	0.049	0.049	0.002	0.025	0.049	0.049	0.048	0.049
Antimony (Sb)	mg/L	0.00028	0.00144	0.00053	0.00037	0.00047	0.00034	0.00033	0.00028	0.00028	0.00028	0.00028	0.00028	0.00028	0.00021	0.00023	0.00029	0.00027	0.00026	0.00028
Arsenic (As)	mg/L	0.0035	0.0056	0.0040	0.0037	0.0039	0.0035	0.0035	0.0035	0.0035	0.0035	0.0035	0.0035	0.0035	0.0034	0.0035	0.0038	0.0035	0.0033	0.0035
Barium (Ba)	mg/L	0.065	0.076	0.067	0.066	0.066	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.067	0.064	0.063	0.065
Boron (B)	mg/L	0.033	0.034	0.033	0.033	0.033	0.033	0.032	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.037	0.033	0.033	0.033
Cadmium (Cd)	mg/L	0.000024	0.000301	0.000083	0.000044	0.000067	0.000031	0.000027	0.000024	0.000024	0.000024	0.000024	0.000024	0.000024	0.000005	0.000014	0.000024	0.000024	0.000024	0.000024
Chromium (Cr)	mg/L	0.00299	0.03055	0.00820	0.00413	0.00655	0.00398	0.00334	0.00299	0.00299	0.00299	0.00299	0.00302	0.00299	0.00016	0.00150	0.00299	0.00299	0.00299	0.00299
Cobalt (Co)	mg/L	0.00056	0.00536	0.00146	0.00074	0.00117	0.00073	0.00062	0.00056	0.00056	0.00056	0.00056	0.00057	0.00056	0.00005	0.00030	0.00056	0.00056	0.00056	0.00056
Copper (Cu)	mg/L	0.0120	0.0773	0.0254	0.0160	0.0216	0.0157	0.0144	0.0120	0.0120	0.0120	0.0120	0.0121	0.0120	0.0067	0.0090	0.0122	0.0120	0.0119	0.0120
Iron (Fe)	mg/L	0.110	0.894	0.240	0.137	0.192	0.135	0.114	0.110	0.110	0.110	0.110	0.111	0.110	0.012	0.060	0.110	0.110	0.110	0.110
Lead (Pb)	mg/L	0.000351	0.003940	0.001061	0.000536	0.000848	0.000462	0.000392	0.000351	0.000351	0.000351	0.000351	0.000354	0.000351	0.000025	0.000185	0.000351	0.000351	0.000351	0.000351
Lithium (Li)	mg/L	0.0075	0.0077	0.0076	0.0075	0.0075	0.0075	0.0074	0.0075	0.0075	0.0075	0.0075	0.0074	0.0075	0.0075	0.0075	0.0079	0.0074	0.0074	0.0075
Manganese (Mn)	mg/L	0.026	0.061	0.029	0.028	0.028	0.028	0.027	0.026	0.026	0.026	0.026	0.027	0.026	0.022	0.024	0.028	0.026	0.025	0.026
Molybdenum (Mo)	mg/L	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.023	0.021	0.024
Nickel (Ni)	mg/L	0.0042	0.0315	0.0092	0.0052	0.0076	0.0051	0.0046	0.0042	0.0042	0.0042	0.0042	0.0042	0.0042	0.0014	0.0027	0.0042	0.0042	0.0041	0.0042
Selenium (Se)	mg/L	0.00478	0.00495	0.00480	0.00478	0.00477	0.00476	0.00469	0.00478	0.00478	0.00478	0.00478	0.00474	0.00478	0.00478	0.00478	0.00595	0.00431	0.00282	0.00478
Silicon (Si)		10.0	10.2	10.1	10.0	10.0	9.9	9.7	10.0	10.0	10.0	10.0	9.9	10.0	10.0	10.0	10.0	10.0	9.9	10.0
Silver (Ag)	mg/L	0.000007	0.000024	0.000010	0.000007	0.000009	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000005	0.000006	0.000007	0.000007	0.000007	0.000007
Strontium (Sr)	mg/L	0.99	1.00	1.00	0.99	0.99	0.99	0.97	0.99	0.99	0.99	0.99	0.98	0.99	0.99	0.99	1.15	1.04	0.97	0.99
Thallium (Tl)	mg/L	0.000017	0.000140	0.000041	0.000023	0.000033	0.000022	0.000019	0.000017	0.000017	0.000017	0.000017	0.000018	0.000017	0.000005	0.000011	0.000017	0.000017	0.000017	0.000017
Tin (Sn)		0.000164	0.001267	0.000371	0.000208	0.000305	0.000203	0.000179	0.000164	0.000164	0.000164	0.000164	0.000165	0.000164	0.000049	0.000105	0.000164	0.000164	0.000164	0.000164
Uranium (U)	mg/L	0.00448	0.00451	0.00450	0.00448	0.00446	0.00445	0.00439	0.00448	0.00448	0.00448	0.00448	0.00443	0.00448	0.00448	0.00448	0.00462	0.00428	0.00381	0.00448
Vanadium (V)	mg/L	0.0069	0.0347	0.0129	0.0090	0.0113	0.0085	0.0081	0.0069	0.0069	0.0069	0.0069	0.0069	0.0069	0.0051	0.0059	0.0074	0.0068	0.0063	0.0069
Zinc (Zn)	mg/L	0.0015	0.0065	0.0021	0.0017	0.0018	0.0016	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0011	0.0013	0.0021	0.0015	0.0010	0.0015
		DECOMMISSIONING AND CLOSURE (YEAR 24 THROUGH 29)																			
Conventional Parameters and Major Ions																					
Hardness - Dissolved	mg/L $CaCO_3$	774	786	775	770	764	756	741	771	779	774	774	771	774	774	774	831	787	752	774
Bromide (Br^-)	mg/L	0.29	0.28	0.26	0.25	0.25	0.25	0.24	0.30	0.30	0.29	0.29	0.28	0.29	0.29	0.29	0.31	0.30	0.28	0.29
Chloride (Cl^-)	mg/L	47	48	46	44	44	43	42	44	47	47	47	47	47	47	47	55	45	37	47
Fluoride (F^-)	mg/L	0.29	0.29	0.28	0.28	0.28	0.27	0.27	0.28	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.37	0.30	0.26	0.29
Sulphate (SO_4^{2-})	mg/L	382	393	382	380	377	373	366	382	394	382	382	381	382	382	382	464	407	367	382
Calcium (Ca)	mg/L	124	135	120	119	119	117	115	128	133	124	126	121	124	124	124	133	122	113	124
Magnesium (Mg)	mg/L	116	116	116	115	114	113	111	115	116	116	116	115	116	116	116	124	118	115	116
Potassium (K)	mg/L	16	16	16	15	15	15	15	16	16	16	16	16	16	16	16	18	16	14	16
Sodium (Na)	mg/L	65	65	65	65	64	63	62	65	65	65	65	65	65	65	65	67	65	63	65
Nutrients																					
Ammonia	mg/L N	0.129	0.201	0.072	0.035	0.052	0.017	0.017	0.112	0.149	0.129	0.134	0.182	0.129	0.129	0.129	0.146	0.132	0.126	0.129
Nitrate	mg/L N	0.584	0.435	0.280	0.165	0.174	0.125	0.122	0.574	0.673	0.585	0.606	0.580	0.584	0.584	0.584	0.659	0.605	0.573	0.584
Nitrite	mg/L	0.0264	0.0255	0.0131	0.0083	0.0107	0.0050	0.0049	0.0234	0.0298	0.0265	0.0273	0.0347	0.0264	0.0264	0.0264	0.0267	0.0263	0.0259	0.0264
Phosphorus - Dissolved (P)	mg/L	0.130	0.206	0.134	0.132	0.133	0.131	0.130	0.130	0.130	0.130	0.130	0.130	0.130	0.123	0.126	0.158	0.130	0.122	0.130
Dissolved Metals																					
Aluminum (Al)	mg/L	0.047	0.404	0.082	0.061	0.084	0.061	0.047	0.048	0.047	0.047	0.047	0.047	0.047	0.002	0.024	0.047	0.047	0.047	0.047
Antimony (Sb)	mg/L	0.00100	0.00139	0.00075	0.00061	0.00061	0.00053	0.00032	0.00128	0.00114	0.00100	0.00101	0.00092	0.00100	0.00097	0.00098	0.00103	0.00101	0.00099	0.00100
Arsenic (As)	mg/L	0.0047	0.0054	0.0047	0.0043	0.0043	0.0040	0.0036	0.0057	0.0048	0.0047	0.0047	0.0044	0.0047	0.0047	0.0047	0.0051	0.0047	0.0045	0.0047
Barium (Ba)	mg/L	0.066	0.074	0.066	0.065	0.065	0.065	0.064	0.065	0.066	0.066	0.066	0.065	0.066	0.065	0.065	0.068	0.063	0.063	0.066
Boron (B)	mg/L	0.052	0.053	0.040	0.032	0.037	0.032	0.031	0.054	0.057	0.052	0.053	0.054	0.052	0.052	0.052	0.055	0.052	0.049	0.052
Cadmium (Cd)	mg/L	0.000023	0.000290	0.000063	0.000036	0.000065	0.000030	0.000023	0.000024	0.000023	0.000023	0.000023	0.000023	0.000023	0.000008	0.000014	0.000023	0.000023	0.000023	0.000023
Chromium (Cr)	mg/L	0.00289	0.02951	0.00610	0.00388	0.00633	0.00388	0.00288	0.00292	0.00289	0.00289	0.00289	0.00289	0.00289	0.00066	0.00145	0.00289	0.00289	0.00289	0.00289
Cobalt (Co)	mg/L	0.00054	0.00518	0.00109	0.00072	0.00114	0.00072	0.00054	0.00055	0.00054	0.00054	0.00054	0.00054	0.00054	0.00023	0.00032	0.00054	0.00054	0.00054	0.00054
Copper (Cu)	mg/L	0.0116	0.0747	0.0205	0.0154	0.0207	0.0154	0.0122	0.0117	0.0116	0.0116	0.0116	0.0116	0.0116	0.0069	0.0089	0.0120	0.0116	0.0115	0.0116
Iron (Fe)	mg/L	0.107	0.864	0.179	0.131	0.185	0.131	0.106	0.108	0.106	0.107	0.106	0.107	0.107	0.015	0.058	0.107	0.107	0.107	0.107
Lead (Pb)	mg/L	0.000339	0.003806	0.000790	0.000452	0.000810	0.000451	0.000339	0.000343	0.000339	0.000339	0.000339	0.000340	0.000339	0.000033	0.000179	0.000339	0.000339	0.000339	0.000339
Lithium (Li)	mg/L	0.0084	0.0089	0.0080	0.0075	0.0078	0.0074	0.0073	0.0086	0.0087	0.0084	0.0084	0.0086	0.0084	0.0084	0.0084	0.0090	0.0085	0.0082	0.0084
Manganese (Mn)	mg/L	0.026	0.058	0.027	0.027	0.027	0.027	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.022	0.023	0.031	0.026	0.025	0.026
Molybdenum (Mo)	mg/L	0.097	0.094	0.064	0.043	0.047	0.024	0.023	0.101	0.113	0.097	0.101	0.100	0.097	0.097	0.097	0.098	0.097	0.095	0.097
Nickel (Ni)	mg/L	0.0040	0.0305	0.0073	0.0050	0.0076	0.0050	0.0040	0.0046	0.0040	0.0040	0.0040	0.0040	0.0040	0.0025	0.0030	0.0041	0.0040	0.0040	0.0040
Selenium (Se)	mg/L	0.00524	0.00534	0.00481	0.00478	0.00475	0.00469	0.00460	0.00545	0.00534	0.00524	0.00527	0.00543	0.00524	0.00524	0.00524	0.00598	0.00489	0.00385	0.00524
Silicon (Si)		9.9	10.4	9.9	9.5	9.6	9.4	9.3	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	10.2	9.9	9.8	9.9
Silver (Ag)	mg/L	0.000007	0.000024	0.000009	0.000007	0.000009	0.000007	0.000006	0.000007	0.000009	0.000007	0.000007	0.000007	0.000007	0.000006	0.000007	0.000007	0.000007	0.000007	0.000007
Strontium (Sr)	mg/L	1.11	1.07	1.00	0.99	0.99	0.98	0.96	1.14	1.16	1.11	1.12	1.13	1.11	1.11	1.11	1.16	1.08	0.99	1.11
Thallium (Tl)	mg/L	0.000018	0.000135	0.000032	0.000021	0.000034	0.000021	0.000017	0.000021	0.000017	0.000018	0.000017	0.000017	0.000018	0.000013	0.000015	0.000018	0.000018	0.000018	0.000018
Tin (Sn)		0.000158	0.001224	0.000287	0.000198	0.000295	0.000198	0.000158	0.000160	0.000158	0.000158	0.000158	0.000159	0.000158	0.000066	0.000101	0.000158	0.000158	0.000158	0.000158
Uranium (U)	mg/L	0.00450	0.00453	0.00451	0.00448	0.00445	0.00439	0.00431	0.00448	0.00451	0.00450	0.00450	0.00448	0.00450	0.00450	0.00450	0.00466	0.00431	0.00383	0.00450
Vanadium (V)	mg/L	0.0069	0.0336	0.0109	0.0083	0.0111	0.0083	0.0071	0.0069	0.0069	0.0069	0.0069	0.0068	0.0069	0.0052	0.0058	0.0073	0.0067	0.0064	0.0069
Zinc (Zn)	mg/L	0.0035	0.0063	0.0024	0.0020	0.0022	0.0016	0.0015	0.0036	0.0040	0.0035	0.0035	0.0038	0.0035	0.0033	0.0033	0.0052	0.0038	0.0033	0.0035
		POST-CLOSURE (YEAR 29+)																			
Conventional Parameters and Major Ions																					
Hardness - Dissolved	mg/L $CaCO_3$	851	1,049	884	863	856	843	825	872	855	851	852	848	851	851	851	914	861	816	795
Bromide (Br^-)	mg/L	0.30	0.58	0.33	0.31	0.29	0.27	0.27	0.32	0.31	0.30	0.30	0.30	0.30	0.30	0.30	0.31	0.30	0.30	0.28
Chloride (Cl^-)	mg/L	43	68	62	50	49	47	44	43	44	43	43	44	43	43	43	64	43	39	43
Fluoride (F^-)	mg/L	0.29	0.43	0.32	0.31	0.30	0.29	0.27	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.39	0.32	0.28	0.26
Sulphate (SO_4^{2-})	mg/L	529	733	515	495	485	470	444	551	534	529	530	562	529	529	529	605	551	513	479
Calcium (Ca)	mg/L	141	243	143	141	141	138	134	147	143	141	142	140	141	141	141	152	141	131	128
Magnesium (Mg)	mg/L	121	123	123	122	122	121	120	123	121	121	121	121	121	121	121	130	124	119	116
Potassium (K)	mg/L	19	28	20	19	18	18	16	19	19	19	19	20	19	19	19	19	19	18	17
Sodium (Na)	mg/L	79	111	80	76	76	73	71	79	79	79	79	82	79	79	79	82	79	76	73
Nutrients																					
Ammonia	mg/L N	0.478	1.161	0.727	0.589	0.716	0.370	0.283	0.478	0.478	0.478	0.478	0.550	0.478	0.478	0.478	0.489	0.479	0.477	0.361
Nitrate	mg/L N	0.766	5.838	1.318	0.734	1.076	0.456	0.312	0.766	0.765	0.766	0.766	0.747	0.766	0.766	0.766	0.817	0.761	0.702	0.597
Nitrite	mg/L	0.0885	0.1655	0.0961	0.0670	0.0661	0.0508	0.0284	0.0885	0.0885	0.0885	0.0885	0.0875	0.0885	0.0885	0.0885	0.0886	0.0885	0.0884	0.0682
Phosphorus - Dissolved (P)	mg/L	0.117	0.143	0.119	0.117	0.117	0.117	0.117	0.117	0.117	0.117	0.117	0.117	0.117	0.117	0.117	0.158	0.117	0.109	0.117
Dissolved Metals																					
Aluminum (Al)	mg/L	0.002	0.005	0.003	0.002	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.004	0.002	0.002	0.002
Antimony (Sb)	mg/L	0.00102	0.02236	0.00265	0.00108	0.00301	0.00075	0.00050	0.00140	0.00104	0.00102	0.00103	0.00116	0.00102	0.00102	0.00102	0.00108	0.00104	0.00100	0.00076
Arsenic (As)	mg/L	0.0043	0.0275	0.0057	0.0045	0.0065	0.0042	0.0041	0.0049	0.0044	0.0043	0.0043	0.0041	0.0043	0.0043	0.0043	0.0045	0.0042	0.0039	0.0036
Barium (Ba)	mg/L	0.065	0.089	0.076	0.068	0.067	0.066	0.065	0.066	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.072	0.066	0.065	0.063
Boron (B)	mg/L	0.075	0.172	0.090	0.075	0.085	0.063	0.057	0.082	0.076	0.075	0.075	0.084	0.075	0.075	0.075	0.079	0.075	0.075	0.064
Cadmium (Cd)	mg/L	0.000010	0.000065	0.000012	0.000010	0.000013	0.000010	0.000009	0.000011	0.000011	0.000010	0.000011	0.000010	0.000010	0.000010	0.000010	0.000012	0.000010	0.000010	0.000008
Chromium (Cr)	mg/L	0.00067	0.00180	0.00098	0.00079	0.00084	0.00063	0.00054	0.00079	0.00068	0.00067	0.00067	0.00075	0.00067	0.00067	0.00067	0.00094	0.00076	0.00066	0.00050
Cobalt (Co)	mg/L	0.00051	0.00177	0.00056	0.00045	0.00047	0.00038	0.00038	0.00054	0.00052	0.00051	0.00051	0.00049	0.00051	0.00051	0.00051	0.00066	0.00053	0.00050	0.00037
Copper (Cu)	mg/L	0.0069	0.0102	0.0075	0.0072	0.0069	0.0068	0.0061	0.0071	0.0069	0.0069	0.0069	0.0069	0.0069	0.0069	0.0069	0.0072	0.0063	0.0060	0.0064
Iron (Fe)	mg/L	0.283	0.287	0.286	0.284	0.285	0.284	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.465	0.291	0.067	0.219
Lead (Pb)	mg/L	0.000033	0.000285	0.000052	0.000034	0.000057	0.000031	0.000031	0.000031	0.000033	0.000033	0.000033	0.000036	0.000033	0.000032	0.000032	0.000050	0.000033	0.000033	0.000030
Lithium (Li)	mg/L	0.0120	0.0195	0.0127	0.0120	0.0120	0.0118	0.0116	0.0125	0.0120	0.0120	0.0120	0.0122	0.0120	0.0120	0.0120	0.0124	0.0120	0.0116	0.0104
Manganese (Mn)	mg/L	0.354	0.361	0.358	0.356	0.357	0.356	0.355	0.355	0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.490	0.357	0.204	0.278
Molybdenum (Mo)	mg/L	0.105	0.324	0.170	0.128	0.143	0.100	0.086	0.123	0.108	0.105	0.106	0.117	0.105	0.105	0.105	0.105	0.104	0.101	0.080
Nickel (Ni)	mg/L	0.0027	0.0263	0.0045	0.0027	0.0048	0.0024	0.0020	0.0036	0.0027	0.0027	0.0027	0.0026	0.0027	0.0027	0.0027	0.0030	0.0027	0.0025	0.0021
Selenium (Se)	mg/L	0.00703	0.00942	0.00678	0.00652	0.00658	0.00617	0.00590	0.00735	0.00708	0.00703	0.00704	0.00754	0.00703	0.00703	0.00703	0.00811	0.00660	0.00479	0.00636
Silicon (Si)		12.7	13.0	12.8	12.7	12.7	12.6	12.4	12.7	12.6	12.7	12.7	12.7	12.7	12.7	12.7	13.1	12.7	12.4	11.5
Silver (Ag)	mg/L	0.000006	0.000013	0.000007	0.000007	0.000007	0.000006	0.000006	0.000007	0.000007	0.000006	0.000007	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006
Strontium (Sr)	mg/L	1.35	2.05	1.31	1.23	1.22	1.18	1.15	1.40	1.36	1.35	1.35	1.43	1.35	1.35	1.35	1.50	1.39	1.32	1.22
Thallium (Tl)	mg/L	0.000012	0.000084	0.000016	0.000014	0.000019	0.000010	0.000009	0.000017	0.000013	0.000012	0.000013	0.000012	0.000012	0.000012	0.000012	0.000016	0.000012	0.000012	0.000009
Tin (Sn)		0.000075	0.000135	0.000077	0.000069	0.000071	0.000064	0.000059	0.000079	0.000115	0.000075	0.000080	0.000075	0.000075	0.000075	0.000075	0.000076	0.000075	0.000075	0.000065
Uranium (U)	mg/L	0.00538	0.00594	0.00522	0.00516	0.00516	0.00513	0.00509	0.00548	0.00541	0.00538	0.00538	0.00562	0.00538	0.00538	0.00538	0.00631	0.00522	0.00472	0.00501
Vanadium (V)	mg/L	0.0049	0.0370	0.0075	0.0051	0.0083	0.0049	0.0048	0.0049	0.0049	0.0049	0.0049	0.0053	0.0049	0.0049	0.0049	0.0051	0.0048	0.0043	0.0046
Zinc (Zn)	mg/L	0.0055	0.0155	0.0058	0.0042	0.0044	0.0032	0.0026	0.0061	0.0056	0.0055	0.0055	0.0055	0.0055	0.0055	0.0055	0.0087	0.0056	0.0049	0.0043

M:\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Tables 5.4 to 5.8 Max Concentration by Project Phase Receiving Water (linked).xlsx]T5.8 Humph Max by Phase

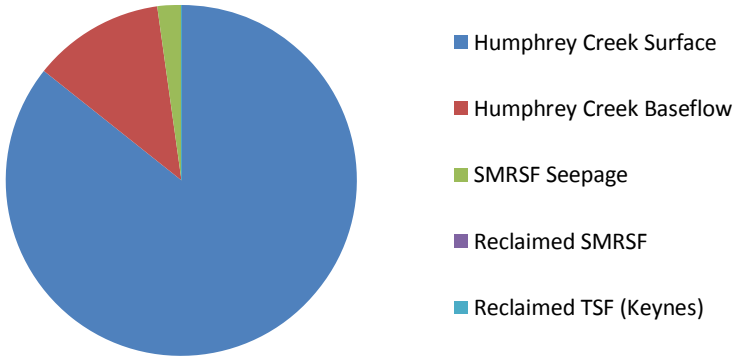
NOTES:

1. SENSITIVITY CASE WATER QUALITY MODEL RESULTS CAN REPRESENT EXTREME OVER OR UNDER PREDICTIONS FOR

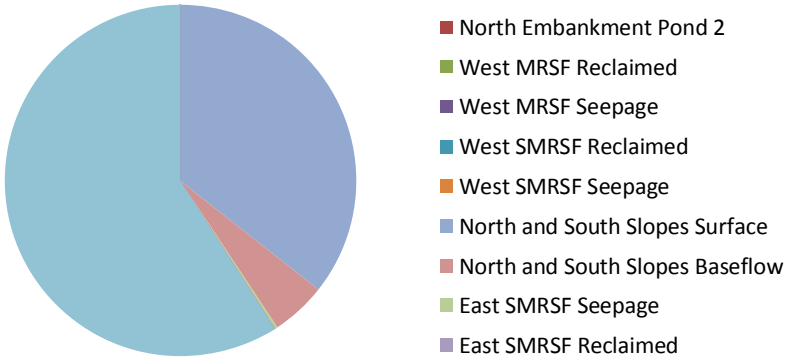
Jacko Lake



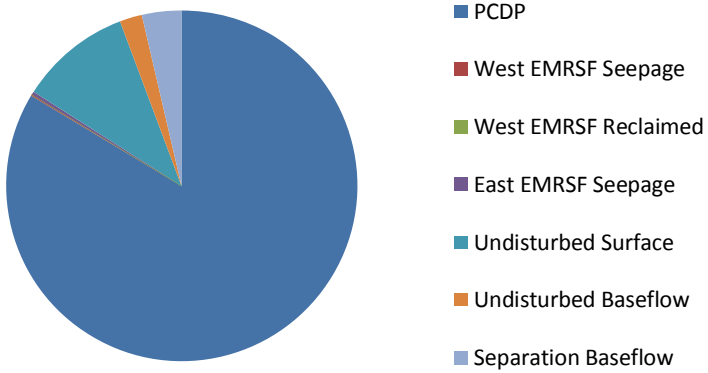
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:

1. MODELLED FLOWS PRESENTED IN m^3/MONTH FOR THE AVERAGE OF YEAR 13 OF OPERATIONS.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

ANNUAL FLOW PROPORTIONS DURING OPERATIONS

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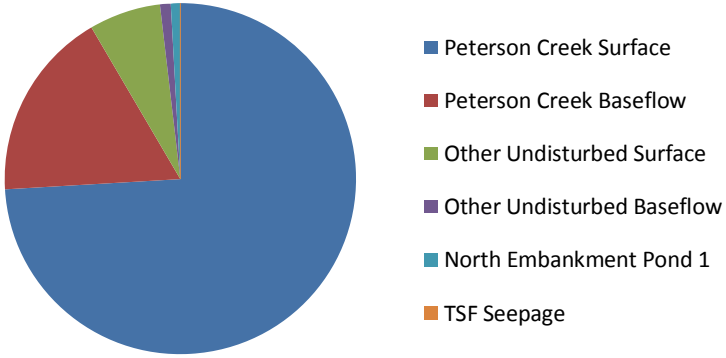
P/A NO. VA101-246/31

REF. NO. 4

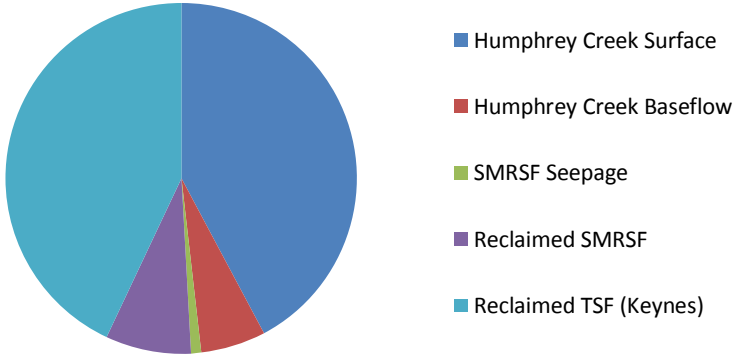
FIGURE 5.1

REV 0

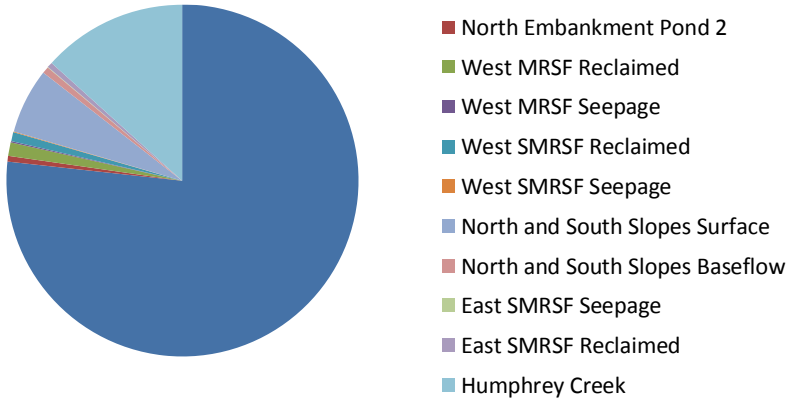
Jacko Lake



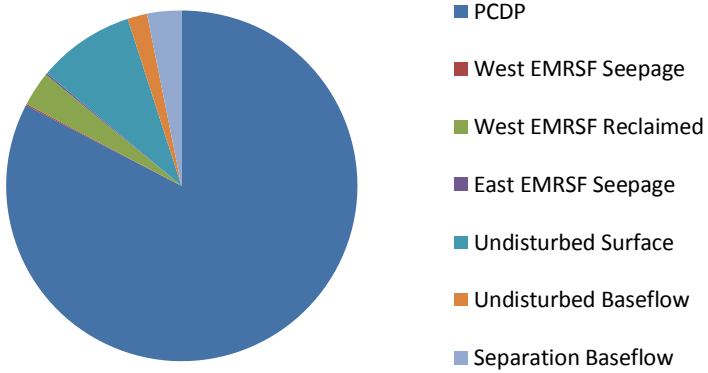
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:

1. MODELLED FLOWS PRESENTED IN m^3/MONTH FOR THE AVERAGE OF A TYPICAL POST CLOSURE YEAR.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
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REF. NO. 4

FIGURE 5.2

REV 0

5.3.2 Sulphate

The lowest predicted receiving water sulphate concentrations are predicted for Jacko Lake and predicted concentrations are generally stable throughout the year. The highest receiving water sulphate concentrations are predicted for Peterson Creek model assessment location PC02, with maximum concentrations at this site predicted for Construction and early Operations. The modelled sulphate concentrations in the Peterson Creek watershed are provided for specific annual time-frames on Figure 5.3. Baseline sulphate concentrations were higher at PC02 compared to upstream locations and the seasonality in sulphate concentrations at PCO2 is indicative of loading primarily due to groundwater baseflow contributions, with higher concentrations measured under low flow conditions. Predicted sulphate ranges are fairly constant at all model assessment locations, with slight increases at all assessment locations upon arrival of seepage loads, which is most emphasized in Humphrey Creek. The seasonality in predicted sulphate concentrations is different for the PCDP and the downstream site PC02.3 compared to Humphrey Creek and PC02; sulphate concentrations at the PCDP and PC02.3 are lower through the winter months with highest concentrations predicted from March through May, whereas higher concentrations are predicted through the low flow months at PC02 and Humphrey Creek. Sulphate was one of the parameters that was often represented by negative concentrations in the baseline calibration model, particularly in May; as a result, the baseline contributions in the model are higher than would be expected in this month.

Sulphate time-series graphs for Jacko Lake, PCDP, PC02.3, PC02, and Humphrey Creek for the base case model are presented on Figure 5.4 through Figure 5.8. Sulphate loading charts for a typical year in Operations and Post Closure are provided on Figure 5.9 and Figure 5.10. Sulphate time-series graphs for all sensitivity models are provided in Appendix D1, Appendix E1, Appendix F1, Appendix G1, and Appendix H1 for Jacko Lake, PCDP, PC02.3, PC02, and Humphrey Creek, respectively.

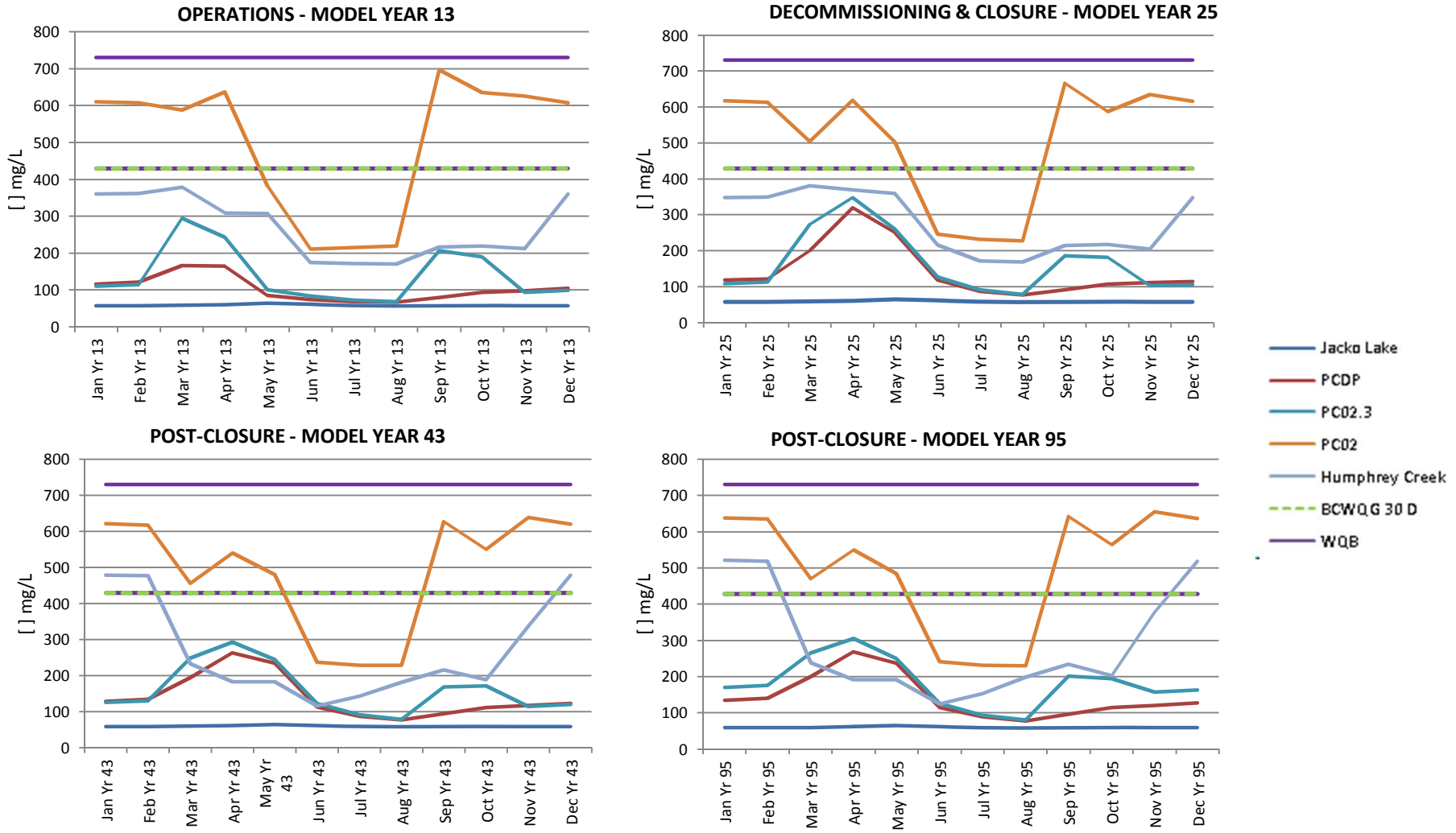
The BCWQG-30 D for sulphate specifies that site specific toxicity testing is required when hardness exceeds 250 mg/L $CaCO_3$, as was frequently the case in the baseline surface water environment in the project area (KP 2015). The toxicity testing, documented in *Testing in support of development of a science based environmental benchmark for sulphate for the Ajax Mine* (Nautilus 2015), resulted in a recommended science based environmental benchmark (SBEB) for a maximum sulphate concentration of 429 mg/L, which is the same as the current BCWQG-30 D, but with the maximum hardness adjusted up to 800 mg/L $CaCO_3$ which is protective of early life stages for trout (assumed present from May through June in an average year). An alternative SBEB of 730 mg/L for a hardness of up to 1377 mg/L $CaCO_3$ was recommended for surface waters where early life stages for trout are never present, or for periods of the year when these life stages are not expected to be present in a given reach of Peterson Creek (July through April).

Predicted Base Case sulphate concentrations seasonally exceed the 429 mg/L SBEB at PC02 in May of each year in Decommissioning and Closure and Post Closure, though predicted Base Case concentrations never exceed the baseline monthly 95th P concentration (736 mg/L) in May (based on 95th P concentration for PC02 for the combined seasonally representative dataset for April and May). Predicted Base Case sulphate concentrations are below the SBEB at all other receiving water model assessment locations. Humphrey Creek is not identified as a fish-bearing stream and the higher SBEB (730 mg/L) would be applicable to sulphate concentrations in this creek; sulphate

concentrations in Humphrey Creek are predicted to just exceed the SBEB for one month in Post Closure.

Highest sulphate concentrations at most assessment locations were predicted for the VCC models; the exceptions being the Jacko Lake model assessment location for all mine phases and the Humphrey Creek model assessment location during Operations and Closure. Jacko Lake predicted sulphate concentrations are most sensitive to variation in baseline inputs, resulting in the highest predicted concentrations during Operations and Closure, though in Post Closure, the highest predicted concentrations resulted from the sensitivity modelling for higher hydraulic conductivity (High HC SC). Highest predicted sulphate concentrations for Humphrey Creek during Operations and Decommissioning and Closure resulted from the baseline sensitivity case modelling (95^{th} P baseline inputs) but transitioned to VCC model results in Post Closure, due to the combined effect of variation in climate inputs with the arrival of seepage loads associated with long flow pathways. Similar to all other parameters whose loads are associated with seepage pathways from the MRSFs, higher VCC model results are predominantly due to the influence of seepage, seepage timing, and the associated timing of monthly model precipitation inputs that generate the loading at the sources (MRSFs) and the runoff in the receiving water assessment location. The geochemical source terms were developed specifically for the average climate case model and have been conservatively applied to the VCC models, such that the source loading predicted for wetter than average months is higher than that which would realistically occur (see section 4.2). In the model it is common for a higher than average month for source loading (wet month in historical climate record) to reach a Peterson Creek receiving water assessment location on a time delay associated with a lower than average receiving water flow month (due to drier conditions in the historical climate record) and the combined model outcome is much higher concentrations than would be expected. Conservative assumptions regarding seepage interactions with groundwater were made. Seepage to groundwater is not mixed with local groundwater in mixing cells along the flow pathway, and it is dealt with in terms of timing delays, so receiving water loads are equivalent to source loading for the same calendar month for a set time earlier in the model timeframe. In reality, groundwater discharge to local creeks would be a combination of small amounts of seepage with larger amounts of local groundwater, resulting in a more diffuse loading than is currently modelled and concentrations are not likely to reach those predicted in the upper percentile VCC summary results. Dustfall contributions to sulphate loading are proportionally low at all assessment locations and the sensitivity model results for dustfall assumptions were similar to Base Case results.

Sulphate is naturally elevated in the project area and as a result is sensitive to variation in the baseline inputs to the model, especially 95^{th} P baseline inputs. Sulphate predictions are not as sensitive to other types of assumptions, with the exception of higher hydraulic conductivity for groundwater. In all cases, the annual range in predicted parameter concentrations is greatest at PC02, particularly during Operations.



NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB - WQB); HIGHER SBEB (730 mg/L) FOR PERIODS OF YEAR WHEN EARLY LIFE STAGES OF FISH ARE ABSENT FROM WATERCOURSE (TYPICALLY FROM JULY THROUGH APRIL).

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SULPHATE - PREDICTED SEASONALITY IN PETERSON CREEK WATERSHED - BASE CASE

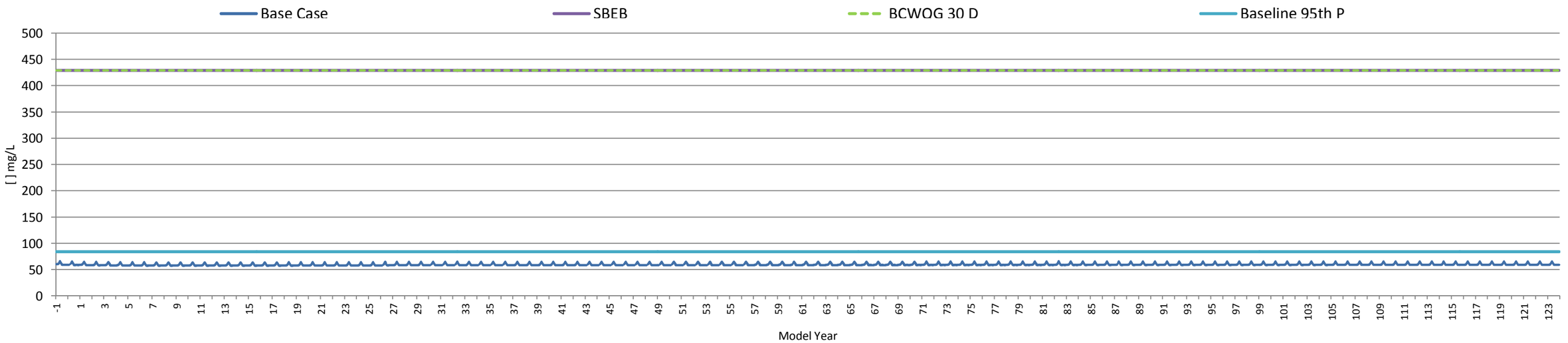
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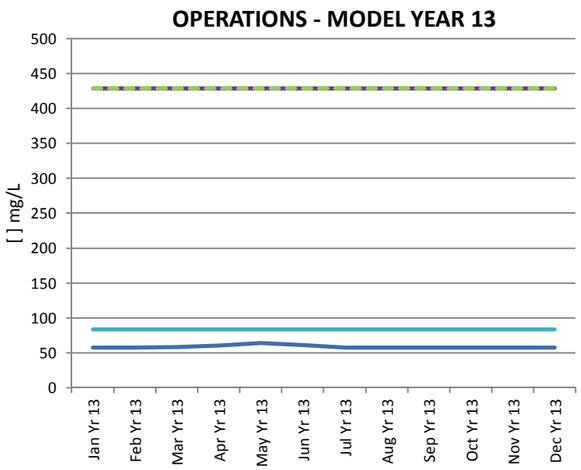
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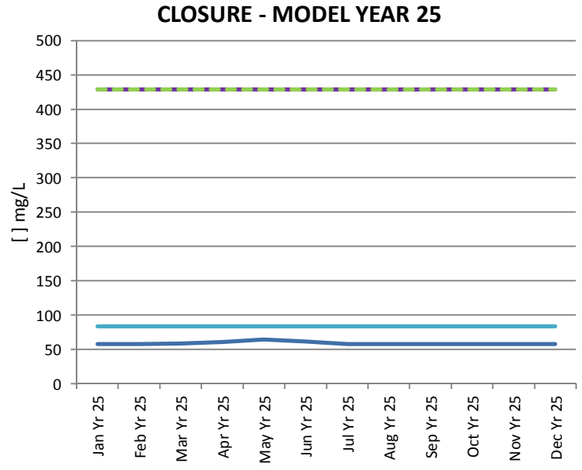
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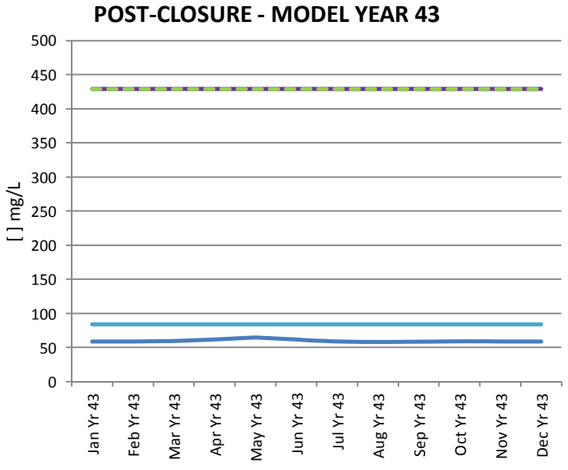
FIGURE 5.3

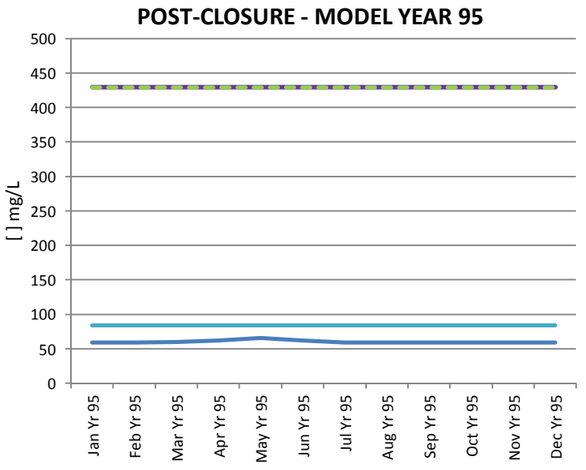
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
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5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE - PREDICTED SULPHATE CONCENTRATIONS - BASE CASE

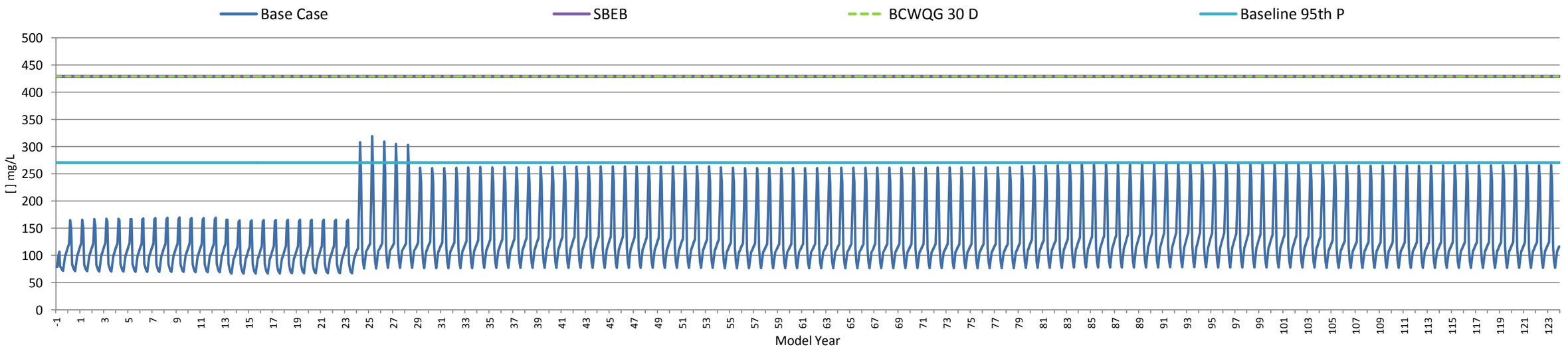
Knight Piésold CONSULTING

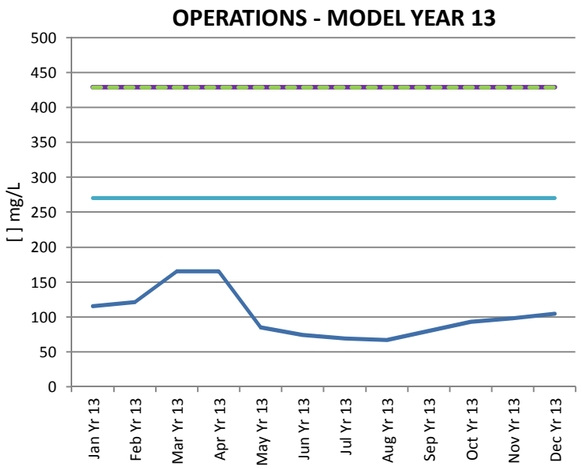
P/A NO. VA101-246/31

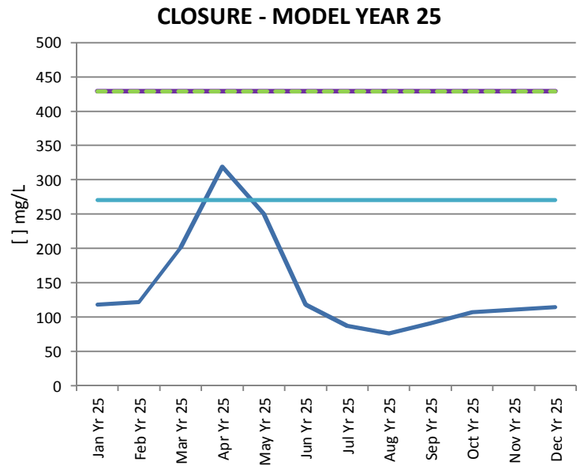
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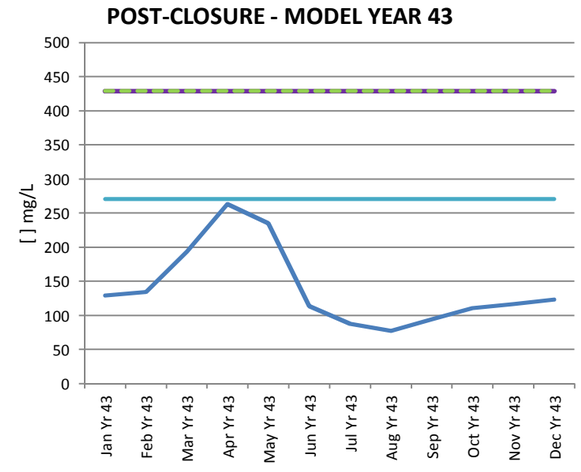
FIGURE 5.4

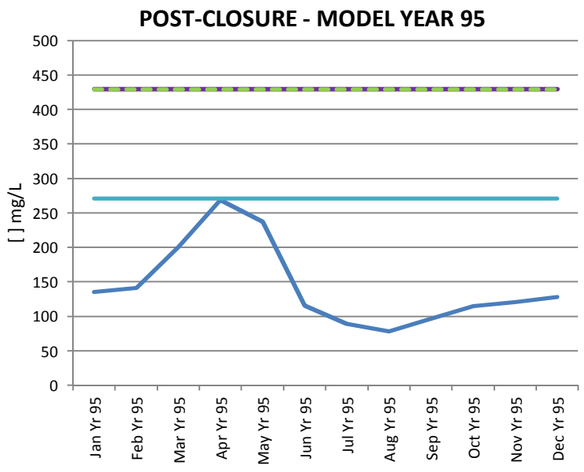
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
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5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).

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KGHM AJAX INC.

AJAX PROJECT

PCDP - PREDICTED SULPHATE CONCENTRATIONS - BASE CASE

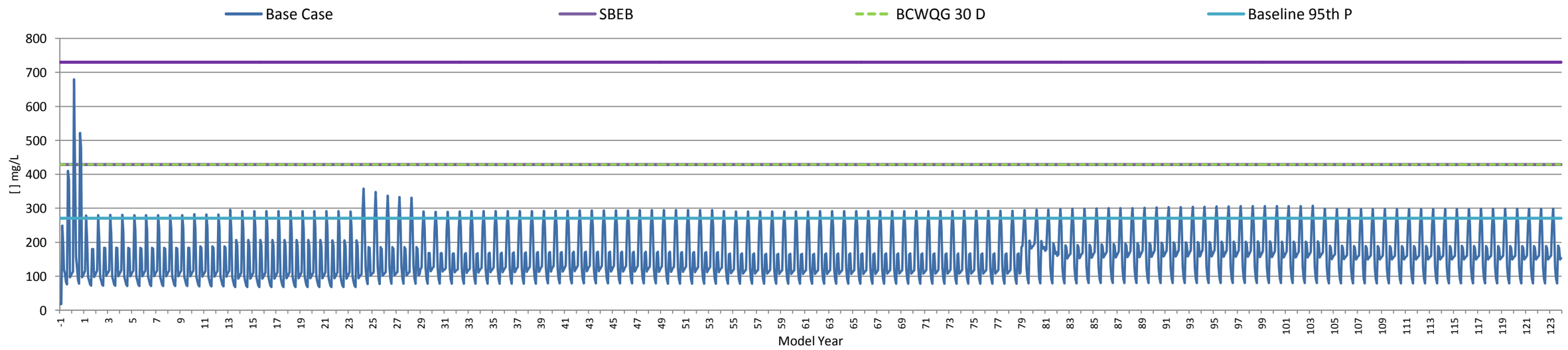
Knight Piésold CONSULTING

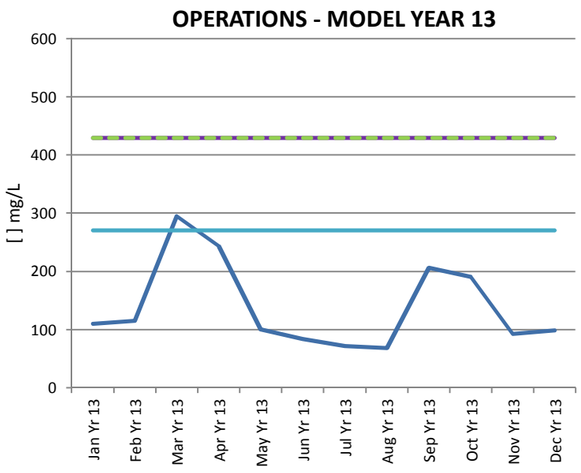
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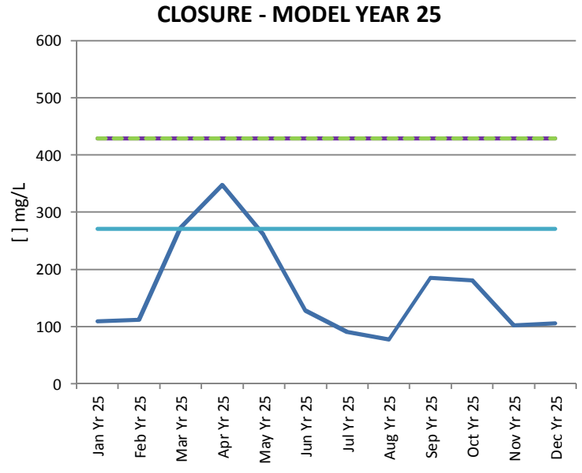
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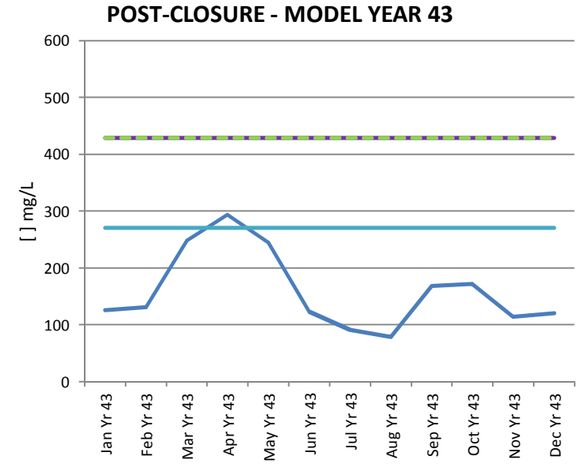
FIGURE 5.5

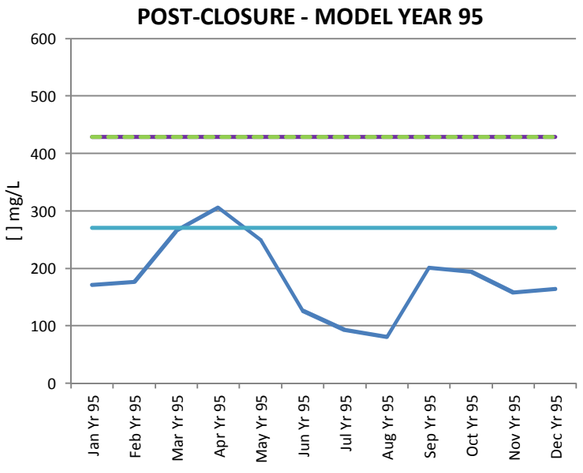
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NOTES:

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KGHM AJAX INC.

AJAX PROJECT

PC02.3 - PREDICTED SULPHATE CONCENTRATIONS - BASE CASE

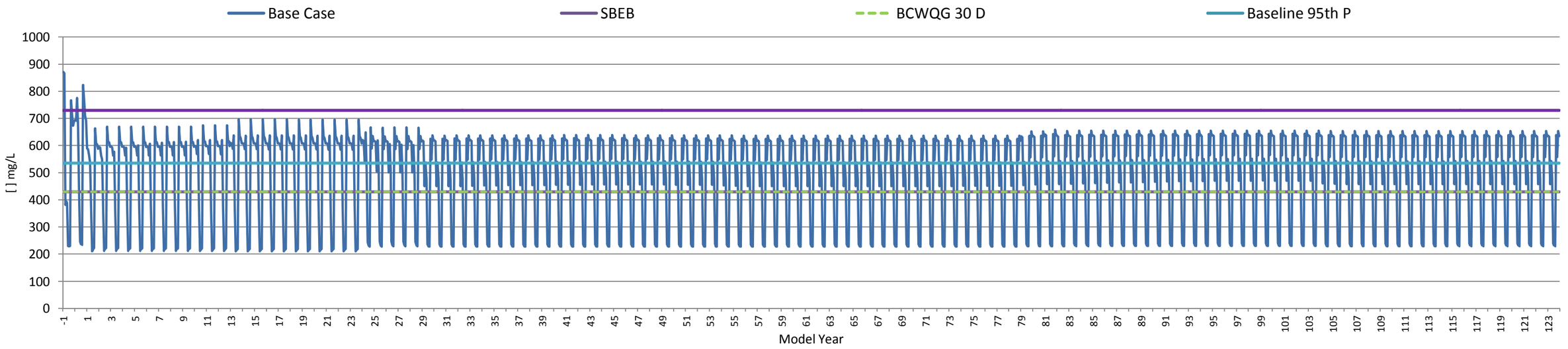
Knight Piésold CONSULTING

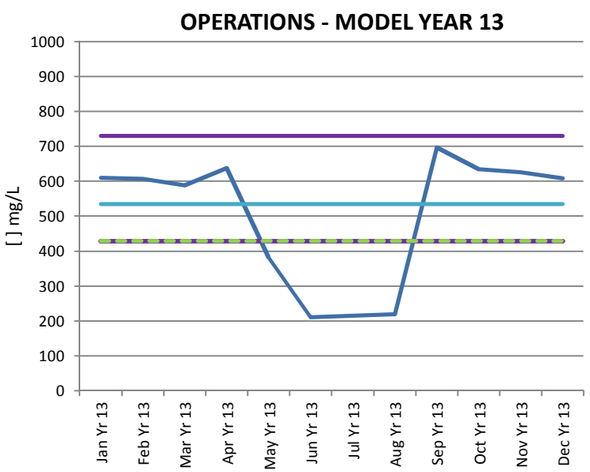
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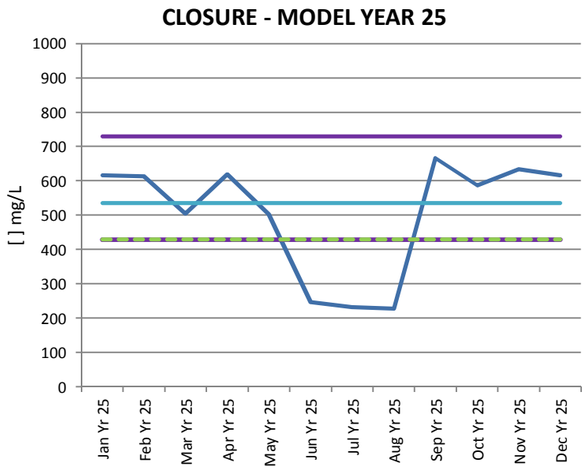
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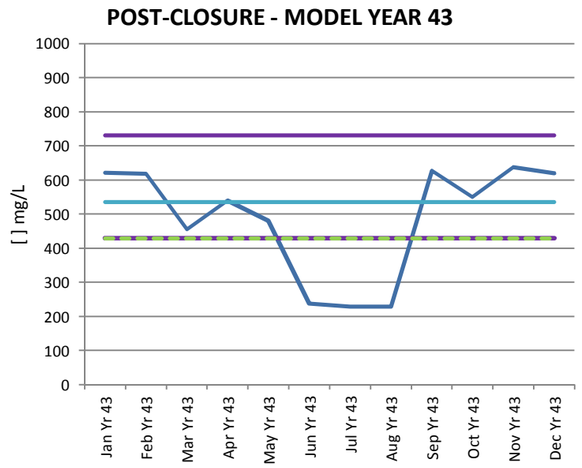
FIGURE 5.6

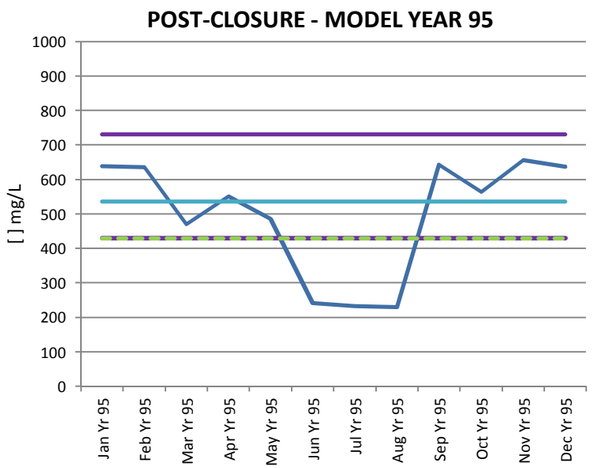
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
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5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB); HIGHER SBEB FOR PERIODS OF YEAR WHEN EARLY LIFE STAGES OF FISH ARE ABSENT FROM WATERCOURSE.

REV	DATE	DESCRIPTION	PREP'D	APP'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

PC02 - PREDICTED SULPHATE CONCENTRATIONS - BASE CASE

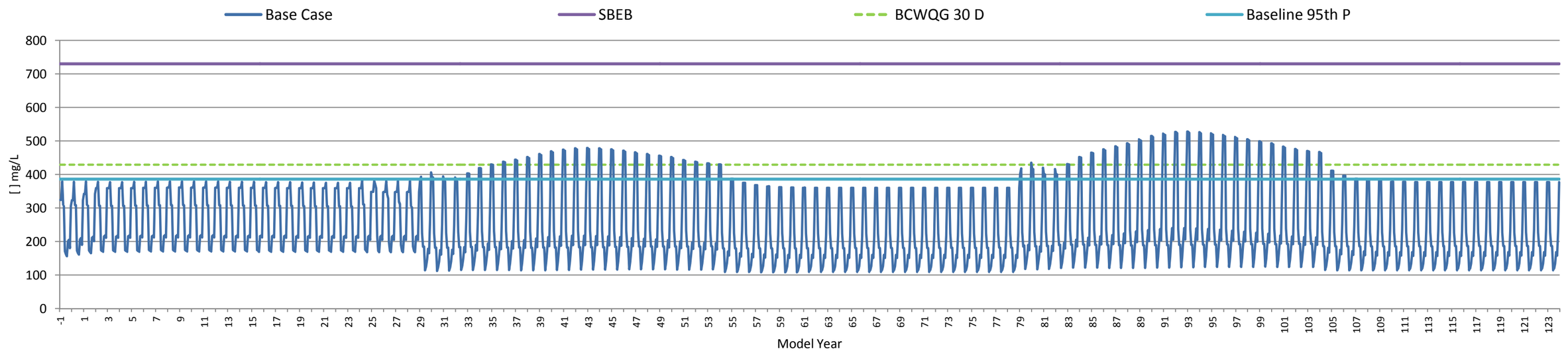
Knight Piésold CONSULTING

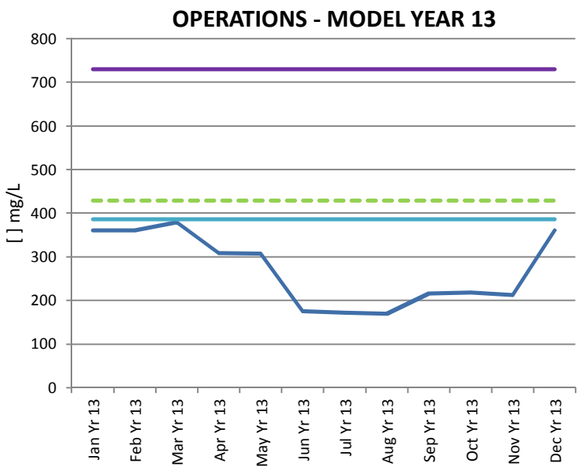
P/A NO. VA101-246/31

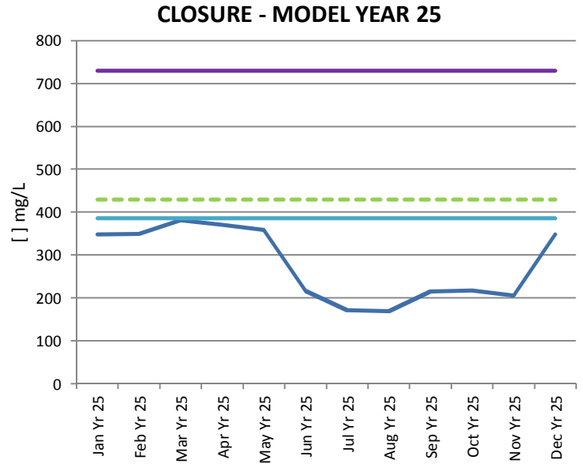
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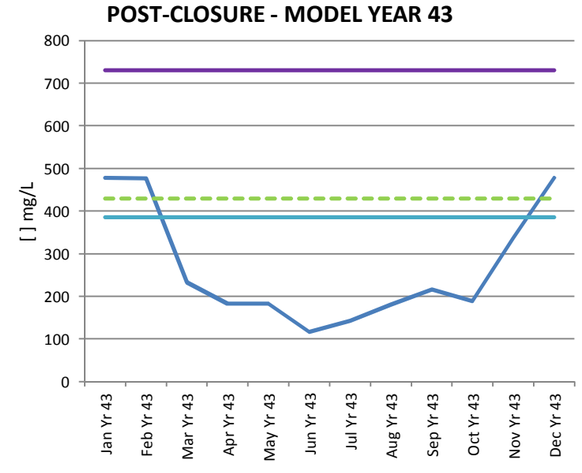
FIGURE 5.7

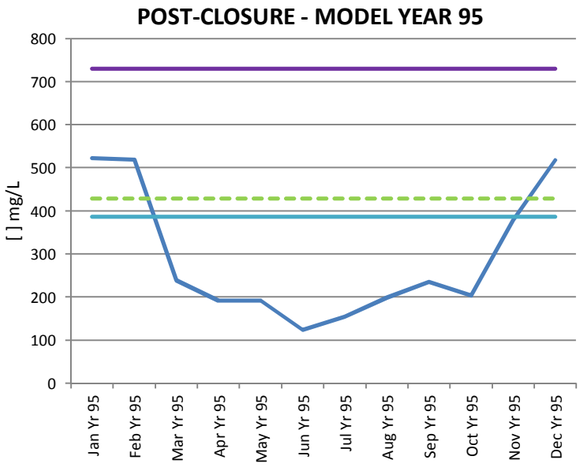
REV 0











NOTES:

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6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK - PREDICTED SULPHATE CONCENTRATIONS - BASE CASE

Knight Piésold CONSULTING

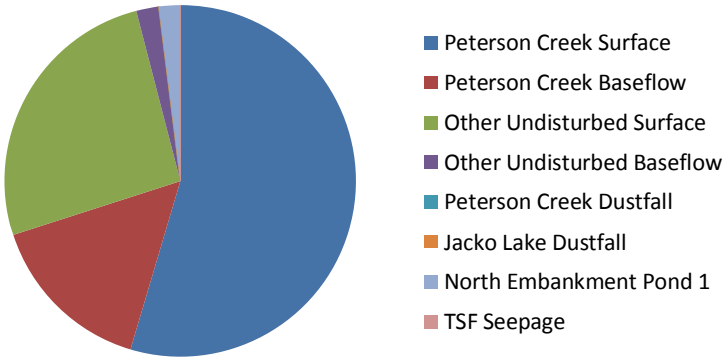
P/A NO. VA101-246/31

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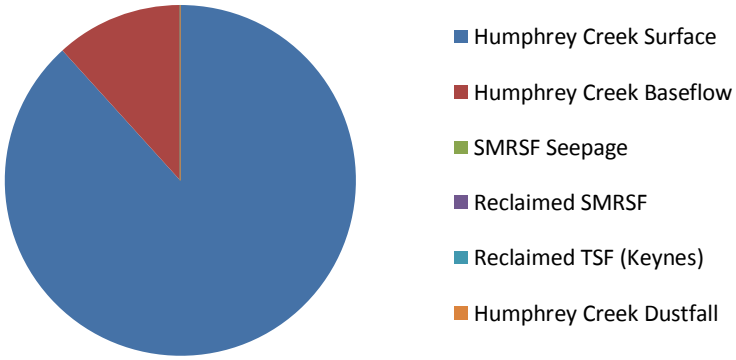
FIGURE 5.8

REV 0

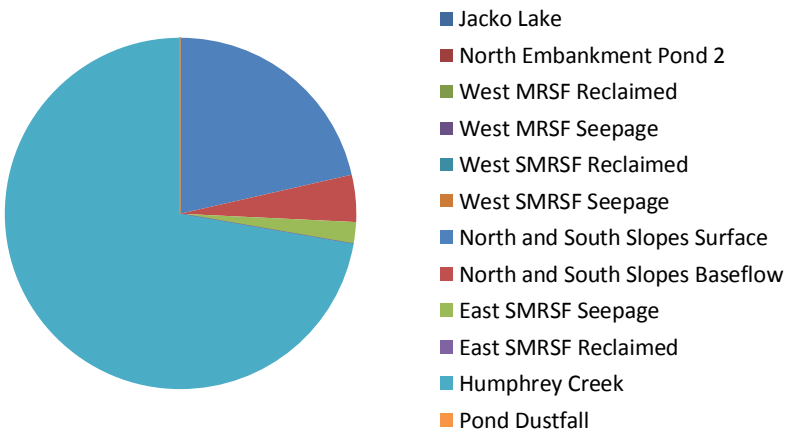
Jacko Lake



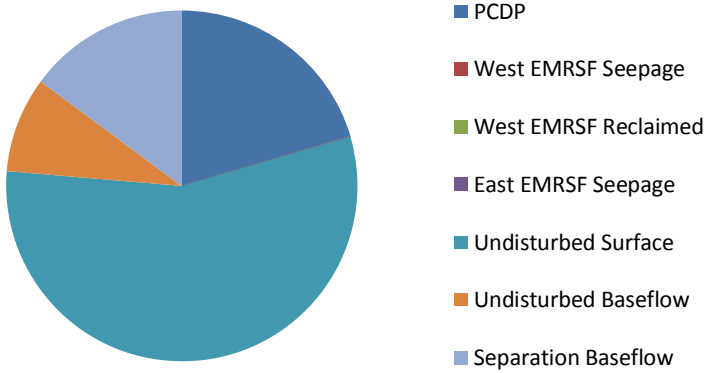
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:

1. MODELLED LOADS PRESENTED IN mg/MONTH FOR THE AVERAGE OF YEAR 13 OF OPERATIONS.
2. MODEL RESULTS DISPLAYED FOR DISSOLVED SULPHATE.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
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KGHM AJAX INC.

AJAX PROJECT

ANNUAL LOAD PROPORTIONS FOR SULPHATE DURING OPERATIONS

Knight Piésold CONSULTING

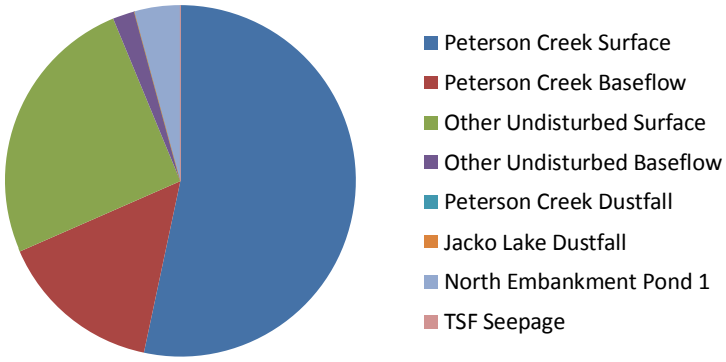
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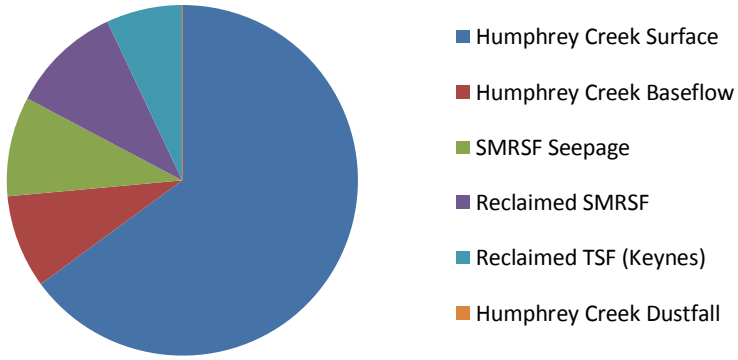
FIGURE 5.9

REV 0

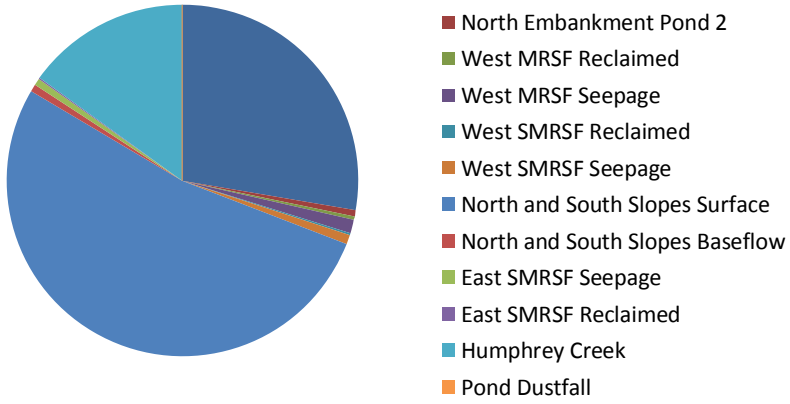
Jacko Lake



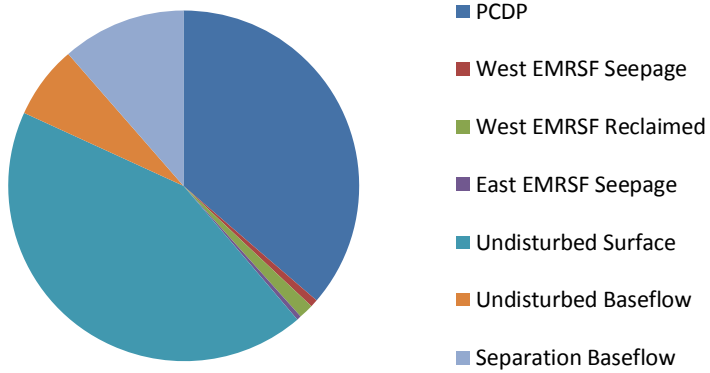
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:

1. MODELLED LOADS PRESENTED IN mg/MONTH FOR THE AVERAGE OF A TYPICAL POST CLOSURE YEAR.
2. MODEL RESULTS DISPLAYED FOR DISSOLVED SULPHATE.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
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KGHM AJAX INC.

AJAX PROJECT

ANNUAL LOAD PROPORTIONS FOR SULPHATE DURING POST CLOSURE

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 4

FIGURE 5.10

REV 0

5.3.3 Chloride

Modelled chloride concentrations are similar to baseline concentrations at all of the receiving water model assessment locations, and concentrations are not greatly affected by mine sources. Modelled chloride concentrations at Jacko Lake, PCDP, PC02.3, and Humphrey Creek remain fairly constant throughout all phases of the Project, with only a slight increase in May for Jacko Lake, PCDP, and PC02.3, and in June for Humphrey Creek. The modelled chloride concentrations for all receiving water assessment locations in the Peterson Creek watershed are provided for specific annual time-frames on Figure 5.11. Baseline chloride concentrations at PC02 are higher than at all the other assessment locations, as are modelled concentrations, and are predicted to exceed the BCWQG-30 D (150 mg/L) seasonally under lower flow conditions during all phases of the model. Highest chloride concentrations are predicted during the Operations phase at PC02, due to incremental loading from mine site runoff and seepage.

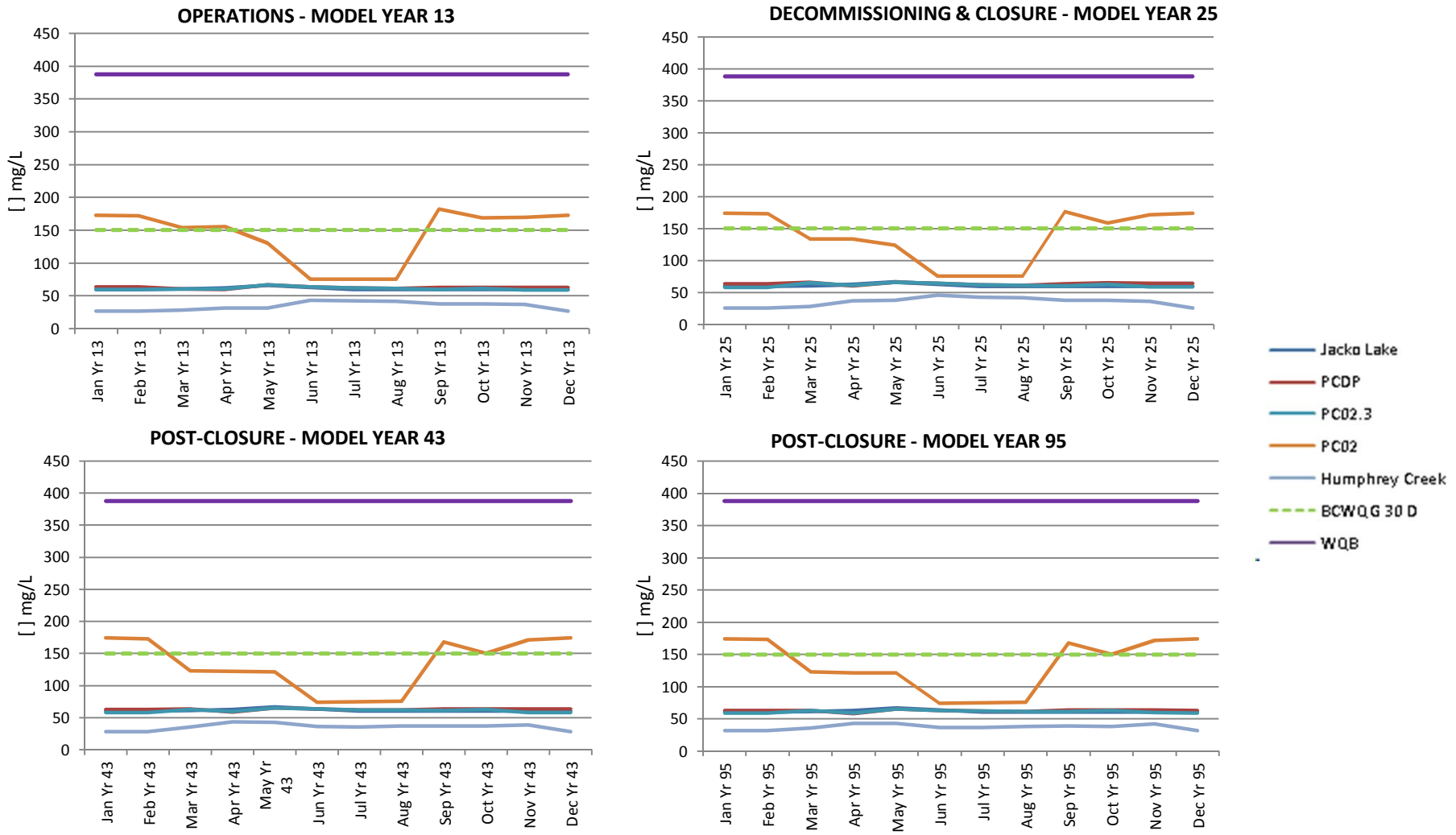
Unlike the other water quality assessment locations, peak chloride concentrations at PC02 usually appear in September and remain elevated through February, and steadily decrease from March through June. Higher chloride concentrations in PC02 are attributed to its proximity to Highway 5A, where road salting activities would be common practice for winter conditions. Higher baseline sodium concentrations were also observed at PC02 than at the other assessment locations, with seasonality identical to that of chloride, which further supports the understanding that chloride, although not naturally elevated, is a background source.

A water quality benchmark (WQB) protective of the most sensitive aquatic life was developed because of the predicted chloride concentrations exceeded the BCWQG-30 D at PC02. A WQB of 388 mg/L was developed for chloride specific to conditions in the Project area, which is protective of the majority of aquatic biota including non-cladoceran species like rainbow trout (Stantec 2015b). No predicted chloride concentrations exceed the WQB at any assessment location for the base case model. The VCC model results were the only ones that exceeded the WQB, with seasonal peak concentrations at PC02 up to 600 mg/L in May; predicted concentrations for all other months remained below the WQB.

Chloride time-series graphs for Jacko Lake, PCDP, PC02.3, PC02, and Humphrey Creek for the base case model are presented on Figure 5.12 through Figure 5.16, respectively. Chloride loading charts for a typical year in Operations and Post Closure are provided on Figure 5.17 and Figure 5.18. Chloride time-series graphs for all sensitivity models are provided in Appendix D2, Appendix E2, Appendix F2, Appendix G2, and Appendix H2 for Jacko Lake, PCDP, PC02.3, PC02, and Humphrey Creek, respectively.

The range of predicted chloride concentrations on a monthly basis is fairly uniform at all water quality assessment locations for all sensitivity scenarios, though at PC02.3 concentration decreases are observed in June and September, which are more pronounced for the lower VCC percentiles (5^{th} P and 25^{th} P) and likely due to unseasonable wet weather for those months in the climate history. Chloride is also sensitive to variation in the baseline inputs to the model, although to a lesser degree in Humphrey Creek. Chloride predictions did not vary much from Base Case results for sensitivity models related to groundwater assumptions, dustfall assumptions, and seepage timing assumptions, confirming that chloride loading in the models is not related to mine sources. As with sulphate, the annual range in predicted chloride concentrations is greatest during Operations at PC02.

Consistent with the previous affirmations, chloride loading in Peterson Creek at PC02 is dominated by background sources from the catchment between PC02.3 and PC02. At the upstream assessment locations, background sources also dominate chloride loading.



NOTES:

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5. WATER QUALITY BENCHMARK (WQB).

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KGHM AJAX INC.

AJAX PROJECT

CHLORIDE - PREDICTED SEASONALITY IN PETERSON CREEK WATERSHED - BASE CASE

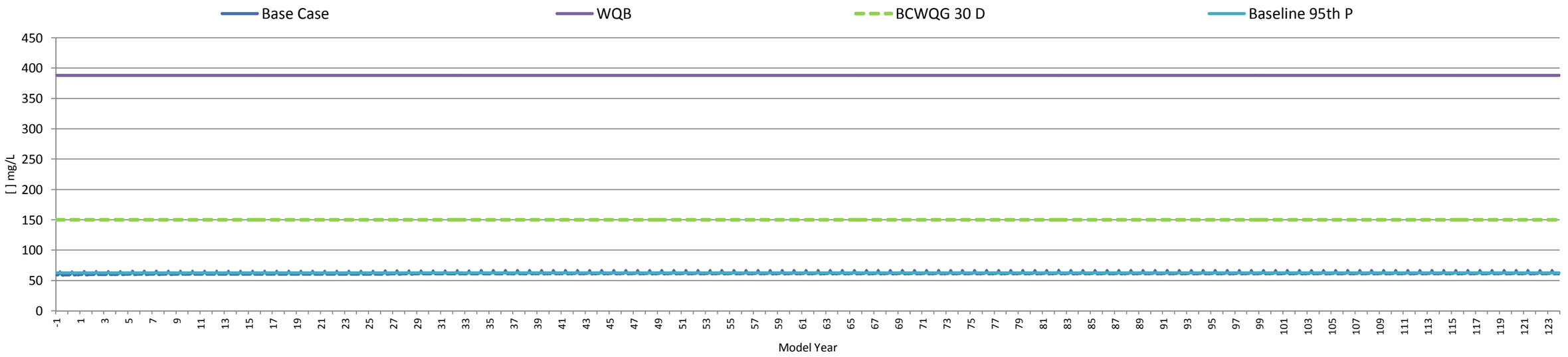
Knight Piésold CONSULTING

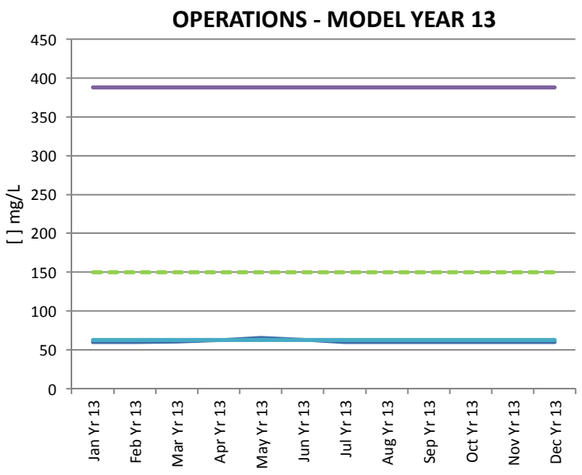
P/A NO. VA101-246/31

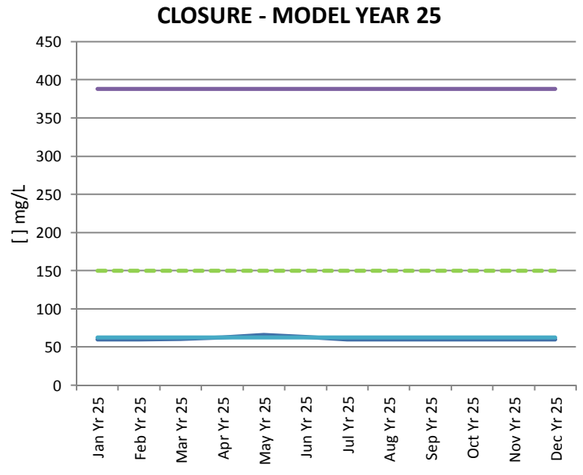
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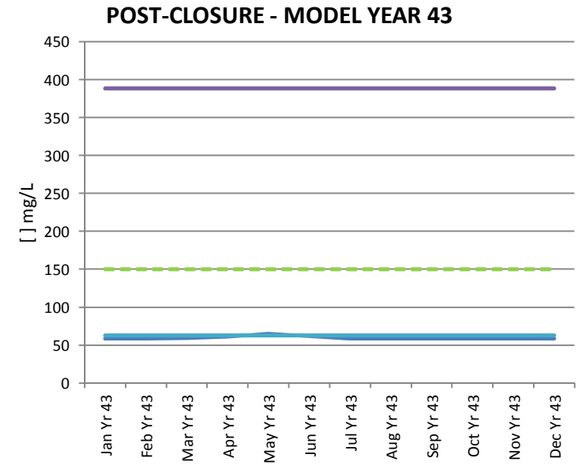
FIGURE 5.11

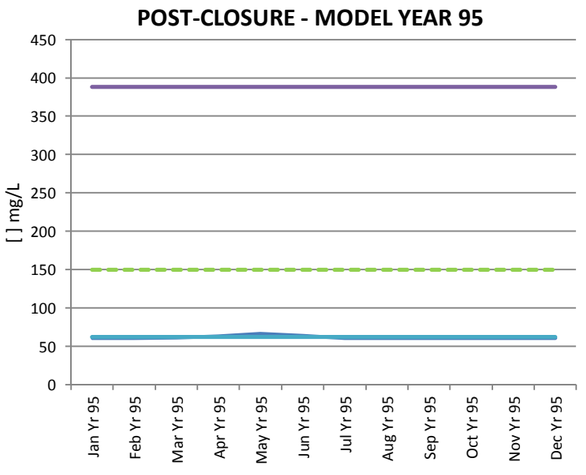
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NOTES:

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6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE - PREDICTED CHLORIDE CONCENTRATIONS - BASE CASE

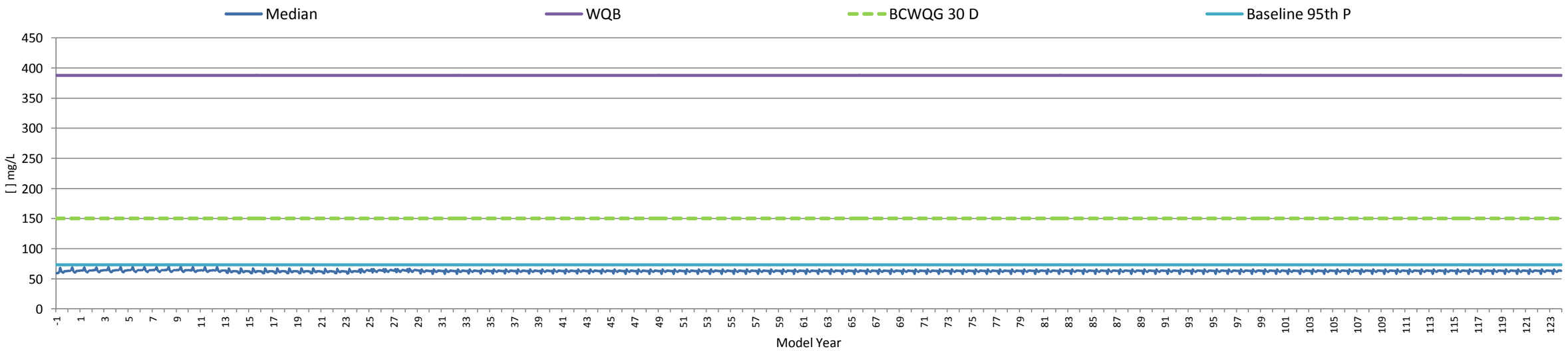
Knight Piésold CONSULTING

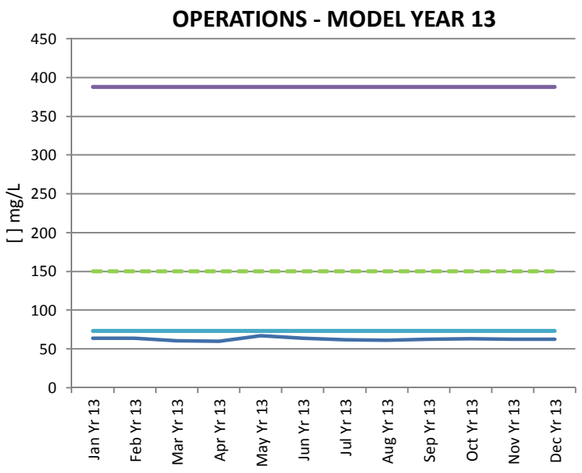
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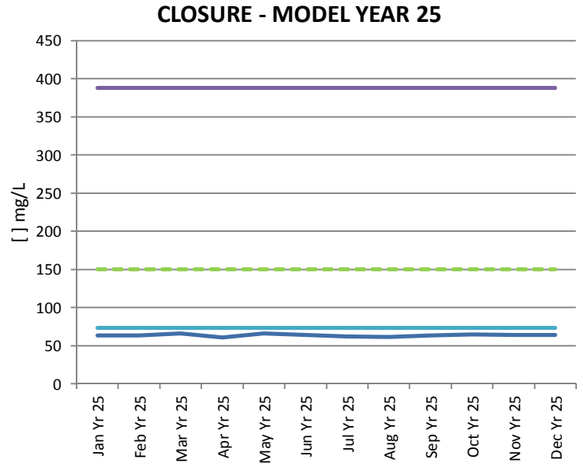
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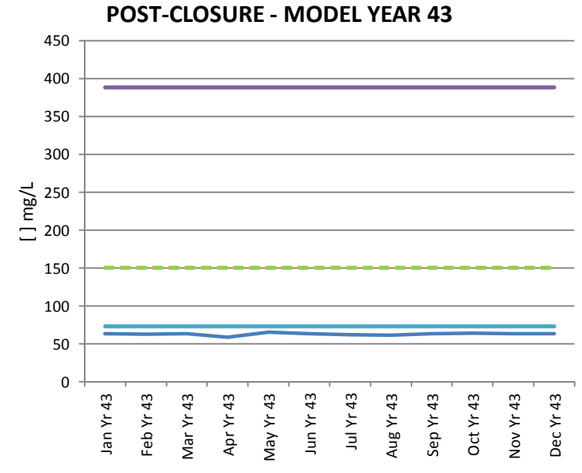
FIGURE 5.12

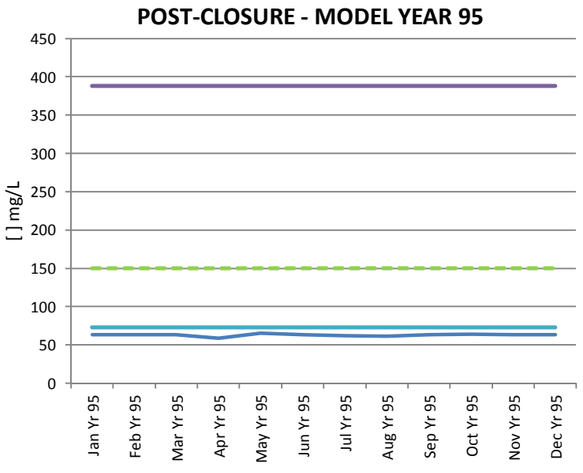
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KGHM AJAX INC.

AJAX PROJECT

PCDP - PREDICTED CHLORIDE CONCENTRATIONS - BASE CASE

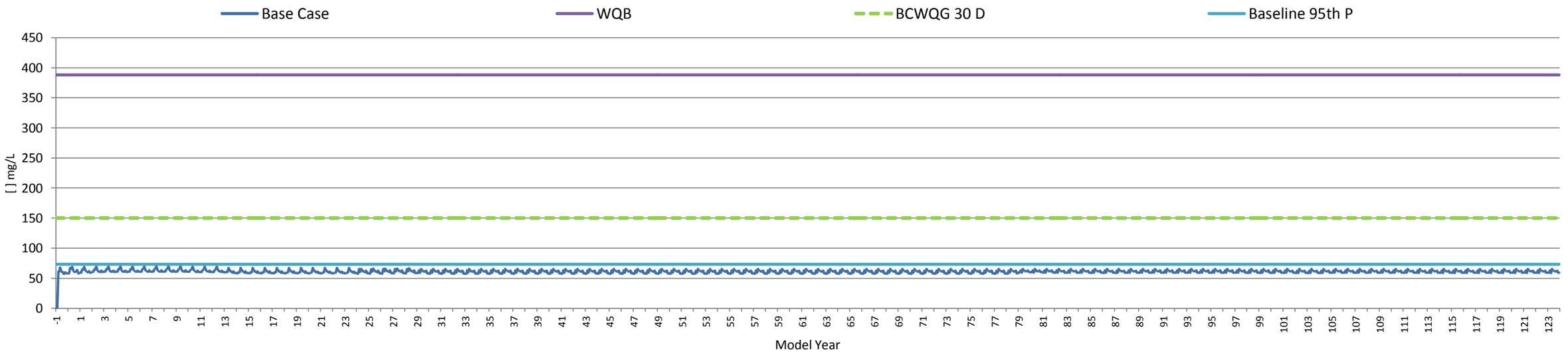
Knight Piésold CONSULTING

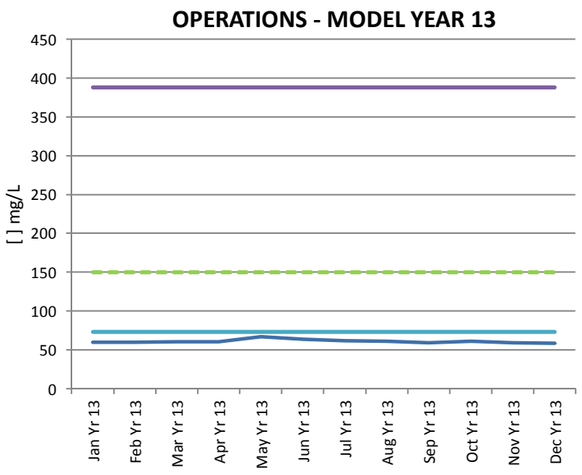
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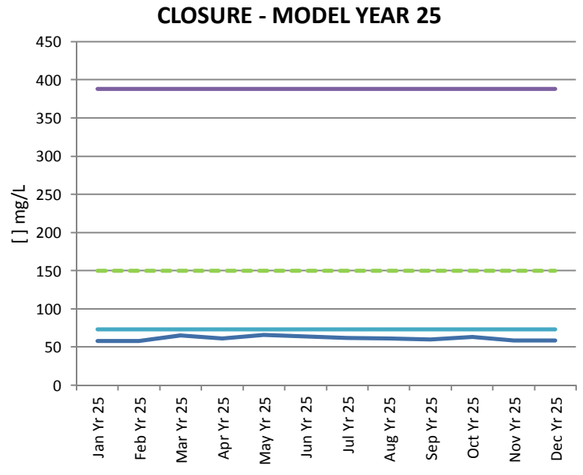
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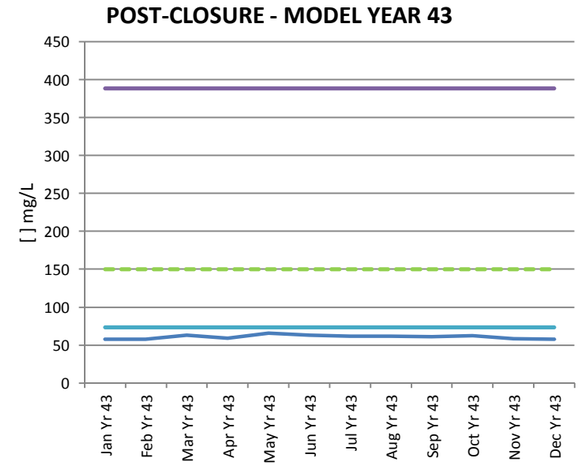
FIGURE 5.13

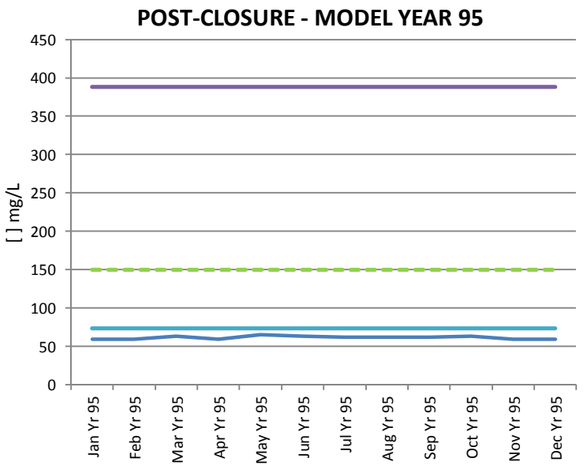
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6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.

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0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

PC02.3 - PREDICTED CHLORIDE CONCENTRATIONS - BASE CASE

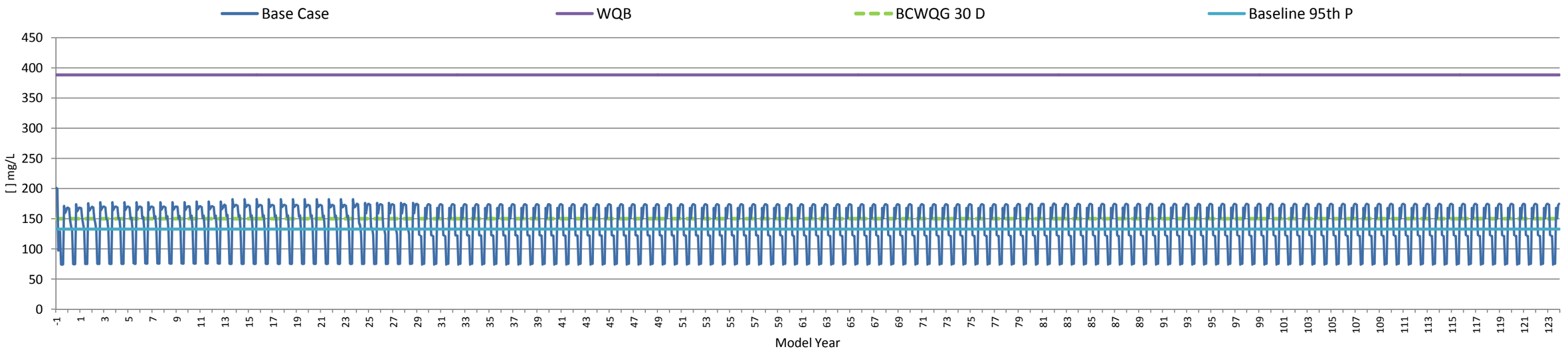
Knight Piésold CONSULTING

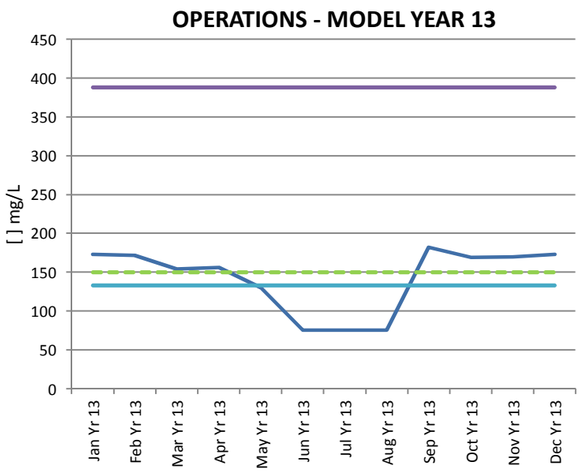
P/A NO. VA101-246/31

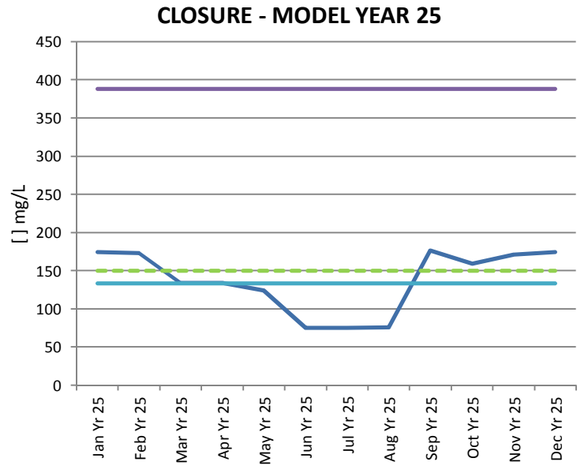
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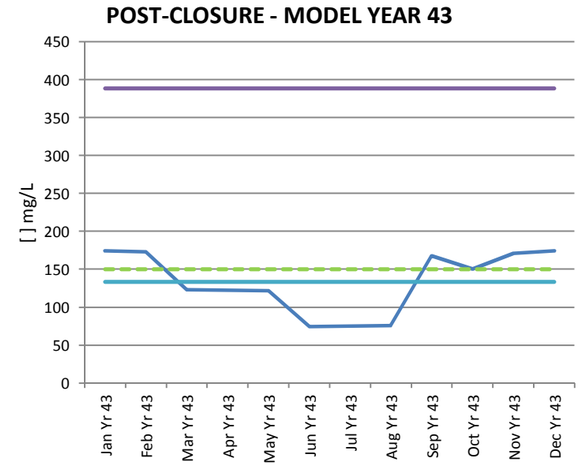
FIGURE 5.14

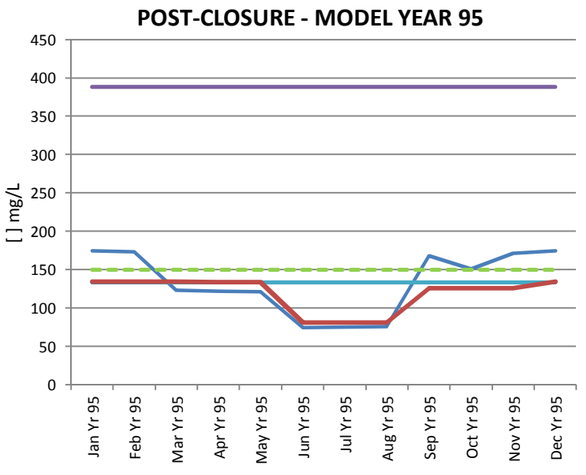
REV 0











NOTES:

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KGHM AJAX INC.

AJAX PROJECT

PC02 - PREDICTED CHLORIDE CONCENTRATIONS - BASE CASE

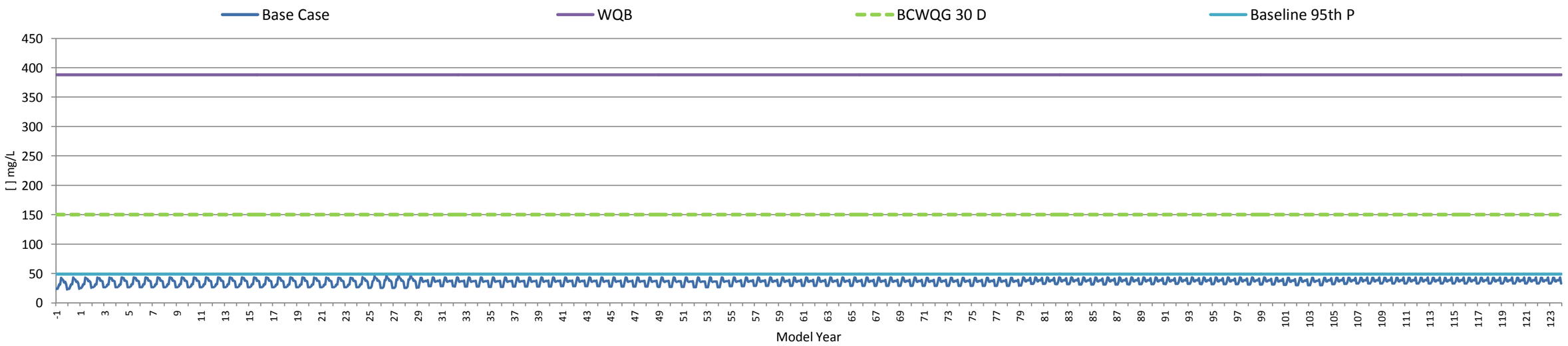
Knight Piésold CONSULTING

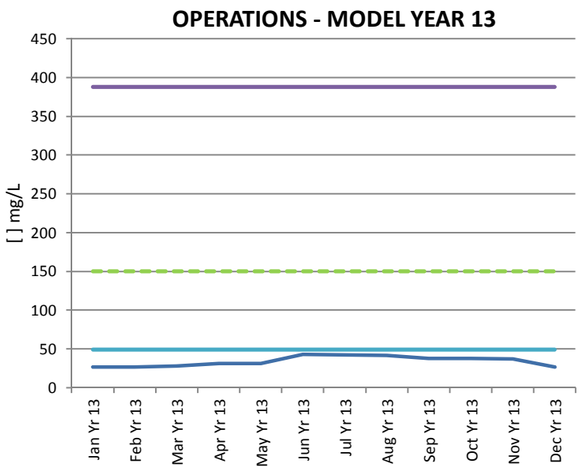
P/A NO. VA101-246/31

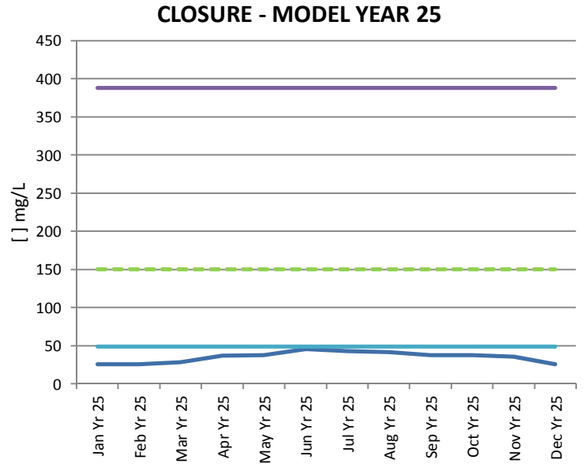
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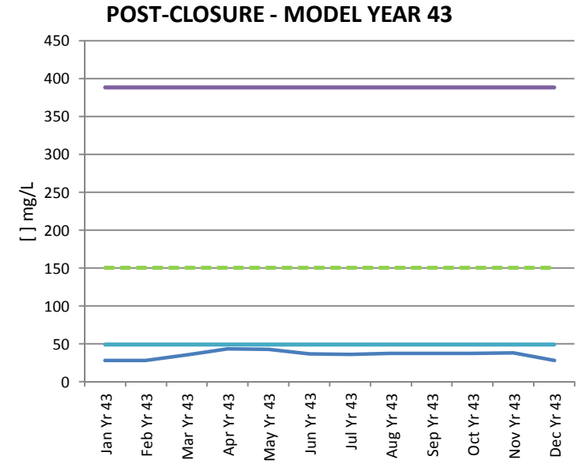
FIGURE 5.15

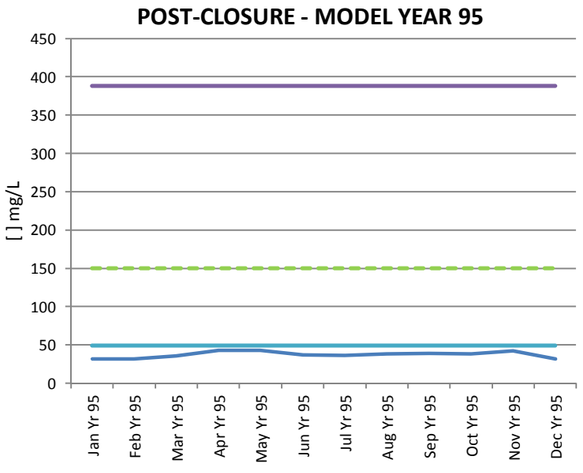
REV 0











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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK - PREDICTED CHLORIDE CONCENTRATIONS - BASE CASE

Knight Piésold CONSULTING

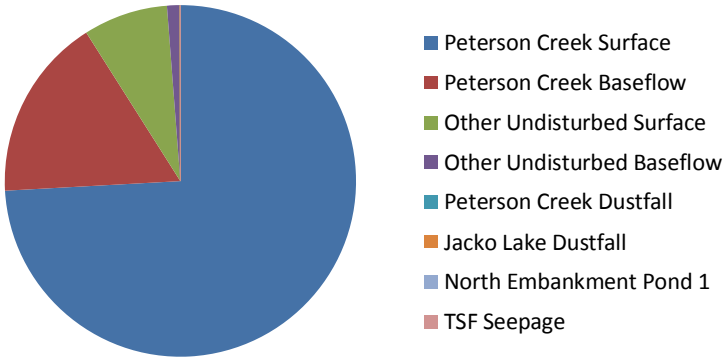
P/A NO. VA101-246/31

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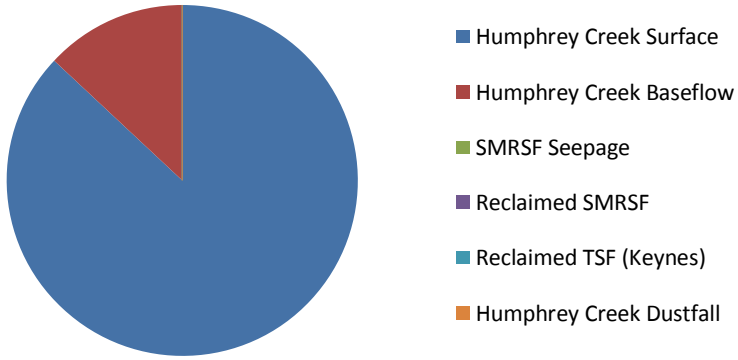
FIGURE 5.16

REV 0

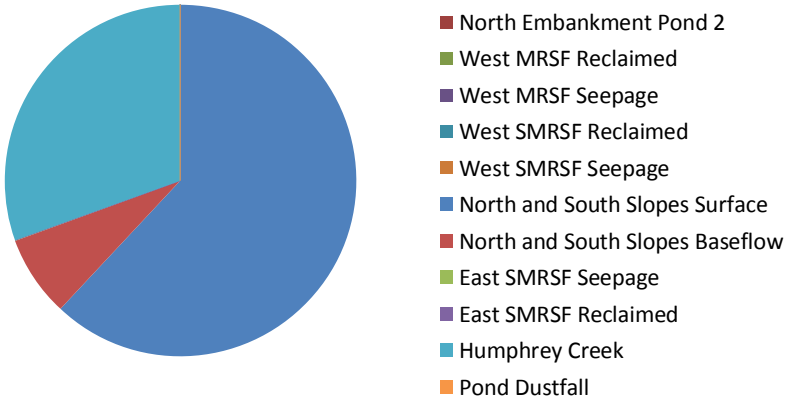
Jacko Lake



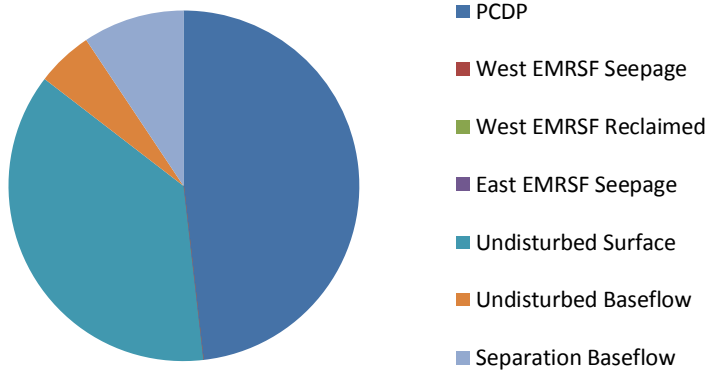
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:

1. MODELLED LOADS PRESENTED IN mg/MONTH FOR THE AVERAGE OF YEAR 13 OF OPERATIONS.
2. MODEL RESULTS DISPLAYED FOR CHLORIDE.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
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KGHM AJAX INC.

AJAX PROJECT

ANNUAL LOAD PROPORTIONS FOR CHLORIDE DURING OPERATIONS

Knight Piésold CONSULTING

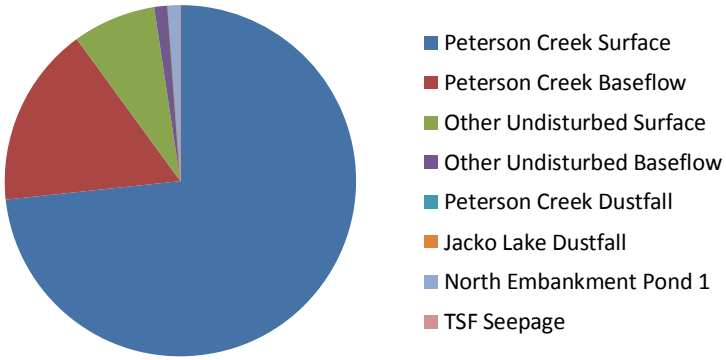
P/A NO. VA101-246/31

REF. NO. 4

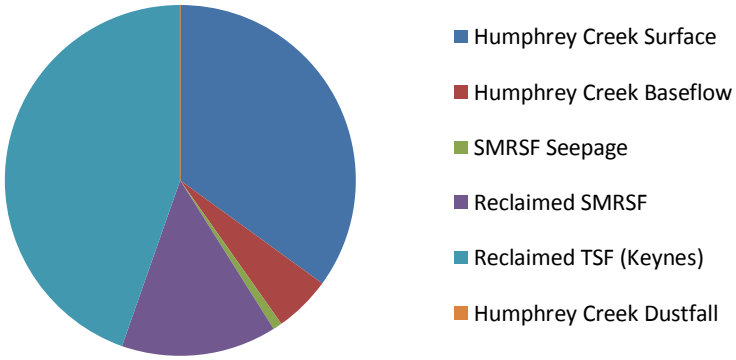
FIGURE 5.17

REV 0

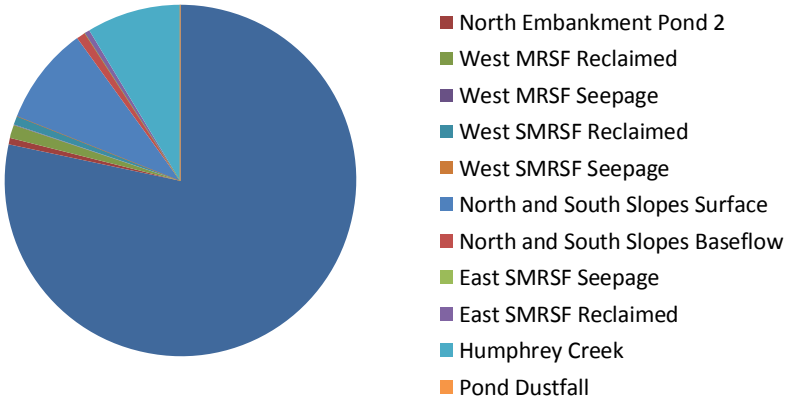
Jacko Lake



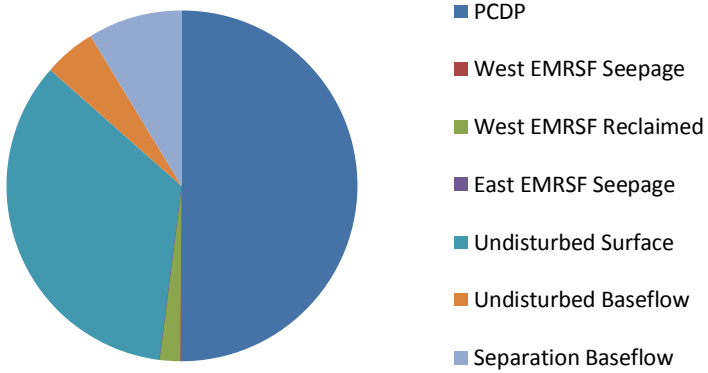
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:
1. MODELLED LOADS PRESENTED IN mg/MONTH FOR THE AVERAGE OF A TYPICAL POST CLOSURE YEAR.
2. MODEL RESULTS DISPLAYED FOR CHLORIDE.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
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KGHM AJAX INC.

AJAX PROJECT

ANNUAL LOAD PROPORTIONS FOR CHLORIDE DURING POST CLOSURE

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 4

FIGURE 5.18

REV 0

5.3.4 Copper

Baseline copper concentrations in Peterson Creek tended to increase slightly with distance downstream in the watershed and where seasonal variation was evident with concentrations tending to increase between May and June or July and then decreasing again from July through October. This seasonal pattern suggests that copper loading under the current site conditions is typically associated with increased surface runoff in response to spring freshet. Highest baseline concentrations were reported for samples collected from Humphrey Creek and although these samples did not exceed the BCWQG-30 D, they often exceeded the Canadian Environmental Quality Guidelines (CEQG) for the protection of aquatic life. The copper aquatic life guidelines are hardness dependent and surface waters in the project area are hard to very hard, resulting in higher guideline values.

Similar to chromium, predicted copper concentrations are affected by dustfall loading from the MRSF and TSF, though the proportion of the total load at each model assessment location is lower for copper. Predicted copper concentrations decrease in Post Closure when the TSF and MRSFs are reclaimed and there is no dust source. Dustfall that is deposited in the winter months (December through April) is accumulated in the model, based on the assumption that it is retained in the snowpack, and is made available at the nearest surface water quality model assessment location in May in association with the average timing of spring freshet and ice break-up on Jacko Lake. The seasonality in predicted copper concentrations is affected by this load accumulation, with an increase in concentrations in May at all assessment locations in Operations and Closure, though maximum concentrations are not predicted in May at any assessment location except PC02 during these mine phases.

Base Case copper concentrations are highest in Humphrey Creek in Operations and Decommissioning and Closure as this creek is most affected by the dustfall deposition due to proximity to the loading sources (TSF and SMRSF) and due to the natural low flow volumes in this creek. The highest copper concentrations are predicted for Humphrey Creek in Post Closure as well, but due to seepage loading from the SMRF, resulting in higher concentrations in the low flow winter months compared to all other receiving water quality model assessment locations. A direct comparison of predicted copper concentrations for the Peterson Creek watershed assessment locations for annual time-frames in each mine phase are provided on Figure 5.19.

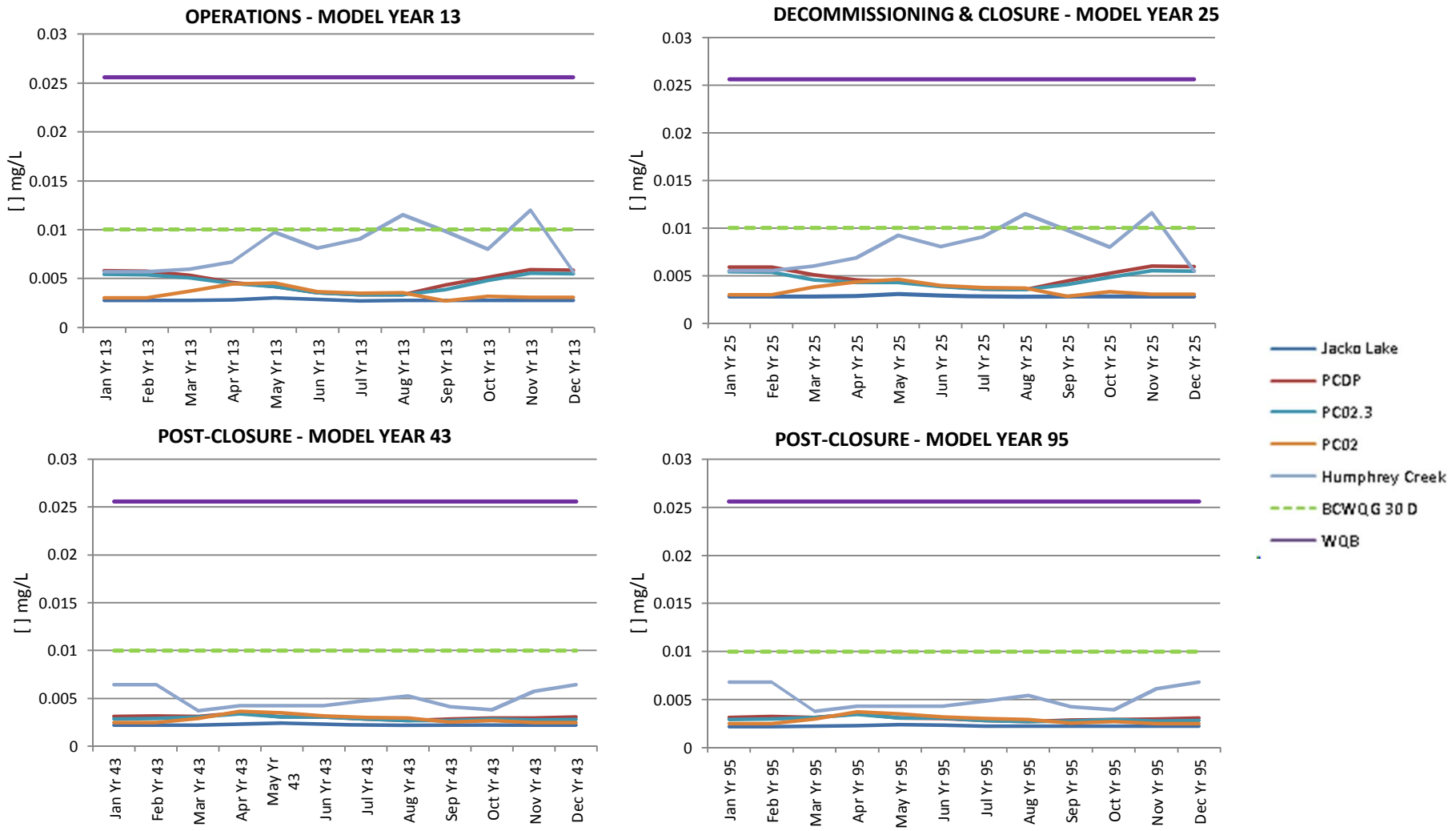
A WQB protective of the most sensitive aquatic biota was derived for copper as well because of the predicted concentrations for this parameter in Humphrey Creek. Since the hardness dependent BCWQG-30 D derived for copper does not account for the effects of other parameters (pH, dissolved organic carbon) on copper toxicity, the WQB was developed using a biotic ligand model (BLM), which accounts for the effects of water chemistry on copper toxicity and bioavailability. Based on the results of this model, a WQB of 0.0256 mg/L was determined for copper in the Project area, which is protective of sensitive species such as water fleas, Chinook salmon, and rainbow trout (Stantec 2015b). No Base Case copper concentrations are predicted to exceed the WQB in any receiving water assessment location.

Copper time-series graphs for Jacko Lake, PCDP, PC02.3, PC02, and Humphrey Creek for the base case model are presented on Figure 5.20 through Figure 5.24, respectively. Copper time-series graphs for all sensitivity models are provided in Appendix D5, Appendix E5, Appendix F5,

Appendix G5, and Appendix H5 for Jacko Lake, PCDP, PC02.3, PC02, and Humphrey Creek, respectively.

Sensitivity model predicted copper concentrations were highest in Jacko Lake for the baseline sensitivity model that incorporated the 95th P baseline inputs and highest predicted concentrations at the other downstream assessment locations were predicted for the VCC models. With the exception of Humphrey Creek, all predicted copper concentrations in the sensitivity analyses were below the WQB. The 95th P summary VCC model results exceed the WQB in almost every May during Operations and Decommissioning and Closure in Humphrey Creek. This repetitive spike in the model results is due to model input assumptions with respect to timing of the release of dustfall stored in the snowpack through the winter months combined with lower than average May flows in Humphrey Creek due to lower flow spring conditions based on the historical climate record for the Project that could result from a lighter snowpack, longer drawn out spring freshet periods, whereby peak flows tend to be lower and extend over two months (April/May or May/June), or variation in the onset of freshet conditions. The deposition is the same in all models and lower flows in Humphrey Creek in May results in higher than expected chromium concentrations. Dustfall deposited along the creeks is conservatively assumed to be available from a 100 m corridor (50 m on both sides) and the transport mechanism for load that accumulates through the winter months to be carried into the creeks is runoff with snow meltwaters and spring rains, resulting in higher loading when flows would also be higher. Predicted model copper concentrations during Post Closure were always below the WQB and only once exceeded the BCWQG-30 D (at PC02.3 in model year 84). Predicted copper concentrations on a monthly basis have a fairly uniform range in all model assessment locations and for all sensitivity scenarios, though the range in Humphrey Creek in Operations, Closure, and early Post Closure is larger than in the other assessment locations for the VCC. Copper concentrations are sensitive to the variation in the baseline inputs to the model, and are less sensitive to other types of assumptions.

Dustfall is an important source of copper loading in Operations to PCDP and Humphrey Creek; however, natural catchment contributions are the primary loading source at all downstream model assessment locations in all mine phases. Simplified annual pie charts illustrating the proportion of total copper loads at Jacko Lake, PCDP, PC02, and Humphrey Creek are presented on Figure 5.25 and Figure 5.26 for Operations and Post Closure, respectively.



NOTES:

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KGHM AJAX INC.

AJAX PROJECT

COPPER - PREDICTED SEASONALITY IN PETERSON CREEK WATERSHED - BASE CASE

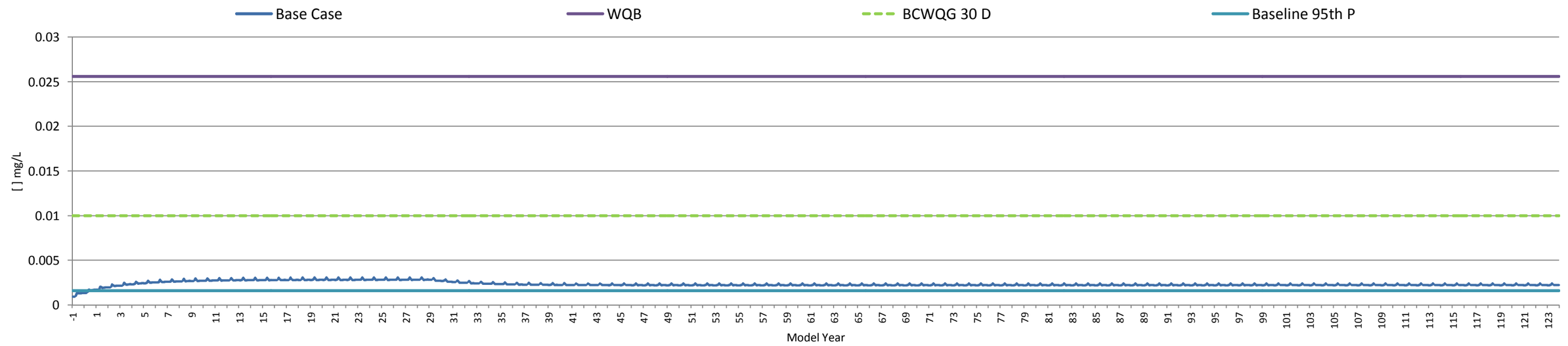
Knight Piésold CONSULTING

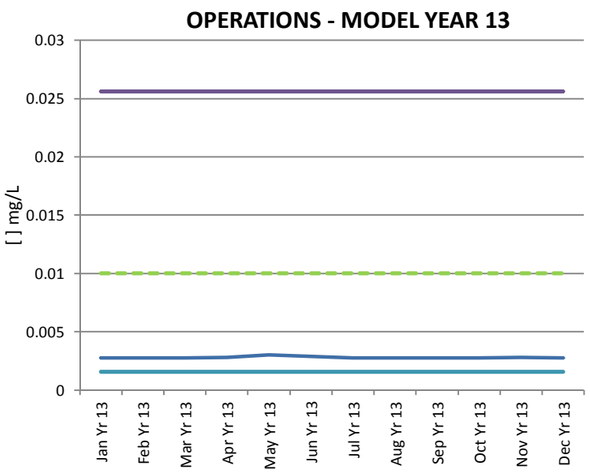
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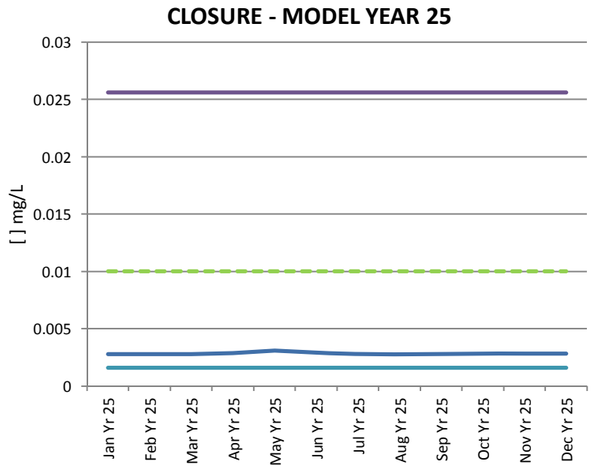
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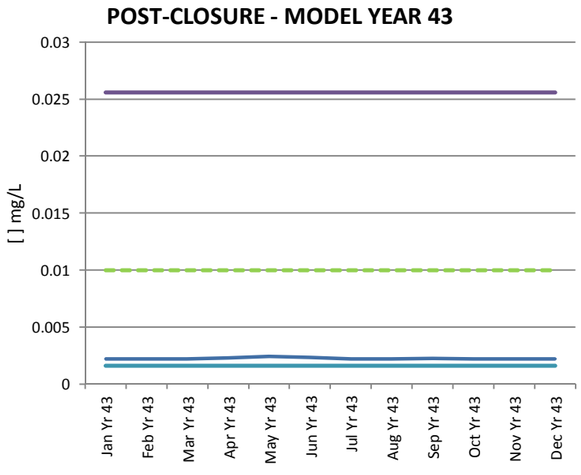
FIGURE 5.19

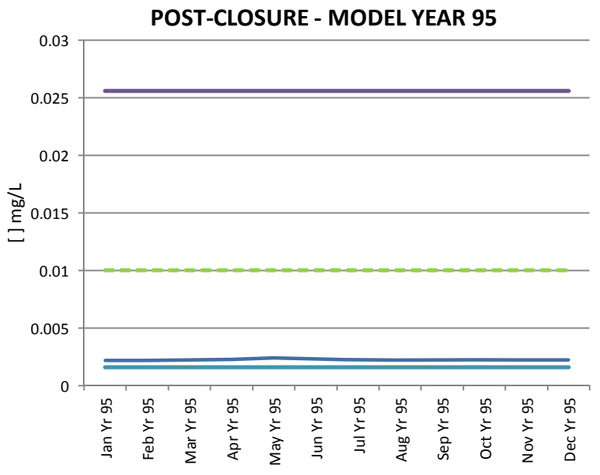
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NOTES:

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE - PREDICTED COPPER CONCENTRATIONS - BASE CASE

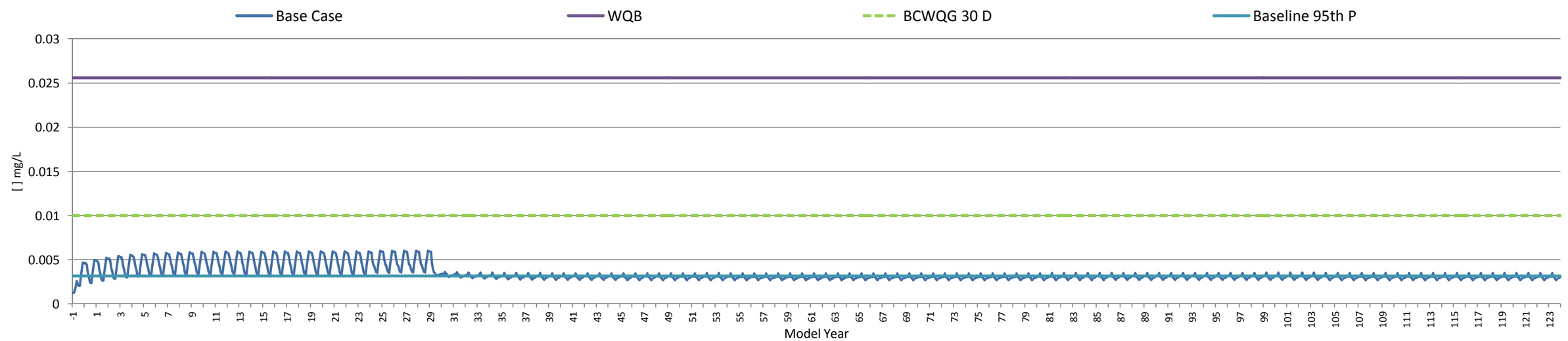
Knight Piésold CONSULTING

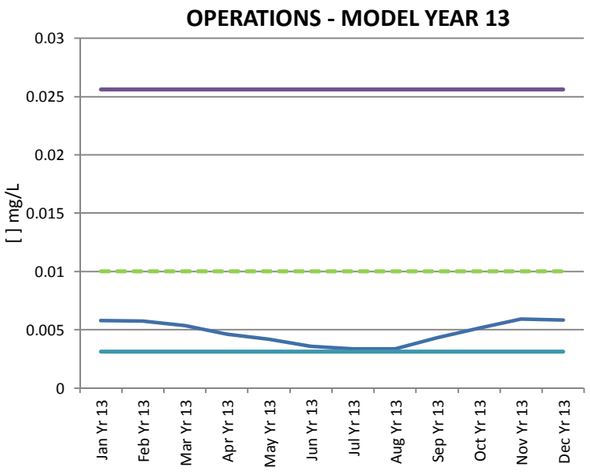
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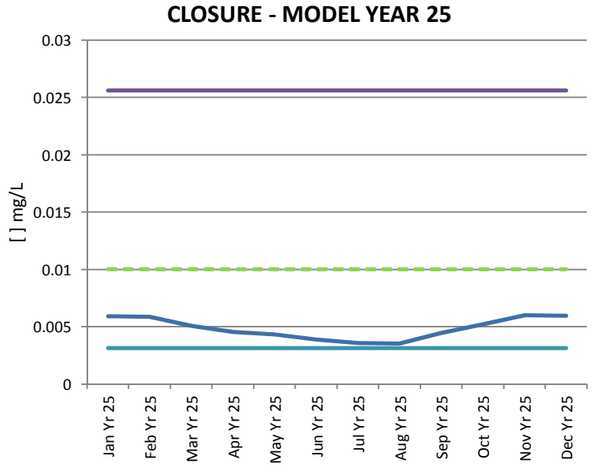
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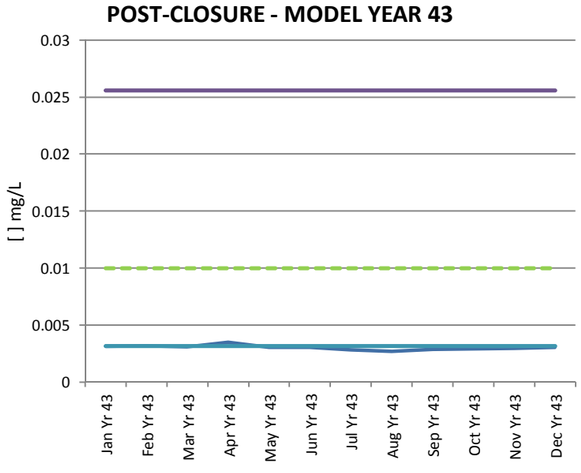
FIGURE 5.20

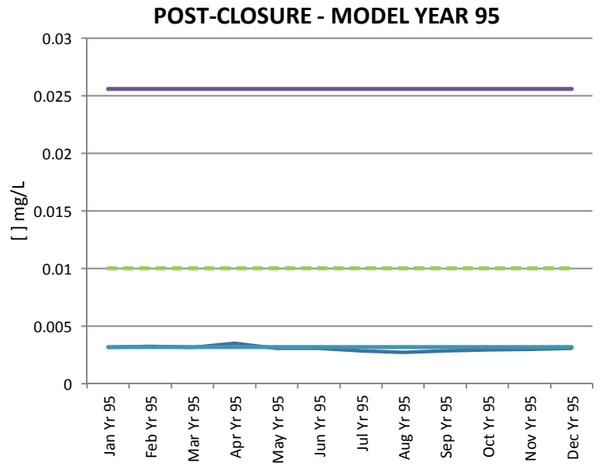
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NOTES:

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KGHM AJAX INC.

AJAX PROJECT

PCDP - PREDICTED COPPER CONCENTRATIONS - BASE CASE

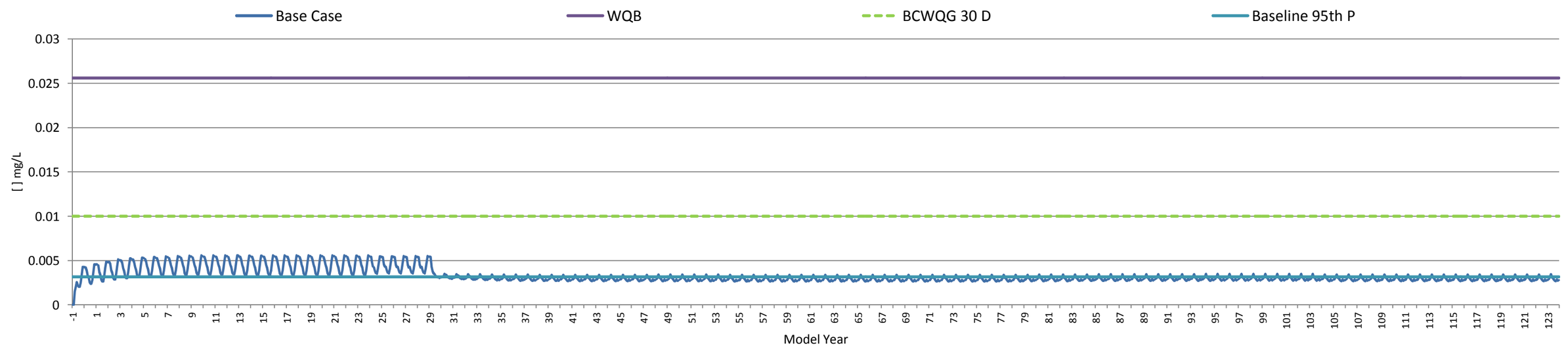
Knight Piésold CONSULTING

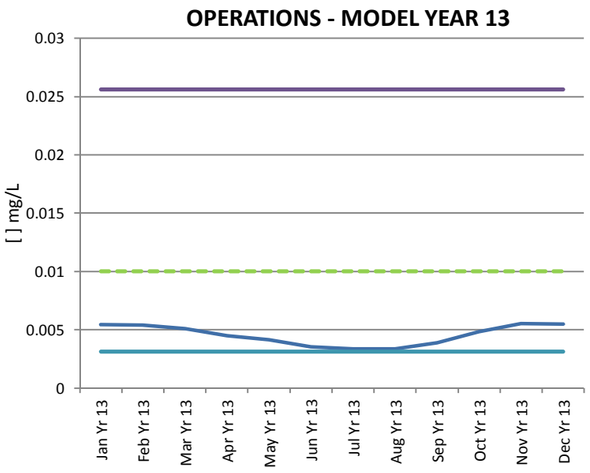
P/A NO. VA101-246/31

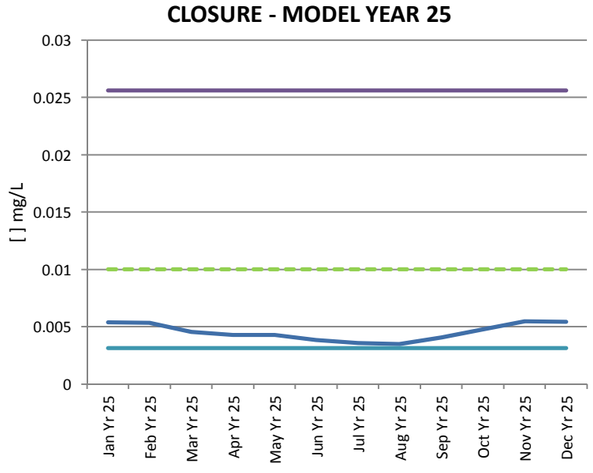
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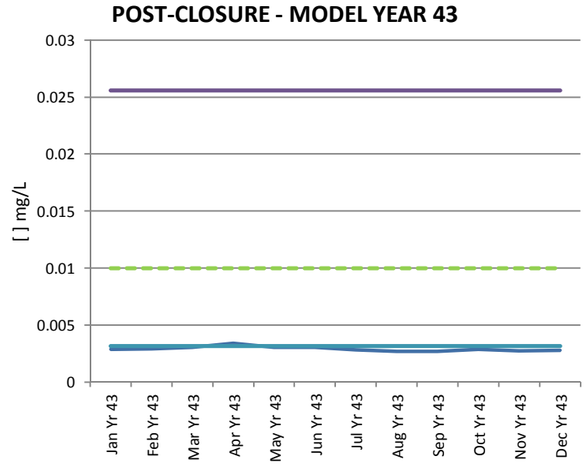
FIGURE 5.21

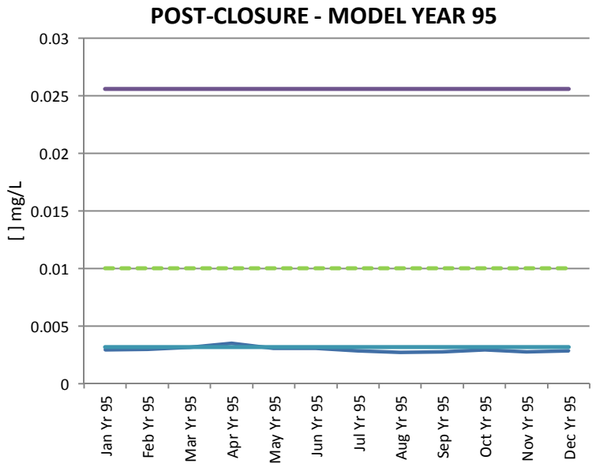
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
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5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.

REV	DATE	DESCRIPTION	PREP'D	APP'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

PC02.3 - PREDICTED COPPER CONCENTRATIONS - BASE CASE

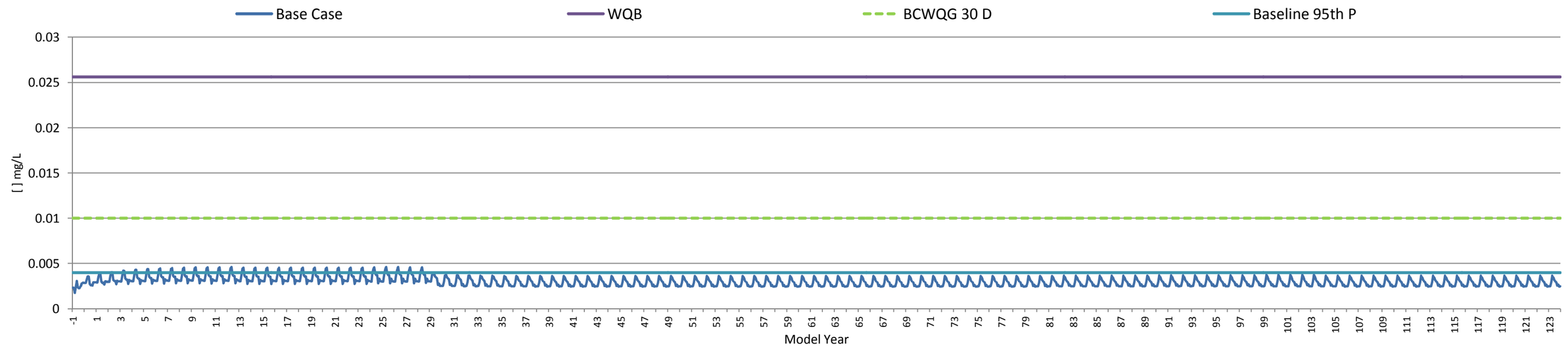
Knight Piésold CONSULTING

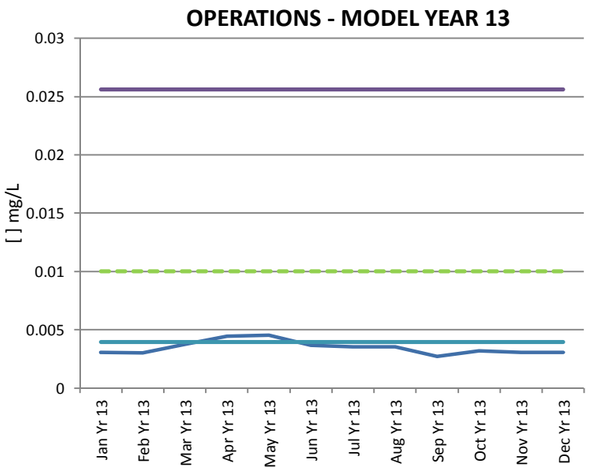
P/A NO. VA101-246/31

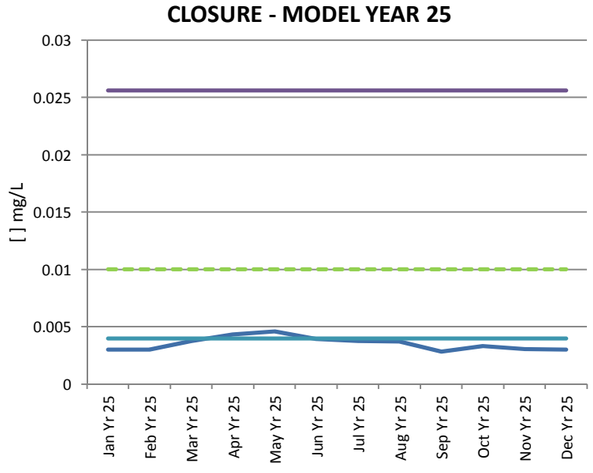
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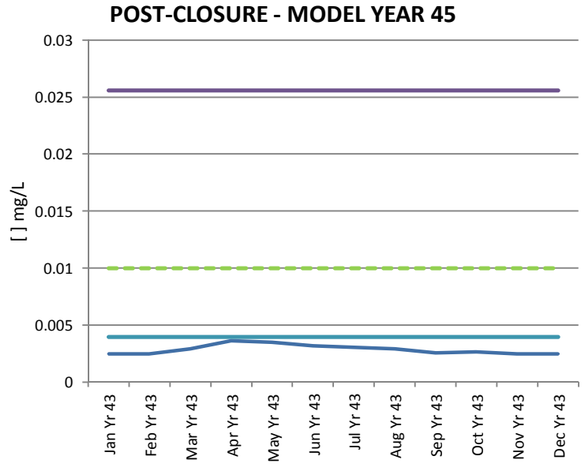
FIGURE 5.22

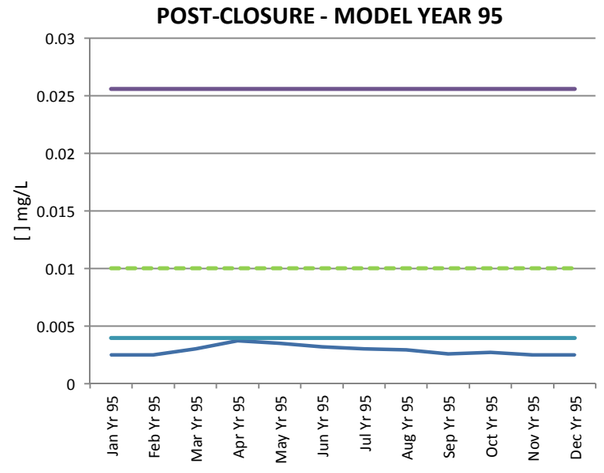
REV 0











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0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

PC02 - PREDICTED COPPER CONCENTRATIONS - BASE CASE

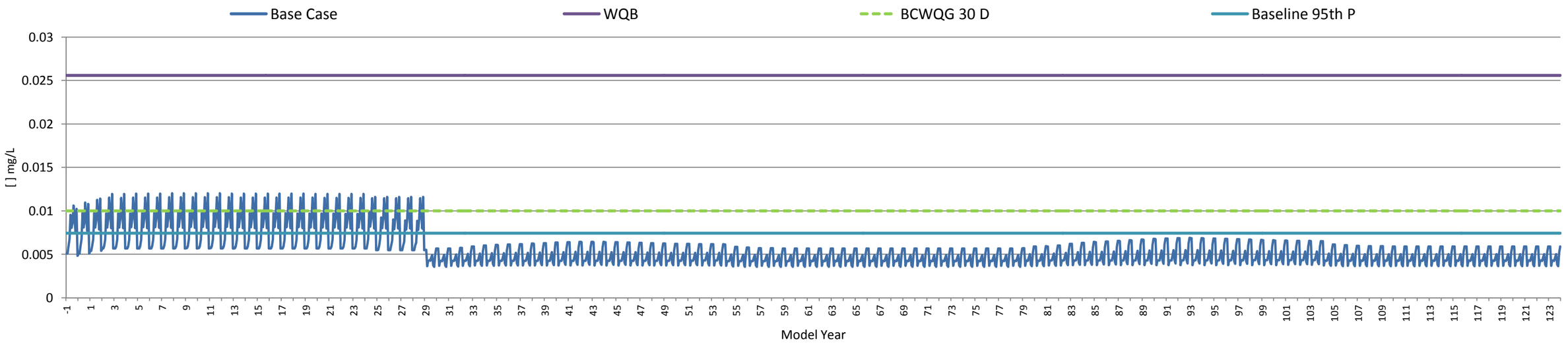
Knight Piésold CONSULTING

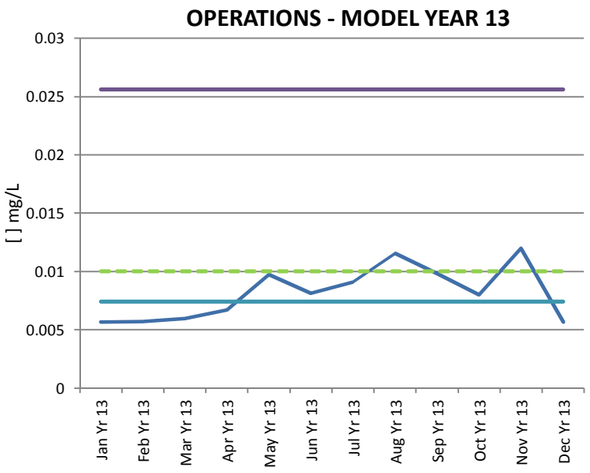
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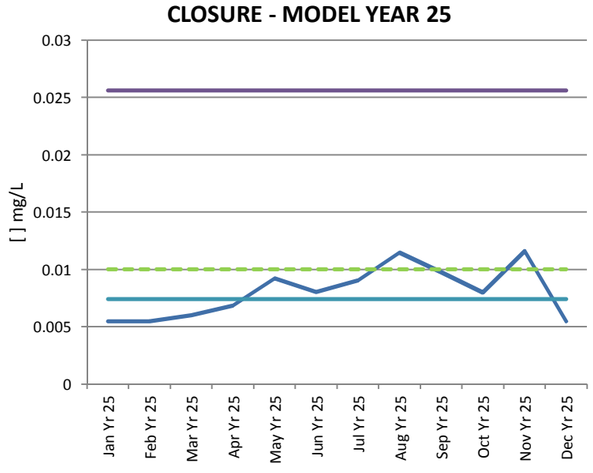
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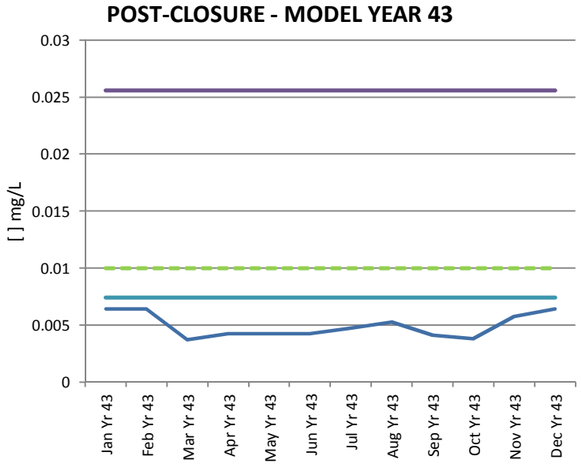
FIGURE 5.23

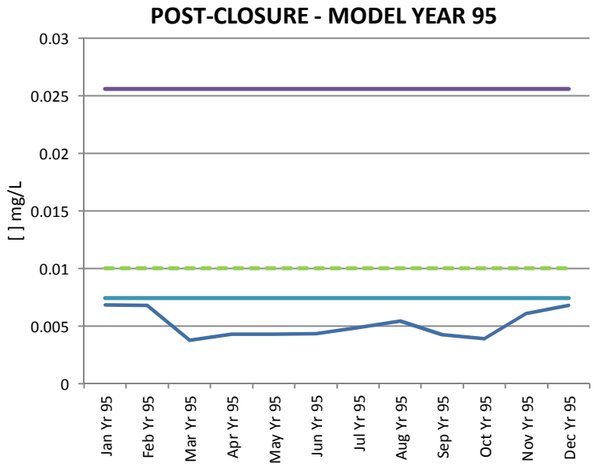
REV 0











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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK - PREDICTED COPPER CONCENTRATIONS - BASE CASE

Knight Piésold CONSULTING

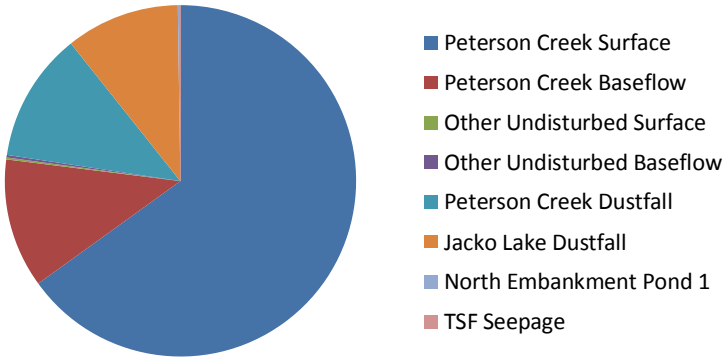
P/A NO. VA101-246/31

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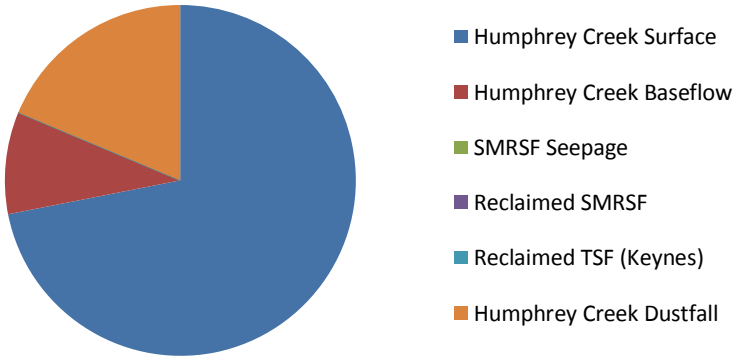
FIGURE 5.24

REV 0

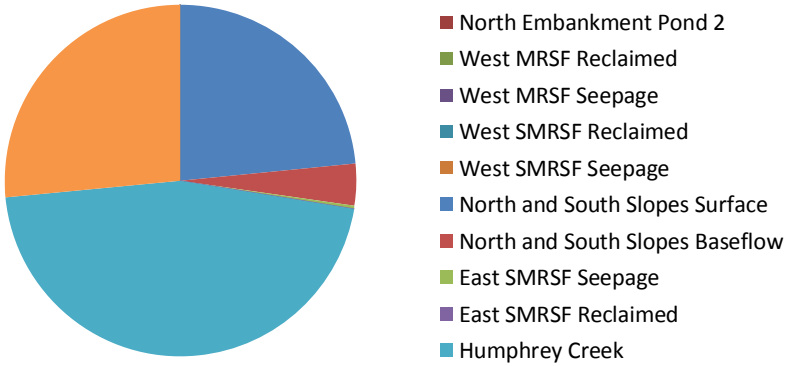
Jacko Lake



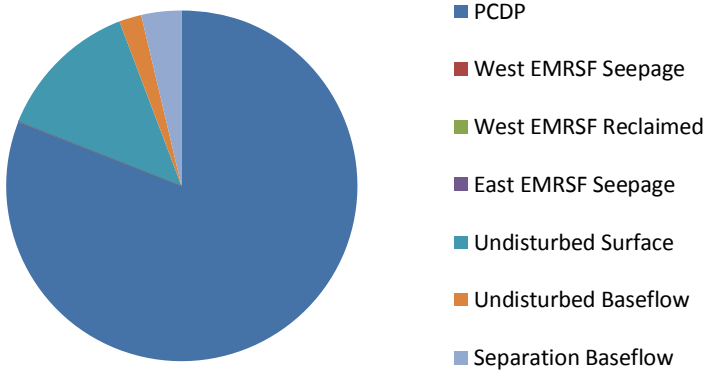
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:

1. MODELLED LOADS PRESENTED IN mg/MONTH FOR THE AVERAGE OF YEAR 13 OF OPERATIONS.
2. MODEL RESULTS DISPLAYED FOR DISSOLVED COPPER.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
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KGHM AJAX INC.

AJAX PROJECT

ANNUAL LOAD PROPORTION FOR COPPER DURING OPERATIONS

Knight Piésold CONSULTING

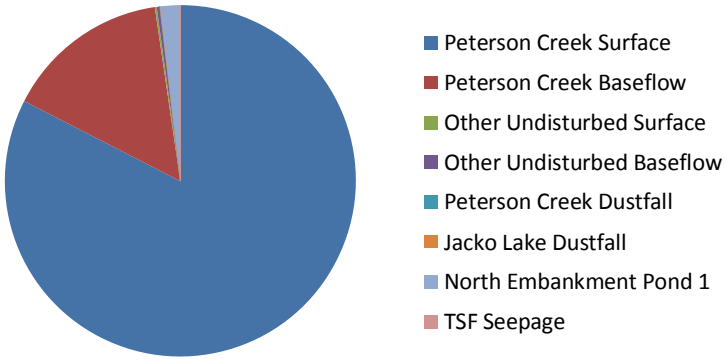
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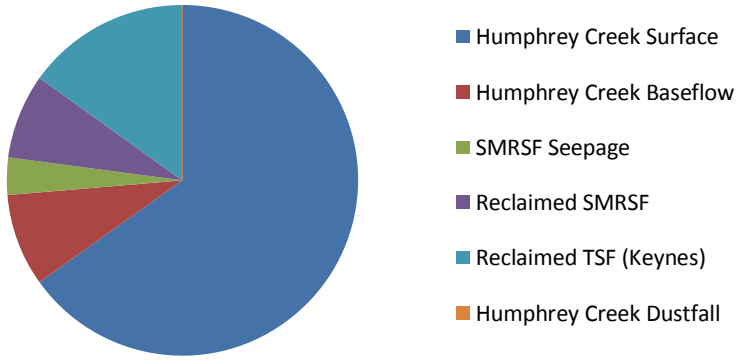
FIGURE 5.25

REV 0

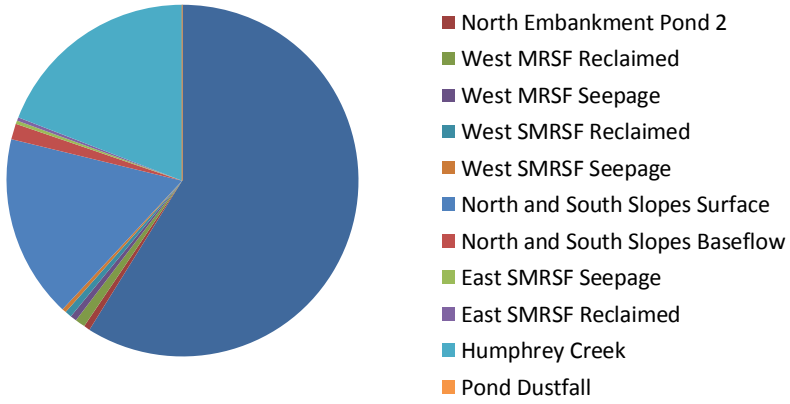
Jacko Lake



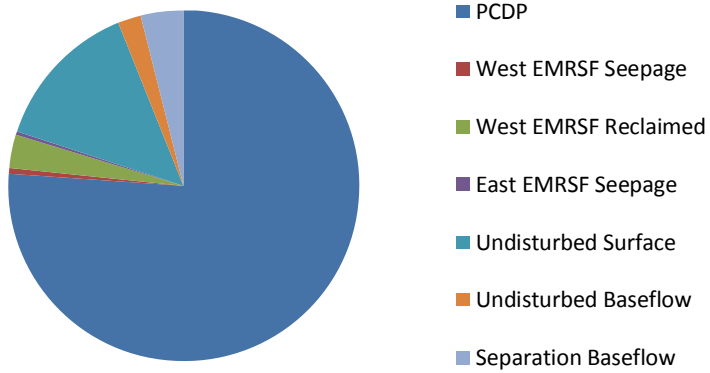
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:
1. MODELLED LOADS PRESENTED IN mg/MONTH FOR THE AVERAGE OF A TYPICAL POST CLOSURE YEAR.
2. MODEL RESULTS DISPLAYED FOR DISSOLVED COPPER.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

ANNUAL LOAD PROPORTION FOR COPPER DURING POST CLOSURE

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 4

FIGURE 5.26

REV 0

5.3.5 Molybdenum

Seasonal and spatial trends in baseline molybdenum concentrations are evident in the Peterson Creek watershed. Seasonally, molybdenum concentrations were typically highest in March, were sustained at comparable but slightly lower concentrations for a couple of months and then decreased quickly to lower concentrations that were sustained through the fall and winter months. Spatially, molybdenum baseline concentrations were highest at PC03 during the lower flow months and the freshet and steadily decreased with distance downstream. However, molybdenum concentrations at PC03 were generally lower than the downstream sites from late May through October. Humphrey Creek molybdenum concentrations were also higher in March and the following months, but the concentrations in this creek were higher under low flow conditions than in Peterson Creek, indicating that molybdenum loading from surface runoff and groundwater baseflow contributions in Humphrey Creek is similar. Samples from PC03, collected in March through May, typically exceeded BCWQG-Wildlife and BCWQG-Livestock (0.05 mg/L) but remained well below the 1 mg/L BCWQG-30 D.

Predicted molybdenum concentrations are affected by seepage from the TSF and MRSFs and due to seepage delay assumptions, the majority of the seepage loads from infiltration through the un-reclaimed (Operations) MRSFs to Peterson Creek and Humphrey Creek affect water quality in Decommissioning and Closure and Post Closure, resulting in higher predicted concentrations in these later mine phases. Highest Base Case concentrations are predicted for Humphrey Creek, though during Operations, the predicted concentrations are similar to baseline concentrations. The seasonality is similar for all of the Peterson Creek water quality assessment locations, with slightly higher concentrations predicted in April of each year and lowest in August. Seasonality in Humphrey Creek predicted molybdenum concentrations differs between Decommissioning and Closure and Post Closure, with higher concentrations during the winter months that are the result of seepage from the SMRSF and a sharp decrease in concentration in March due to increased runoff to the Humphrey Creek catchment from the reclaimed surface of the TSF. A direct comparison of predicted molybdenum concentrations for the Peterson Creek watershed assessment locations for annual time-frames in each mine phase are provided on Figure 5.27.

Peak molybdenum Base Case model concentrations in Humphrey Creek exceed the BCWQG-Wildlife and BCWQG-Livestock and are predicted to remain below this guideline at all other receiving water quality model assessment locations. Although predicted molybdenum concentrations do not exceed the BCWQG-30 D at any assessment location, a WQB protective of sensitive wildlife and livestock was developed for molybdenum, considering the predicted concentrations in Humphrey Creek in excess of the BCWQG–Wildlife. Based on the estimated maximum water consumption of beef cow, which are present on the Project area, a WQB of 0.18 mg/L was determined for molybdenum, which is also protective of other wildlife species that have lower water requirements and forage over a larger area (Stantec 2015b). No molybdenum concentrations are predicted to exceed the WQB in any assessment location for the Base Case model.

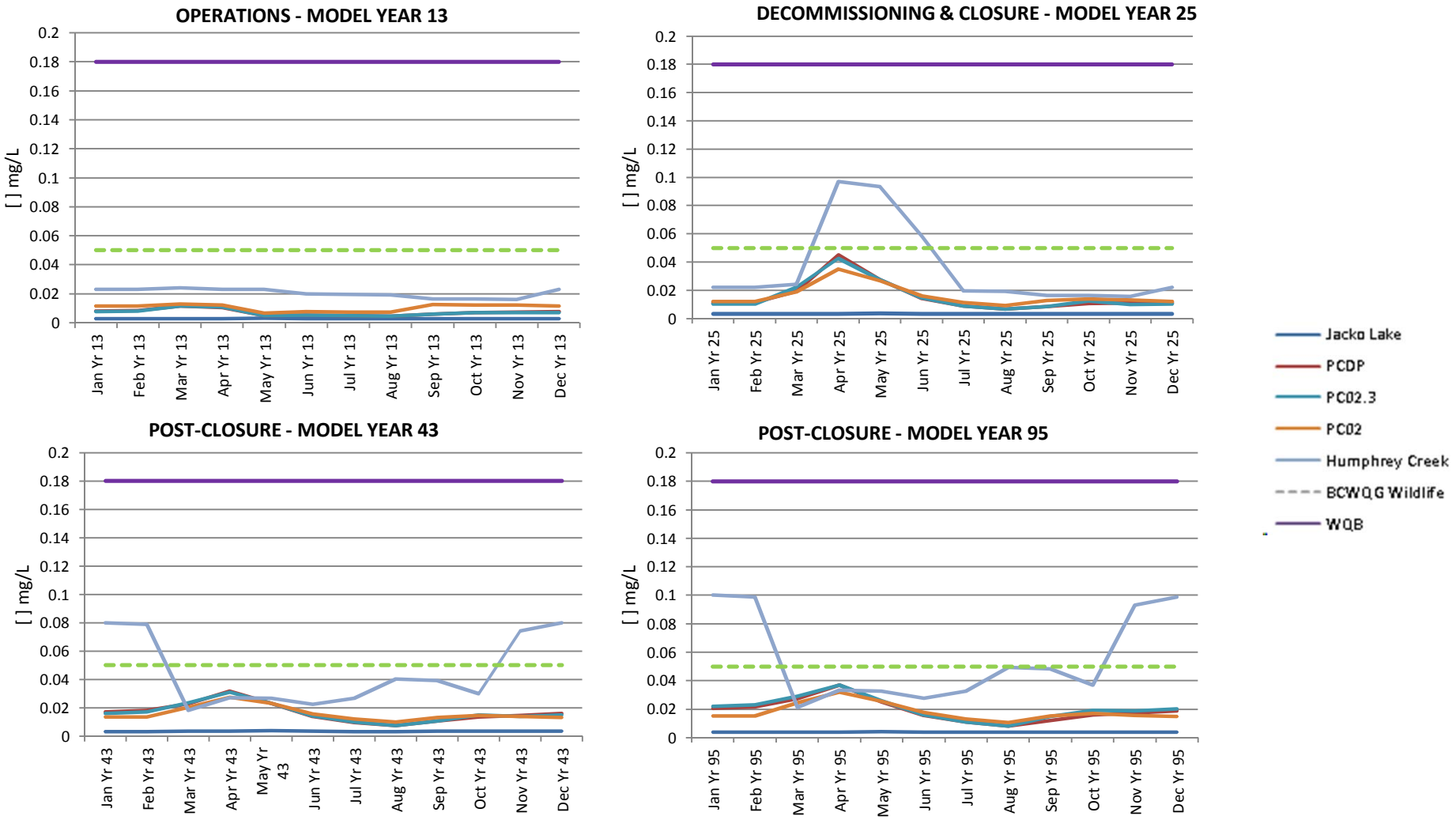
Molybdenum time-series graphs for Jacko Lake, PCDP, PC02.3, PC02, and Humphrey Creek for the Base Case model are presented on Figure 5.28 through Figure 5.32, respectively. Molybdenum time-series graphs for all sensitivity models are provided in Appendix D6, Appendix E6, Appendix F6, Appendix G6, and Appendix H6 for Jacko Lake, PCDP, PC02.3, PC02, and Humphrey Creek, respectively.

Predicted molybdenum concentrations at all assessment locations are sensitive to variation in model assumptions that result in changes to seepage loads and baseline inputs. A comparison of sensitivity model molybdenum concentrations revealed that the highest concentrations for each assessment location were predicted during Post Closure, but the sensitivity case that resulted in those peak concentrations varied between assessment locations and was often different between mine phases. The WQB was exceeded for the 95th P VCC summary results for three months in Post Closure at PC02.3 and 12 months in Humphrey Creek, which is low considering the Post Closure model phase is 97 years. For all parameters that are predicted to receive loading from MRSF seepage, higher VCC model results are predominantly due to the influence of seepage, assumptions for timing of seepage arrival, and the associated timing of monthly model precipitation inputs that generate the loading at the sources (MRSFs) and the runoff in the receiving water assessment location. The geochemical source terms were developed specifically for the average climate case model and have been conservatively applied to the VCC models, such that the source loading predicted for wetter than average months is higher than that which would realistically occur (see section 4.2).

In the model it is common for a higher than average month for source loading (wet month in historical climate record) to reach a Peterson Creek receiving water assessment location on a time delay associated with a lower than average receiving water flow month (due to drier conditions in the historical climate record) and the combined model outcome is higher concentrations than would be expected. Conservative assumptions regarding seepage interactions with groundwater were made. Mine source seepage to groundwater is not mixed with local groundwater in mixing cells along the flow pathway, it is dealt with in terms of timing delays, so receiving water loads are equivalent to source loading for the same calendar month for a set time earlier in the model. In reality, groundwater discharge to local creeks would be a combination of small amounts of mine seepage with larger amounts of local groundwater, resulting in a more diffuse loading than is currently modelled and concentrations are not likely to reach those predicted in the upper percentile VCC summary results.

Jacko Lake water quality predictions were assessed to be most sensitive (highest concentrations predicted) to adjustments related to higher hydraulic conductivity (High HC SC) in Decommissioning and Closure and Post Closure, with greater seepage loads reaching the lake. Baseline sensitivity modelling resulted in the maximum concentrations in Jacko Lake during Operations. It should be noted that the range in predicted molybdenum concentrations in Jacko Lake is narrow and these concentrations are often barely discernable on the graphs. Humphrey Creek maximum predicted sensitivity case molybdenum concentrations resulted from baseline adjustments in Operations, higher hydraulic conductivity in Closure, and VCC models in Post Closure.

Sources of molybdenum loading in Operations are predominantly natural sources, although mining sources (seepage) account for a portion of molybdenum loading to Jacko Lake. In Post Closure, mining sources (seepage and runoff from reclaimed areas) account for a larger portion of molybdenum loading to Jacko Lake and make up the majority of molybdenum loading to Humphrey Creek, but natural catchment contributions are still predominant at all assessment locations in this mine phase. Simplified annual pie charts illustrating the proportion of total molybdenum loads at Jacko Lake, PCDP, PC02, and Humphrey Creek are presented on Figure 5.33 and Figure 5.34 for Operations and Post Closure, respectively.



NOTES:

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KGHM AJAX INC.

AJAX PROJECT

MOLYBDENUM - PREDICTED SEASONALITY IN PETERSON CREEK WATERSHED - BASE CASE

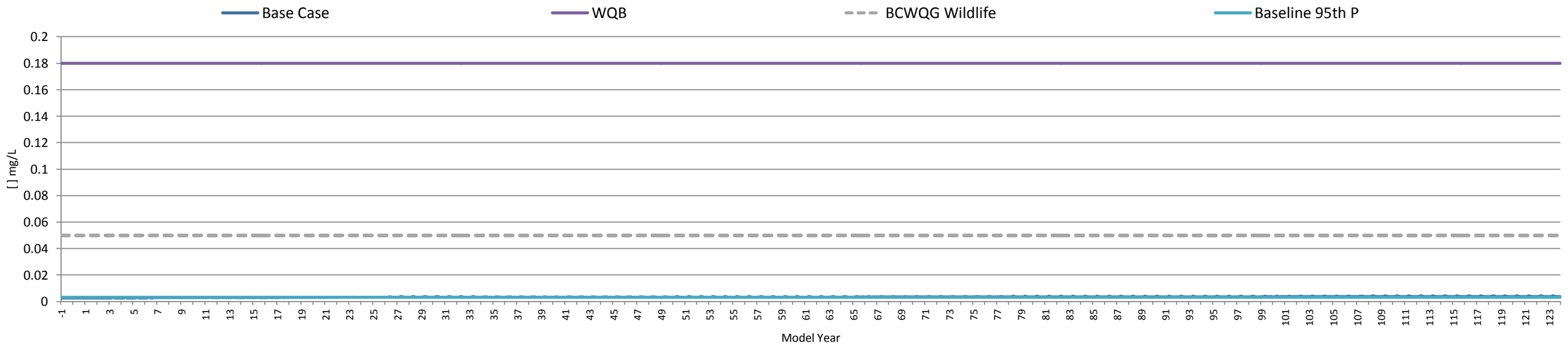
Knight Piésold CONSULTING

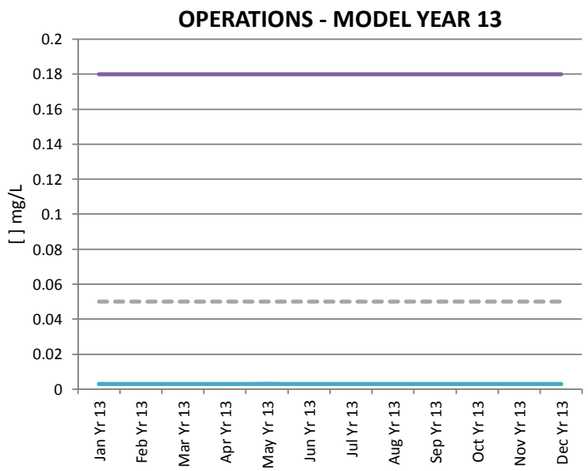
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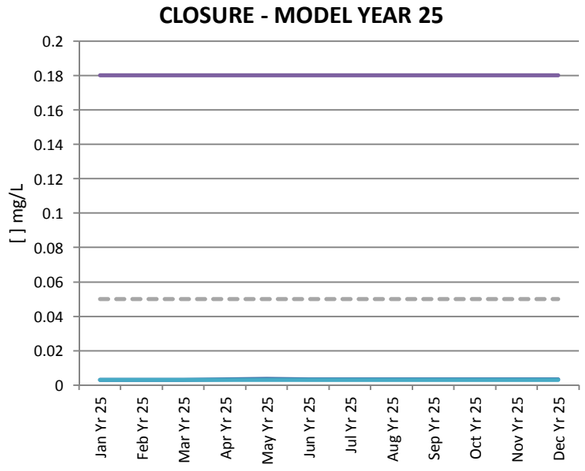
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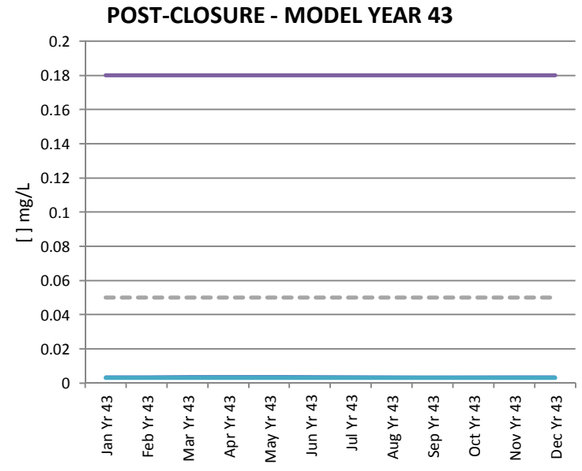
FIGURE 5.27

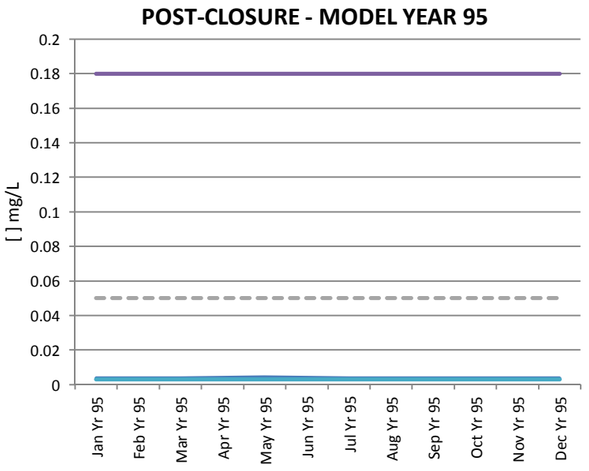
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NOTES:

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE - PREDICTED MOLYBDENUM CONCENTRATIONS - BASE CASE

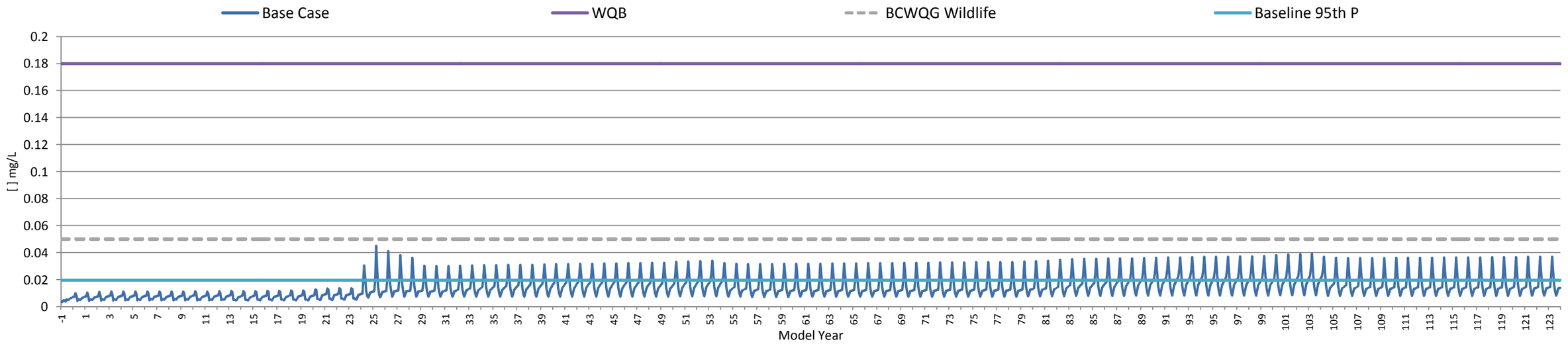
Knight Piésold CONSULTING

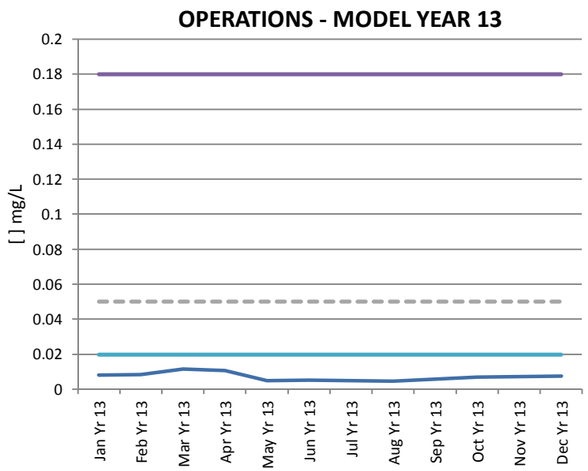
P/A NO. VA101-246/31

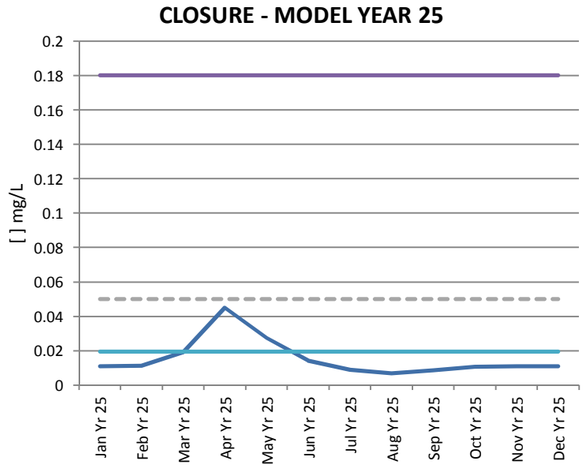
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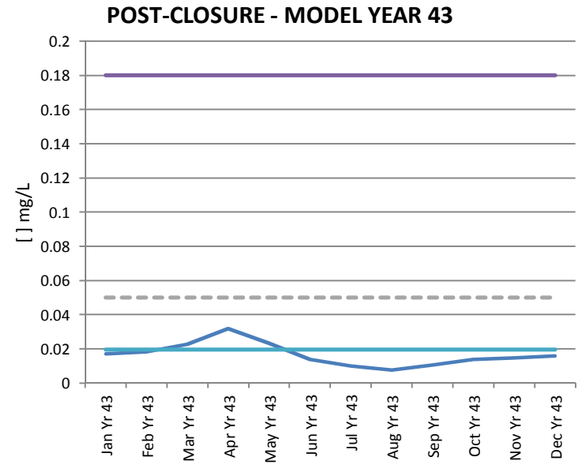
FIGURE 5.28

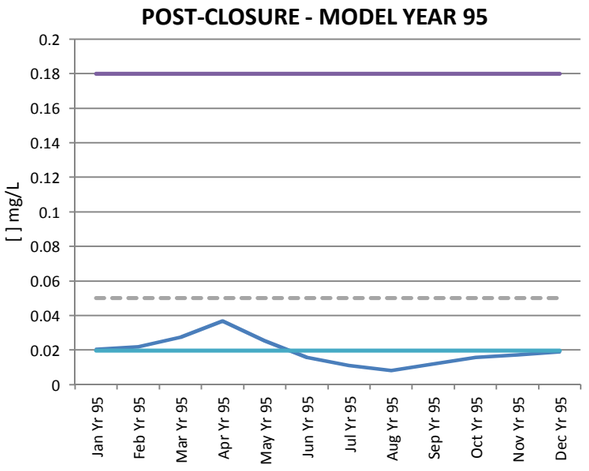
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.

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KGHM AJAX INC.

AJAX PROJECT

PCDP - PREDICTED MOLYBDENUM CONCENTRATIONS - BASE CASE

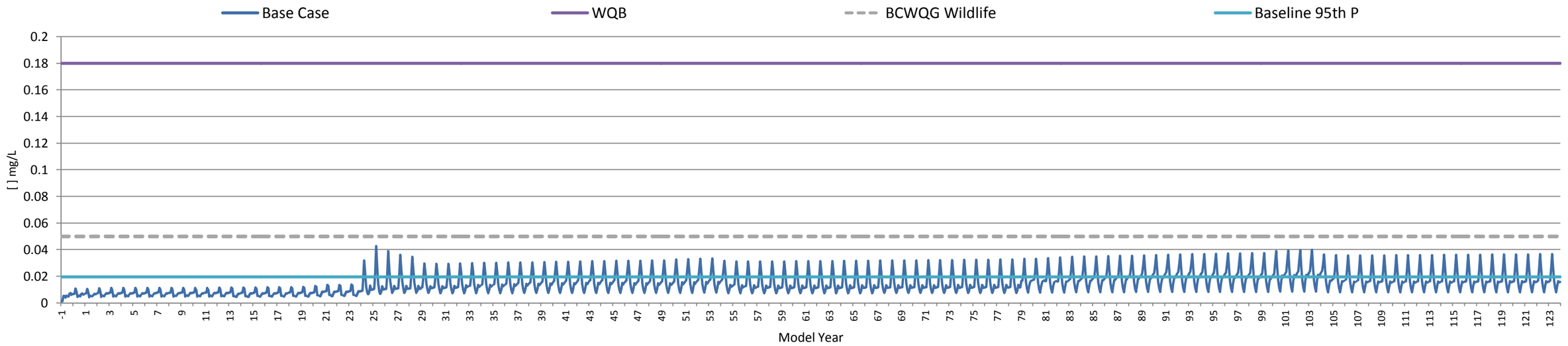
Knight Piésold CONSULTING

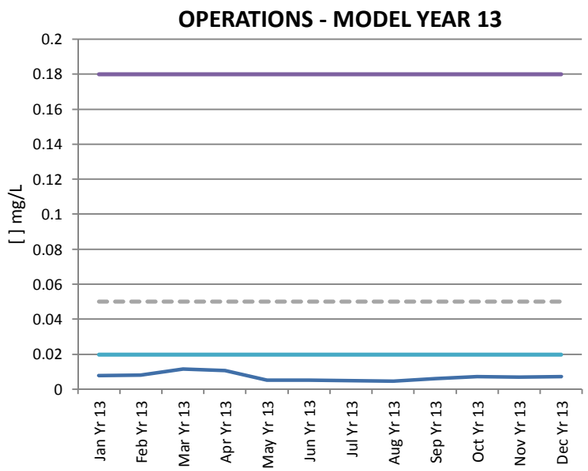
P/A NO. VA101-246/31

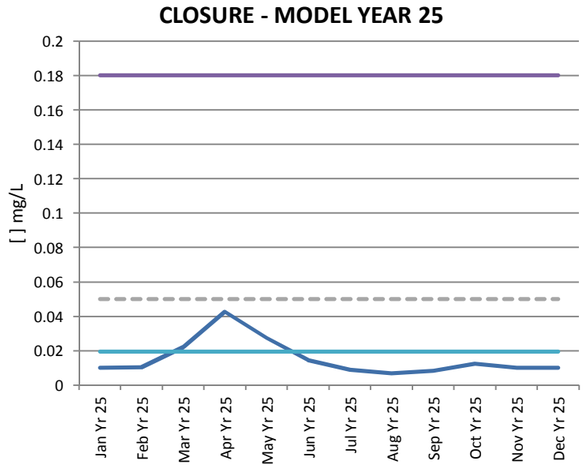
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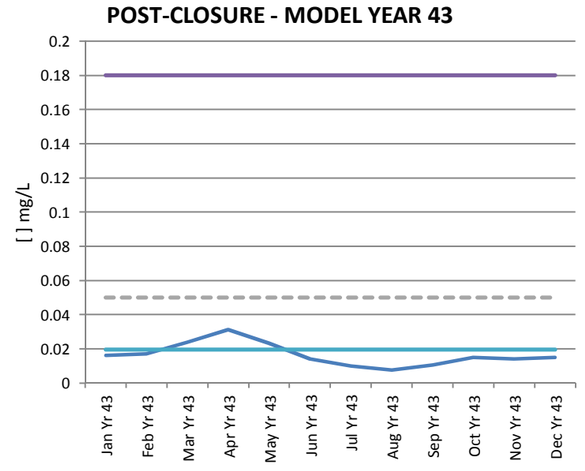
FIGURE 5.29

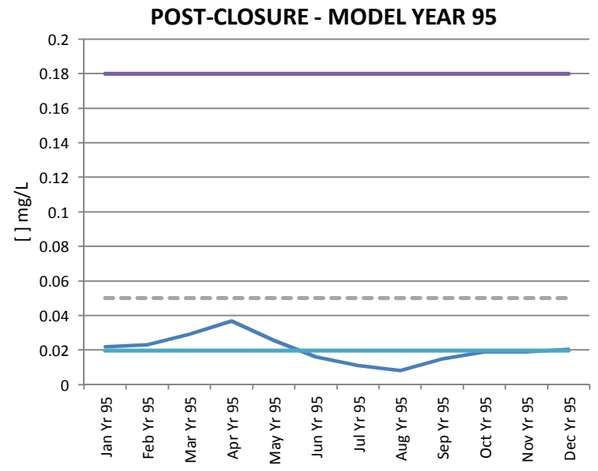
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NOTES:

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6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.

REV	DATE	DESCRIPTION	PREP'D	APP'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

PC02.3 - PREDICTED MOLYBDENUM CONCENTRATIONS - BASE CASE

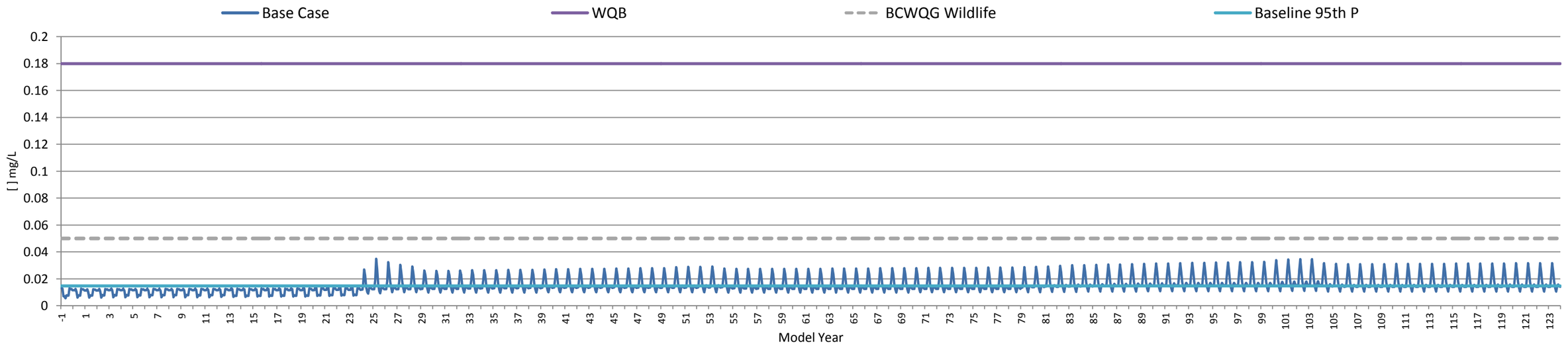
Knight Piésold CONSULTING

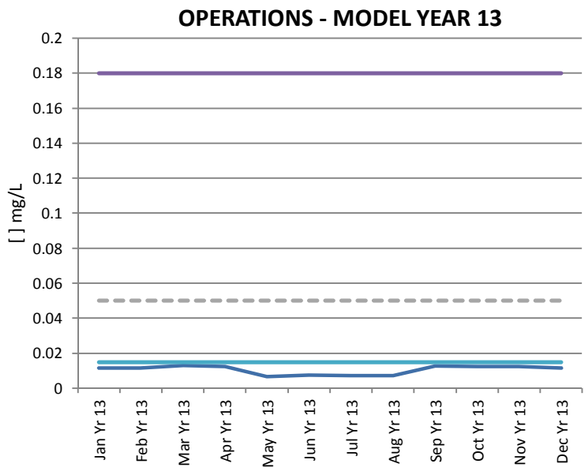
P/A NO. VA101-246/31

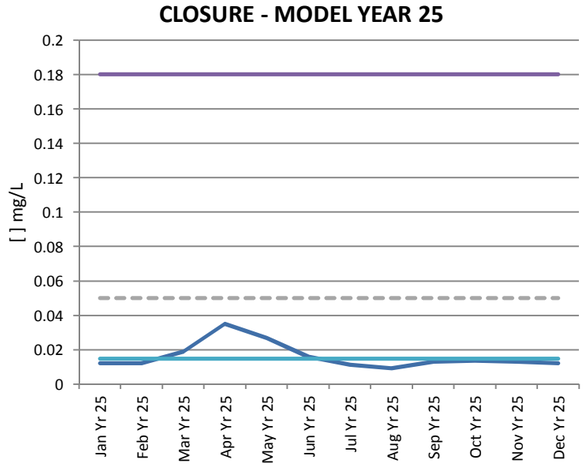
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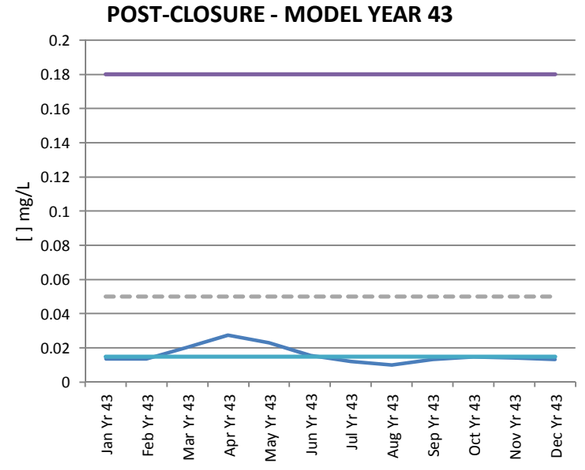
FIGURE 5.30

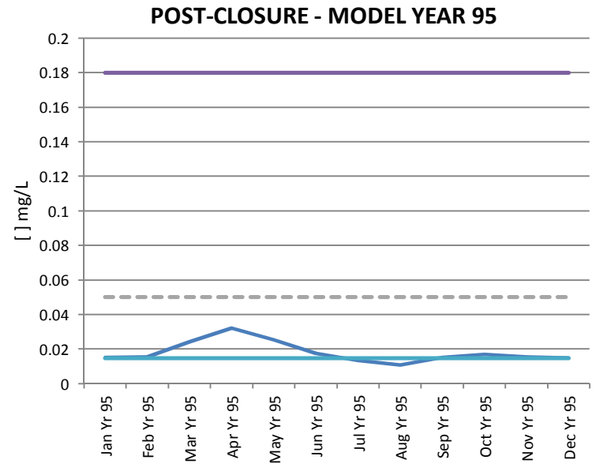
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NOTES:

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REV	DATE	DESCRIPTION	PREP'D	APP'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

PC02 - PREDICTED MOLYBDENUM CONCENTRATIONS - BASE CASE

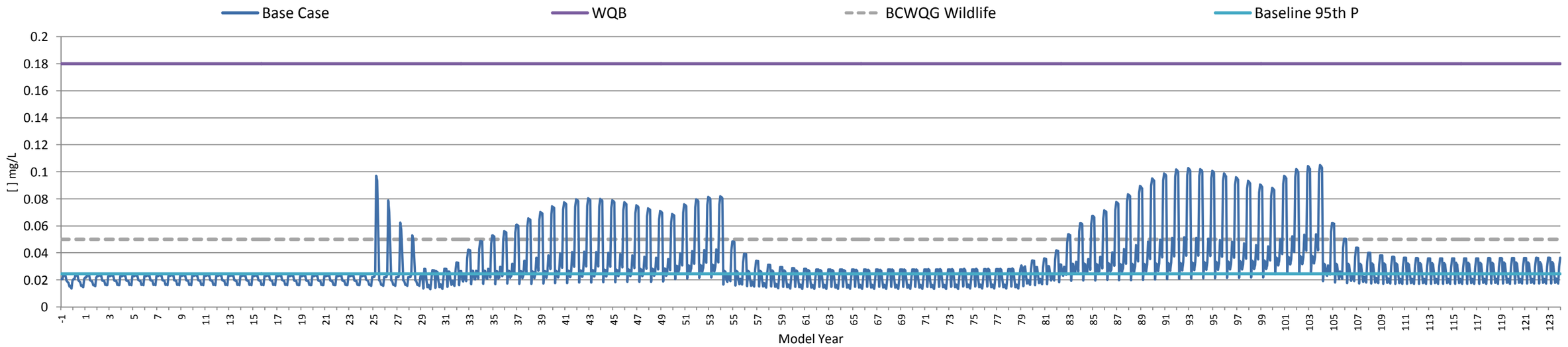
Knight Piésold CONSULTING

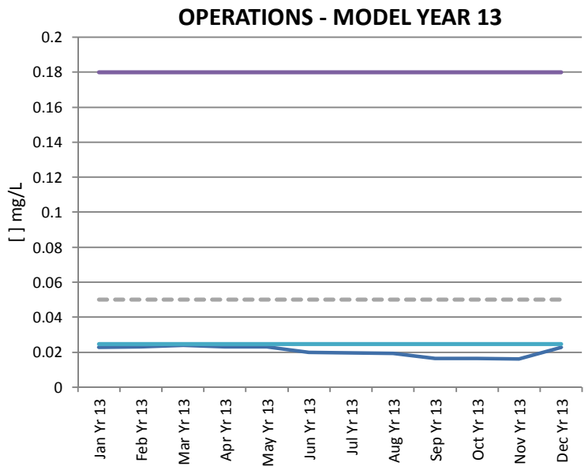
P/A NO. VA101-246/31

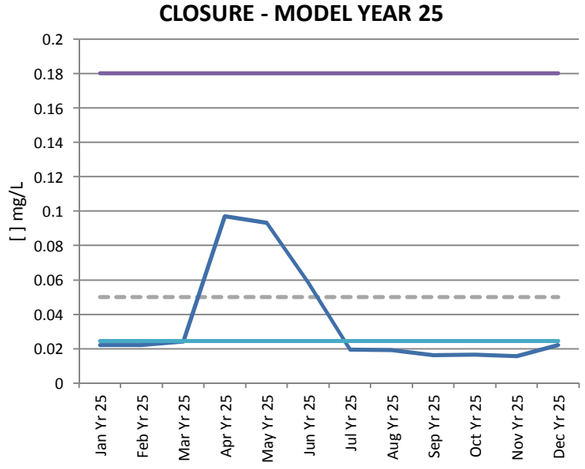
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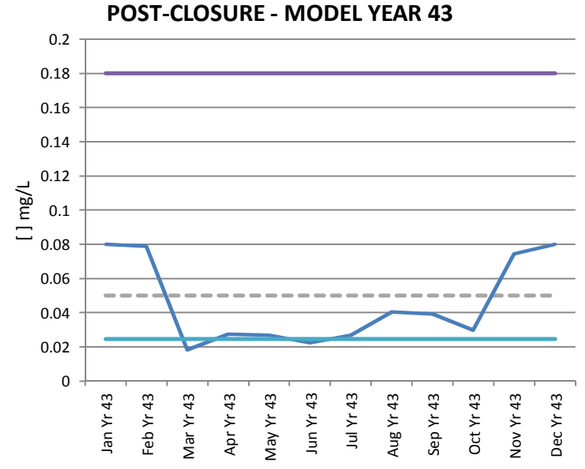
FIGURE 5.31

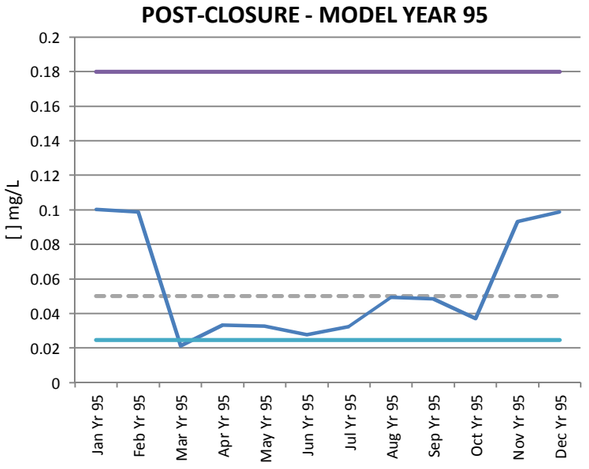
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
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REV	DATE	DESCRIPTION	PREP'D	APP'D
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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK - PREDICTED MOLYBDENUM CONCENTRATIONS - BASE CASE

Knight Piésold CONSULTING

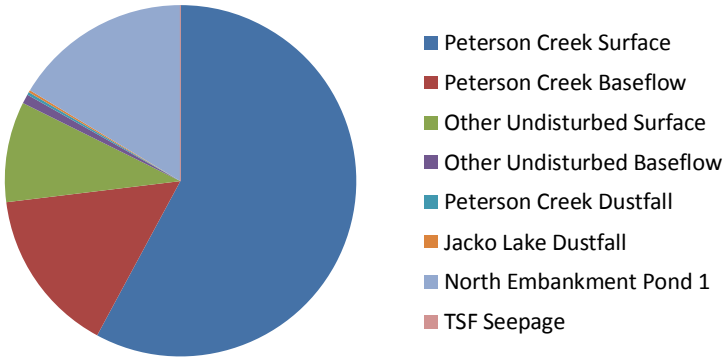
P/A NO. VA101-246/31

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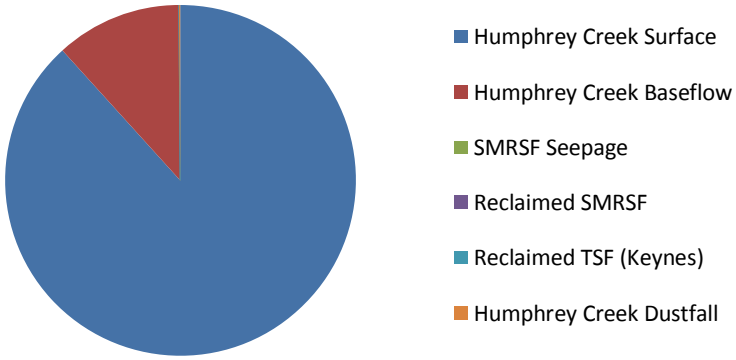
FIGURE 5.32

REV 0

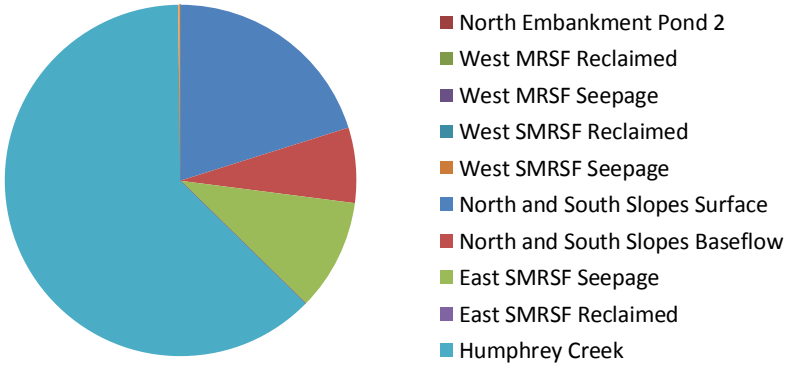
Jacko Lake



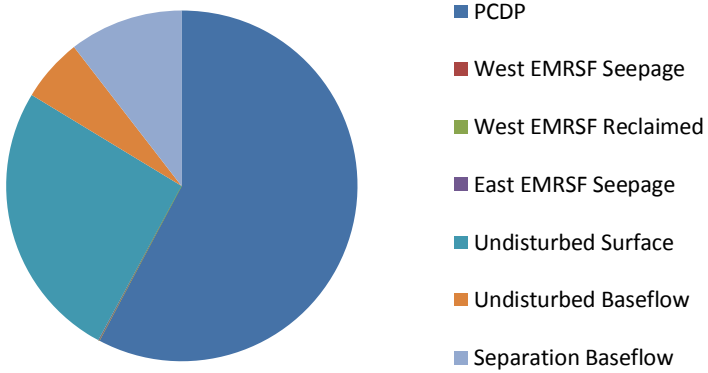
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:

1. MODELLED LOADS PRESENTED IN mg/MONTH FOR THE AVERAGE OF YEAR 13 OF OPERATIONS.
2. MODEL RESULTS DISPLAYED FOR DISSOLVED MOLYBDENUM.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

ANNUAL LOAD PROPORTION FOR MOLYBDENUM DURING OPERATIONS

Knight Piésold CONSULTING

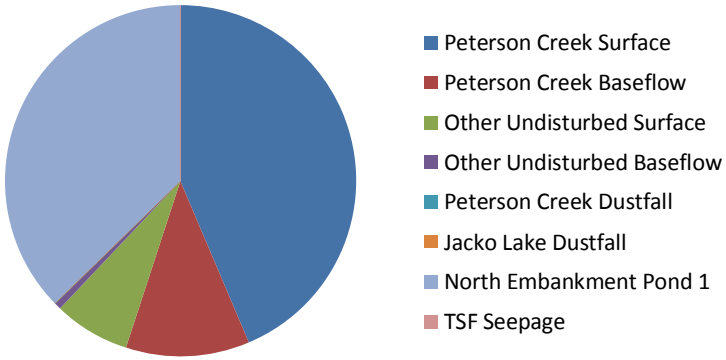
P/A NO. VA101-246/31

REF. NO. 4

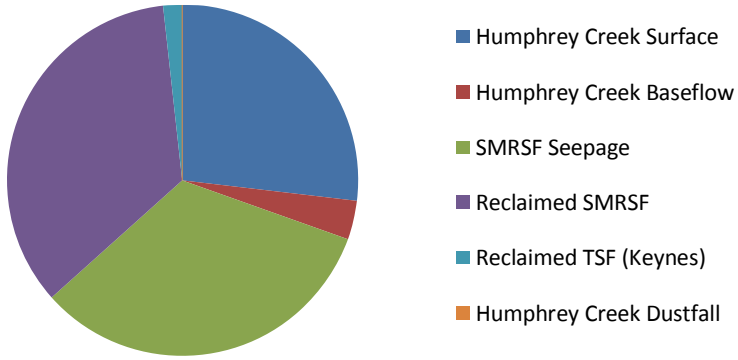
FIGURE 5.33

REV 0

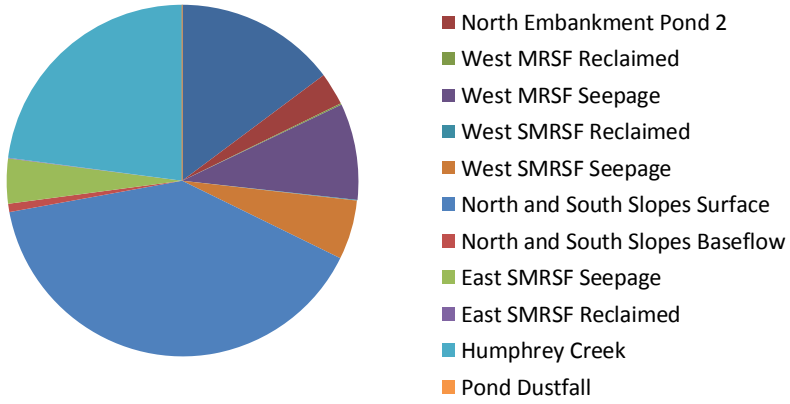
Jacko Lake



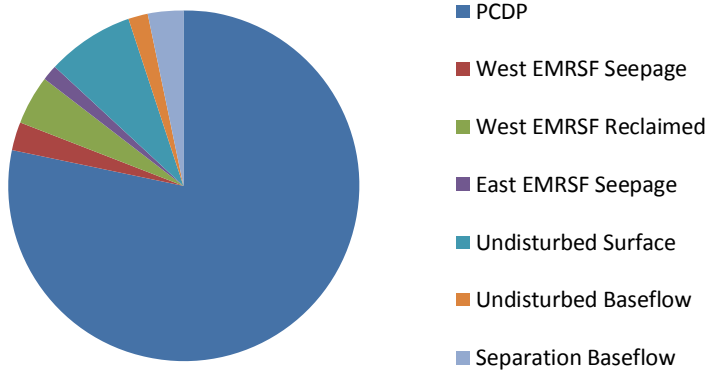
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:
1. MODELLED LOADS PRESENTED IN mg/MONTH FOR THE AVERAGE OF A TYPICAL POST CLOSURE YEAR.
2. MODEL RESULTS DISPLAYED FOR DISSOLVED MOLYBDENUM.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

ANNUAL LOAD PROPORTION FOR MOLYBDENUM DURING POST CLOSURE

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 4

FIGURE 5.34

REV 0

5.3.6 Selenium

Selenium samples analyzed prior to October 2011 had higher analytical MDLs and the majority of the data collected prior to that date have been excluded from the model and baseline characterization due to the predominance of high non-detect results. Seasonal and spatial trends for baseline selenium concentrations in Peterson Creek and Humphrey Creek were evident; concentrations were typically higher in samples collected in late winter/early spring, under lower flow conditions and concentrations increased with distance downstream. Peak concentrations were typically measured in samples collected in March in Humphrey Creek and in April in Peterson Creek. Baseline sample concentrations frequently exceeded the BCWQG-30 D at PC02 and lower Humphrey Creek. The highest baseline concentrations were reported for samples from lower Humphrey Creek and some samples exceeded the WQB developed for selenium. Selenium was one of the parameters that was often represented by negative concentrations in the baseline calibration model; and as a result of the conservative assumptions used to address this factor, the baseline contributions in the model are higher than would realistically occur, particularly in April and May at PC02 and in March and April at PC02.3, adding a conservative factor to predictions for this parameter. The calibration results for the Base Case model inputs for selenium are shown on Figure 4.4.

Spatial and seasonal trends in predicted selenium concentrations were similar to baseline trends at the Peterson Creek watershed model assessment locations. Higher selenium concentrations were predicted to be sustained through the duration of the low flow winter months in Humphrey Creek as opposed to the Peterson Creek assessment locations where concentrations predicted through these months were typically lower than the peak achieved just prior to spring freshet. Predicted selenium concentrations for Humphrey Creek during Operations were similar to baseline concentrations (model inputs), indicating that mine seepage and dustfall do not contribute to loading for this parameter. A slight change in the seasonality of predicted selenium concentrations is of note in Humphrey Creek between Decommissioning and Closure and Post Closure and in Post Closure predicted concentrations are lower in May and June than in previous mine phases. This is due to the influence of spring freshet runoff from the reclaimed TSF, which is directed to the Humphrey Creek watershed. Background (non-mine) loading sources were the dominant influence on selenium concentrations at all assessment locations, though the influence of seepage is apparent, particularly in Humphrey Creek. The highest predicted Base Case selenium concentrations are in Humphrey Creek in Post Closure as a result of the influence of seepage associated to long flow pathways from the SMRSF. Selenium was not predicted to exceed the BCWQG-30 D or the WQB under any model scenario in Jacko Lake.

A WQB was developed for selenium as a result of baseline surface water sample concentrations that exceeded the BCWQG-30 D (0.002 mg/L). A WQB of 0.0025 mg/L was developed for lentic systems (Jacko Lake and the PCDP) with consideration of higher bioavailability in slow flowing systems and a WQB of 0.005 mg/L was developed for lotic systems (Humphrey Creek and Peterson Creek) (Stantec 2015b). Base Case selenium concentrations are not predicted to exceed the WQB in any assessment location other than Humphrey Creek, and Base Case concentrations in the PCDP (next assessment location downstream of Humphrey Creek) are predicted to remain below the BCWQG-30 D and the WQB for the duration of the model. It should be noted that the 95th P baseline concentration for the lower Humphrey Creek is 0.0051 mg/L, which also exceeds the WQB. Peak

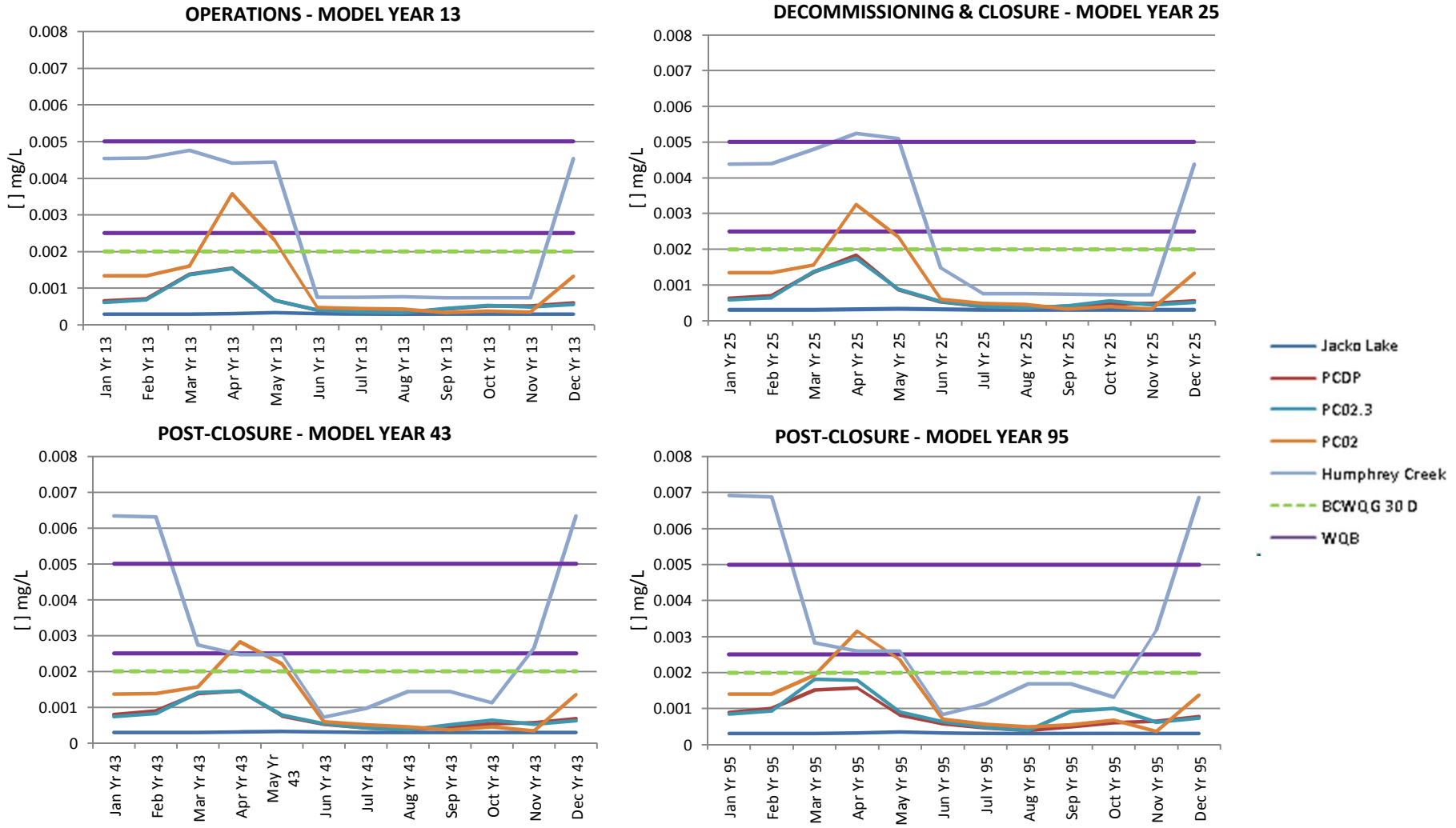
Base Case concentrations are predicted to seasonally exceed the BCWQG 30 D at PC02 (April and May of each year), but remain below the WQB.

The modelled selenium concentrations in the Peterson Creek watershed are provided for specific annual time-frames on Figure 5.35. Selenium time-series graphs for Jacko Lake, PCDP, PC02.3, PC02, and Humphrey Creek for the base case model are presented on Figure 5.36 through Figure 5.40, respectively. Selenium time-series graphs for all sensitivity models are provided in Appendix D7, Appendix E7, Appendix F7, Appendix G7, and Appendix H7 for Jacko Lake, PCDP, PC02.3, PC02, and Humphrey Creek, respectively.

Predicted selenium concentrations are sensitive to variation in baseline inputs to the models but are most sensitive to variable climate (VCC) inputs. Jacko Lake selenium water quality predictions were not sensitive to VCC inputs, but were most sensitive to the high hydraulic conductivity groundwater assumptions, which result in greater loading from the TSF and WMRSF. The Base Case and sensitivity case ranges in predicted concentrations are much greater at Peterson Creek watershed assessment locations below the PCDP than above. This is predominantly due to the influence of seepage, seepage timing, and the associated timing of monthly model precipitation inputs that generate the loading at the sources (MRSFs) and the runoff in the receiving water assessment location. The geochemical source terms were developed specifically for the average climate case model and have been conservatively applied to the VCC models, such that the source loading predicted for wetter than average months is higher than that which would realistically occur (see section 4.2). In the model it is common for a higher than average month for source loading to reach a Peterson Creek receiving water assessment location on a time delay associated with a lower than average receiving water flow month (due to drier conditions in the historic climate record) and the combined model outcome is much higher concentrations than would be expected. Conservative assumptions regarding seepage interactions with groundwater were made. Mine source seepage to groundwater is not mixed with local groundwater in mixing cells along the flow pathway, it is dealt with in terms of timing delays, so receiving water loads are equivalent to source loading for the same calendar month for a set time earlier in the model. In reality, groundwater discharge to local creeks would be a combination of small amounts of mine seepage with larger amounts of local groundwater, resulting in a more diffuse loading than is currently modelled and concentrations will not likely reach those predicted in the VCC summary results. There are predicted exceedances of the WQB for selenium at PC02 regularly in May in the 95th P summary results for the VCC models and at PC02.3 due to delayed seepage loading in Post Closure; as stated above, these maximum predicted concentrations are not expected, and are considered conservative. Baseline sensitivity case (BSC) model results for the 95th P baseline inputs are also conservative, given that these concentrations assume that all baseline contributions are at their near maximum for the duration of the model. They provide a valuable understanding of potential sensitivities but are not likely representative of future water concentrations.

The primary sources of selenium loading at all model assessment locations are natural catchment runoff and baseflow contributions. Seepage from proposed mine facilities is the second important source and is most dominantly noted for Jacko Lake, though the influence of seepage does not result in a predicted concentrations that exceed the BCWQG-30 D in the lake. In Post Closure, mining sources (seepage and runoff from reclaimed areas) account for a slightly larger portion of selenium loading to Jacko Lake, PCDP, and Humphrey Creek. Selenium loading sources to the PCDP are predominantly Humphrey Creek, thought there is a shift between Decommissioning and

Closure and Post Closure and Jacko Lake becomes an important loading source for water quality predictions in the PCDP. Simplified annual pie charts illustrating the proportion of total selenium loads at Jacko Lake, PCDP, PC02, and Humphrey Creek are presented on Figure 5.41 and Figure 5.42 for Operations and Post Closure, respectively.



NOTES:

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5. WATER QUALITY BENCHMARK (WQB).

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0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

SELENIUM - PREDICTED SEASONALITY IN PETERSON CREEK WATERSHED - BASE CASE

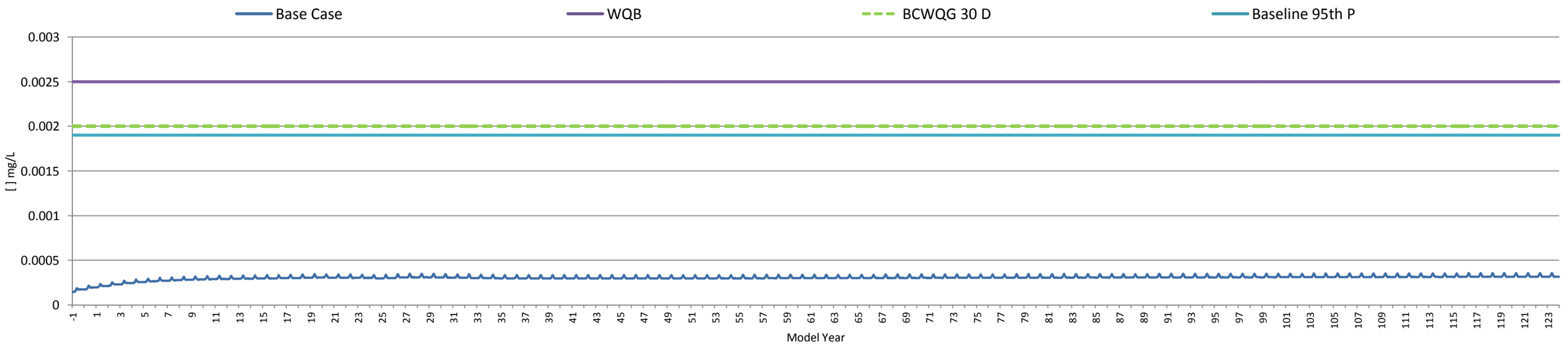
Knight Piésold CONSULTING

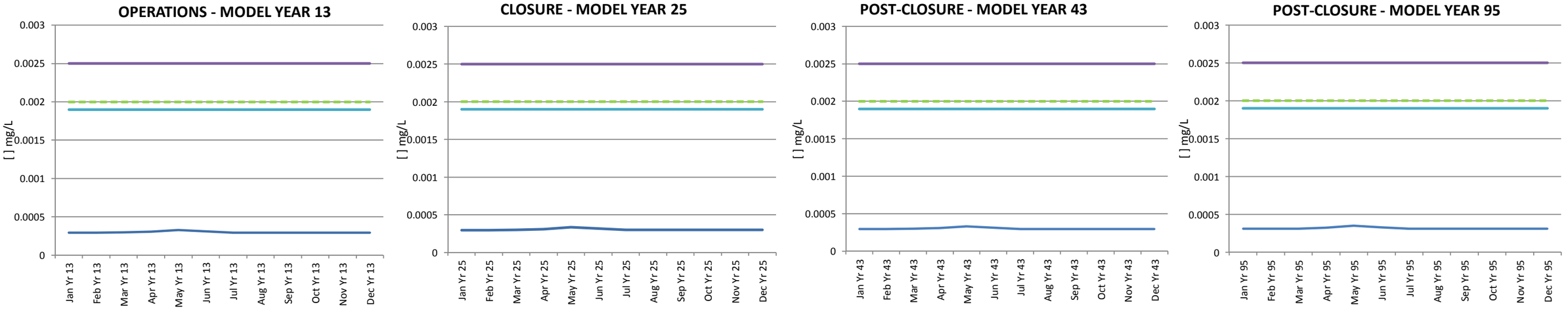
P/A NO. VA101-246/31

REF. NO. 4

FIGURE 5.35

REV 0





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.

REV	DATE	DESCRIPTION	PREP'D	APP'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE - PREDICTED SELENIUM CONCENTRATIONS - BASE CASE

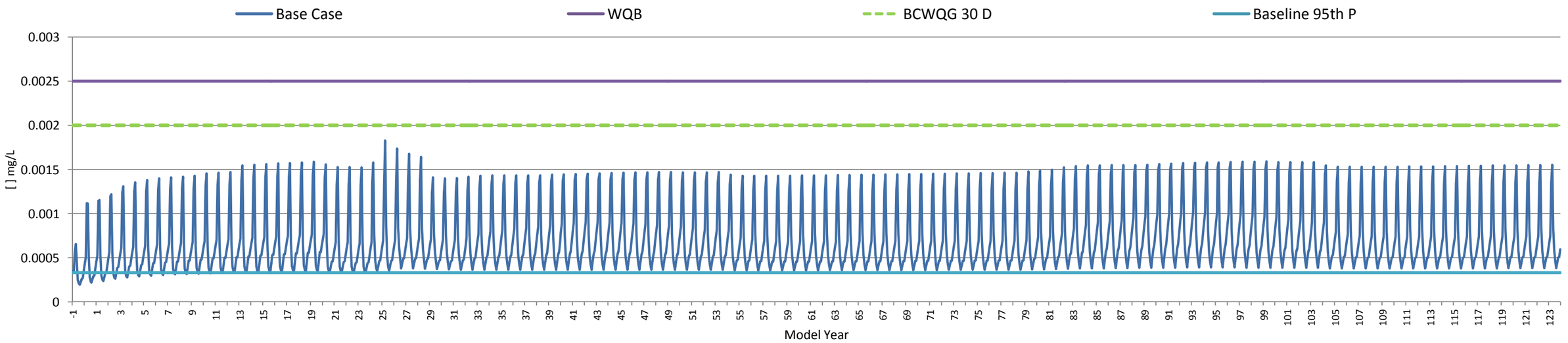
Knight Piésold CONSULTING

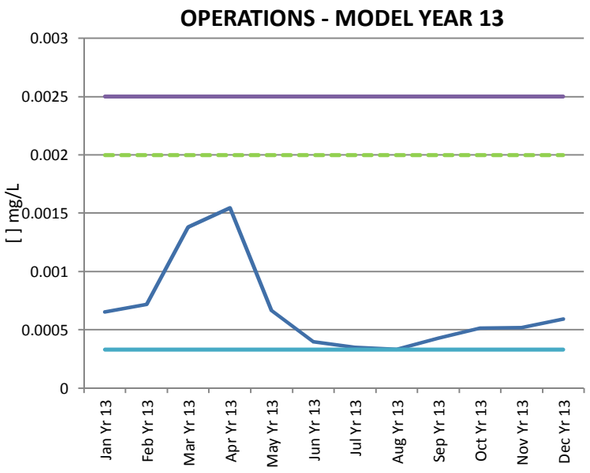
P/A NO. VA101-246/31

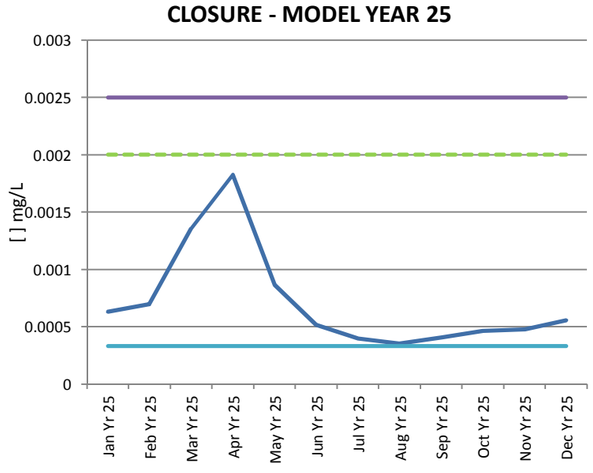
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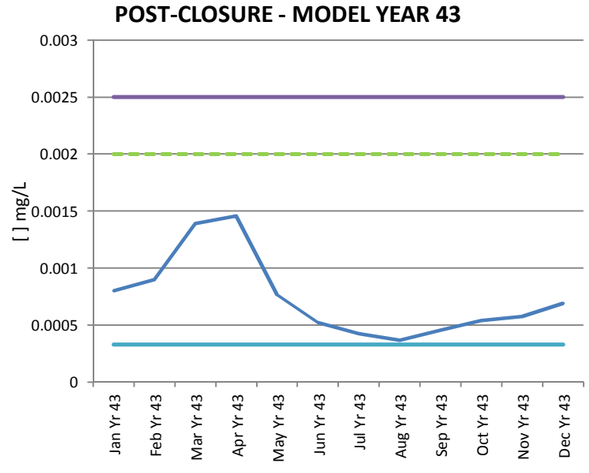
FIGURE 5.36

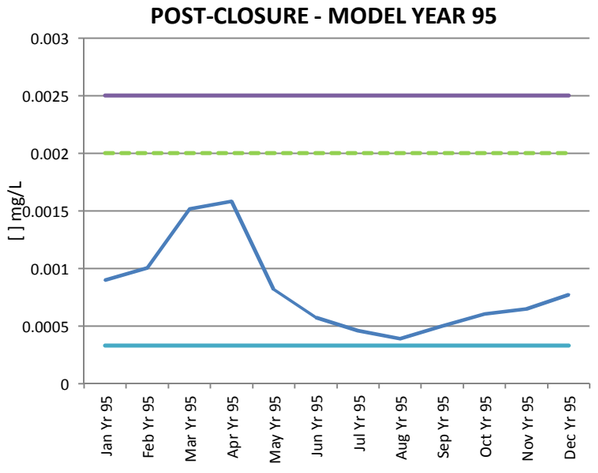
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
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5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.

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KGHM AJAX INC.

AJAX PROJECT

PCDP - PREDICTED SELENIUM CONCENTRATIONS - BASE CASE

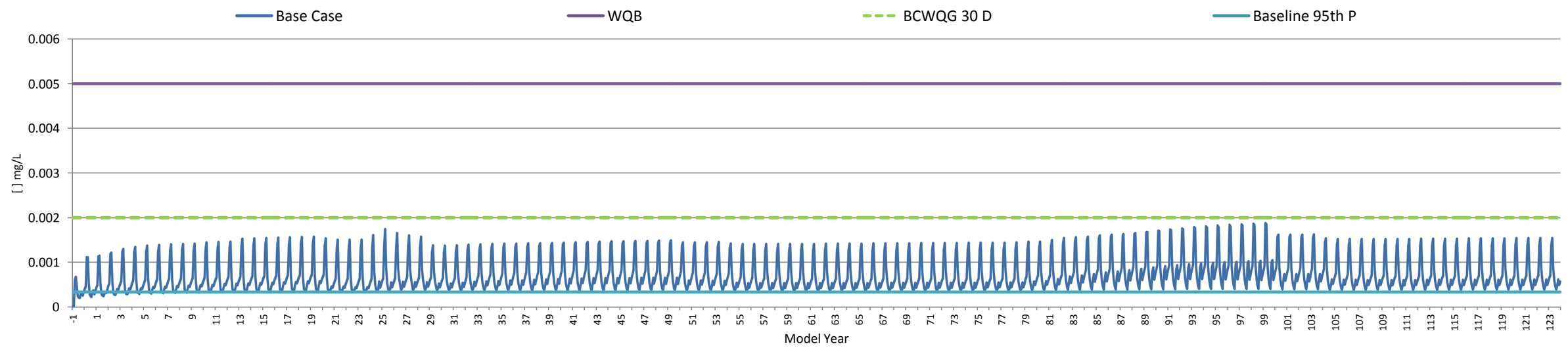
Knight Piésold CONSULTING

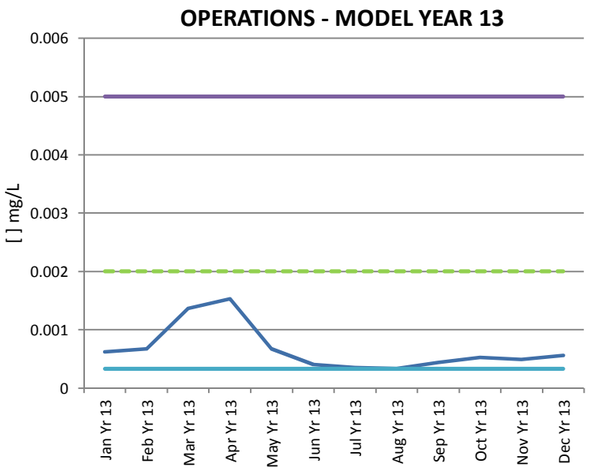
P/A NO. VA101-246/31

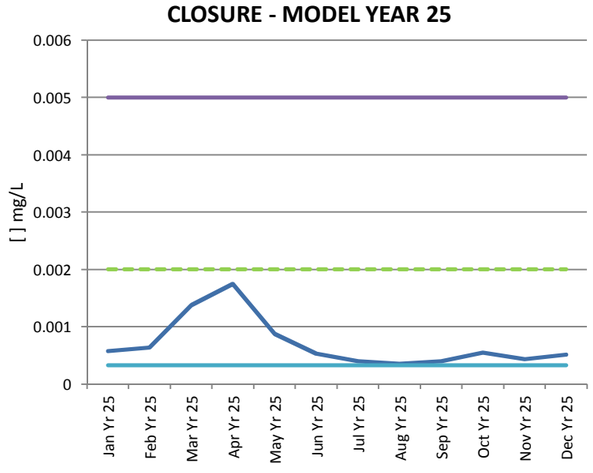
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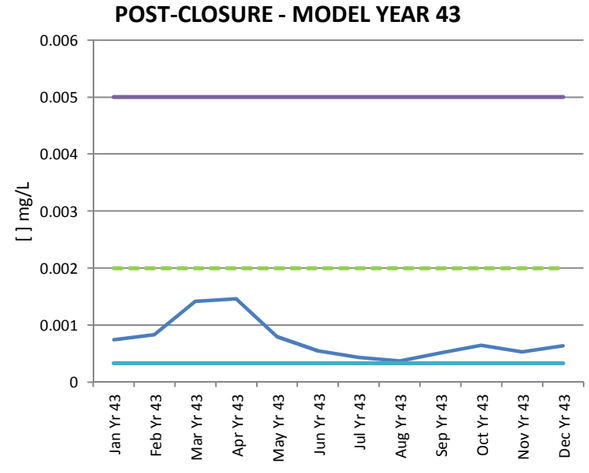
FIGURE 5.37

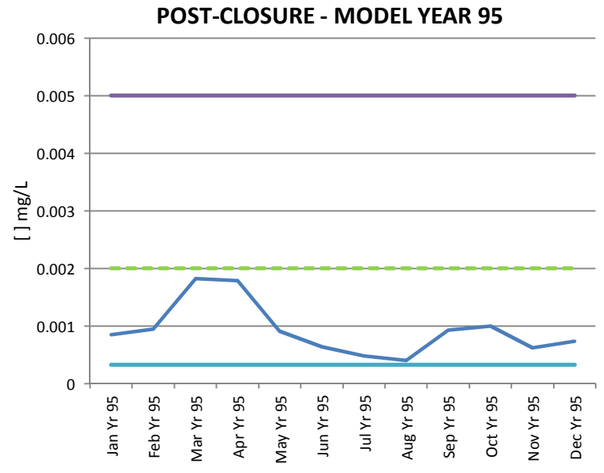
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
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REV	DATE	DESCRIPTION	PREP'D	APP'D
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KGHM AJAX INC.

AJAX PROJECT

PC02.3 - PREDICTED SELENIUM CONCENTRATIONS - BASE CASE

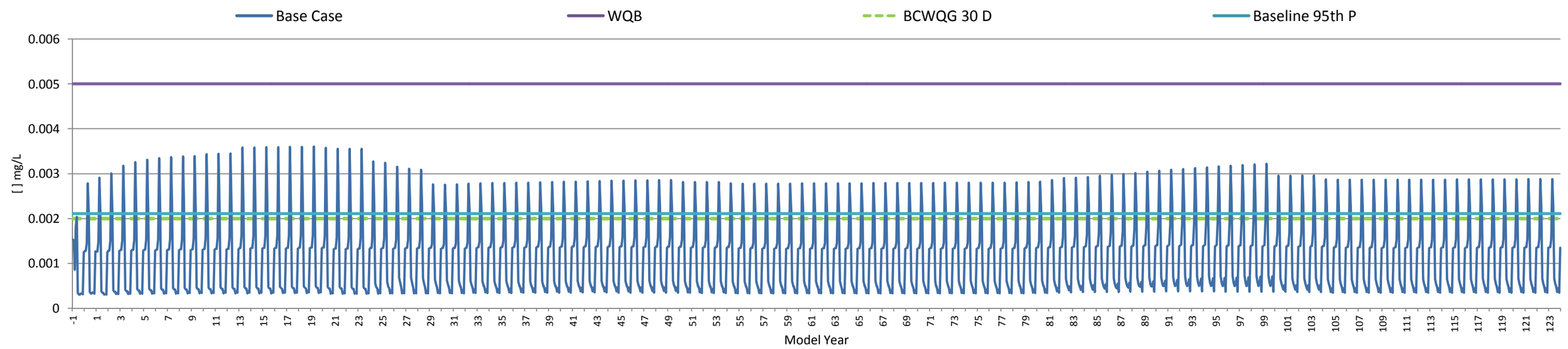
Knight Piésold CONSULTING

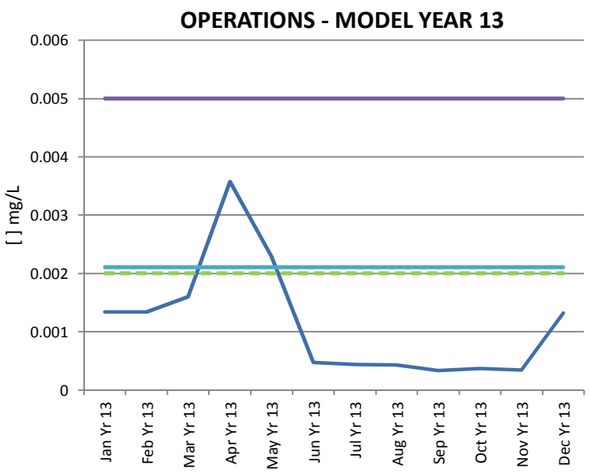
P/A NO. VA101-246/31

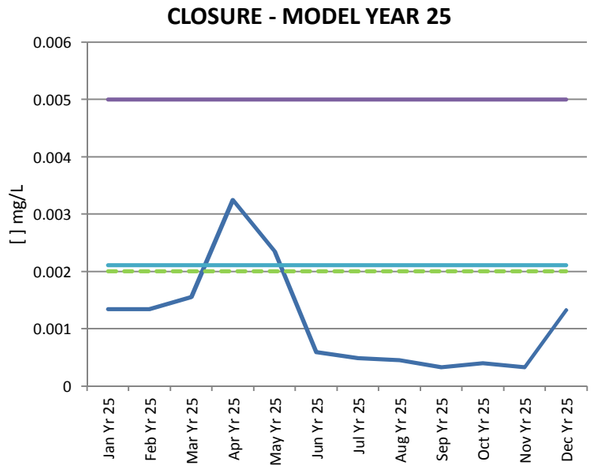
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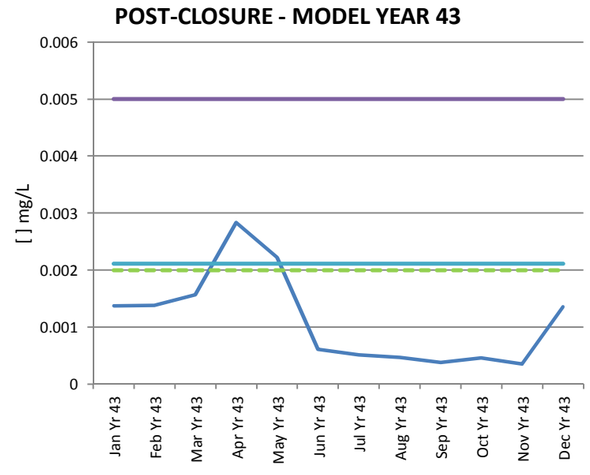
FIGURE 5.38

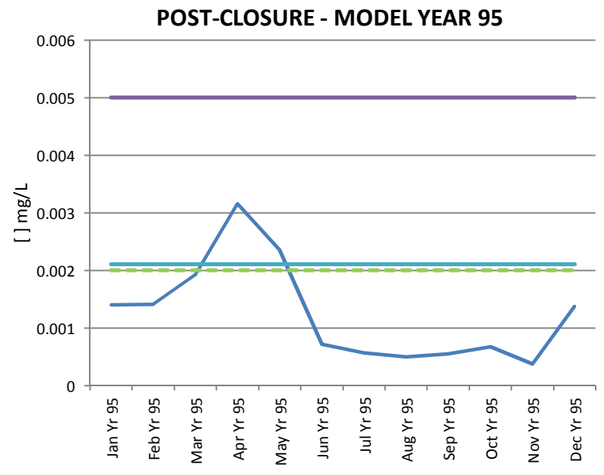
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
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REV	DATE	DESCRIPTION	PREP'D	APP'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

PC02 - PREDICTED SELENIUM CONCENTRATIONS - BASE CASE

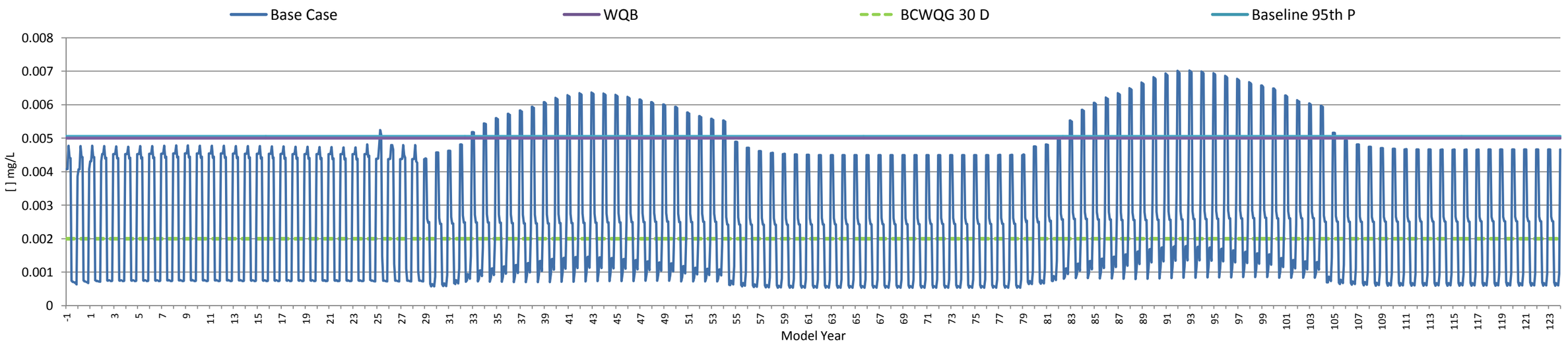
Knight Piésold CONSULTING

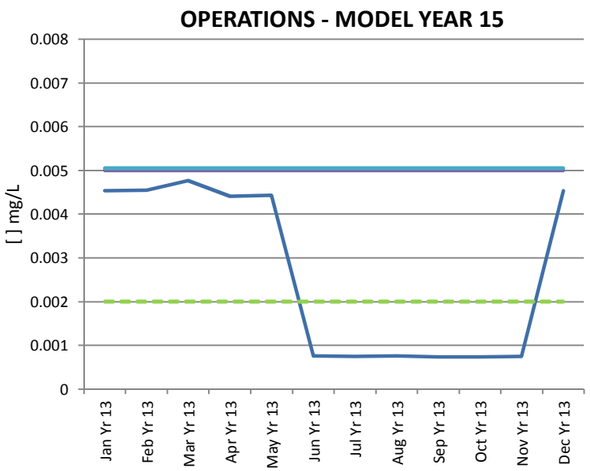
P/A NO. VA101-246/31

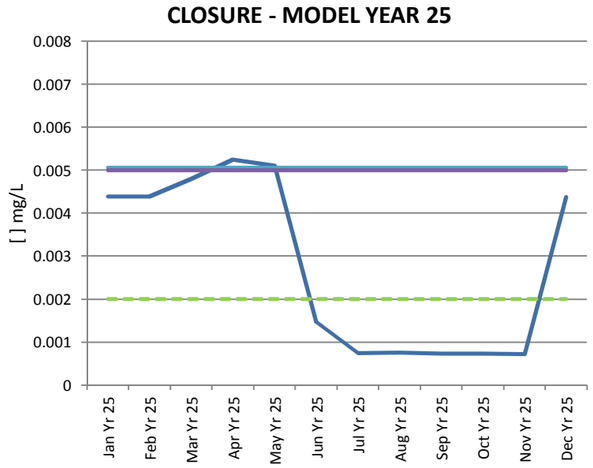
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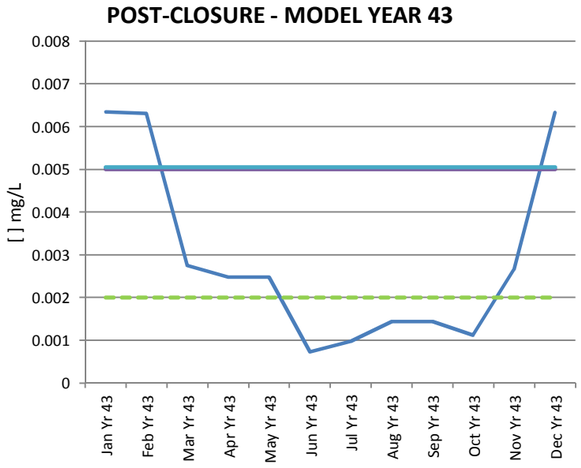
FIGURE 5.39

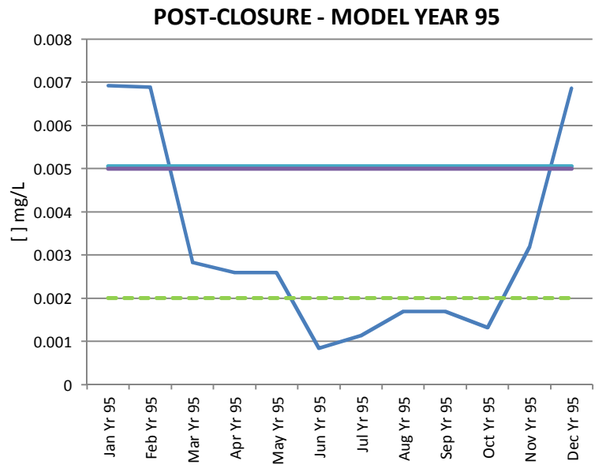
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
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6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.

REV	DATE	DESCRIPTION	PREP'D	APP'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK - PREDICTED SELENIUM CONCENTRATIONS - BASE CASE

Knight Piésold CONSULTING

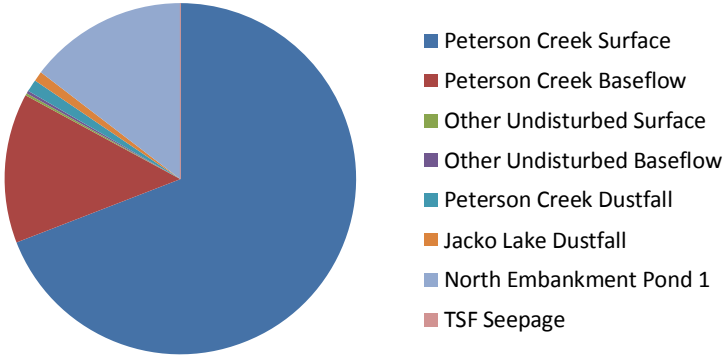
P/A NO. VA101-246/31

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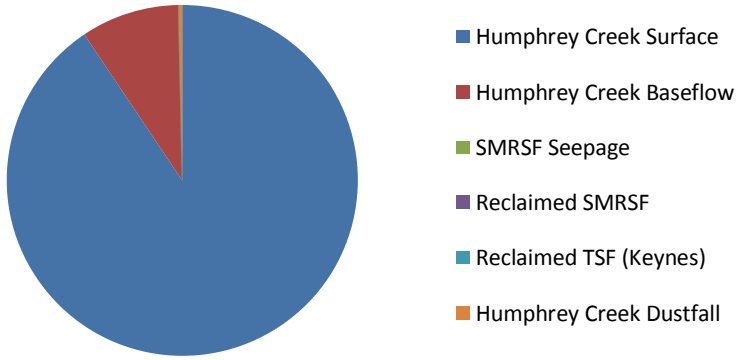
FIGURE 5.40

REV 0

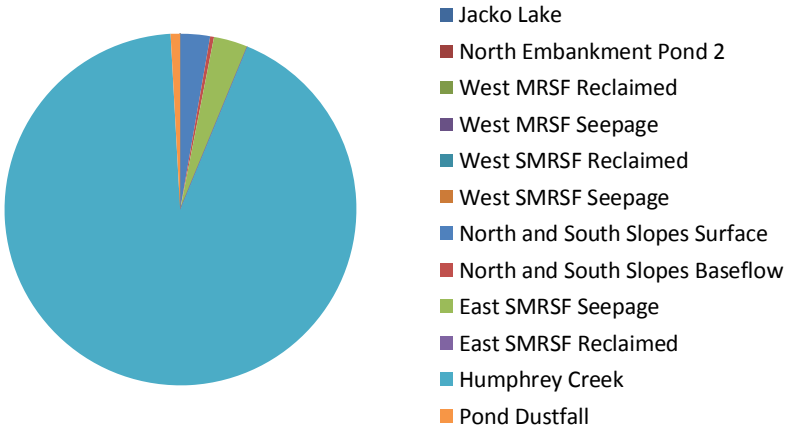
Jacko Lake



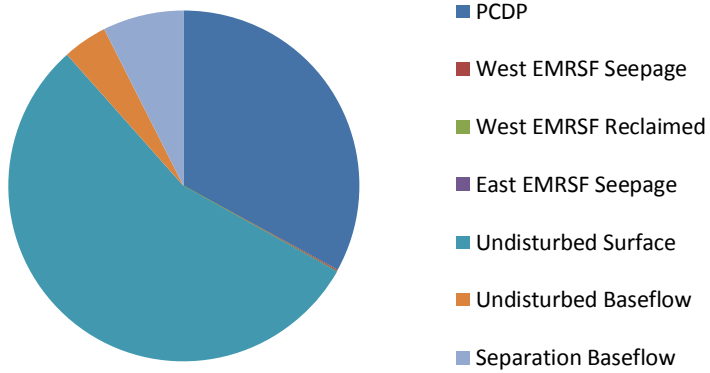
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:

1. MODELLED LOADS PRESENTED IN mg/MONTH FOR THE AVERAGE OF YEAR 13 OF OPERATIONS.
2. MODEL RESULTS DISPLAYED FOR DISSOLVED SELENIUM.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

ANNUAL LOAD PROPORTION FOR SELENIUM DURING OPERATIONS

Knight Piésold CONSULTING

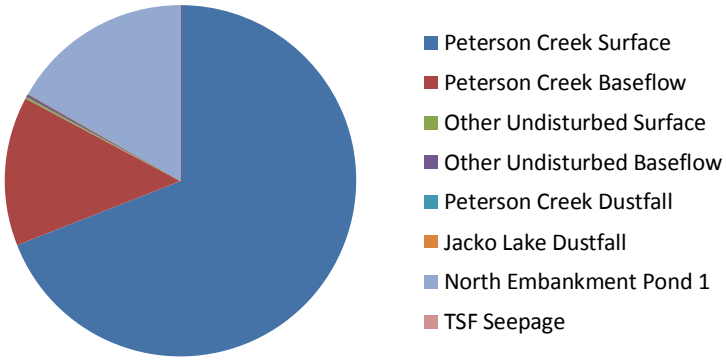
P/A NO. VA101-246/31

REF. NO. 4

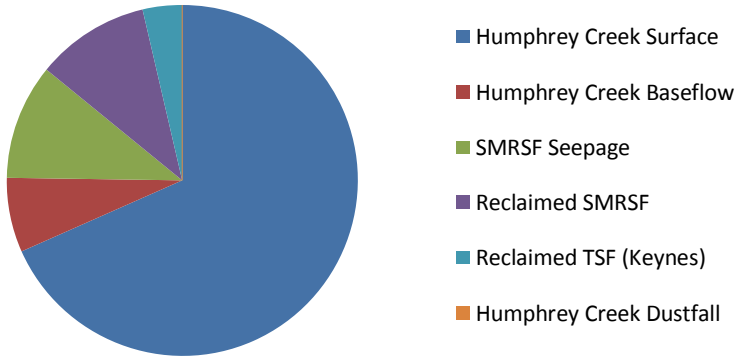
FIGURE 5.41

REV 0

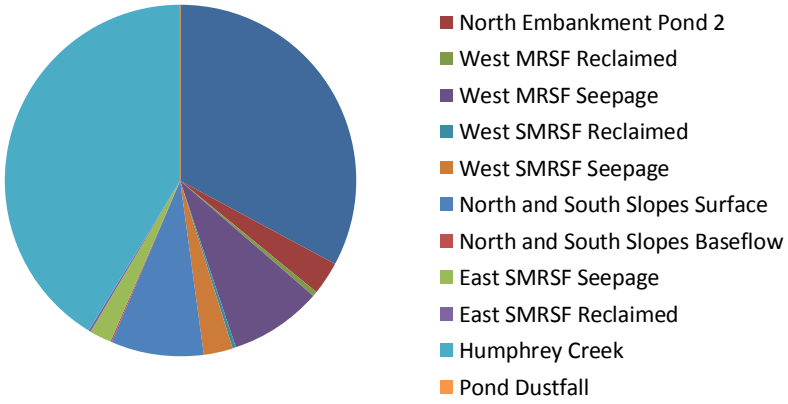
Jacko Lake



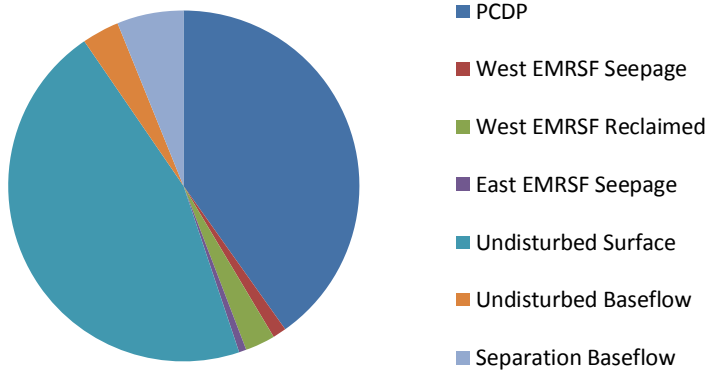
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:
1. MODELLED LOADS PRESENTED IN mg/MONTH FOR THE AVERAGE OF A TYPICAL POST CLOSURE YEAR.
2. MODEL RESULTS DISPLAYED FOR DISSOLVED SELENIUM.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

ANNUAL LOAD PROPORTION FOR SELENIUM DURING POST CLOSURE

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 4

FIGURE 5.42

REV 0

5.3.7 Other Parameters

Other parameters, in addition to those described previously, have been predicted to potentially exceed guidelines under less probable conditions. This category of parameters includes those for which guideline exceedances were predicted in sensitivity scenarios only and those for which predicted guideline exceedances in the Base Case model were limited to one assessment location, during one mine phase only. In some cases, parameters in this category are predicted to exceed guidelines as a result of model interactions that are not expected to occur under realistic conditions and are described in the text only to provide a complete understanding of the model and its results and limitations. Such parameters are described in detail in the following sub-sections and include the following:

- Nutrients: ammonia and nitrate
- Metals and metalloids: aluminum, antimony, arsenic, chromium, cobalt, iron, and uranium

The maximum concentrations predicted in the sensitivity case models tend to represent extremes in model input assumptions and do not necessarily represent realistic concentrations that are likely to occur. Sensitivity analyses were conducted in order to assess the differences in predicted water chemistry from the Base Case due to changes to a single model input assumption. A single change does not necessarily result in the same variation in downstream concentrations for all parameters modelled and through the assessment of changes to multiple variables it can be determined which parameters are more sensitive to specific assumptions and which are not. The resulting predicted concentrations tend to exceed the expected ranges and are not representative of expected water quality under realistic conditions. In particular, the results of the VCC models can exceed the upper bound concentrations that would realistically be expected due to conservatism in the assumptions used in the application of source terms, which were developed specifically for application in the Base Case climate scenario (see section 4.2) combined with the influence of seepage, seepage delays, and the associated timing of monthly model precipitation inputs that generate the loading at the sources (MRSFs) and the runoff in the receiving water assessment location. In the model it is common for a higher than average month for source loading to reach a receiving water assessment location on a time delay associated with a lower than average receiving water flow month (due to drier conditions in the historic climate record) and the combined model outcome is much higher concentrations than would be expected. Conservative and simplistic assumptions regarding seepage interactions with groundwater were made. Mine source seepage to groundwater is not mixed with local groundwater in mixing cells along the flow pathway, it is dealt with in terms of timing delays, so receiving water loads are equivalent to source loading for the same calendar month for a set time earlier in the model. In reality, groundwater discharge to local creeks would be a combination of small amounts of mine seepage with larger amounts of local groundwater, resulting in a more diffuse loading than is currently modelled and concentrations will not likely reach those predicted in the VCC summary results.

Repetitive spikes in predicted concentrations were predicted in the VCC models due to model input assumptions with respect to timing of the release of dustfall stored in the snowpack through the winter months. This stored dustfall load is timed to be released in May, when freshet conditions are expected in an average year. The transport mechanism for load that accumulates through the winter months to be carried into the creeks is runoff with snow meltwaters and spring rains, resulting in higher loading when flows would also be higher. Historical climate variability accounts for the onset of spring earlier or later than May in some years, but the model timing results in the release of the

stored dustfall load independent of these conditions, resulting in predicted concentrations that are much higher than expected.

Baseline sensitivity models are intended to assess the extremes in baseline conditions, but result in the over- or under-prediction of concentrations based on the assumption that all of the baseline inputs are at their near highest (95th P) or near lowest (5th P) for all assessment locations for the duration of the model. The probability that all baseline sources would be at the 95th P for the duration of the mine life is low and as such these results provide insight into the potential for concentrations to be sensitive to baseline variability, but are not necessarily a good indicator of potential guideline exceedances particularly for assessing chronic exposure risks. The appropriate application of the sensitivity case models is to identify a range of concentrations that could result from deviations from the Base Case with consideration to the assumptions relating to each case and the probability of the conditions specified in each case.

The predicted concentrations of each of the parameters for which less probable guideline exceedances were predicted are discussed in the following subsections. The predicted exceedances are described with a qualitative analysis of the applicability of the assumptions and conditions resulting in the exceedance, which is specific to each parameter. Figures have been included only in cases where they are a beneficial visual aid to the text and the presence or absence of a figure does not indicate the relative importance or magnitude of a predicted guideline exceedance.

5.3.7.1 Ammonia

Ammonia is not predicted to exceed the relevant water quality guidelines in the Base Case model at any assessment location, the lowest of which is the BCWQG 30 D. The BCWQG 30 D for ammonia is in situ temperature and pH dependent and ranges from 0.102 mg/L to 2.08 mg/L, with the lower threshold typical for higher pH and temperature conditions. None of the predicted ammonia concentrations exceeded the BCWQG-Max. The pH in the creeks and Jacko Lake is not expected to change materially as a result of the project and baseline pH ranges have been used to as the basis for the ammonia guideline interpretation and at most sites this range is typically from 8.0 to 8.5. Water temperature is predominantly affected by local air temperature, and due to the relative low flows in the project area creeks, water temperatures are often high in the summer months. It is understood that water temperatures will be somewhat affected by the PCDP and the diversion of Peterson Creek, but it is not likely to change significantly from baseline conditions. Baseline water temperatures have been used to assess the ammonia guidelines for comparison with future predicted concentrations.

Ammonia BCWQG 30 D exceedances were predicted at the following assessment locations for the sensitivity case models:

- Humphrey Creek – 95th P, 75th P, and Mean VCC summary results in Post Closure due to arrival of seepage (medium and long flow pathways) from the SMRSF. Seasonal exceedances for low flow periods from late summer through winter.
- PCDP - 95th P Baseline Inputs sensitivity case – seasonally (July) for Construction through Post Closure. Predicted concentration is just above the guideline (1.3 times higher).
- PC02.3 – VCC summary results and 95th P Baseline Inputs sensitivity case:

- 95th P and Mean VCC summary results – exceeds the BCWQG 30 D three times in Post Closure when seepage associated to long flow pathways from the EMRSF arrives at this assessment location.
- 95th P Baseline Inputs sensitivity case – seasonally (July) for Construction through Post Closure. Predicted concentration is just above the guideline (1.3 times higher).

- PC02 – 95th P Baseline Inputs sensitivity case – seasonally (July) for Construction through Post Closure. Predicted concentrations in July are equal to or just above the guideline (1.0 to 1.1 times higher).

Ammonia loading is predominantly from background sources, with the exception of Humphrey Creek, which is predominantly influenced by seepage from the SMRSF. Proportional loading at all sites varies seasonally, with loading from seepage more predominant in the low flow periods (summer through winter). All of the 95th P Baseline Input sensitivity analysis exceedances were predicted in July when baseline pH and temperature were typically highest and the exceedances were minor (less than 1.5 times the guideline). A slight drop in temperature or pH in July would result in these predicted values being below the guideline. Baseline sensitivity case model results tend to be conservative in that the model assumes that all inputs are at the percentile being modelled. The probability that all baseline sources would be at the 95th P for the duration of the mine life is low and as such these results provide insight into the potential for concentrations to be sensitive to baseline variability, but are not an indication of expected ammonia concentrations.

All of the exceedances for ammonia are predicted as a result of these unrepresentative model interactions and these predictions exceed the range of expected concentrations for the receiving water in the project area. What is apparent from the sensitivity model results is that parameter concentrations are sensitive to variation in streamflow conditions, which is evident under baseline conditions, with higher concentrations for most parameters measured under low flow conditions, when groundwater is the primary source for surface flows.

5.3.7.2 Nitrate

Nitrate is not predicted to exceed the relevant water quality guidelines in the Base Case model at any assessment location, the lowest of which is the BCWQG 30 D (3 mg/L) and predicted ammonia concentrations remain below the BCWQG-Max (32.8 mg/L) in all of the sensitivity scenarios. There were some exceedances of the BCWQG-30 D predicted in the VCC models as follows:

- Humphrey Creek – 95th P VCC summary results in Post Closure due to arrival of seepage (medium and long flow pathways) from the SMRSF. Eleven exceedances in total.
- PC02.3 – 95th P and Mean VCC summary results – six exceedances in late Post Closure due to arrival of seepage associated to long flow pathways from the EMRSF.
- PC02 – 95th P VCC summary results – seven exceedances in Construction through Decommissioning and Closure and four in Post Closure due to seepage.

Nitrate loading in Humphrey Creek is predominately from background sources in Operations and by seepage from the SMRSF in Post Closure and the PCDP nitrate loading is predominately from seepage from the EMRSF Pond in Operations and Closure, but by background sources in Post Closure. All other model assessment locations have minor loading contributions from seepage source and the majority of the loads are from background sources. Proportional loading at all sites

varies seasonally, with loading from seepage more predominant in the low flow periods (summer through winter).

All of the exceedances for nitrate are predicted as a result of these unrepresentative model interactions and these predictions exceed the range of expected concentrations for the receiving water in the project area. What is apparent from the sensitivity model results is that parameter concentrations are sensitive to variation in streamflow conditions, which is evident under baseline conditions, with higher concentrations for most parameters measured under low flow conditions, when groundwater is the primary source for surface flows.

5.3.7.3 Aluminum

Aluminum is not predicted to exceed the relevant water quality guidelines in the Base Case model at any assessment location, the lowest of which is the BCWQG 30 D (0.05 mg/L). Base Case aluminum concentrations approach the BCWQG 30 D in Humphrey Creek seasonally in Operations and Decommissioning and Closure due to loading associated with dustfall deposition. Aluminum exceedances are predicted in the VCC models at the following assessment locations, but remained below the BCWQG 30 D in all sensitivity scenarios in Jacko Lake and at the most downstream model assessment location in Peterson Creek (PC02):

- Humphrey Creek – for the 95th P, 75th P, 50th P, Mean, 25th P, and 5th P VCC summary results as follows:
  - 95th P VCC summary results – seasonally (May through September and November) in Construction and Operations, and seasonally (May through September) in Closure.
  - 75th P VCC summary results – seasonally (May through September) in Construction through Decommissioning and Closure (variation in total number of months that is predicted to exceed from year to year).
  - 50th P (Median) summary results – seasonally (typically July through September) in Construction through Closure.
  - Mean VCC summary results – seasonally in Construction through Decommissioning and Closure (May and then August/September).
  - 25th P VCC summary results – once in Construction and seasonally (August/September) in Operations and Closure.
  - 5th P VCC summary results – once only in Operations.
  - All VCC cases – there were no exceedances predicted in Post Closure in Humphrey Creek.
- PCDP - 95th P VCC summary results – seasonally (May or May/June) for Construction through Closure.
- PC02.3 - 95th P VCC summary results – once in Closure.

All of the aluminum exceedances summarized above result from these conservative and unrepresentative model assumption issues and are therefore not expected exceedances.

5.3.7.4 Antimony

Antimony is not predicted to exceed the relevant water quality guidelines in the Base Case model at any assessment location, the lowest of which is the BCWQG-30 D (0.009 mg/L). Changes in receiving water antimony concentrations are due to seepage from the MRSFs and the sensitivity case BCWQG 30 D exceedances were only predicted during Post Closure in the VCC sensitivity

models, for the 95th P summary results for Humphrey Creek and Peterson Creek assessment locations PC02.3 and PC02. There were also exceedances noted at PC02.3 for the Mean VCC summary results in Post Closure. The VCC summary result exceedances were as follows:

- Humphrey Creek – 95th P VCC summary results – five times in Post Closure (March, June, August or October in random years when seepage arrives in the creek).
- Peterson Creek assessment location PC02.3 – 95th VCC summary results – seasonally in Post Closure when seepage arrives at the assessment location.
- Peterson Creek assessment location PC02.3 – Mean VCC summary results – four times in Post Closure when seepage associated to long flow pathways arrives at the assessment location (occurs every five years in late Post Closure, due to cycling of one specific dry June in the historical record which results in low flows in Peterson Creek).
- Peterson Creek assessment location PC02 – 95th VCC summary results – eight times in Post Closure when seepage associated to long flow pathways arrives at the assessment location.

All of the antimony exceedances summarized above result from these conservative and unrepresentative model assumption issues and are therefore not expected exceedances.

5.3.7.5 Arsenic

Baseline arsenic concentrations generally increased slightly through the summer months, reaching peak concentrations in November at monitoring sites PC03 and PC02.5/PC02.3, with lower concentrations typically reported for samples collected in December through March. Spatially, arsenic concentrations were highest in the Keynes Creek water quality samples and in samples collected from Peterson Creek site PC02; samples from Keynes Creek generally exceeded the BCWQG-Max (0.005 mg/L) but did not exceed guidelines at PC02. Modelled arsenic concentrations tend to peak in March or April at most assessment locations, differing from baseline seasonal trends. The seasonality in predicted arsenic concentrations in Humphrey Creek differ between Operations, Closure, and Post Closure, due primarily to addition of the reclaimed surface runoff to Humphrey Creek in Post Closure and arrival of delayed seepage from the SMRSF, resulting in lower concentrations during spring freshet and higher concentrations through the winter low flow months.

The predicted seasonality of arsenic concentrations in the Peterson Creek watershed (Jacko Lake, PCDP, PC02.3, PC02, and Humphrey Creek) for the Base Case is shown on Figure 5.45.

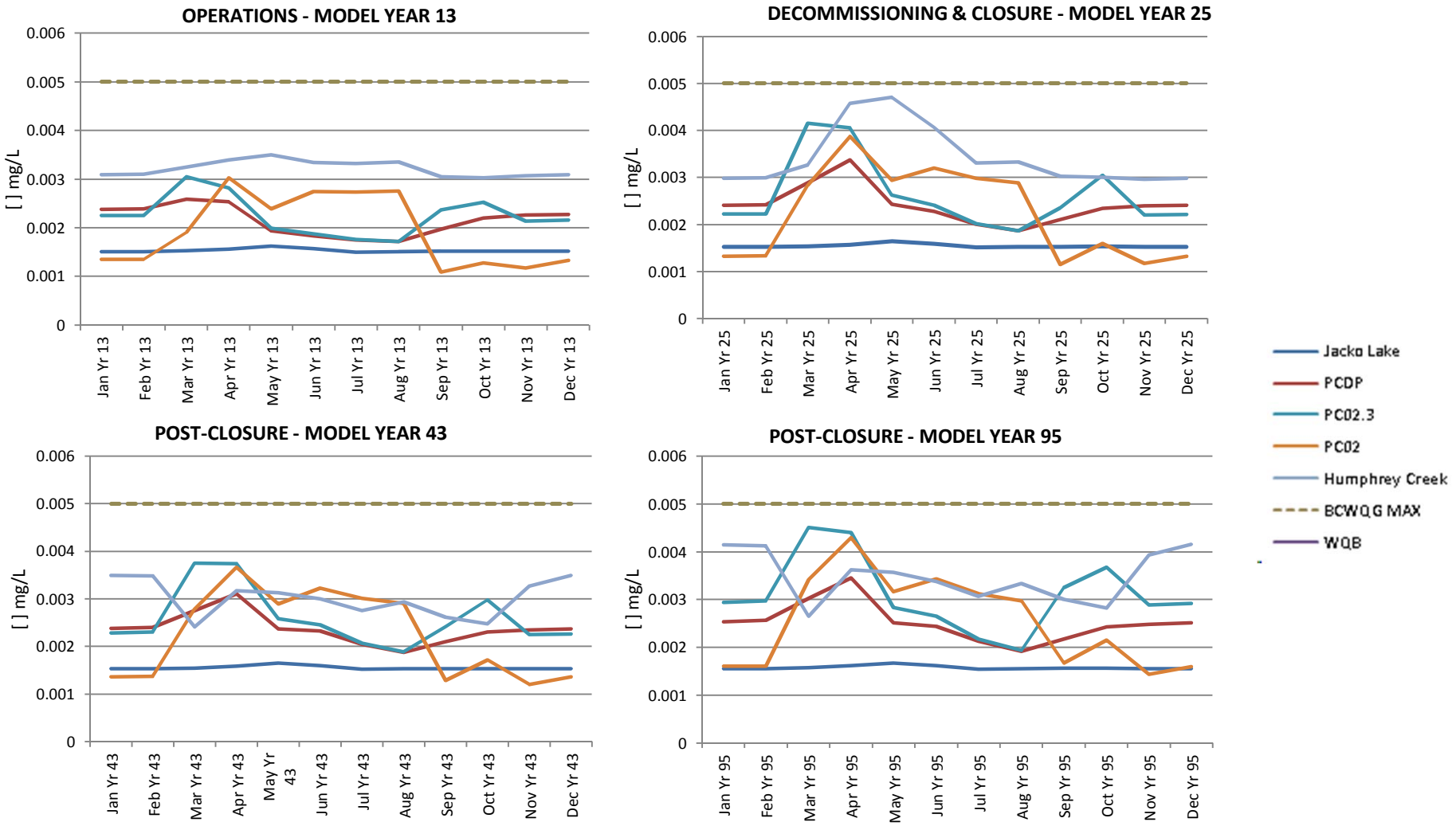
Base Case arsenic concentrations predicted for the Peterson Creek watershed assessment locations were consistently below the BCWQG-Max; however, arsenic concentrations are predicted to exceed the BCWQG-Max in the sensitivity case models at various assessment locations and development of a WQB was warranted. A WQB of 0.032 mg/L was derived for arsenic to protect the most sensitive aquatic organism found in the Project area (*Cyclops vernalis* in Jacko Lake) (Stantec 2015b). Arsenic concentrations are not predicted to exceed the WQB at any assessment location in any of the sensitivity scenarios, except at PC02.3 in the VCC model results.

Highest arsenic concentrations at most assessment locations were predicted for the VCC models; the exceptions being Jacko Lake for all mine phases and PC02.3 and PC02 during Closure. Predicted arsenic concentrations during Operations and Post Closure in Jacko Lake are most sensitive to baseline inputs and in Decommissioning and Closure due to seepage generated from increased recharge to the MRSFs (WMRSF), and at PC02.3 and PC02, predicted arsenic concentrations in Decommissioning and Closure are most sensitive to increased recharge to the

MRSFs (predominantly the EMRSF). Increasing recharge to the MRSFs results in increased loading at the downstream assessment locations through seepage pathways in the model and due to seepage losses from the WMPs. Due to seepage timing assumptions, the greatest predicted changes in arsenic concentrations at the lower Peterson Creek assessment locations are in later Post Closure, when the majority of EMRSF loads associated with infiltration through the un-reclaimed facility (Operations) reach these downstream assessment locations. Arsenic concentrations in the model are also sensitive to changes in groundwater assumptions as they result in changes to seepage loading from the various mine facilities to the downstream environment. Dustfall contributions to arsenic loading are low and the dustfall sensitivity model concentrations are similar to the Base Case concentrations.

Predicted concentrations at PC02.3 and Humphrey Creek have a more pronounced variation, especially during Post Closure after the arrival seepage associated to long flow pathways for the higher percentile summary results of the VCC models. The annual range in predicted arsenic concentrations is greatest in Post Closure in PC02.3; this is the only model assessment location where exceedances of the WQB are predicted, though exceedances are infrequent (10 months in the 125 year model time-frame). High arsenic VCC model results are predominantly due to the influence of seepage, seepage timing, and the associated timing of monthly model precipitation inputs that generate the loading at the sources (MRSFs) and the runoff in the receiving water assessment location, as described in the introduction.

Arsenic loading at all downstream water quality model assessment locations in the Project area is dominated by natural catchment sources, and the incremental change from baseline conditions results from loads associated with seepage from proposed mine facilities, the MRSFs in particular. Seepage loading from the MRSFs is proportionally greater in the Decommissioning and Closure and Post Closure mine phases due to a greater proportion of seepage assumed to arrive at downstream assessment locations during these mine phases compared to Operations. Simplified annual pie charts illustrating the proportion of total arsenic loads at Jacko Lake, PCDP, PC02, and Humphrey Creek are presented on Figure 5.46 and Figure 5.47 for Operations and Post Closure, respectively.



NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. WATER QUALITY BENCHMARK (WQB) IS 0.032 mg/L; Y-AXIS TRUNCATED BELOW THIS VALUE TO BETTER DISPLAY RESULTS.

REV	DATE	DESCRIPTION	PREP'D	APP'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

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ARSENIC - PREDICTED SEASONALITY IN PETERSON CREEK WATERSHED - BASE CASE

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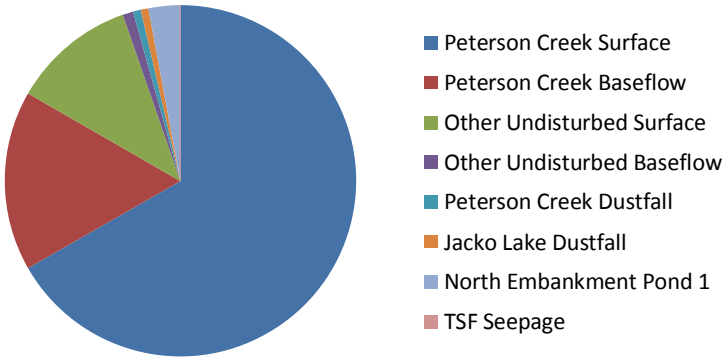
P/A NO. VA101-246/31

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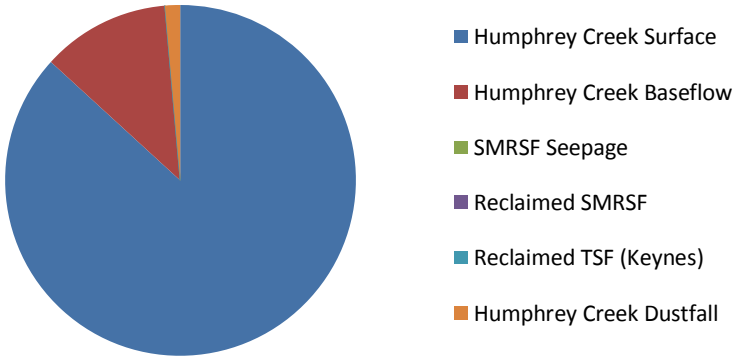
FIGURE 5.43

REV 0

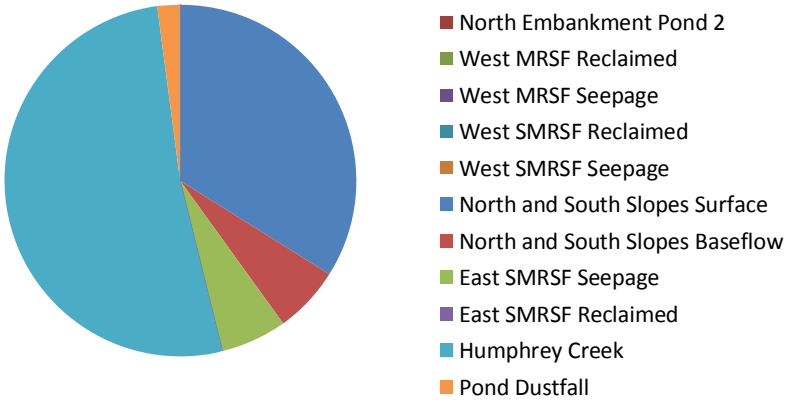
Jacko Lake



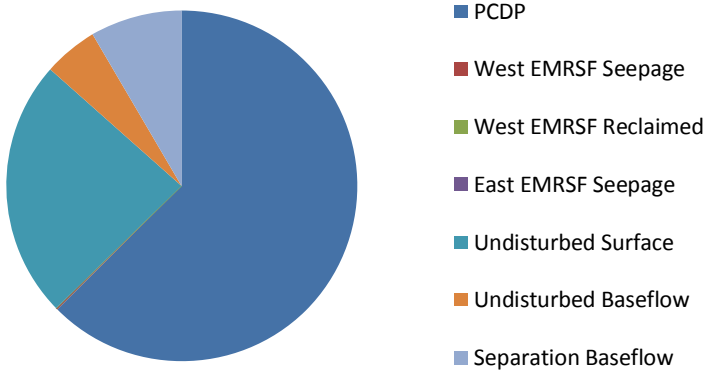
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:

1. MODELLED LOADS PRESENTED IN mg/MONTH FOR THE AVERAGE OF YEAR 13 OF OPERATIONS.
2. MODEL RESULTS DISPLAYED FOR DISSOLVED ARSENIC.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
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AJAX PROJECT

ANNUAL LOAD PROPORTION FOR ARSENIC DURING OPERATIONS

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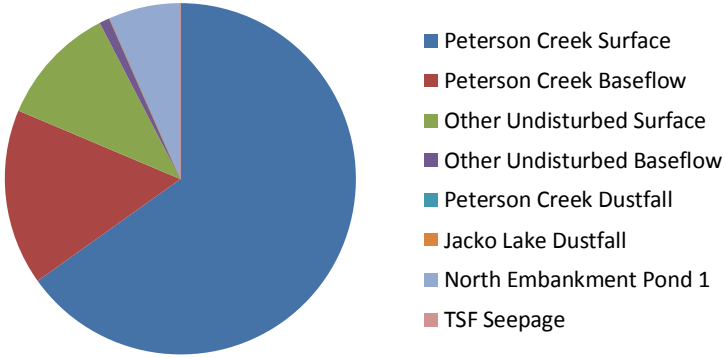
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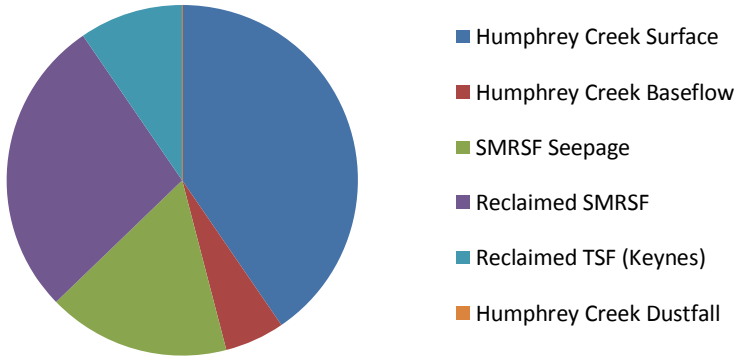
FIGURE 5.44

REV 0

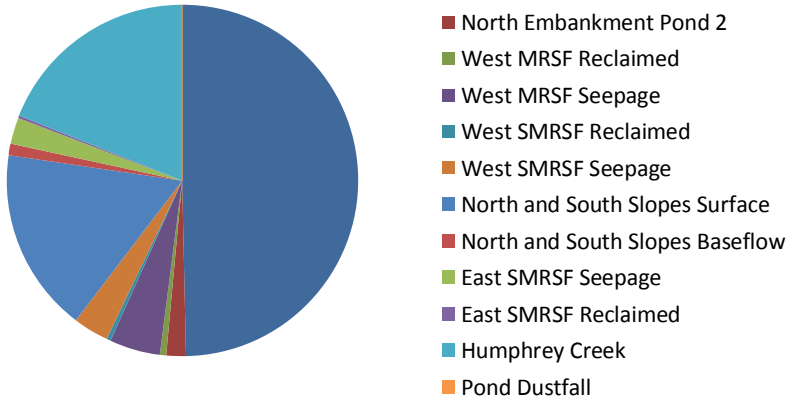
Jacko Lake



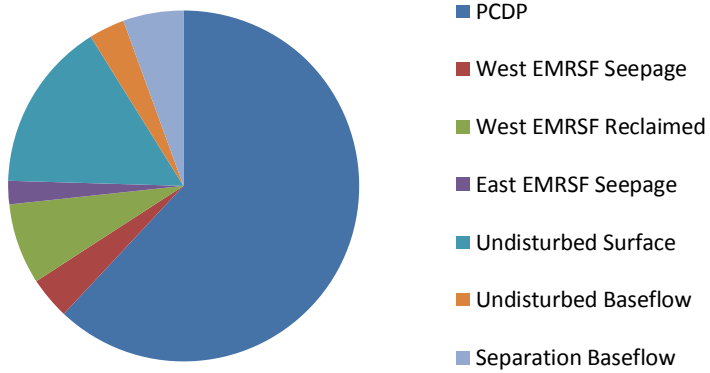
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:
1. MODELLED LOADS PRESENTED IN mg/MONTH FOR THE AVERAGE OF A TYPICAL POST CLOSURE YEAR.
2. MODEL RESULTS DISPLAYED FOR DISSOLVED ARSENIC.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
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FIGURE 5.45

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5.3.7.6 Chromium

Baseline chromium concentrations tended to be lowest during the summer months (June through August), after which concentrations tended to increase, reaching peak concentrations in late fall at some baseline monitoring sites (typically the downstream sample locations) and in late winter at others (upstream locations). Spatially, baseline chromium concentrations tended to be higher in samples collected from upper watershed sites compared to downstream sites, with this difference most pronounced in samples collected during late winter low flow conditions, indicating that groundwater contributing to baseflow in the creeks at sample locations at higher elevations in the project area are higher in chromium than in the lower reaches.

Dustfall from mine sources is the primary source of loading in the local study area in Operations and Closure, until the MRSFs and TSF are reclaimed and this translates into a notable decrease in predicted chromium concentrations between Decommissioning and Closure and Post Closure. Dustfall that is deposited in the winter months (December through April) is accumulated in the model, based on the assumption that it is held up in the snowpack, and is made available at the nearest surface water quality model assessment location in May in association with the average timing of spring freshet and ice break-up on Jacko Lake. The seasonality in predicted chromium concentrations is affected by this load accumulation, with an increase in concentrations in May at all assessment locations in Operations and Closure, though maximum concentrations are not predicted in May at any assessment location except PC02 during these mine phases. Base Case chromium concentrations are highest in Humphrey Creek in Operations and Decommissioning and Closure as this creek is most affected by the dustfall deposition due to proximity to the loading sources (TSF and SMRSF) and due to the natural low flow volumes in this creek. The highest chromium concentrations are predicted for Humphrey Creek in Post Closure as well, but due to seepage loading from the SMRF, resulting in higher concentrations in the low flow winter months compared to all other receiving water quality model assessment locations. A direct comparison of predicted chromium concentrations for the Peterson Creek watershed assessment locations for annual time-frames in each mine phase are provided on Figure 5.27.

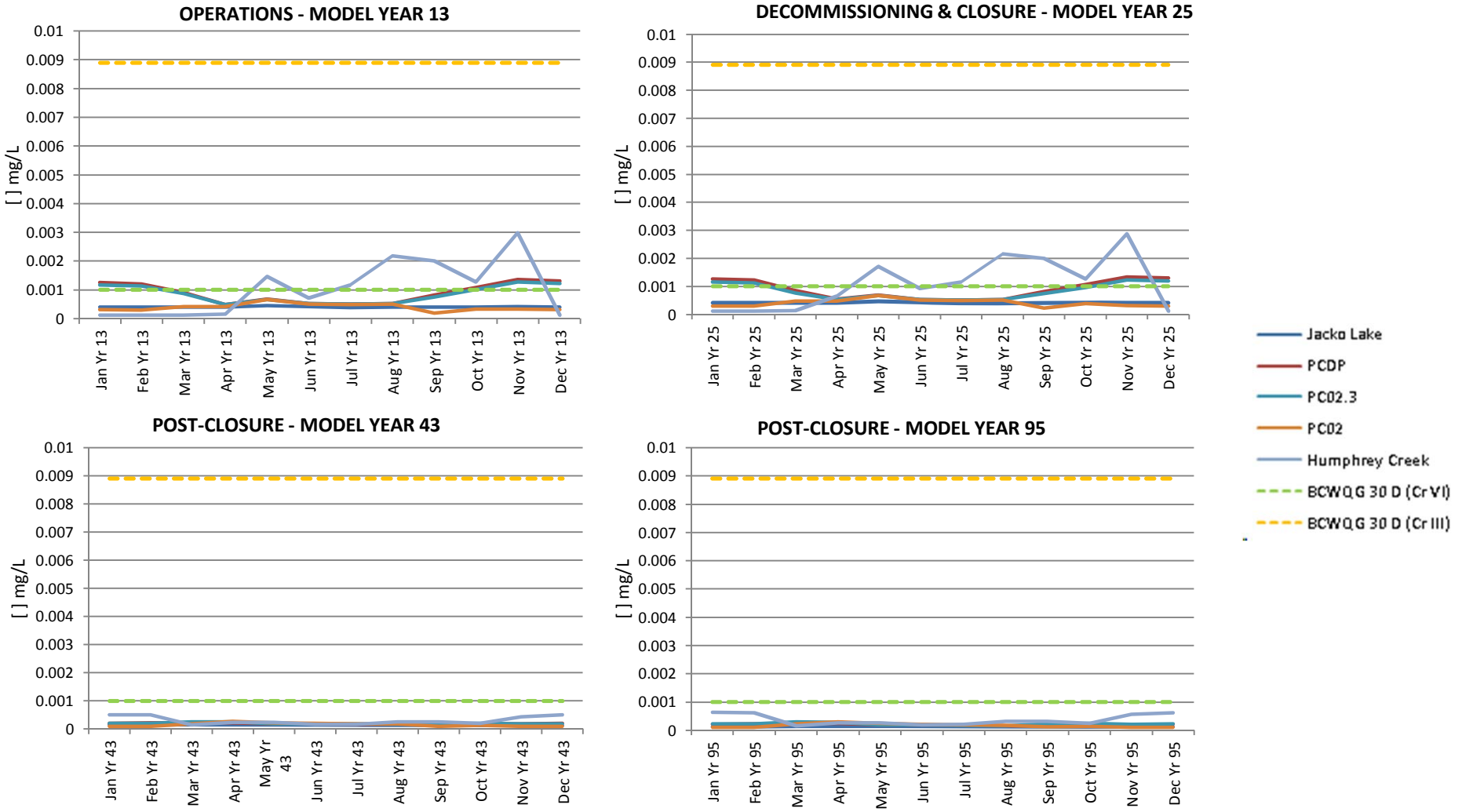
Predicted Base Case chromium concentrations in Humphrey Creek seasonally exceed the BCWQG-30 D for hexavalent chromium (Cr VI) of 0.001 mg/L during Operations, Closure, and for a few years in early Post Closure, but remaining below the BCWQG-30 D for trivalent chromium (Cr III) of 0.0089 mg/L. Predicted winter low flow chromium concentrations exceed the BCWQG-30 D for Cr VI (but not the Cr III guideline) at the PCDP and PC02.3 during Operations and Closure, but predicted concentrations decrease at these assessment locations and remain below the guideline in Post Closure. Understanding the species of chromium that is contributed from dustfall from the MRSF and TSF is critical to understand the potential effects of the dustfall on aquatic biota. The species present in the mine rock and tailings from which the dustfall is generated is Cr III; identified by Lorax based on the geochemical characterization of the mine rock and tailings (Lorax 2015b). Based on this characterization, the predicted Base Case chromium concentrations remain below the relevant guideline during all mine phases at all assessment locations in the Peterson Creek watershed.

The seasonality of the predicted chromium concentrations in the Peterson Creek watershed (Jacko Lake, PCDP, PC02.3, PC02, and Humphrey Creek) for the base case model is presented on Figure 5.46.

Sensitivity model predicted chromium concentrations were highest at Jacko Lake for the baseline sensitivity model that incorporated the 95th P baseline inputs and highest predicted concentrations at the other downstream assessment locations were predicted for the VCC models. With the exception of Humphrey Creek, all predicted chromium concentrations in the sensitivity analyses were below the BCWQG-30 D for Cr III. The 95th P summary VCC model results exceeded the BCWQG-30 D in every May during Operations and Decommissioning and Closure in Humphrey Creek. This repetitive spike in the model results is due to model input assumptions with respect to timing of the release of dustfall stored in the snowpack through the winter months combined with lower than average May flows in Humphrey Creek due to lower flow spring conditions based on the historical climate record for the Project that could result from a lighter snowpack, longer drawn out spring freshet periods, whereby peak flows tend to be lower and extend over two months (April/May or May/June), or variation in the onset of freshet conditions. The deposition of dust was conservatively assumed consistent in all models and the lower flows in Humphrey Creek in May results in higher chromium concentrations than would be expected if the dustfall deposition was adjusted to the specific freshet conditions in Humphrey Creek. Dustfall deposited along the creeks is conservatively assumed to be available from a 100 m corridor (50 m on both sides) and the transport mechanism for load that accumulates through the winter months to be carried into the creeks is runoff with snow meltwaters and spring rains, resulting in higher loading when flows would also be higher.

Although predicted chromium concentrations during Post Closure are typically lower than during Operations and Closure, the VCC model results tend to spike (i.e. increase rapidly) when seepage loads associated to long flow pathways arrive at the receiving water assessment locations. Similar to all other parameters whose loads are associated with seepage pathways from the MRSFs, higher VCC model results are predominantly due to the influence of seepage, seepage timing, and the associated timing of monthly model precipitation inputs that generate the loading at the sources (MRSFs) and the runoff in the receiving water assessment location, as previously explained.

Primary loading sources change when the proposed facilities are reclaimed in Closure; with dustfall as the primary loading source in Operations and Decommissioning and Closure and natural catchment loading as the primary loading source in Post Closure and delayed seepage from the MRSFs as the secondary loading source during this model phase. Simplified annual pie charts illustrating the proportion of total chromium loads at Jacko Lake, PCDP, PC02, and Humphrey Creek are presented on Figure 5.47 and Figure 5.48 for Operations and Post Closure, respectively.



NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. NO WATER QUALITY BENCHMARK (WQB) PROPOSED FOR CHROMIUM.

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KGHM AJAX INC.

AJAX PROJECT

CHROMIUM - PREDICTED SEASONALITY IN PETERSON CREEK WATERSHED - BASE CASE

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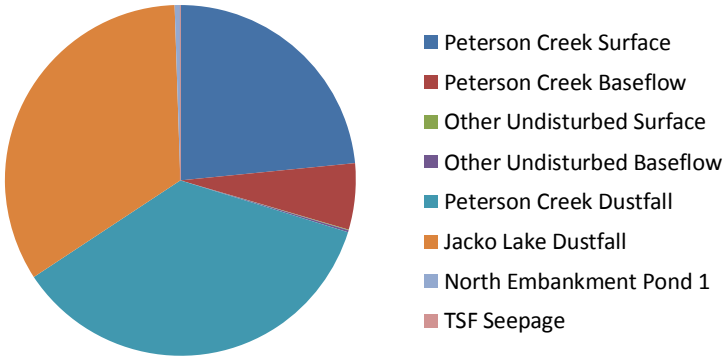
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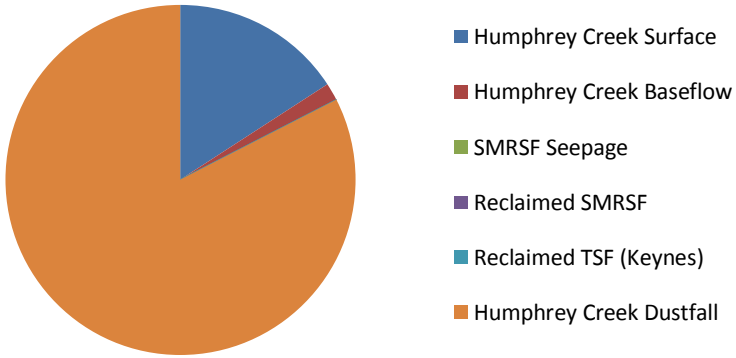
FIGURE 5.46

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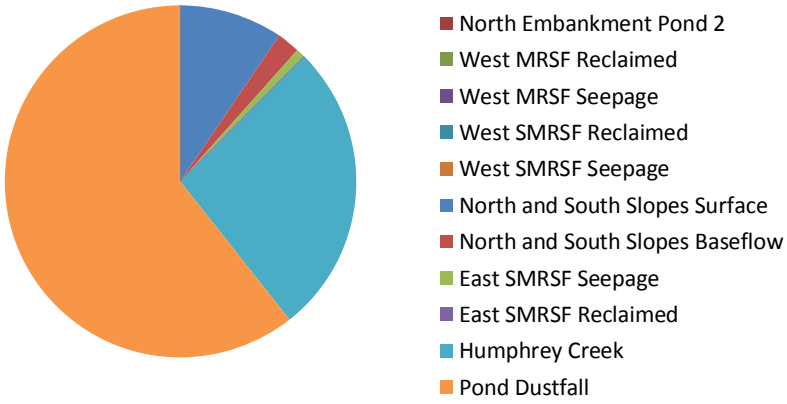
Jacko Lake



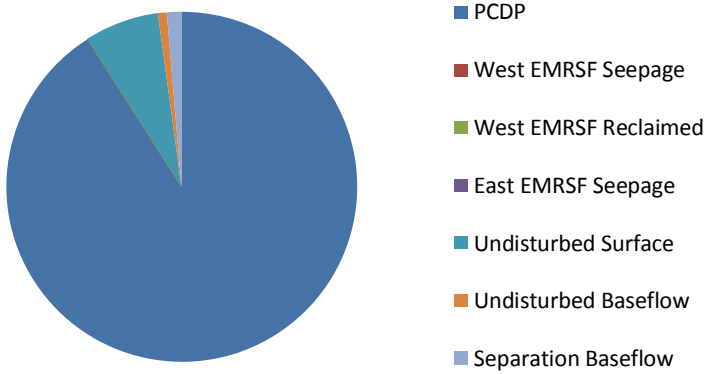
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:

1. MODELLED LOADS PRESENTED IN mg/MONTH FOR THE AVERAGE OF YEAR 13 OF OPERATIONS.
2. MODEL RESULTS DISPLAYED FOR DISSOLVED CHROMIUM.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
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ANNUAL LOAD PROPORTION FOR CHROMIUM DURING OPERATIONS

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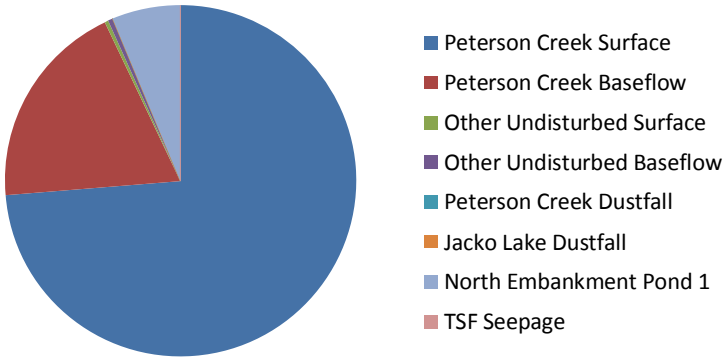
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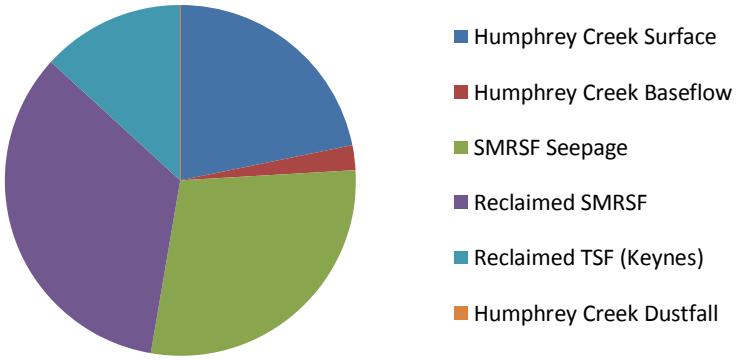
FIGURE 5.47

REV 0

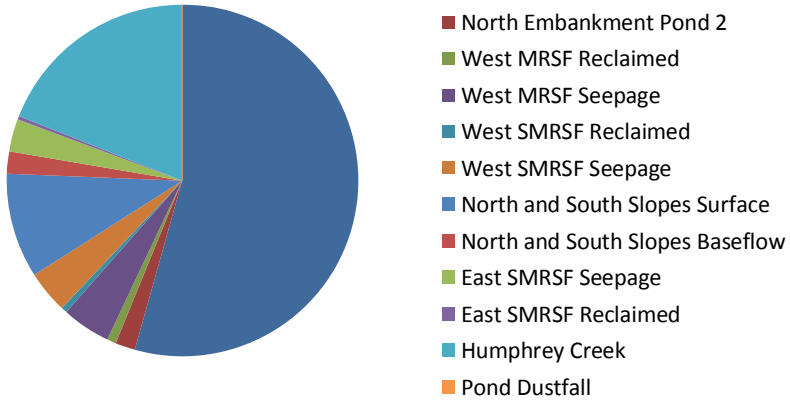
Jacko Lake



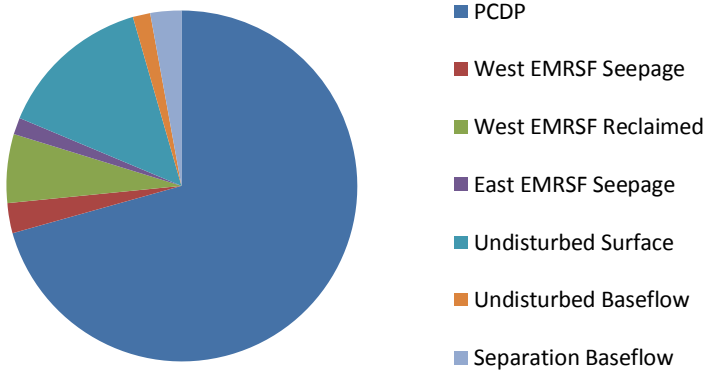
Humphrey Creek



Peterson Creek Downstream Pond



PC02



NOTES:
1. MODELLED LOADS PRESENTED IN mg/MONTH FOR THE AVERAGE OF A TYPICAL POST CLOSURE YEAR.
2. MODEL RESULTS DISPLAYED FOR DISSOLVED CHROMIUM.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

ANNUAL LOAD PROPORTION FOR CHROMIUM DURING POST CLOSURE

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P/A NO. VA101-246/31

REF. NO. 4

FIGURE 5.48

REV 0

5.3.7.7 Cobalt

Cobalt is not predicted to exceed the relevant water quality guidelines in the Base Case model at any assessment location; the lowest guideline for cobalt is the BCWQG 30 D (0.004 mg/L). Exceedances of the BCWQG 30 D for cobalt are predicted in the VCC models at the Humphrey Creek and PC02.3 assessment locations; however, it is important to note that there were no exceedances of the BCWQG Max (0.11 mg/L) in any scenario. Exceedances were not predicted at any other assessment location under any other sensitivity scenario. The cobalt BCWQG 30 D exceedances are as follows:

- Humphrey Creek – 95th P VCC summary results – five times in Construction through Decommissioning and Closure as a result of dustfall loading, and
- Peterson Creek assessment location PC02.3 – 95th VCC summary results – three times in Post Closure when seepage arrives at the assessment location.

Cobalt is primarily transported via dustfall during Construction, Operations, and Decommissioning and Closure and then through seepage from the MRSFs in Post Closure, with dustfall having the greatest effect on Humphrey Creek due to natural low flow conditions in that watershed. Repetitive spikes in predicted concentrations were predicted in the VCC models due to model input assumptions with respect to timing of the release of dustfall stored in the snowpack through the winter months. This stored dustfall load is timed to be released in May, when freshet conditions are expected in an average year. The transport mechanism for load that accumulates through the winter months to be carried into the creeks is runoff with snow meltwaters and spring rains, resulting in higher loading when flows would also be higher. Historical climate variability accounts for the onset of spring earlier or later than May in some years, but the model timing results in the release of the stored dustfall load independent of these conditions, resulting in predicted concentrations that are much higher than expected.

All of the guideline exceedances for cobalt are predicted under the VCC models only. These exceedances result from unrepresentative model interactions and the predicted concentrations exceed the range of expected concentrations for the receiving water in the project area. What is apparent from the sensitivity model results is that parameter concentrations are sensitive to variation in streamflow conditions, particularly for those parameters that are predicted to be affected by seepage from the mine facilities and that are elevated in local groundwater, thus contributing to loading through baseflow.

5.3.7.8 Iron

Iron concentrations are predicted to exceed the BCWQG-Max (0.035 mg/L) at the Peterson Creek model assessment location PC02.3 in Post Closure in the Base Case model and in some of the sensitivity case models. Some sensitivity models, however, did not indicate iron concentrations in excess of any guideline, including the 5th P Baseline Inputs and seepage timing sensitivity scenarios. The high predicted iron concentrations in PC02.3 in Post Closure result from the arrival of seepage from the EMRSF, which is expected to take in excess of 200 years to reach the receiving assessment location, but was conservatively modelled to arrive on an 80 year period. Conservative assumptions related to seepage loading have been made for the purposes of modelling. Mine source seepage to groundwater is not mixed with local groundwater in mixing cells along the flow pathway, it is dealt with in terms of timing delays, so receiving water loads are equivalent to source loading for

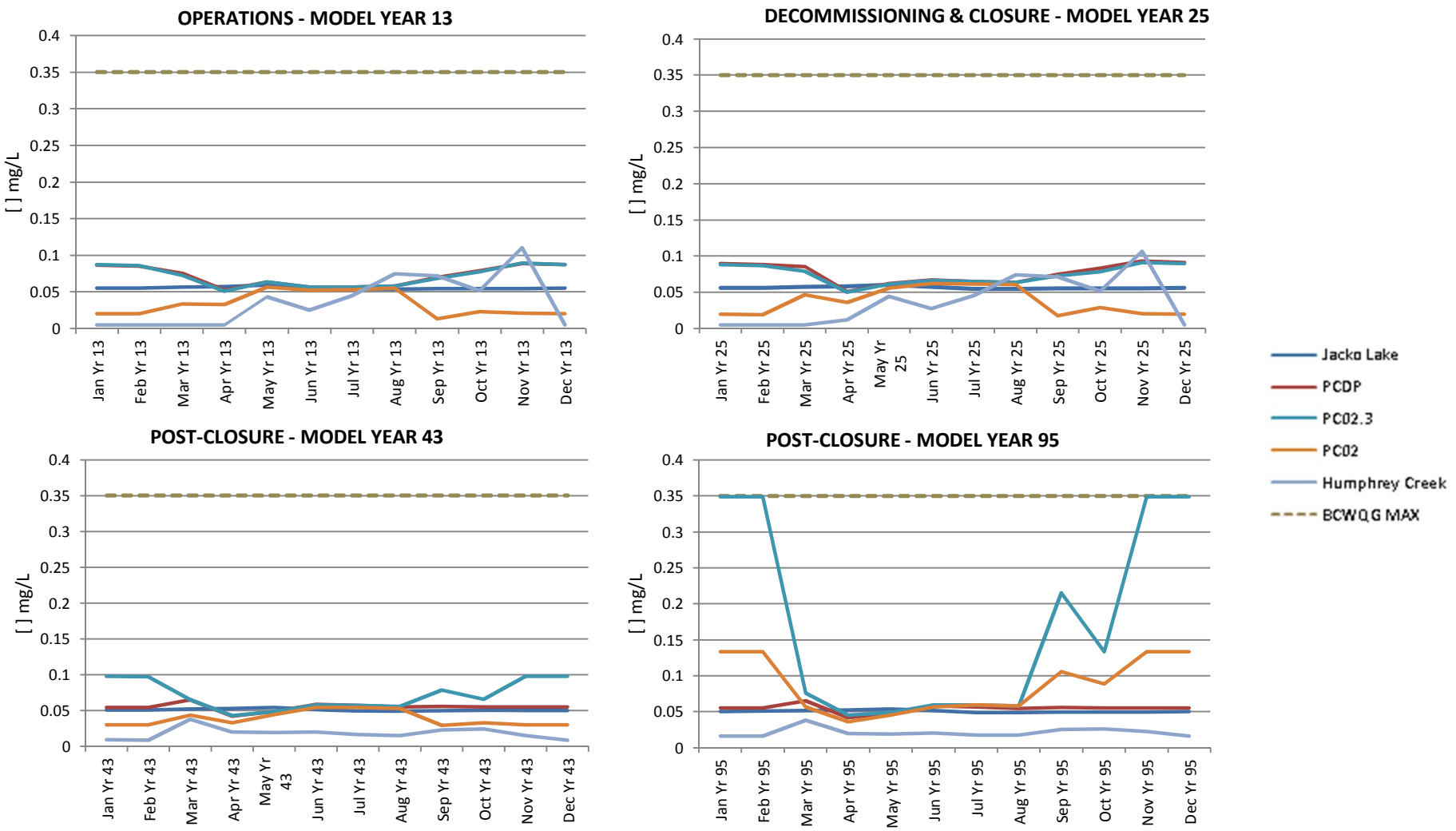
the same calendar month for a set time earlier in the model. In reality, groundwater discharge to local creeks would be a combination of small amounts of mine seepage with larger amounts of local groundwater, resulting in a more diffuse loading than is currently modelled and concentrations are not likely to reach those predicted in the water quality models. The default seepage assumptions have led to conservatively high predictions of the iron concentrations at PC02.3 (and other assessment locations), when the actual concentrations are likely to be lower. These same assumptions result in higher than expected predicted concentrations for the sensitivity case models as well at all assessment locations.

The predicted seasonality of iron concentrations in the Peterson Creek watershed are shown on Figure 5.49 and the predicted iron concentrations specific to PC02.3 under the Base Case scenario are shown on Figure 5.50. The iron BCWQG 30 D exceedances are summarized as follows:

- Humphrey Creek – VCC summary results – seasonal exceedances in Construction through Decommissioning and Closure as a result of dustfall loading.
- PC02.3 – Base Case and most sensitivity scenarios.
- PC02 – VCC summary results and 95th P Baseline Inputs:
  - 95th P and 75th P VCC summary results – one exceedance predicted in Post Closure.
  - 95th P Baseline Inputs sensitivity case – seasonal (November through February) exceedances in late Post Closure, upon arrival of seepage associated to long flow pathways from the EMRSF.

Humphrey Creek iron loading is primarily through dustfall during Construction, Operations, and Decommissioning and Closure and then through seepage from the MRSFs in Post Closure, with dustfall having the greatest effect on Humphrey Creek due to natural low flow conditions in that watershed. Repetitive spikes in predicted concentrations were predicted in the VCC models due to model input assumptions with respect to timing of the release of dustfall stored in the snowpack through the winter months. This stored dustfall load is timed to be released in May, when freshet conditions are expected in an average year. The transport mechanism for load that accumulates through the winter months to be carried into the creeks is runoff with snow meltwaters and spring rains, resulting in higher loading when flows would also be higher. Historical climate variability accounts for the onset of spring earlier or later than May in some years, but the model timing results in the release of the stored dustfall load independent of these conditions, resulting in predicted concentrations that are much higher than expected.

All of the exceedances for iron are predicted as a result of unrepresentative model interactions and these predictions exceed the range of expected concentrations for the receiving water in the project area. What is apparent from the sensitivity model results is that parameter concentrations are sensitive to variation in streamflow conditions, particularly for those parameters that are predicted to be affected by dustfall and seepage from the mine facilities and that are elevated in local groundwater, thus contributing to loading through baseflow.



NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. NO WATER QUALITY BENCHMARK (WQB) PROPOSED FOR IRON.

REV	DATE	DESCRIPTION	PREP'D	APP'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

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AJAX PROJECT

IRON - PREDICTED SEASONALITY IN PETERSON CREEK WATERSHED - BASE CASE

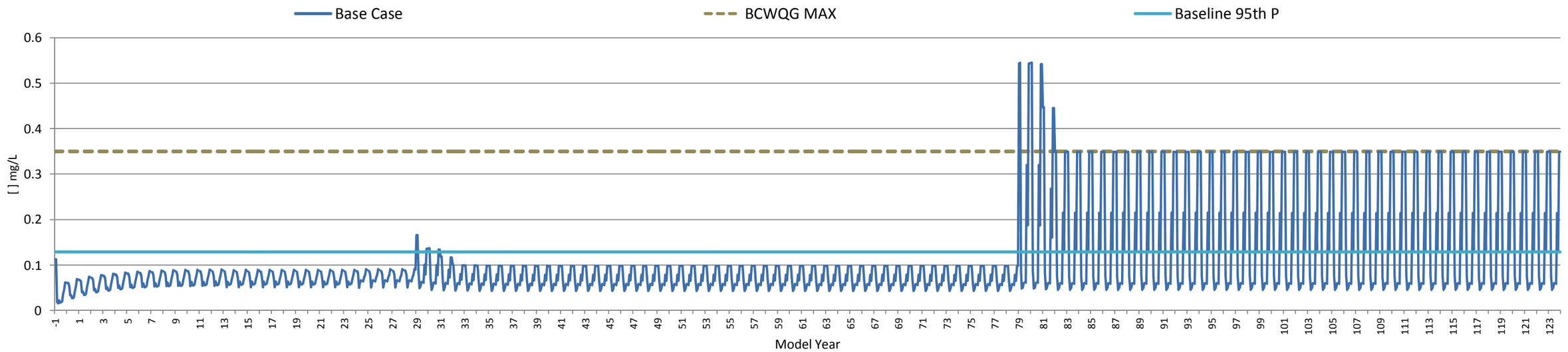
Knight Piésold CONSULTING

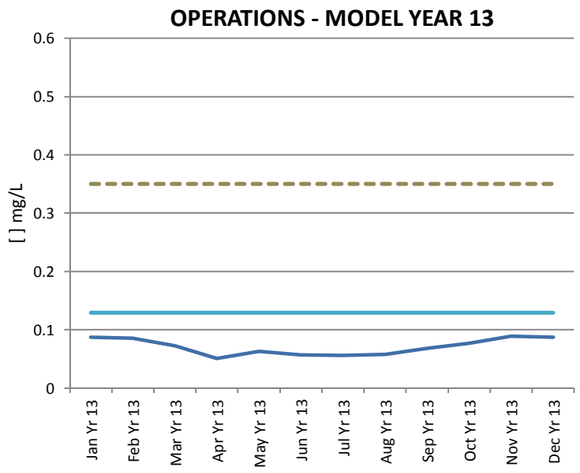
P/A NO. VA101-246/31

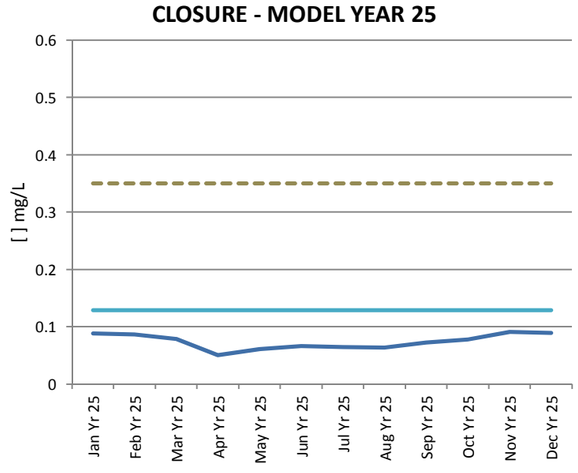
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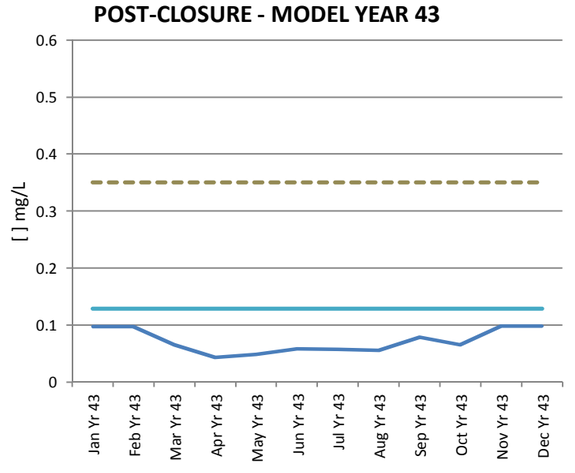
FIGURE 5.49

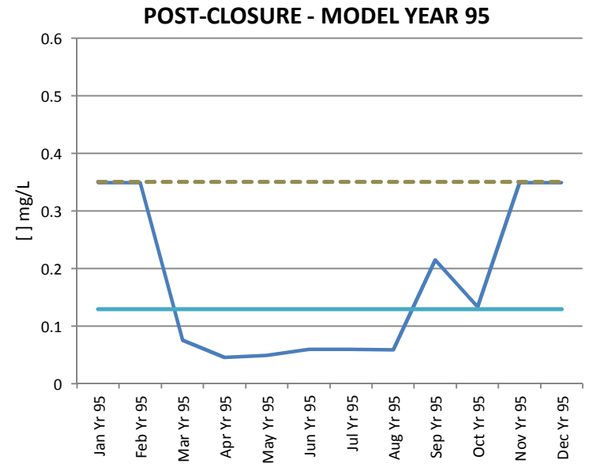
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. NO WATER QUALITY BENCHMARK PROPOSED FOR IRON.

REV	DATE	DESCRIPTION	PREP'D	APP'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

PC02.3 - PREDICTED IRON CONCENTRATIONS - BASE CASE

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 4

FIGURE 5.50

REV 0

5.3.7.9 Uranium

Predicted uranium concentrations do not exceed the BCWQG 30 D (0.0085 mg/L) at any assessment location in the Base Case model scenario; however, some exceedances were noted for the VCC models for PC02.3 and PC02. The uranium BCWQG 30 D exceedances are as follows:

- Peterson Creek assessment location PC02.3 – 95th P, 75th P, Mean, and 50th P VCC summary results in Post Closure only – seasonal (September) exceedances when seepage associated to long flow pathways arrives at the assessment location.
- Peterson Creek assessment location PC02 – 95th P and 75th P VCC summary results for all mine phases – seasonal (May) exceedances.

Uranium loading is dominated by background sources at all model assessment locations with minor loading from MRSF and TSF seepage. All of the exceedances for uranium are predicted as a result of these unrepresentative model interactions and these predictions exceed the range of expected concentrations for the receiving water in the project area. What is apparent from the sensitivity model results is that parameter concentrations are sensitive to variation in streamflow conditions, which is evident under baseline conditions, with higher concentrations for most parameters measured under low flow conditions, when groundwater is the primary source for surface flows.

5.4 MINE SITE WATER QUALITY PREDICTIONS

Water quality predictions for the TSF and water management ponds are presented in this section of the report. The parameters discussed in these sections are the parameters that exceeded a relevant water quality guideline in the receiving environment; however, the focus of this discussion is the loading sources that are influencing the parameter concentrations within the facilities, as opposed to receiving water quality guidelines.

Summary data for all parameters and all model scenarios are provided in Appendix J, with TSF data provided in Appendix J1 and data for TSF South Embankment water management pond, TSF Southeast Embankment water management pond, WMRSF water management pond 1, WMRSF water management pond 2, SMRSF water management pond, and EMRSF water management pond provided in Appendices J2 through J7, respectively.

5.4.1 Tailings Storage Facility (TSF) Overview

The tailings produced throughout the mine life will be managed in the TSF. Four embankments constructed primarily of rockfill sourced from the open pit will contain the tailings. Tailings materials, including the solids and the supernatant, will be continuously deposited in the facility through the Operations mine phase, and mill water requirements are partially met through reclaim water from the supernatant pond. The tailings beaches will be constructed from non-acid generating tailings, though neutral loading is anticipated from these materials and has been factored into the water quality predictions for the Project. Water management on site is designed to maximize reclaim and minimize water required for make-up and as a result, water and loads from water management ponds and the open pit are run through the mill, adding to loading in the TSF.

Half of the parameters modelled reached their respective solubility during Operations and the remaining parameters stabilized at concentrations below their solubility limits. Sulphate, boron, lithium, molybdenum, and selenium were not assigned solubility constraints, but these parameters also reached stable concentrations in the model. Fluoride, molybdenum and selenium were predicted to exceed their respective wildlife water quality guidelines (BCQWG-Wildlife). Fluoride reached its solubility limit of 1.42 mg/L by the third year of Operations and the BCWQG-Wildlife is set at 1 mg/L. Molybdenum concentrations were predicted to begin to stabilize relatively early in Operations (year 4), though a slight increasing trend was noted over the duration of Operations, from 0.9 mg/L at the end of year 4 to 1.06 mg/L at the end of Operations. Molybdenum concentrations also exceeded the WQB of 0.18 mg/L. The initial selenium concentration in the TSF is higher than is predicted in Operations and this is due to the assumption that the water in the historical open pits is pumped to the TSF and the selenium concentrations are elevated in that water. Similar to molybdenum, selenium concentrations begin to stabilize around year four of Operations, at around 0.0083 mg/L, reaching 0.0097 mg/L at the end of Operations; predicted concentrations exceed the 0.002 mg/L BCWQG-Wildlife and also exceed the 0.005 mg/L WQB. The primary loading source to the TSF is the loading from ore processing in the mill and tailings consolidation is a secondary loading source; evaporation is a key factor contributing to the high concentrations in the TSF. Several parameters exceed aquatic life guidelines, but these exceedances are not discussed in this report. The Base Case model summary statistics for the predicted TSF chemistry are provided in Appendix I, Table I1.

5.4.2 Water Management Ponds

Water management ponds will be situated at four locations down-gradient of the TSF in order to maximize containment of seepage losses from this facility and from contact water from the embankments and the WMRSF. The water management ponds down-gradient of the TSF are the TSF South Embankment water management pond, TSF Southeast Embankment water management pond, WMRSF water management pond 1, and WMRSF water management pond 2. During Operations, water from the WMRSF water management pond1 and water management pond2 will be pumped to the Central Pond and then back to the TSF after use in the mill. The water management ponds at the South and Southeast TSF embankments are intended to be evaporative basins and much smaller volumes of water are expected in them compared to the other water management ponds due to relatively small catchment areas. In Decommissioning and Closure and Post Closure, the WMRSF water management pond1 and water management pond 2 are intended to function as evaporative ponds with no surface outflow, though seepage losses are expected, contributing to loading in Jacko Lake, the open pit, and Peterson Creek. The SMRSF water management pond is situated in the Humphrey Creek drainage area at the southeast edge of the SMRSF. This water management pond is reclaimed to the mill during Operations and in Decommissioning and Closure this pond receives runoff from the reclaimed SMRSF surface, which contributes relatively low loads for most parameters and seepage from the SMRSF; seepage from the SMRSF water management pond reports to Humphrey Creek. The EMRSF water management pond is located the southeast of the EMRSF, near the PCDP. During Operations, water from the EMRSF water management pond is reclaimed and in Decommissioning and Closure the water management pond is intended to function as an evaporative pond. Seepage from this water management pond is modelled to be intercepted in Peterson Creek downstream of the PDCP and upstream of model assessment location PC02.3.

Predicted chemistry in the WMRSF water management ponds was similar, with concentrations of most parameters reaching maximum values near the end of Operations, decreasing rapidly through Closure, and trending upwards over time in Post Closure, though most parameters remained below the maximum concentrations predicted in Operations. A few parameters reached their respective solubility constraints (phosphorus, antimony, arsenic, barium, beryllium, cadmium, lead, nickel, and vanadium), but with the exception of phosphorus, barium, beryllium, and vanadium, parameter concentrations dropped below the solubility constraints in Post Closure. Lead concentrations in WMRSF water management pond1 seasonally reached the solubility constraint for the duration of Post Closure. Overall, trends through Post Closure are upwards due to the influence of greater seepage released from the MRSFs as the pore spaces fill with water over time. Molybdenum and selenium concentrations in these two water management ponds are predicted to exceed their respective wildlife water quality guidelines (note that the BCWQG-Livestock is the same as the BCWQG-Wildlife for molybdenum) in all modelled mine phases; selenium concentrations are predicted to exceed the BCWQG for livestock water (0.03 mg/L) in Operations and Closure, but not in Post Closure. Concentrations for these parameters are also predicted to exceed the WQB through Operations and Closure, drop below the WQBs in early Post Closure, and rise over time to values that exceed the WQBs. Aquatic life guideline exceedances were noted in both ponds but are not discussed in detail in this section. The Base Case model summary statistics for the predicted WMRSF water management ponds chemistry are provided in Appendix I, Table I2 and Table I3 for the WMRSF water management pond1 and WMRSF water management pond2, respectively.

The TSF South and Southeast Embankment water management ponds are smaller than the other water management ponds and are planned to manage contact water from the mine rock used to construct the embankments in that area. Seepage losses from these water management ponds are returned back into the TSF catchment area, though these are small loads. Due to continuous loading with little potential for load losses and high evaporation, many parameters are evapo-concentrated reaching their respective solubility constraints during the model time frame and concentrations of all other parameters rise. Concentrations are higher in the TSF Southeast water management pond than the TSF South water management pond, but overall the chemistry is similar. Fluoride, selenium, and molybdenum are predicted to exceed their respective wildlife water quality guidelines and selenium is also predicted to exceed the BCWQG for livestock (0.03 mg/L) in late Post Closure in the TSF Southeast water management pond but concentrations did not reach that value in the TSF South water management pond by the end of the model timeframe. Similarly, the fluoride concentrations were only predicted to exceed the BCWQG-Wildlife in late Post Closure in the TSF Southeast Embankment water management pond, but concentrations did not reach that value in the TSF South water management pond by the end of the model timeframe. Selenium and molybdenum are predicted to exceed the WQBs in Post Closure. The Base Case model summary statistics for the predicted TSF South and Southeast water management ponds chemistry are provided in Appendix I, Table I4 and Table I5, respectively.

Predicted parameter concentrations in the SMRSF water management pond were higher in Operation and Decommissioning and Closure than any other phase and most parameters reached their solubility constraints during these phases. Phosphorus, barium, beryllium, cadmium, lead, and vanadium were the only parameters that were at their solubility constraints in Post Closure too. Fluoride, molybdenum, and selenium are predicted to exceed their respective wildlife water quality guidelines (note that the BCWQG-Livestock is the same as the BCWQG-Wildlife for molybdenum) in all modelled mine phases; selenium concentrations are also predicted to exceed the BCWQG for livestock water (0.03 mg/L) in Operations, but no other mine phases. The fluoride wildlife guideline exceedances are predicted in late Operations and early Closure, and the molybdenum exceedances are predicted in Operations through Post Closure. The WQG for molybdenum is predicted to be exceeded in Operations, Closure, and early Post Closure, with concentrations below this threshold through Post Closure. Selenium is the only parameter that is predicted to exceed the wildlife guideline in Construction and reaches peak concentrations in Operations in year 12, continuing to exceed this guideline in Closure, but dropping below the guideline in Post Closure. The selenium WQB is exceeded in Construction, Operations and Closure. Aquatic life guideline exceedances were noted in both ponds but are not discussed in detail in this section. The Base Case model summary statistics for the predicted SMRSF water management pond chemistry are provided in Appendix I, Table I6.

Predicted parameter concentrations in the EMRSF water management pond are higher in Operations and Decommissioning and Closure than any other mine phase. Only a few parameters reached their solubility constraint concentrations (phosphorus, antimony, arsenic, barium, beryllium, lead, and vanadium), and with the exception of phosphorus, barium, beryllium, and vanadium, concentrations of all parameters are below their solubility constraints through Post Closure. Molybdenum and selenium are predicted to exceed their respective wildlife water quality guidelines (note that the BCWQG-Livestock is the same as the BCWQG-Wildlife for molybdenum) in Operations and Closure. Of these two parameters, only selenium is predicted to exceed the WQB (in

Operations and Closure), but remains below the BCWQG for livestock (0.03 mg/L). Aquatic life guideline exceedances were noted in both ponds but are not discussed in detail in this section. The Base Case model summary statistics for the predicted EMRSF water management pond chemistry are provided in Appendix I, Table I7.

6 – CONCLUSIONS

A mass balance water quality model was developed for the Ajax Project to determine the potential changes in water quality as a result of runoff and seepage of contact water from mine facilities and mine rock sources and dustfall. Following calibration to existing conditions, the Base Case model was developed using the LOM water balance for average conditions and median baseline water quality inputs and 13 sensitivity case models were run to assess the sensitivity of the predicted parameters concentrations to variation in some of the key input assumptions and to climate variability. The model predicts concentrations within the Peterson Creek watershed as seepage and runoff from all of the proposed facilities and infrastructure will be limited to this watershed. Jacko Lake is the uppermost assessment location in Peterson Creek, with assessment locations further downstream in Peterson Creek at the Peterson Creek Downstream Pond (PCDP), PC02.3, and PC02, and at the mouth of Humphrey Creek, which is just upstream of the PCDP.

The predicted parameters were screened against baseline concentrations ranges and generic BC water quality guidelines, the most sensitive of which are those for the protection of aquatic life and wildlife (molybdenum and selenium), though it is recognized that the wildlife guideline for molybdenum is also the same for livestock water sources. Parameters that are predicted to exceed the generic water quality guidelines at multiple assessment locations or over multiple mine phases are sulphate, chloride, copper, molybdenum, and selenium.

A science based environmental benchmark (SBEB) was developed for sulphate for the characterization of the baseline water quality in the project area because baseline hardness typically exceeded the 250 mg/L $CaCO_3$ hardness threshold in the BCWQG-30 D, requiring site specific toxicity testing for sulphate. The toxicity testing, documented in *Testing in support of development of a science based environmental benchmark for sulphate for the Ajax Mine* (Nautilus 2015), resulted in the development of two SBEB values, the lowest of which is a maximum sulphate concentration of 429 mg/L, which is the same as the current BCWQG-30 D, but with the maximum hardness adjusted up to 800 mg/L $CaCO_3$ which is protective of early life stages for trout (assumed present from May through June in an average year). The alternative SBEB of 730 mg/L for a hardness of up to 1377 mg/L $CaCO_3$ was recommended for surface waters where early life stages for trout are never present, or for periods of the year when these life stages are not expected to be present in a given reach of Peterson Creek (July through April). Protective water quality benchmarks (WQBs) were researched and prepared for chloride, arsenic, copper, molybdenum, and selenium based on the most sensitive species specific to the project area, and although aquatic life guideline exceedances for molybdenum are not predicted, a WQB was developed for wildlife and livestock.

The Base Case model results were calculated using average monthly climate inputs in combination with median monthly baseline water quality inputs. The sensitivity of the predicted water quality to Mine Rock Storage Facility (MRSF) recharge assumptions, groundwater assumptions, baseline inputs, dustfall assumptions, seepage timing, and to variability in climate conditions was assessed in detail to provide additional insight into the sensitivity of the downstream water quality predictions to variations in these important model inputs. Median monthly baseline water quality inputs were used in all of the models except the baseline inputs sensitivity case.

There are no parameters that are predicted to exceed the water quality guidelines, water quality benchmarks (WQBs), or science based environmental benchmark (SBEB) in Jacko Lake, in the Base Case or in any of the sensitivity case models. Given the large changes in seepage loading that

were modelled in several of the sensitivity scenarios and the influence of baseline variability that was assessed in the baseline sensitivity scenarios, the confidence in the lack of guideline exceedances at this model assessment location is high.

Predicted sulphate concentrations are predominantly influenced by natural catchment contributions and secondarily by seepage from the MRSFs, with the greatest increase noted between the two lower Peterson Creek assessment locations PC02.3 and PC02. The effects of seepage are seen in the model results, particularly with respect to changes in concentrations due to the arrival of long-delay seepage loads (MRSF infiltration in Operations (on active MRSFs) that arrives at receiving water assessment locations later in Decommissioning and Closure and Post Closure). Sulphate concentrations are predicted to remain below the SBEB thresholds at all of the Peterson Creek and Humphrey Creek assessment locations, with the exception of May results at PC02 in Decommissioning and Closure and Post Closure. However, the sulphate concentrations in May at PC02 are below the baseline 95th P concentration for this site. The sulphate predictions are most sensitive to variation in the baseline inputs to the model and to variation in climate conditions (VCC) and SBEB exceedances were predicted for these sensitivity case models.

Similar to all other parameters whose loads are associated with seepage pathways from the MRSFs, higher VCC model results are predominantly due to the influence of seepage, assumptions related to seepage timing, and the associated timing of monthly model precipitation inputs that generate the loading at the sources (MRSFs) and the runoff in the receiving water assessment location. The geochemical source terms were developed specifically for the average climate case model and have been conservatively applied to the VCC models, such that the source loading predicted for wetter than average months is higher than that which would realistically occur (see section 4.2). In the model it is common for a higher than average month for source loading (wet month in historical climate record) to reach a receiving water creek assessment location on a time delay associated with a lower than average receiving water flow month (due to drier conditions in the historical climate record) and the combined model outcome is much higher concentrations than would be expected. Conservative assumptions regarding seepage interactions with groundwater were made for modelling. Mine source seepage to groundwater is not mixed with local groundwater in mixing cells along the flow pathway, it is dealt with in terms of timing delays, so receiving water loads are equivalent to source loading for the same calendar month for a set time earlier in the model. In reality, groundwater discharge to local creeks would be a combination of small amounts of mine seepage with larger amounts of local groundwater, resulting in a more diffuse loading than is currently modelled and concentrations are not likely to reach those predicted in the upper percentile VCC summary results. Baseline sensitivity case (BSC) model results for the 95th P baseline inputs are also conservative, given that these concentrations assume that all baseline contributions are at their near maximum for the duration of the model. They provide a valuable understanding of potential sensitivities but are not likely representative of future water concentrations.

Chloride concentrations are predicted to remain below the BCWQG-30 D (150 mg/L) in the project area with the exception of PC02. Chloride Baes Case concentrations are predicted to seasonally exceed the BCWQG-30 D at this site, but are not predicted to exceed the 388 mg/L WQB developed for this parameter. Higher chloride concentrations in PC02 are attributed to proximity to Highway 5A, where road salting activities would be common practice for winter conditions; this observation was made upon examination of the baseline data for this site and chloride, although not naturally elevated, is a background source. Predicted chloride concentrations are sensitive to variation in

baseline inputs but were most sensitive (highest predicted concentrations) to the variation in climate inputs. Chloride occasionally exceeded the WQB in the VCC models, though the conservatism with respect to these sensitivity models was previously explained, and these exceedances are not expected to occur.

Dustfall is an important source of copper loading in Operations to PCDP and Humphrey Creek; however, natural catchment contributions are the primary loading source at all downstream model assessment location in all mine phases. Base Case copper concentrations are highest in Humphrey Creek in Operations and Decommissioning and Closure as this creek is most affected by the dustfall deposition due to proximity to the loading sources (TSF and SMRSF) and due to the natural low flow volumes in this creek. The highest copper concentrations are predicted for Humphrey Creek in Post Closure, but due to seepage loading from the SMRSF, resulting in higher concentrations in the low flow winter months compared to all other receiving water quality model assessment locations. Humphrey Creek is the only assessment location that had predicted copper guideline exceedances in the Base Case model, but concentrations remained below the WQB (0.026 mg/L). With the exception of Humphrey Creek, all predicted copper concentrations in the sensitivity analyses were below the WQB. The 95th P summary VCC model results exceed the WQB in almost every May during Operations and Decommissioning and Closure in Humphrey Creek. This repetitive spike in the model results is due to model input assumptions with respect to timing of the release of dustfall stored in the snowpack through the winter months combined with lower than average spring (May) flows in Humphrey Creek. Similar to chromium, these exceedances are considered conservative and unlikely.

Sources of molybdenum loading in Operations are predominantly natural sources. In Post Closure, mining sources (seepage and runoff from reclaimed areas) account for a larger portion of molybdenum loading to Jacko Lake and make up the majority of molybdenum loading to Humphrey Creek, but natural catchment contributions are still predominant at all assessment locations in this mine phase. Peak molybdenum Base Case model concentrations in Humphrey Creek exceed the BCWQG-Wildlife and BCWQG-Livestock and are predicted to remain below this guideline at all other receiving water quality model assessment locations and remain below the 0.18 mg/L WQB. The WQB was exceeded for the 95th P VCC summary results for one month in Post Closure at PC02.3 and four months in Humphrey Creek, which is low considering the Post Closure model phase is 97 years. The conservatism of the model VCC model predictions with respect to delayed seepage and low flows in the receiving waters was explained previously; these exceedances are not expected.

The primary sources of selenium loading at all model assessment locations are natural catchment runoff and baseflow contributions. Seepage from proposed mine facilities is a secondary source. Base Case selenium concentrations are not predicted to exceed the WQB in any assessment location other than Humphrey Creek and Base Case concentrations in the PCDP (next assessment location downstream of Humphrey Creek) are predicted to remain below the BCWQG-30 D and the WQB for the duration of the model. It should be noted that the 95th P baseline concentration for the lower Humphrey Creek is 0.0051 mg/L, which also exceeds the WQB. Peak Base Case concentrations are predicted to seasonally exceed the BCWQG-30 D at PC02 (April and May of each year), but remain below the WQB. Predicted selenium concentrations are sensitive to variation in baseline inputs to the models but are most sensitive to variable climate (VCC) inputs and exceedances of the WQB were predicted. For reasons previously stated, these VCC predictions are considered to be conservative and not likely to occur.

Contributions from the natural catchment to Jacko Lake, Peterson Creek, and Humphrey Creek account for the majority of constituent loading to these features. Dustfall, especially for chromium and copper loading, and seepage from the MRSFs are the major mine-related sources of loading to the Project area, and more specifically to Humphrey Creek.

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8 – CERTIFICATION

This report was prepared and reviewed by the undersigned.

Prepared: ORIGINAL SIGNED

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Approval that this document adheres to Knight Piésold Quality Systems:

APPENDIX A

GEOCHEMICAL SOURCE TERMS

(Pages A-1 to A-5)

TSF Source Terms

	Reported as	Unit	pH	Alkalinity	SO4	Cl	F	Br	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	P	K	Se	Si	Ag	Na	Sr	Tl	Sn	U	V	Zn
Beach runoff (active)	Load	mg/m^2/yr	8.0	4865	51590	139	21	37	0.12	0.100	0.12	0.95	0.0026	5.6	0.0022	18849	0.068	0.044	0.41	0.0099	0.0063	0.83	1817	1.5	0.0015	7.5	0.19	1.2	1882	0.40	245	0.0015	861	84	0.0033	0.094	0.081	0.56	0.28
Beach runoff/infiltration (inactive)	Load	mg/m^2/yr	7.9	3896	48234	715	21	37	0.096	0.100	0.12	2.2	0.016	24	0.016	12325	0.29	0.25	0.44	0.013	0.024	1.9	3622	10	0.0017	37	0.62	7.4	822	1.5	242	0.0019	3799	225	0.012	0.49	0.34	0.59	0.74
Operations seepage (saturated)	Concentration	mg/L	7.8	246	1498	112	0.42	0.40	0.0023	0.0047	0.0073	0.023	0.00020	0.093	0.000092	627	0.00041	0.00072	0.0066	0.00040	0.00062	0.0066	45	0.087	0.000056	0.35	0.0059	0.13	35	0.0021	6.6	0.00020	78	3.1	0.000020	0.00028	0.0091	0.0046	0.015
Closure seepage w/o NAG cover	Concentration	mg/L	7.9	105	1304	19	0.57	1.0	0.0026	0.0027	0.0033	0.059	0.00044	0.65	0.00044	333	0.0079	0.0068	0.012	0.00036	0.00065	0.051	98	0.27	0.000046	1.0	0.017	0.20	22	0.041	6.5	0.000050	103	6.1	0.00032	0.013	0.0091	0.016	0.020
Closure seepage with NAG cover	Concentration	mg/L	7.9	105	1304	19	0.57	1.0	0.0026	0.012	0.073	0.059	0.00044	0.65	0.00044	333	0.0079	0.0068	0.046	0.00036	0.00065	0.051	98	0.27	0.000084	1.3	0.017	0.20	22	0.041	6.5	0.000050	103	6.1	0.00032	0.013	0.010	0.11	0.024
Process-water - initial	Concentration	mg/L	7.7	50	1616	112	0.40	0.25	0.047	0.0047	0.0073	0.038	0.00020	0.093	0.000092	612	0.00041	0.00072	0.0066	0.030	0.00062	0.0066	61	0.087	0.000056	0.22	0.0059	0.13	32	0.0021	7.4	0.00020	78	3.1	0.000023	0.00028	0.0091	0.0045	0.015
Process water - Load accumulation	Load	mg/t_{rain}/cycle								12	18															554				5.3					0.057		23	11	

Legend

commonly below DL in humidity cells

for tails beach source terms (in loads), an annual infiltration of 37 mm was assumed

Mine Facilities Source Terms

	Time Step/Scenario	pH	Alkalinity	Sulphate	Cl	F	Br	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	P	K	Se	Si	Ag	Na	Sr	Tl	Sn	U	V	Zn
	Year 5	8.0	132	1673	8.9	0.47	1.0	0.0032	0.052	0.081	0.029	0.00010	0.41	0.00019	504	0.0035	0.0036	0.011	0.00028	0.0014	0.034	54	0.060	0.000090	0.47	0.085	0.080	44	0.080	6.6	0.000025	160	3.6	0.00025	0.00025	0.0069	0.11	0.029
West MRSF &	Year 10	8.0	130	1660	9.7	0.47	1.0	0.0031	0.049	0.081	0.030	0.00012	0.41	0.00023	497	0.0037	0.0055	0.011	0.00028	0.0012	0.034	56	0.088	0.00010	0.71	0.10	0.10	42	0.080	6.6	0.000025	160	3.6	0.00025	0.00025	0.0097	0.11	0.033
Main Embankment	Year 20	8.0	128	1649	10	0.47	1.0	0.0031	0.048	0.081	0.031	0.00013	0.41	0.00025	491	0.0037	0.0063	0.011	0.00028	0.0011	0.034	57	0.10	0.00011	0.83	0.11	0.12	41	0.080	6.6	0.000025	160	3.6	0.00025	0.00025	0.011	0.11	0.035
	Post-closure	7.9	112	1447	2.2	0.47	1.0	0.0027	0.015	0.081	0.046	0.00018	0.41	0.00018	478	0.0059	0.0018	0.012	0.00033	0.00039	0.034	79	0.049	0.000090	1.3	0.057	0.083	39	0.045	6.6	0.000025	24	3.6	0.00025	0.00025	0.0058	0.11	0.027
	Year 5	8.0	124	1616	16	0.47	1.0	0.0030	0.076	0.081	0.036	0.00016	0.41	0.00020	469	0.0048	0.0050	0.011	0.00030	0.00090	0.034	64	0.088	0.00013	0.64	0.083	0.13	38	0.080	6.6	0.000025	160	3.6	0.00025	0.00025	0.0099	0.11	0.043
South MRSF &	Year 10	8.0	123	1611	17	0.47	1.0	0.0030	0.074	0.081	0.036	0.00017	0.41	0.00023	465	0.0048	0.0059	0.011	0.00030	0.00084	0.034	65	0.10	0.00014	0.76	0.094	0.15	37	0.080	6.6	0.000025	160	3.6	0.00025	0.00025	0.011	0.11	0.044
East Embankment	Year 20	8.0	123	1610	17	0.47	1.0	0.0030	0.074	0.081	0.036	0.00017	0.41	0.00022	465	0.0048	0.0059	0.011	0.00030	0.00084	0.034	65	0.10	0.00014	0.75	0.093	0.15	37	0.080	6.6	0.000025	160	3.6	0.00025	0.00025	0.011	0.11	0.044
	Post-closure	7.9	105	1430	2.9	0.47	1.0	0.0026	0.020	0.081	0.060	0.00025	0.41	0.00017	432	0.0075	0.0021	0.012	0.00037	0.00060	0.034	99	0.067	0.00013	1.1	0.052	0.11	32	0.043	6.5	0.000025	33	3.6	0.00025	0.00025	0.0067	0.11	0.038
	Year 5	7.9	122	1598	20	0.47	1.0	0.0029	0.080	0.081	0.038	0.00016	0.41	0.000080	458	0.0046	0.0019	0.011	0.00031	0.00091	0.034	67	0.045	0.00012	0.22	0.029	0.12	36	0.064	6.6	0.000025	160	3.6	0.00021	0.00025	0.0050	0.11	0.039
East MRSF	Year 10	7.9	122	1598	20	0.47	1.0	0.0029	0.080	0.081	0.038	0.00016	0.41	0.000080	458	0.0046	0.0019	0.011	0.00031	0.00091	0.034	67	0.045	0.00012	0.21	0.029	0.12	36	0.063	6.6	0.000025	160	3.6	0.00021	0.00025	0.0050	0.11	0.039
	Year 20	7.9	122	1598	20	0.47	1.0	0.0029	0.080	0.081	0.038	0.00016	0.41	0.000080	458	0.0046	0.0019	0.011	0.00031	0.00091	0.034	67	0.045	0.00012	0.21	0.029	0.12	36	0.063	6.6	0.000025	160	3.6	0.00021	0.00025	0.0050	0.11	0.039
	Post-closure	7.9	116	1457	1.4	0.47	1.0	0.0028	0.011	0.081	0.040	0.00013	0.37	0.000050	504	0.0039	0.0010	0.011	0.00031	0.00035	0.034	69	0.036	0.000070	0.36	0.025	0.059	43	0.013	6.6	0.000025	17	3.6	0.00025	0.00025	0.0024	0.11	0.021
Backfill	Year 20	7.9	120	1598	20	0.47	1.0	0.0029	0.080	0.081	0.041	0.00023	0.41	0.00045	450	0.0066	0.0063	0.012	0.00032	0.00064	0.034	72	0.19	0.00019	1.5	0.19	0.22	35	0.080	6.6	0.000025	160	3.6	0.00025	0.00025	0.015	0.11	0.064
South	Year 20	8.0	126	1634	12	0.47	1.0	0.0031	0.048	0.081	0.032	0.00015	0.41	0.00029	482	0.0041	0.0063	0.011	0.00029	0.00090	0.034	59	0.13	0.00012	1.0	0.12	0.14	40	0.080	6.6	0.000025	160	3.6	0.00025	0.00025	0.014	0.11	0.041
Embankment	Post-closure	8.0	121	1485	1.2	0.45	1.0	0.0030	0.0070	0.062	0.033	0.00010	0.26	0.000090	534	0.0027	0.00082	0.011	0.00029	0.00021	0.034	60	0.025	0.000050	0.54	0.015	0.045	48	0.023	6.6	0.000025	13	3.6	0.00021	0.00025	0.0036	0.11	0.014
Southeast	Year 20	8.0	133	1618	6.1	0.47	1.0	0.0032	0.025	0.081	0.026	0.000080	0.41	0.00016	539	0.0021	0.0042	0.011	0.00027	0.00047	0.030	50	0.068	0.000060	0.55	0.064	0.075	52	0.080	6.6	0.000025	95	3.6	0.00015	0.00025	0.0075	0.11	0.021
Embankment	Post-closure	8.0	130	1529	0.65	0.24	0.82	0.0032	0.0037	0.033	0.027	0.000050	0.13	0.000050	572	0.0014	0.00044	0.011	0.00027	0.00011	0.022	50	0.013	0.000030	0.29	0.0081	0.024	57	0.012	6.6	0.000025	6.9	2.4	0.00011	0.00025	0.0019	0.11	0.0073
Ore Stockpile	Max extent	8.2	199	1638	20	0.47	1.0	0.0046	0.023	0.048	0.012	0.000086	0.41	0.0011	537	0.00083	0.0063	0.11	0.00021	0.0017	0.034	29	0.46	0.00013	0.83	0.043	0.037	97	0.080	6.6	0.000021	160	3.6	0.00018	0.00025	0.015	0.11	0.023
	Year 17	8.2	199	1632	20	0.47	1.0	0.0046	0.022	0.050	0.012	0.000075	0.41	0.00075	540	0.00084	0.0063	0.11	0.00021	0.0014	0.034	29	0.46	0.00011	0.75	0.037	0.033	98	0.080	6.6	0.000021	153	3.6	0.00014	0.00025	0.015	0.11	0.015
Pit wall - IMH	operational	8.0	126	1623	14	0.47	1.0	0.0031	0.056	0.081	0.032	0.00010	0.41	0.000020	480	0.0028	0.00076	0.011	0.00029	0.00066	0.034	58	0.022	0.000070	0.075	0.0041	0.077	40	0.016	6.6	0.000025	160	3.6	0.00010	0.00025	0.0026	0.11	0.025
Pit wall - SLD	operational	8.0	131	1616	3.5	0.47	1.0	0.0032	0.011	0.018	0.028	0.00015	0.41	0.00046	547	0.0038	0.0063	0.011	0.00027	0.00044	0.034	52	0.20	0.00014	1.8	0.18	0.15	50	0.080	6.6	0.000025	80	3.6	0.00025	0.00025	0.015	0.11	0.045
Pit wall - MAFV	operational	8.0	138	1703	4.5	0.47	1.0	0.0033	0.030	0.081	0.025	0.000050	0.41	0.00033	522	0.0035	0.00097	0.011	0.00026	0.0036	0.034	48	0.0046	0.000070	0.27	0.13	0.019	54	0.068	6.6	0.000010	160	3.6	0.00025	0.00025	0.0057	0.11	0.039
Pit wall - PICR	operational	8.0	141	1707	3.1	0.47	1.0	0.0033	0.055	0.081	0.025	0.000040	0.41	0.000090	539	0.0031	0.00073	0.0094	0.00026	0.00071	0.033	49	0.014	0.000060	0.050	0.075	0.018	55	0.054	6.6	0.000010	141	3.0	0.00025	0.00025	0.00023	0.024	0.011
Pit wall - SLD ore	operational	8.1	167	1660	13	0.47	1.0	0.0040	0.011	0.019	0.016	0.000041	0.41	0.00077	590	0.00034	0.0063	0.011	0.00022	0.0010	0.034	34	0.52	0.000062	0.42	0.024	0.019	94	0.080	6.6	0.000010	82	3.6	0.00011	0.00025	0.0098	0.11	0.017

Notes: All concentrations are given in mg/L; Alkalinity is reported in terms of $CaCO_3$

Open Pit Areas for Various Years of Mining

NOTE: Ore is determined by an economic cutoff that varies with metals prices and therefore ore to waste ratios will vary over the life of mine.

End of Year	2	Total area:	157.1
Rock	Ore	Waste	Total (hectares)
IMH	3.9	73.9	77.8
MAFV	0.0	2.9	2.9
PICR	0.1	13.0	13.1
PXPP	-	-	-
SLD	0.5	1.3	1.8
SLDMA	11.9	15.3	27.2
SLDSA	9.7	1.7	11.4
SLDWA	3.2	10.0	13.3
SVHYB	5.8	3.9	9.7
UNKN	-	-	-
Total	35.1	122.0	157.1

End of Year	5	Total area:	191.9
Rock	Ore	Waste	Total (hectares)
IMH	2.4	82.7	85.1
MAFV	0.2	5.5	5.7
PICR	0.2	33.3	33.6
PXPP	-	-	-
SLD	0.7	1.5	2.2
SLDMA	18.4	22.1	40.5
SLDSA	2.9	3.4	6.2
SLDWA	5.7	11.4	17.1
SVHYB	0.9	0.6	1.5
UNKN	-	-	-
Total	31.5	160.4	191.9

End of Year	8	Total area:	255.1
Rock	Ore	Waste	Total (hectares)
IMH	1.1	101.7	102.9
MAFV	0.2	15.4	15.6
PICR	0.2	51.9	52.1
PXPP	0.1	0.0	0.1
SLD	0.7	9.4	10.2
SLDMA	12.7	11.2	23.9
SLDSA	3.5	4.1	7.6
SLDWA	7.8	20.0	27.8
SVHYB	11.9	3.2	15.1
UNKN	-	-	-
Total	38.2	216.9	255.1

End of Year	10	Total area:	272.1
Rock	Ore	Waste	Total (hectares)
IMH	0.9	106.3	107.2
MAFV	0.6	16.1	16.7
PICR	0.1	49.3	49.4
PXPP	0.1	0.0	0.1
SLD	0.9	8.4	9.3
SLDMA	20.1	17.6	37.6
SLDSA	8.2	3.7	12.0
SLDWA	11.5	24.5	36.0
SVHYB	2.4	1.5	3.9
UNKN	-	-	-
Total	44.8	227.3	272.1

End of Year	15	Total area:	357.8
Rock	Ore	Waste	Total (hectares)
IMH	0.2	143.1	143.3
MAFV	1.1	15.9	17.0
PICR	1.3	52.8	54.1
PXPP	2.5	2.2	4.8
SLD	0.9	15.3	16.2
SLDMA	20.6	32.5	53.1
SLDSA	3.9	3.2	7.1
SLDWA	21.6	29.7	51.3
SVHYB	8.8	2.2	11.0
UNKN	-	-	-
Total	61.0	296.8	357.8

Areas for Entire Exposed Pit including Backfill			
End of Year	20	Total area:	314.2
Rock	Ore	Waste	Total (hectares)
IMH	0.3	119.0	119.3
MAFV	2.4	12.9	15.2
PICR	0.9	41.6	42.5
PXPP	2.0	1.7	3.7
SLD	0.8	14.1	14.9
SLDMA	26.9	25.9	52.8
SLDSA	5.0	3.5	8.5
SLDWA	20.0	28.2	48.2
SVHYB	7.3	1.6	8.9
UNKN	-	-	-
Total	65.6	248.6	314.2
BACKFILL	-	69.7	69.7
Total with BACKFILL		318.3	383.9

Areas Under Backfill			
End of Year	20	Total area:	80.4
Rock	Ore	Waste	Total (hectares)
IMH	0.1	28.0	28.1
MAFV	0.4	3.1	3.5
PICR	0.2	18.3	18.5
PXPP	1.6	1.4	3.0
SLD	0.0	1.7	1.7
SLDMA	4.1	2.3	6.4
SLDSA	0.1	0.2	0.3
SLDWA	7.2	5.3	12.5
SVHYB	5.3	1.2	6.4
UNKN	-	-	-
Total	18.9	61.5	80.4

IMH: Iron Mask Hybrid
MAFV: Mafic Volcanic
PICR: Picrite
PXPP: Pyroxene Plagioclase Porphyry
SLD: Sugarloaf Diorite (no albite alteraion)
SLDMA: Sugarloaf Diorite (moderate albite alteraion)
SLDSA: Sugarloaf Diorite (strong albite alteraion)
SLDWA: Sugarloaf Diorite (weak albite alteraion)
SVHYB: Sugarloaf Volcanic Hybrid
UNKN: Other rock type

		East MSRF				TSF MSRF				South MSRF				TSF South Dam				TSF Southeast Dam				Temporary Ore Stockpile				Backfill				Tailings (pond effluent)		
Mine Plan	Mine Year	Annual N Release (kg)	Annual N source Term NO3-N (kg)	Annual N source Term NH3-N (kg)	Annual N source Term NO2-N (kg)	Annual N Release (kg)	Annual N source Term NO3-N (kg)	Annual N source Term NH3-N (kg)	Annual N source Term NO2-N (kg)	Annual N Release (kg)	Annual N source Term NO3-N (kg)	Annual N source Term NH3-N (kg)	Annual N source Term NO2-N (kg)	Annual N Release (kg)	Annual N source Term NO3-N (kg)	Annual N source Term NH3-N (kg)	Annual N source Term NO2-N (kg)	Annual N Release (kg)	Annual N source Term NO3-N (kg)	Annual N source Term NH3-N (kg)	Annual N source Term NO2-N (kg)	Annual N Release (kg)	Annual N source Term NO3-N (kg)	Annual N source Term NH3-N (kg)	Annual N source Term NO2-N (kg)	Annual N Release (kg)	Annual N source Term NO3-N (kg)	Annual N source Term NH3-N (kg)	Annual N source Term NO2-N (kg)	Annual N Release (kg)	Annual N source Term NO3-N (kg)	Annual N source Term NH3-N (kg)
-2	Y0																													0	0	0
-1	Y1																													4,702	3,532	635
1	Y2																													39,033	29,313	5,269
2	Y3					120	104.1	13.2	2.4	171	149.0	18.8	3.4																	40,422	30,357	5,457
3	Y4					360	313	39.6	7.2	2,962	2,577	326	59.2																	39,710	29,823	5,361
4	Y5	2,851	2,481	314	57.0	1,200	1,044	132	24.0	5,020	4,368	552	100.4									677	589	74.5	13.5					44,331	33,293	5,985
5	Y6	7,241	6,299	796	145	4,851	4,220	534	97.0	7,352	6,396	809	147									1,304	1,135	143	26.1					35,504	26,664	4,793
6	Y7	9,516	8,279	1047	190	9,096	7,914	1,001	182	9,042	7,867	995	181									2,016	1,754	222	40.3					39,995	30,036	5,399
7	Y8	8,735	7,600	961	175	11,475	9,983	1,262	230	13,956	12,142	1,535	279									2,011	1,750	221	40.2					40,617	30,504	5,483
8	Y9	8,019	6,977	882	160	13,488	11,734	1,484	270	17,151	14,921	1,887	343	2.0	1.7	0.2	0.04					1,846	1,606	203	36.9					39,759	29,859	5,368
9	Y10	7,642	6,649	841	153	15,144	13,176	1,666	303	23,829	20,731	2,621	477	98	85.2	10.8	2.0					1,553	1,351	171	31.1					37,449	28,124	5,056
10	Y11	7,016	6,104	772	140	13,903	12,095	1,529	278	33,198	28,883	3,652	664	327	285	36.0	6.5	3.8	3.3	0.4	0.1	1,400	1,218	154	28.0					36,078	27,094	4,870
11	Y12	6,440	5,603	708	129	14,776	12,855	1,625	296	37,434	32,568	4,118	749	672	585	73.9	13.4	31.4	27.3	3.4	0.6	1,967	1,711	216	39.3					35,392	26,580	4,778
12	Y13	5,912	5,144	650	118	17,525	15,246	1,928	350	35,791	31,138	3,937	716	617	537	67.8	12.3	28.8	25.0	3.2	0.6	4,277	3,721	471	86					35,537	26,689	4,798
13	Y14	5,427	4,722	597	108.5	18,819	16,373	2,070	376	39,387	34,267	4,333	788	566	493	62.3	11.3	26.4	23.0	2.9	0.5	5,649	4,914	621	113					36,941	27,743	4,987
14	Y15	4,982	4,335	548	99.6	20,615	17,935	2,268	412	36,356	31,630	3,999	727	520	452	57.2	10.4	24.3	21.1	2.7	0.5	6,334	5,511	697	127					38,458	28,882	5,192
15	Y16	4,574	3,979	503	91.5	28,496	24,791	3,135	570	33,407	29,064	3,675	668	477	415	52.5	9.5	22.3	19.4	2.4	0.4	5,801	5,047	638	116					39,385	29,578	5,317
16	Y17	4,199	3,653	462	84.0	31,136	27,089	3,425	623	32,743	28,487	3,602	655	438	381	48.2	8.8	20.4	17.8	2.2	0.4	4,785	4,163	526	96					41,726	31,337	5,633
17	Y18	3,854	3,353	424	77.1	28,755	25,017	3,163	575	30,058	26,151	3,306	601	402	350	44.2	8.0	18.8	16.3	2.1	0.4	3,269	2,844	360	65.4	8,517	7,410	937	170	41,726	31,337	5,633
18	Y19	3,538	3,078	389	70.8	26,397	22,966	2,904	528	27,594	24,006	3,035	552	369	321	40.6	7.4	17.2	15.0	1.9	0.3	2,342	2,037	258	46.8	15,999	13,919	1,760	320	41,726	31,337	5,633
19	Y20	3,248	2,826	357	65.0	24,233	21,082	2,666	485	25,331	22,038	2,786	507	339	295	37.3	6.8	15.8	13.8	1.7	0.3	0				22,557	19,624	2,481	451	41,763	31,364	5,638
20	Y21	2,982	2,594	328	59.6	22,246	19,354	2,447	445	23,254	20,231	2,558	465	311	271	34.2	6.2	14.5	12.6	1.6	0.3	0				24,263	21,109	2,669	485	41,726	31,337	5,633
21	Y22	2,737	2,382	301	54.7	20,421	17,767	2,246	408	21,347	18,572	2,348	427	286	248	31.4	5.7	13.3	11.6	1.5	0.3	0				22,793	19,830	2,507	456	5,035	3,781	680
22	Y23	801	697	88.1	16.0	5,976	5,199	657	120	6,247	5,434	687	125	83.6	72.7	9.2	1.7	3.9	3.4	0.4	0.1	0				0				0		
23	Y24	781	680	85.9	15.6	5,829	5,071	641	117	6,093	5,301	670	122	81.5	70.9	9.0	1.6	3.8	3.3	0.4	0.1	0				0				0		
23	Y25	762	663	83.8	15.2	5,685	4,946	625	114	5,943	5,170	654	119	79.5	69.2	8.7	1.6	3.7	3.2	0.4	0.1	0				0				0		
24	Y26	700	609	77.0	14.0	5,219	4,541	574	104	5,456	4,746	600	109	73.0	63.5	8.0	1.5	3.4	3.0	0.4	0.1											
25	Y27	642	559	70.6	12.8	4,791.2	4,168	527	96	5,008	4,357	551	100	67.0	58.3	7.4	1.3	3.1	2.7	0.3	0.1											
26	Y28	590	513	64.9	11.8	4,398.3	3,827	484	88	4,598	4,000	506	92	61.5	53.5	6.8	1.2	2.9	2.5	0.3	0.1											
27	Y29	541	471	59.5	10.8	4,037.6	3,513	444	81	4,221	3,672	464	84	56.5	49.1	6.2	1.1	2.6	2.3	0.3	0.1											
28	Y30	497	432	54.7	9.9	3,706.5	3,225	408	74	3,875	3,371	426	77	51.8	45.1	5.7	1.0	2.4	2.1	0.3	0.05											
29	Y31	456	397	50.2	9.1	3,402.6	2,960	374	68	3,557	3,094	391	71	47.6	41.4	5.2	1.0	2.2	1.9	0.2	0.04											
30	Y32	419	364	46.1	8.4	3,123.6	2,718	344	62	3,265	2,841	359	65	43.7	38.0	4.8	0.9	2.0	1.8	0.2	0.04											
31	Y33	384	334	42.3	7.7	2,867.5	2,495	315	57	2,997	2,608	330	60	40.1	34.9	4.4	0.8	1.9	1.6	0.2	0.04											
32	Y34	353	307	38.8	7.1	2,632.3	2,290	290	53	2,752	2,394	303	55	36.8	32.0	4.0	0.7	1.7	1.5	0.2	0.03											
33	Y35	324	282	35.6	6.5	2,416.5	2,102	266	48	2,526	2,198	278	51	33.8	29.4	3.7	0.7	1.6	1.4	0.2	0.03											
34	Y36	297	259	32.7	5.9	2,218.3	1,930	244	44	2,319	2,017	255	46	31.0	27.0	3.4	0.6	1.4	1.3	0.2	0.03											
35	Y37	273	237	30.0	5.5	2,036.4	1,772	224	41	2,129	1,852	234	43	28.5	24.8	3.1	0.6	1.3	1.2	0.1	0.03											
36	Y38	251	218	27.6	5.0	1,869.4	1,626	206	37	1,954	1,700	215	39	26.1	22.7	2.9	0.5	1.2	1.1	0.1	0.02											
37	Y39	230	200	25.3	4.6	1,716.1	1,493	189	34	1,794	1,561	197	36	24.0	20.9	2.6	0.5	1.1	1.0	0.1	0.02											
38	Y40	211	184	23.2	4.2	1,575.4	1,371	173	32	1,647	1,433	181	33	22.0	19.2	2.4	0.4	1.0	0.9	0.1	0.02											
39	Y41	194	169	21.3	3.9	1,446.2	1,258	159	29	1,512	1,315	166	30	20.2	17.6	2.2	0.4	0.9	0.8	0.1	0.02											
40	Y42	178	155	19.6	3.6	1,327.6	1,155	146	27	1,388	1,207	153	28	18.6	16.2	2.0	0.4	0.9	0.8	0.1	0.02											
41	Y43	163	142	18.0	3.3	1,218.8	1,060	134	24	1,274	1,108	140	25	17.0	14.8	1.9	0.3	0.8	0.7	0.1	0.02											
42	Y44	150	130	16.5	3.0	1,118.8	973	123	22	1,170	1,018	129	23	15.6	13.6	1.7	0.3	0.7	0.6	0.1	0.01											
43	Y45	138	120	15.1	2.8	1,027.1	894	113	21	1,074	934	118	21	14.4	12.5	1.6	0.3	0.7	0.6	0.1	0.01											
44	Y46	126	110	13.9	2.5	943	820	104	19	986	857	108	20	13.2	11.5	1.5	0.3	0.6	0.5	0.1	0.01											
45	Y47	116	101	12.8	2.3	866	753	95	17	905	787	100	18	12.1	10.5	1.3	0.2	0.6	0.5	0.1	0.01											
46	Y48	107	93	11.7	2.1	795	691	87	16	831	723	91	17	11.1	9.7	1.2	0.2	0.5	0.5	0.1	0.01											
47	Y49	98	85	10.8	2.0	729	635	80	15	762	663	84	15	10.2	8.9	1.1	0.2	0.5	0.4	0.1	0.01											
48	Y50	90	78	9.9	1.8	670	583	74	13	700	609	77	14	9.4	8.1	1.0	0.2	0.4	0.4	0.05	0.01											
49	Y51	82	72	9.1	1.6	615	535	68	12	643	559	71	13	8.6	7.5	0.9	0.2	0.4	0.3	0.04	0.01											
50	Y52	76	66	8.3	1.5	564	491	62	11	590	513	65	12	7.9	6.9	0.9	0.2	0.4	0.3	0.04	0.01											
51	Y53	69	60	7.6	1.4	518	451	57	10	542	471	60	11	7.2	6.3	0.8	0.1	0.3	0.3	0.04	0.01											
52	Y54	64	55	7.0	1.3	476	414	52	10	497	432	55	10	6.6	5.8	0.7	0.1	0.3	0.3	0.03	0.01											
53	Y55	59	51	6.4	1.2	437	380	48	8.7	456	397	50	9.1	6.1	5.3	0.7	0.1	0.3	0.2	0.03	0.01											
54	Y56	54	47	5.9	1.1	401	349	44	8.0	419	364	46	8.4	5.6	4.9	0.6	0.1	0.3	0.2	0.03	0.01											
55	Y57	49	43	5.4	1.0	368	320	40	7.4	385	335	42	7.7	5.1	4.5	0.6	0.1	0.2	0.2	0.03	0.005											
56	Y58	45	39	5.0	0.91	338	294	37	6.8	353	307	39	7.1	4.7	4.1	0.5	0.1	0.2	0.2	0.02	0.004											
57	Y59	42	36	4.6	0.83	310	270	34	6.2	324	282	36	6.5	4.3	3.8	0.5	0.1	0.2	0.2	0.02	0.004											
58	Y60	38	33	4.2	0.76	285	248	31	5.7	298	259	33	6.0	4.0	3.5	0.4	0.1	0.2	0.2	0.02	0.004											
59	Y61	35	30	3.9	0.70	261	227	29	5.2	273	238	30	5.5	3.7	3.2	0.4	0.1	0.2	0.1	0.02	0.003											
60	Y62	32	28	3.5	0.64	240	209	26	4.8	251	218	28	5.0	3.4	2.9	0.4	0.1	0.2	0.1	0.02	0.003											
61	Y63	30	26	3.2	0.59	220	192	24	4.4	230	200	25	4.6	3.1	2.7	0.3	0.1	0.1	0.1	0.02	0.003											
62	Y64	27	24	3.0	0.54	202	176	22	4.0	211	184	23	4.2	2.8	2.5	0.3	0.1	0.1	0.1	0.01	0.003											
63	Y65	25	22	2.7	0.50	186	161	20	3.7	194	169	21	3.9	2.6	2.3	0.3	0.1	0.1	0.1	0.01	0.002											
64	Y66	23	20	2.5	0.46	170	148	19	3.4	178	155	20	3.6	2.4	2.1	0.3	0.05	0.1	0.1	0.01	0.002											
65	Y67	21	18	2.3	0.42	156	136	17	3.1	163	142	18	3.3	2.2	1.9	0.2	0.04	0.1	0.1	0.01	0.002											
66	Y68	19	17	2.1	0.38	144	125	16	2.9	150	131	17	3.0	2.0	1.7	0.2	0.04	0.1	0.1	0.01	0.002											
67	Y69	18	15	1.9	0.35	132	115	14	2.6	138	120	15	2.8	1.8	1.6	0.2	0.04	0.1	0.1	0.01	0.002											
68	Y70	16	14	1.8	0.32	121	105	13	2.4	126	110	14	2.5	1.7	1.5	0.2	0.03	0.1	0.1	0.01	0.002											
69	Y71	15	13	1.6	0.30	111	97	12	2.2	116	101	13	2.3	1.6	1.4	0.2	0.03	0.1	0.1	0.01	0.001											
70	Y72	14	12	1.5	0.27	102	89	11	2.0	107	93	12	2.1	1.4	1.2	0.2	0.03	0.1	0.1	0.01	0.001											
71	Y73	13	11	1.4	0.25	94	81	10	1.9	98	85	11	2.0	1.3	1.1	0.1	0.03	0.1	0.1	0.01	0.001											
72	Y74	12	10	1.3	0.23	86	75	9.5	1.7	90	78	10	1.8	1.2	1.0	0.1	0.02	0.1	0.05	0.01	0.001											
73	Y75	11	9	1.2	0.21	79	69	8.7	1.6	82	72	9.1	1.6	1.1	1.0	0.1	0.02	0.1	0.04	0.01	0.001											
74	Y76	10	8.4	1.1	0.19	72	63	8.0	1.4	76	66	8.3	1.5	1.0	0.9	0.1	0.02	0.05	0.04	0.01	0.001											
75	Y77	8.9	7.8	1.0	0.18	66	58	7.3	1.3	69	60	7.6	1.4	0.9	0.8	0.1	0.02	0.04	0.04	0.005	0.001											
76	Y78	8.2	7.1	0.90	0.16	61	53	6.7	1.2	64	55	7.0	1.3	0.9	0.7	0.1	0.02	0.04	0.03	0.004	0.001											
77	Y79	7.5	6.5	0.83	0.15	56	49	6.2	1.1	59	51	6.4	1.2	0.8	0.7	0.1	0.02	0.04	0.03	0.004	0.001											
78	Y80	6.9	6.0	0.76	0.14	51	45	5.7	1.0	54	47	5.9	1.1	0.7	0.6	0.1	0.01	0.03	0.03	0.004	0.001											
79	Y81	6.3	5.5	0.70	0.13	47	41	5.2	0.9	49	43	5.4	1.0	0.7	0.6	0.1	0.01	0.03	0.03	0.003	0.001											
80	Y82	5.8	5.1	0.64	0.12	43	38	4.8	0.9	45	39	5.0	0.9	0.6	0.5	0.1	0.01	0.03	0.02	0.003	0.001											
81	Y83	5.3	4.6	0.59	0.11	40	35	4.4	0.8	42	36	4.6	0.8	0.6	0.5	0.1	0.01	0.03	0.02	0.003	0.001											
82	Y84	4.9	4.3	0.54	0.10	37	32	4.0	0.7	38	33	4.2	0.8	0.5	0.4	0.1	0.01	0.02	0.02	0.003	0.0005											
83	Y85	4.5	3.9	0.49	0.09	34	29	3.7	0.7	35	30	3.9	0.7	0.5	0.4	0.1	0.01	0.02	0.02	0.002	0.0004											
84	Y86	4.1	3.6	0.45	0.08	31	27	3.4	0.6	32	28	3.5	0.6	0.4	0.4	0.05	0.01	0.02	0.02	0.002	0.0004											
85	Y87	3.8	3.3	0.42	0.08	28	25	3.1	0.6	30	26	3.2	0.6	0.4	0.3	0.04	0.01	0.02	0.02	0.002	0.0004											
86	Y88	3.5	3.0	0.38	0.07	26	23	2.9	0.5	27	24	3.0	0.5	0.4	0.3	0.04	0.01	0.02	0.01	0.002	0.0003											
87	Y89	3.2	2.8	0.35	0.06	24	21	2.6	0.5	25	22	2.7	0.5	0.3	0.3	0.04	0.01	0.02	0.01	0.002	0.0003											
88	Y90	2.9	2.5	0.32	0.06	22	19	2.4	0.4	23	20	2.5	0.5	0.3	0.3	0.03	0.01	0.01	0.01	0.002	0.0003											
89	Y91	2.7	2.3	0.30	0.05	20	17	2.2	0.4	21	18	2.3	0.4	0.3	0.2	0.03	0.01	0.01	0.01	0.001	0.0003											
90	Y92	2.5	2.1	0.27	0.05	18	16	2.0	0.4	19	17	2.1	0.4	0.3	0.2	0.03	0.01	0.01	0.01	0.001	0.0003											
91	Y93	2.3	2.0	0.25	0.05	17	15	1.9	0.3	18	15	1.9	0.4	0.2	0.2	0.03	0.005	0.01	0.01	0.001	0.0002											
92	Y94	2.1	1.8	0.23	0.04	16	14	1.7	0.3	16	14	1.8	0.3	0.2	0.2	0.02	0.004	0.01	0.01	0.001	0.0002											
93	Y95	1.9	1.7	0.21	0.04	14	12	1.6	0.3	15	13	1.6	0.3	0.2	0.2	0.02	0.004	0.01	0.01	0.001	0.0002											
94	Y96	1.8	1.5	0.19	0.04	13	11	1.4	0.3	14	12	1.5	0.3	0.2	0.2	0.02	0.004	0.01	0.01	0.001	0.0002											
95	Y97	1.6	1.4	0.18	0.03	12	10	1.3	0.2	13	11	1.4	0.3	0.2	0.1	0.02	0.003	0.01	0.01	0.001	0.0002											
96	Y98	1.5	1.3	0.16	0.03	11	10	1.2	0.2	12	10	1.3	0.2	0.2	0.1	0.02	0.003	0.01	0.01	0.001	0.0002											
97	Y99	1.4	1.2	0.15	0.03	10	8.8	1.1	0.2	11	9.2	1.2	0.2	0.1	0.1	0.02	0.003	0.01	0.01	0.001	0.0001											
98	Y100	1.2	1.1	0.14	0.02	9	8.1	1.0	0.2	10	8.4	1.1	0.2	0.1	0.1	0.01	0.003	0.01	0.01	0.001	0.0001											

Stockpiled Mine Rock (waste and ore)
3rd year flush attenuation model
% residual N flush rate 8.2%
Model assigns 8.2% annual N release rate for "open" condition (based on local MAP and Diavik Studies), release rate is reduced during "closed" condition (i.e., cover in place); release begins the third year after rock placement.
Nitrogen species in effluent from stockpiled mine rock (waste and ore) are distributed as 87% NO3, 11% NH3 and 2% NO2 as per Ferguson and Leask (1988). Background concentrations are assumed to be zero.

Metal Speciation Profiles for Waste (Other), Ore, Tailings, and Diesel Source Types

Metal	ProUCL 95% Waste Rock using Lorax and KGMH combined or only Lorax - 2014 analysis	Ore 95% UCL (mg/kg)	Lorax Tailings (Updated March 19, 2015)	Diesel (CARB)
	ppm	ppm	ppm	ppm
Aluminum - Al	1.98	17,057	19,700	0.00
Antimony - Sb	8.07	12.26	0.26	0.00
Arsenic - As	12.72	29.30	6.00	186.33
Barium - Ba	167.20	105.40	120.00	0.00
Beryllium - Be	0.49	0.51	0.30	-
Bismuth - Bl	7.56	5.92	0.02	0.00
Boron - B	30.91	-	50.00	0.00
Bromide - Br	-	-		0.00
Cadmium - Cd	0.71	0.90	0.06	174.68
Calcium - Ca	2.83	30,909	41,200	0.00
Cerium - Ce	6.82	-	9.11	-
Cesium - Cs	1.69	-	0.82	-
Chloride - Cl	-	-		0.00
Chromium - Cr	208.40	159.70	180.00	69.87
Cobalt - Co	35.39	39.36	23.40	0.00
Copper - Cu	318.70	1,571	447	477.47
Fluoride - F	-	-		-
Gallium - Ga	7.33	-	6.90	0.00
Germanium - Ge	0.17	-	0.20	-
Gold - Au	30.44	0.11		0.00
Hafnium - Hf	0.31	-	0.20	-
Indium - In	0.04	-	0.04	-
Iron - Fe	4.84	37,974	37,200	0.00
Lanthanum - La	4.32	4.95	4.20	0.00
Lead - Pb	19.27	24.15	1.20	966.58
Lithium - Li	8.48	8.38	8.00	-
Magnesium - Mg	3.33	24,679	22,100	0.00
Manganese - Mn	362.20	283.90	312.00	361.01
Mercury - Hg	1.18	2.59	0.18	232.91
Molybdenum - Mo	8.03	14.69	31.30	0.00
Nickel - Ni	211.80	139.60	99.00	454.17
Niobium - Nb	0.40	-	0.05	-
Phosphorus - P	850.80	1,041	0	0.00
Potassium - K	-	2,912	2,400	0.00
Rubidium - Rb	32.12	-	8.60	-
Scandium - Sc	11.38	7.11	10.80	0.00
Selenium - Se	2.66	5.01	<1	256.20
Silicon - Si	-	-		-
Silver - Ag	0.11	0.27	0.12	0.00
Sodium - Na	0.09	621.10	600.00	0.00
Strontium - Sr	102.30	95.85	72.40	0.00
Sulphate - SO4	-	-		-
Sulphur - S	0.43	5,601	1,600	0.00
Tantalum - Ta	0.05	-	<0.05	-
Tellurium - Te	0.24	-	0.05	0.00
Terbium - Tb	0.20	-	0.25	-
Thallium - Tl	1.06	-	0.03	0.00
Thorium - Th	2.21	-	0.50	0.00
Tin - Sn	8.41	8.68	0.50	-
Titanium - Ti	0.14	1,141	1,600	0.00
Tungsten - W	3.78	4.83	0.60	0.00
Uranium - U	3.58	4.55	0.44	0.00
Vanadium - V	206.20	147.60	175.00	0.00
Ytterbium - Yb	0.65	-	0.70	-
Yttrium - Y	3.66	3.92	7.58	-
Zinc - Zn	21.89	16.61	18.00	2,609
Zirconium - Zr	8.99	-	5.20	-

- = no data available

APPENDIX B

BASELINE WATER QUALITY MODEL INPUTS

(Pages B-1 to B-10)

APPENDIX B - BASELINE WATER QUALITY MODEL INPUTS

BASE CASE MEDIAN CONCENTRATIONS

	Analytes	Alkalinity (Total as CaCO3)	Hardness as CaCO3	pH (unitless)	Bromide	Chloride	Fluoride	Sulphate	Ammonia	Nitrate
	MDL	1 to 2	0.5 to 1.1	0.01 to 0.1	0.05 to 2.495	0.5 to 1	0.02 to 0.4	0.5 to 1	0.005 to 0.05	0.005 to 0.1
INKS-S	Jan	798.5	4665	8.665	1.25	488	0.5	7085	0.2675	0.125
	Feb	798.5	4665	8.665	1.25	488	0.5	7085	0.2675	0.125
	Mar	798.5	4665	8.665	1.25	488	0.5	7085	0.2675	0.125
	Apr	671	3690	8.78	1.25	426	0.5	6130	0.0355	0.125
	May	671	3690	8.78	1.25	426	0.5	6130	0.0355	0.125
	Jun	683	3860	8.87	1.25	431	0.5	6150	0.0748	0.125
	Jul	683	3860	8.87	1.25	431	0.5	6150	0.0748	0.125
	Aug	683	3860	8.87	1.25	431	0.5	6150	0.0748	0.125
	Sep	793	4800	8.78	1.25	524	0.5	7650	0.132	0.125
	Oct	793	4800	8.78	1.25	524	0.5	7650	0.132	0.125
	Nov	793	4800	8.78	1.25	524	0.5	7650	0.132	0.125
	Dec	798.5	4665	8.665	1.25	488	0.5	7085	0.2675	0.125
KC03	Jan	533	684	8.43	0.25	17.1	0.3	351	0.01	0.092
	Feb	533	684	8.43	0.25	17.1	0.3	351	0.01	0.092
	Mar	533	684	8.43	0.25	17.1	0.3	351	0.01	0.092
	Apr	559	700	8.28	0.25	17.5	0.28	340	0.0085	0.1375
	May	559	700	8.28	0.25	17.5	0.28	340	0.0085	0.1375
	Jun	576	739	8.33	0.25	21	0.26	320	0.0073	0.025
	Jul	576	739	8.33	0.25	21	0.26	320	0.0073	0.025
	Aug	576	739	8.33	0.25	21	0.26	320	0.0073	0.025
	Sep	576	739	8.43	0.25	21	0.3	351	0.01	0.1375
	Oct	576	739	8.43	0.25	21	0.3	351	0.01	0.1375
	Nov	576	739	8.43	0.25	21	0.3	351	0.01	0.1375
	Dec	533	684	8.43	0.25	17.1	0.3	351	0.01	0.092
JACL	Jan	250	304	8.19	0.125	58.1	0.2	60	0.1198	0.265
	Feb	250	304	8.19	0.125	58.1	0.2	60	0.1198	0.265
	Mar	250	304	8.19	0.125	58.1	0.2	60	0.1198	0.265
	Apr	245	300	8.235	0.025	56	0.2105	60.25	0.0591	0.03535
	May	245	300	8.235	0.025	56	0.2105	60.25	0.0591	0.03535
	Jun	236	295.5	8.43	0.025	54.9	0.211	53.65	0.0459	0.0025
	Jul	236	295.5	8.43	0.025	54.9	0.211	53.65	0.0459	0.0025
	Aug	236	295.5	8.43	0.025	54.9	0.211	53.65	0.0459	0.0025
	Sep	246	301.5	8.325	0.125	56.6	0.2065	59	0.2515	0.0125
	Oct	246	301.5	8.325	0.125	56.6	0.2065	59	0.2515	0.0125
	Nov	246	301.5	8.325	0.125	56.6	0.2065	59	0.2515	0.0125
	Dec	250	304	8.19	0.125	58.1	0.2	60	0.1198	0.265
JC03-PC10	Jan	344	429	8.14	0.25	64.7	0.31	73.7	0.0598	0.168
	Feb	344	429	8.14	0.25	64.7	0.31	73.7	0.0598	0.168
	Mar	344	429	8.14	0.25	64.7	0.31	73.7	0.0598	0.168
	Apr	254	368	8.29	0.125	69	0.1575	48.5	0.0228	0.07435
	May	254	368	8.29	0.125	69	0.1575	48.5	0.0228	0.07435
	Jun	260	297.5	8.365	0.025	35.3	0.22	23	0.01955	0.0559
	Jul	260	297.5	8.365	0.025	35.3	0.22	23	0.01955	0.0559
	Aug	260	297.5	8.365	0.025	35.3	0.22	23	0.01955	0.0559
	Sep	371.5	400.5	8.23	0.25	50	0.21	39.05	0.0196	0.025
	Oct	371.5	400.5	8.23	0.25	50	0.21	39.05	0.0196	0.025
	Nov	371.5	400.5	8.23	0.25	50	0.21	39.05	0.0196	0.025
	Dec	344	429	8.14	0.25	64.7	0.31	73.7	0.0598	0.168
PC08	Jan	312	353	8	0.25	56.9	0.26	39.8	0.23	0.025
	Feb	312	353	8	0.25	56.9	0.26	39.8	0.23	0.025
	Mar	312	353	8	0.25	56.9	0.26	39.8	0.23	0.025
	Apr	295	350	8.27	0.125	57.3	0.229	55.4	0.0193	0.0125
	May	295	350	8.27	0.125	57.3	0.229	55.4	0.0193	0.0125
	Jun	234.5	289	8.51	0.025	52.5	0.216	46.4	0.0562	0.0125
	Jul	234.5	289	8.51	0.025	52.5	0.216	46.4	0.0562	0.0125
	Aug	234.5	289	8.51	0.025	52.5	0.216	46.4	0.0562	0.0125
	Sep	314	344	8.23	0.125	56	0.28	35	0.194	0.025
	Oct	314	344	8.23	0.125	56	0.28	35	0.194	0.025
	Nov	314	344	8.23	0.125	56	0.28	35	0.194	0.025
	Dec	312	353	8	0.25	56.9	0.26	39.8	0.23	0.025
HUMPH02	Jan	469	782	8.39	0.25	28.4	0.25	386	0.018	0.129
	Feb	469	782	8.39	0.25	28.4	0.25	386	0.018	0.129
	Mar	469	782	8.39	0.25	28.4	0.25	386	0.018	0.129
	Apr	475	675	8.43	0.25	32.1	0.26	313	0.0077	0.025
	May	475	675	8.43	0.25	32.1	0.26	313	0.0077	0.025
	Jun	463	572.5	8.5	0.25	44.2	0.2835	179	0.0116	0.025
	Jul	463	572.5	8.5	0.25	44.2	0.2835	179	0.0116	0.025
	Aug	463	572.5	8.5	0.25	44.2	0.2835	179	0.0116	0.025
	Sep	501	638.5	8.54	0.25	39.55	0.2535	227.5	0.01025	0.025
	Oct	501	638.5	8.54	0.25	39.55	0.2535	227.5	0.01025	0.025
	Nov	501	638.5	8.54	0.25	39.55	0.2535	227.5	0.01025	0.025
	Dec	469	782	8.39	0.25	28.4	0.25	386	0.018	0.129
PC03	Jan	463.5	629	8.055	0.25	60.75	0.2	237.5	0.434	0.05
	Feb	463.5	629	8.055	0.25	60.75	0.2	237.5	0.434	0.05
	Mar	463.5	629	8.055	0.25	60.75	0.2	237.5	0.434	0.05
	Apr	325	494	8.325	0.25	46	0.17	237	0.031	0.025
	May	325	494	8.325	0.25	46	0.17	237	0.031	0.025
	Jun	255	312	8.39	0.125	52.1	0.227	68.2	0.0217	0.0125
	Jul	255	312	8.39	0.125	52.1	0.227	68.2	0.0217	0.0125
	Aug	255	312	8.39	0.125	52.1	0.227	68.2	0.0217	0.0125
	Sep	366	446	8.355	0.25	60.45	0.23	123.9	0.0645	0.067
	Oct	366	446	8.355	0.25	60.45	0.23	123.9	0.0645	0.067
	Nov	366	446	8.355	0.25	60.45	0.23	123.9	0.0645	0.067
	Dec	463.5	629	8.055	0.25	60.75	0.2	237.5	0.434	0.05
PC02.5	Jan	434	554	8.21	0.25	65.4	0.23	150	0.155	0.1
	Feb	434	554	8.21	0.25	65.4	0.23	150	0.155	0.1
	Mar	434	554	8.21	0.25	65.4	0.23	150	0.155	0.1
	Apr	387	564	8.325	0.25	54.5	0.22	198	0.0351	0.038
	May	387	564	8.325	0.25	54.5	0.22	198	0.0351	0.038
	Jun	301	375	8.41	0.25	52.5	0.273	81	0.0208	0.025
	Jul	301	375	8.41	0.25	52.5	0.273	81	0.0208	0.025
	Aug	301	375	8.41	0.25	52.5	0.273	81	0.0208	0.025
	Sep	442	496	8.355	0.25	59.6	0.279	133	0.0563	0.12
	Oct	442	496	8.355	0.25	59.6	0.279	133	0.0563	0.12
	Nov	442	496	8.355	0.25	59.6	0.279	133	0.0563	0.12
	Dec	434	554	8.21	0.25	65.4	0.23	150	0.155	0.1

NOTES:
1. UNITS ARE mg/L, UNLESS OTHERWISE STATED.
2. METHOD DETECTION LIMIT (MDL) REPRESENTS THE RANGE OF MDLs FOR THE BASELINE DATASET.

BASE CASE MEDIAN CONCENTRATIONS

	Analytes	Alkalinity (Total as CaCO3)	Hardness as CaCO3	pH (unitless)	Bromide	Chloride	Fluoride	Sulphate	Ammonia	Nitrate
	MDL	1 to 2	0.5 to 1.1	0.01 to 0.1	0.05 to 2.495	0.5 to 1	0.02 to 0.4	0.5 to 1	0.005 to 0.05	0.005 to 0.1
PC02.3	Jan	434	554	8.21	0.25	65.4	0.23	150	0.155	0.1
	Feb	434	554	8.21	0.25	65.4	0.23	150	0.155	0.1
	Mar	434	554	8.21	0.25	65.4	0.23	150	0.155	0.1
	Apr	387	564	8.325	0.25	54.5	0.22	198	0.0351	0.038
	May	387	564	8.325	0.25	54.5	0.22	198	0.0351	0.038
	Jun	301	375	8.41	0.25	52.5	0.273	81	0.0208	0.025
	Jul	301	375	8.41	0.25	52.5	0.273	81	0.0208	0.025
	Aug	301	375	8.41	0.25	52.5	0.273	81	0.0208	0.025
	Sep	442	496	8.355	0.25	59.6	0.279	133	0.0563	0.12
	Oct	442	496	8.355	0.25	59.6	0.279	133	0.0563	0.12
	Nov	442	496	8.355	0.25	59.6	0.279	133	0.0563	0.12
	Dec	434	554	8.21	0.25	65.4	0.23	150	0.155	0.1
PC02	Jan	447	740	8.14	0.5	118	0.2	362	0.02325	0.6
	Feb	447	740	8.14	0.5	118	0.2	362	0.02325	0.6
	Mar	447	740	8.14	0.5	118	0.2	362	0.02325	0.6
	Apr	411.5	761	8.22	0.5	108.5	0.2	424	0.01705	0.38
	May	411.5	761	8.22	0.5	108.5	0.2	424	0.01705	0.38
	Jun	346	486	8.4	0.25	62.7	0.265	183	0.0189	0.062
	Jul	346	486	8.4	0.25	62.7	0.265	183	0.0189	0.062
	Aug	346	486	8.4	0.25	62.7	0.265	183	0.0189	0.062
	Sep	449	715	8.19	0.5	113	0.244	361	0.0248	0.107
	Oct	449	715	8.19	0.5	113	0.244	361	0.0248	0.107
	Nov	449	715	8.19	0.5	113	0.244	361	0.0248	0.107
	Dec	447	740	8.14	0.5	118	0.2	362	0.02325	0.6
NSP	Jan	1515	3545	8.86	1.25	92	0.5	3990	3.2	0.2325
	Feb	1515	3545	8.86	1.25	92	0.5	3990	3.2	0.2325
	Mar	1515	3545	8.86	1.25	92	0.5	3990	3.2	0.2325
	Apr	894	1950	9.11	0.5	41.5	0.2	2165	0.21965	0.05
	May	894	1950	9.11	0.5	41.5	0.2	2165	0.21965	0.05
	Jun	1210	2540	9.25	1.25	49	0.5	2680	0.0883	0.125
	Jul	1210	2540	9.25	1.25	49	0.5	2680	0.0883	0.125
	Aug	1210	2540	9.25	1.25	49	0.5	2680	0.0883	0.125
	Sep	1300	2790	9.11	1.25	55	0.5	3060	0.136	0.125
	Oct	1300	2790	9.11	1.25	55	0.5	3060	0.136	0.125
	Nov	1300	2790	9.11	1.25	55	0.5	3060	0.136	0.125
	Dec	1515	3545	8.86	1.25	92	0.5	3990	3.2	0.2325
Jacko Lake Tributaries	Jan	0	0	8.890979116	0	0	0	0	0.960974939	1.624899484
	Feb	0	0	8.890979116	0	0	0	0	0.960974939	1.624899484
	Mar	0	0	8.461100527	0	22.31473038	0	0	0.445120633	0.790935023
	Apr	196.9493388	0	7.94135707	0	0	0.493465005	122.9828077	0.252904334	0
	May	112.2404599	0	7.423691699	0	0	0.992306181	233.5749552	0.594563479	0
	Jun	0	248.1809988	9.967867539	0.025	518.6262118	0	778.8136935	0.669327841	0
	Jul	231.0835717	295.0902976	8.443315327	0.025	58.91508315	0.209156339	59.9286887	0.051297829	0
	Aug	235.3946965	295.449558	8.431639364	0.025	55.39433121	0.210773011	54.42302303	0.046564573	0.0011532
	Sep	371.5	400.5	8.23	0.25	50	0.21	39.05	0.0196	0.025
	Oct	371.5	400.5	8.23	0.25	50	0.21	39.05	0.0196	0.025
	Nov	371.5	400.5	8.23	0.25	50	0.21	39.05	0.0196	0.025
	Dec	344	429	8.14	0.25	64.7	0.31	73.7	0.0598	0.168
PC03 Tributaries	Jan	731.4107981	1117.075117	8.152261346	0.25	67.55829421	0.093896714	587.1103286	0.794751174	0.094209703
	Feb	731.4107981	1117.075117	8.152261346	0.25	67.55829421	0.093896714	587.1103286	0.794751174	0.094209703
	Mar	523.6346535	738.5522401	8.076831062	0.25	62.27817436	0.176184296	315.9727459	0.514973395	0.05992321
	Apr	418.5792242	943.1802762	8.496561911	0.639913434	10.75182555	0	803.4662372	0.067495897	0.063991343
	May	778.0509267	2668.644448	9.155593366	2.137712194	0	0	2979.468276	0.207689861	0.213771219
	Jun	731.0464199	846.1008613	5.603386811	2.447177658	42.81128937	0.482439542	574.4347294	0	0.0125
	Jul	1189.995855	1361.01974	2.916853531	4.68595539	33.85617844	0.728705093	1062.488275	0	0.0125
	Aug	1570.839421	1788.307643	0.68752534	6.543728884	26.42508447	0.933060177	1467.482897	0	0.0125
	Sep	428.417753	568.4348232	8.505042675	0.400042675	65.79151925	0.16998293	230.6103508	0	0.117414339
	Oct	419.430789	550.8065477	8.483439397	0.378439397	65.02244252	0.178624241	215.2460989	0	0.110155637
	Nov	457.9561815	626.3755869	8.576048513	0.471048513	68.31932707	0.141580595	281.1097027	0	0.1412723
	Dec	731.4107981	1117.075117	8.152261346	0.25	67.55829421	0.093896714	587.1103286	0.794751174	0.094209703
PC02.5 Tributaries	Jan	390.8358147	444.2605459	8.436794872	0.25	72.20384615	0.273895782	21.97063689	0	0.173159636
	Feb	390.8358147	444.2605459	8.436794872	0.25	72.20384615	0.273895782	21.97063689	0	0.173159636
	Mar	416.0846507	508.4525017	8.304131497	0.25	68.2239449	0.248218999	96.86125194	0	0.130364999
	Apr	496.0421766	687.1121348	8.325	0.25	69.44933066	0.307937239	129.4089535	0.042310854	0.060863682
	May	814.1308594	1046.244519	8.325	0.25	113.058263	0.564460371	0	0.06334575	0.127559696
	Jun	786.1466114	1039.439924	8.620933309	1.568333183	56.71866619	0.758146611	215.9973179	0.011308001	0.156833318
	Jul	1299.753332	1742.857824	8.844240579	2.964003619	61.18481158	1.271753332	358.9139706	0.001259174	0.296400362
	Aug	1758.711016	2371.430305	9.043787398	4.21117124	65.17574797	1.730711016	486.623935	0	0.421117124
	Sep	523.1344974	549.3779588	8.355	0.25	58.6925747	0.3313104	142.7147885	0.047546015	0.176580636
	Oct	514.9412978	543.9876959	8.355	0.25	58.78420917	0.326027942	141.7337607	0.048430018	0.170866958
	Nov	553.2026468	569.1596361	8.355	0.25	58.35628619	0.350696443	146.3150538	0.04430182	0.197549214
	Dec	390.8358147	444.2605459	8.436794872	0.25	72.20384615	0.273895782	21.97063689	0	0.173159636
PC02.3 Tributaries	Jan	0	0	0	0	0	0	0	0	0
	Feb	0	0	0	0	0	0	0	0	0
	Mar	434	554	8.21	0.25	65.4	0.23	150	0.155	0.1
	Apr	387	564	8.325	0.25	54.5	0.22	198	0.0351	0.038
	May	387	564	8.325	0.25	54.5	0.22	198	0.0351	0.038
	Jun	301	375	8.41	0.25	52.5	0.273	81	0.0208	0.025
	Jul	301	375	8.41	0.25	52.5	0.273	81	0.0208	0.025
	Aug	301	375	8.41	0.25	52.5	0.273	81	0.0208	0.025
	Sep	442	496	8.355	0.25	59.6	0.279	133	0.0563	0.12
	Oct	442	496	8.355	0.25	59.6	0.279	133	0.0563	0.12
	Nov	0	0	0	0	0	0	0	0	0
	Dec	0	0	0	0	0	0	0	0	0
PC02 Tributaries	Jan	470.1816136	1071.675395	8.015175927	0.945800262	211.7963752	0.146503969	740.0386223	0	1.491600524
	Feb	469.8256251	1066.582021	8.017092788	0.938954329	210.3559908	0.147325481	734.2332709	0	1.477908658
	Mar	475.9708602	1154.506154	7.984003061	1.057131927	235.2205574	0.133144169	834.4478739	0	1.714263853
	Apr	508.7715236	1543.142455	7.803122042	1.492566568	322.8943786	0.120594675	1321.280177	0	1.737831065
	May	678.7106033	2909.591382	7.0748117	3.226638809	697.4539828	0	2888.881483	0	4.110041891
	Jun	1014.836599	2135.796944	8.251369645	0.25	214.3029624	0.146095716	1699.029624	0	0.611932315
	Jul	1393.383231	3069.545303	8.167248171	0.25	300.1068657	0.078798537	2557.068657	0	0.923181768
	Aug	1674.085748	3761.944844	8.104869834	0.25	363.7327695	0.028895867	3193.327695	0	1.153981615
	Sep	462.4482559	1135.73829	7.873005398	0.980294852	215.5909804	0.176758721	799.0289049	0	0.082024668
	Oct	462.8745848	1149.076297	7.862956215	0.995520887	218.8432614	0.174627076	812.9150488	0	0.081232914
	Nov	461.4159842	1103.442933	7.897337516	0.943428006	207.7162221	0.181920079	765.4063415	0	0.083941744
	Dec	470.1816136	1071.675395	8.015175927	0.945800262	211.7963752	0.146503969	740.0386223	0	1.491600524
Kamloops Lake		35.54444444	36.63333333	7.880909091	0.025	0.8	0.049454545	7.936363636	0.006775	0.095045455

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NOTES:
1. UNITS ARE mg/L, UNLESS OTHERWISE STATED.
2. METHOD DETECTION LIMIT (MDL) REPRESENTS THE RANGE OF MDLs FOR THE BASELINE DATASET.

BASE CASE MEDIAN CONCENTRATIONS

	Analytes	Nitrite	Phosphorus - Dissolved	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron
	MDL	0.001 to 0.02	0.002 to 0.02	0.001 to 0.025	0.0001 to 0.0025	0.0001 to 0.0025	5E-005 to 0.02	0.0001 to 0.005	0.0005 to 0.2	0.01 to 0.1
INKS-S	Jan	0.038	0.142	0.01375	0.0005	0.01565	0.03095	0.0005	0.0025	2.27
	Feb	0.038	0.142	0.01375	0.0005	0.01565	0.03095	0.0005	0.0025	2.27
	Mar	0.038	0.142	0.01375	0.0005	0.01565	0.03095	0.0005	0.0025	2.27
	Apr	0.025	0.0764	0.015	0.0005	0.0146	0.0266	0.0005	0.0025	1.88
	May	0.025	0.0764	0.015	0.0005	0.0146	0.0266	0.0005	0.0025	1.88
	Jun	0.025	0.116	0.025	0.0025	0.0207	0.03	0.005	0.0025	1.89
	Jul	0.025	0.116	0.025	0.0025	0.0207	0.03	0.005	0.0025	1.89
	Aug	0.025	0.116	0.025	0.0025	0.0207	0.03	0.005	0.0025	1.89
	Sep	0.025	0.105	0.005	0.001	0.0204	0.0292	0.0005	0.0025	2.32
	Oct	0.025	0.105	0.005	0.001	0.0204	0.0292	0.0005	0.0025	2.32
	Nov	0.025	0.105	0.005	0.001	0.0204	0.0292	0.0005	0.0025	2.32
	Dec	0.038	0.142	0.01375	0.0005	0.01565	0.03095	0.0005	0.0025	2.27
KC03	Jan	0.005	0.163	0.0012	0.00017	0.00676	0.0724	0.00005	0.00025	0.104
	Feb	0.005	0.163	0.0012	0.00017	0.00676	0.0724	0.00005	0.00025	0.104
	Mar	0.005	0.163	0.0012	0.00017	0.00676	0.0724	0.00005	0.00025	0.104
	Apr	0.005	0.142	0.0012	0.000195	0.0056	0.0745	0.00005	0.00025	0.1105
	May	0.005	0.142	0.0012	0.000195	0.0056	0.0745	0.00005	0.00025	0.1105
	Jun	0.01	0.097	0.0005	0.00018	0.00542	0.079	0.00005	0.00025	0.119
	Jul	0.01	0.097	0.0005	0.00018	0.00542	0.079	0.00005	0.00025	0.119
	Aug	0.01	0.097	0.0005	0.00018	0.00542	0.079	0.00005	0.00025	0.119
	Sep	0.01	0.163	0.0012	0.000195	0.00676	0.079	0.00005	0.00025	0.119
	Oct	0.01	0.163	0.0012	0.000195	0.00676	0.079	0.00005	0.00025	0.119
	Nov	0.01	0.163	0.0012	0.000195	0.00676	0.079	0.00005	0.00025	0.119
	Dec	0.005	0.163	0.0012	0.00017	0.00676	0.0724	0.00005	0.00025	0.104
JACL	Jan	0.005	0.08995	0.0005	0.000105	0.00138	0.0519	0.00005	0.00025	0.0215
	Feb	0.005	0.08995	0.0005	0.000105	0.00138	0.0519	0.00005	0.00025	0.0215
	Mar	0.005	0.08995	0.0005	0.000105	0.00138	0.0519	0.00005	0.00025	0.0215
	Apr	0.00315	0.067	0.0005	0.00005	0.001235	0.0595	0.00005	0.00025	0.0205
	May	0.00315	0.067	0.0005	0.00005	0.001235	0.0595	0.00005	0.00025	0.0205
	Jun	0.0025	0.01525	0.0011	0.00005	0.00132	0.0563	0.00005	0.00025	0.021
	Jul	0.0025	0.01525	0.0011	0.00005	0.00132	0.0563	0.00005	0.00025	0.021
	Aug	0.0025	0.01525	0.0011	0.00005	0.00132	0.0563	0.00005	0.00025	0.021
	Sep	0.005	0.10175	0.0013	0.00005	0.001335	0.0653	0.00005	0.00025	0.021
	Oct	0.005	0.10175	0.0013	0.00005	0.001335	0.0653	0.00005	0.00025	0.021
	Nov	0.005	0.10175	0.0013	0.00005	0.001335	0.0653	0.00005	0.00025	0.021
	Dec	0.005	0.08995	0.0005	0.000105	0.00138	0.0519	0.00005	0.00025	0.0215
JC03-PC10	Jan	0.005	0.08975	0.0016	0.00005	0.00139	0.0781	0.00005	0.00025	0.0085
	Feb	0.005	0.08975	0.0016	0.00005	0.00139	0.0781	0.00005	0.00025	0.0085
	Mar	0.005	0.08975	0.0016	0.00005	0.00139	0.0781	0.00005	0.00025	0.0085
	Apr	0.005	0.06355	0.00325	0.00005	0.001035	0.0791	0.00005	0.00025	0.005
	May	0.005	0.06355	0.00325	0.00005	0.001035	0.0791	0.00005	0.00025	0.005
	Jun	0.00135	0.1145	0.0029	0.00005	0.001665	0.06525	0.00005	0.00025	0.015
	Jul	0.00135	0.1145	0.0029	0.00005	0.001665	0.06525	0.00005	0.00025	0.015
	Aug	0.00135	0.1145	0.0029	0.00005	0.001665	0.06525	0.00005	0.00025	0.015
	Sep	0.005	0.06585	0.0018	0.00005	0.00116	0.0918	0.00005	0.050125	0.0135
	Oct	0.005	0.06585	0.0018	0.00005	0.00116	0.0918	0.00005	0.050125	0.0135
	Nov	0.005	0.06585	0.0018	0.00005	0.00116	0.0918	0.00005	0.050125	0.0135
	Dec	0.005	0.08975	0.0016	0.00005	0.00139	0.0781	0.00005	0.00025	0.0085
PC08	Jan	0.005	0.0107	0.00145	0.00005	0.00089	0.0549	0.00005	0.00025	0.0245
	Feb	0.005	0.0107	0.00145	0.00005	0.00089	0.0549	0.00005	0.00025	0.0245
	Mar	0.005	0.0107	0.00145	0.00005	0.00089	0.0549	0.00005	0.00025	0.0245
	Apr	0.0025	0.0182	0.00175	0.00005	0.00106	0.0535	0.00005	0.00025	0.022
	May	0.0025	0.0182	0.00175	0.00005	0.00106	0.0535	0.00005	0.00025	0.022
	Jun	0.0024	0.01755	0.0021	0.00005	0.0013	0.0531	0.00005	0.00025	0.02
	Jul	0.0024	0.01755	0.0021	0.00005	0.0013	0.0531	0.00005	0.00025	0.02
	Aug	0.0024	0.01755	0.0021	0.00005	0.0013	0.0531	0.00005	0.00025	0.02
	Sep	0.005	0.014	0.0019	0.00005	0.00125	0.063	0.00005	0.00025	0.029
	Oct	0.005	0.014	0.0019	0.00005	0.00125	0.063	0.00005	0.00025	0.029
	Nov	0.005	0.014	0.0019	0.00005	0.00125	0.063	0.00005	0.00025	0.029
	Dec	0.005	0.0107	0.00145	0.00005	0.00089	0.0549	0.00005	0.00025	0.0245
HUMPH02	Jan	0.005	0.0893	0.0014	0.00021	0.00331	0.0635	0.00005	0.00025	0.029
	Feb	0.005	0.0893	0.0014	0.00021	0.00331	0.0635	0.00005	0.00025	0.029
	Mar	0.005	0.0893	0.0014	0.00021	0.00331	0.0635	0.00005	0.00025	0.029
	Apr	0.005	0.0921	0.0005	0.00021	0.00345	0.0554	0.00005	0.00025	0.027
	May	0.005	0.0921	0.0005	0.00021	0.00345	0.0554	0.00005	0.00025	0.027
	Jun	0.005	0.0995	0.0018	0.0002	0.003365	0.066	0.00005	0.00025	0.0325
	Jul	0.005	0.0995	0.0018	0.0002	0.003365	0.066	0.00005	0.00025	0.0325
	Aug	0.005	0.0995	0.0018	0.0002	0.003365	0.066	0.00005	0.00025	0.0325
	Sep	0.005	0.129	0.0019	0.000135	0.00305	0.06495	0.00005	0.00025	0.034
	Oct	0.005	0.129	0.0019	0.000135	0.00305	0.06495	0.00005	0.00025	0.034
	Nov	0.005	0.129	0.0019	0.000135	0.00305	0.06495	0.00005	0.00025	0.034
	Dec	0.005	0.0893	0.0014	0.00021	0.00331	0.0635	0.00005	0.00025	0.029
PC03	Jan	0.0075	0.148	0.0018	0.00005	0.00133	0.0901	0.00005	0.00025	0.034
	Feb	0.0075	0.148	0.0018	0.00005	0.00133	0.0901	0.00005	0.00025	0.034
	Mar	0.0075	0.148	0.0018	0.00005	0.00133	0.0901	0.00005	0.00025	0.034
	Apr	0.005	0.0337	0.0015	0.00011	0.00133	0.0633	0.00005	0.00025	0.035
	May	0.005	0.0337	0.0015	0.00011	0.00133	0.0633	0.00005	0.00025	0.035
	Jun	0.0025	0.0383	0.0019	0.00011	0.00165	0.049	0.00005	0.00025	0.028
	Jul	0.0025	0.0383	0.0019	0.00011	0.00165	0.049	0.00005	0.00025	0.028
	Aug	0.0025	0.0383	0.0019	0.00011	0.00165	0.049	0.00005	0.00025	0.028
	Sep	0.018	0.0504	0.0029	0.00008	0.001765	0.064	0.00005	0.00025	0.0355
	Oct	0.018	0.0504	0.0029	0.00008	0.001765	0.064	0.00005	0.00025	0.0355
	Nov	0.018	0.0504	0.0029	0.00008	0.001765	0.064	0.00005	0.00025	0.0355
	Dec	0.0075	0.148	0.0018	0.00005	0.00133	0.0901	0.00005	0.00025	0.034
PC02.5	Jan	0.0102	0.134	0.0018	0.00005	0.00139	0.0626	0.00005	0.00025	0.026
	Feb	0.0102	0.134	0.0018	0.00005	0.00139	0.0626	0.00005	0.00025	0.026
	Mar	0.0102	0.134	0.0018	0.00005	0.00139	0.0626	0.00005	0.00025	0.026
	Apr	0.005	0.07345	0.0016	0.00011	0.001515	0.0626	0.00005	0.00025	0.031
	May	0.005	0.07345	0.0016	0.00011	0.001515	0.0626	0.00005	0.00025	0.031
	Jun	0.005	0.0805	0.0018	0.00011	0.00191	0.0517	0.00005	0.00025	0.033
	Jul	0.005	0.0805	0.0018	0.00011	0.00191	0.0517	0.00005	0.00025	0.033
	Aug	0.005	0.0805	0.0018	0.00011	0.00191	0.0517	0.00005	0.00025	0.033
	Sep	0.011	0.186	0.0021	0.00005	0.002125	0.0639	0.00005	0.00025	0.03
	Oct	0.011	0.186	0.0021	0.00005	0.002125	0.0639	0.00005	0.00025	0.03
	Nov	0.011	0.186	0.0021	0.00005	0.002125	0.0639	0.00005	0.00025	0.03
	Dec	0.0102	0.134	0.0018	0.00005	0.00139	0.0626	0.00005	0.00025	0.026

NOTES:
1. UNITS ARE mg/L, UNLESS OTHERWISE STATED.
2. METHOD DETECTION LIMIT (MDL) REPRESENTS THE RANGE OF MDLs FOR THE BASELINE DATASET.

BASE CASE MEDIAN CONCENTRATIONS

	Analytes	Nitrite	Phosphorus - Dissolved	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron
	MDL	0.001 to 0.02	0.002 to 0.02	0.001 to 0.025	0.0001 to 0.0025	0.0001 to 0.0025	5E-005 to 0.02	0.0001 to 0.005	0.0005 to 0.2	0.01 to 0.1
PC02.3	Jan	0.0102	0.134	0.0018	0.00005	0.00139	0.0626	0.00005	0.00025	0.026
	Feb	0.0102	0.134	0.0018	0.00005	0.00139	0.0626	0.00005	0.00025	0.026
	Mar	0.0102	0.134	0.0018	0.00005	0.00139	0.0626	0.00005	0.00025	0.026
	Apr	0.005	0.07345	0.0016	0.00011	0.001515	0.0626	0.00005	0.00025	0.031
	May	0.005	0.07345	0.0016	0.00011	0.001515	0.0626	0.00005	0.00025	0.031
	Jun	0.005	0.0805	0.0018	0.00011	0.00191	0.0517	0.00005	0.00025	0.033
	Jul	0.005	0.0805	0.0018	0.00011	0.00191	0.0517	0.00005	0.00025	0.033
	Aug	0.005	0.0805	0.0018	0.00011	0.00191	0.0517	0.00005	0.00025	0.033
	Sep	0.011	0.186	0.0021	0.00005	0.002125	0.0639	0.00005	0.00025	0.03
	Oct	0.011	0.186	0.0021	0.00005	0.002125	0.0639	0.00005	0.00025	0.03
	Nov	0.011	0.186	0.0021	0.00005	0.002125	0.0639	0.00005	0.00025	0.03
	Dec	0.0102	0.134	0.0018	0.00005	0.00139	0.0626	0.00005	0.00025	0.026
PC02	Jan	0.00735	0.0375	0.0005	0.00005	0.00124	0.053	0.00005	0.00025	0.0735
	Feb	0.00735	0.0375	0.0005	0.00005	0.00124	0.053	0.00005	0.00025	0.0735
	Mar	0.00735	0.0375	0.0005	0.00005	0.00124	0.053	0.00005	0.00025	0.0735
	Apr	0.005	0.0646	0.0015	0.00012	0.00189	0.05575	0.00005	0.00025	0.052
	May	0.005	0.0646	0.0015	0.00012	0.00189	0.05575	0.00005	0.00025	0.052
	Jun	0.005	0.1095	0.0018	0.0001	0.00261	0.048	0.00005	0.00025	0.045
	Jul	0.005	0.1095	0.0018	0.0001	0.00261	0.048	0.00005	0.00025	0.045
	Aug	0.005	0.1095	0.0018	0.0001	0.00261	0.048	0.00005	0.00025	0.045
	Sep	0.017	0.04835	0.00105	0.00005	0.001635	0.0569	0.00005	0.00025	0.086
	Oct	0.017	0.04835	0.00105	0.00005	0.001635	0.0569	0.00005	0.00025	0.086
	Nov	0.017	0.04835	0.00105	0.00005	0.001635	0.0569	0.00005	0.00025	0.086
	Dec	0.00735	0.0375	0.0005	0.00005	0.00124	0.053	0.00005	0.00025	0.0735
NSP	Jan	0.025	0.9135	0.0025	0.001085	0.01685	0.04105	0.00025	0.00125	0.025
	Feb	0.025	0.9135	0.0025	0.001085	0.01685	0.04105	0.00025	0.00125	0.025
	Mar	0.025	0.9135	0.0025	0.001085	0.01685	0.04105	0.00025	0.00125	0.025
	Apr	0.01	0.506	0.0075	0.000365	0.007865	0.04365	0.000175	0.000875	0.027
	May	0.01	0.506	0.0075	0.000365	0.007865	0.04365	0.000175	0.000875	0.027
	Jun	0.025	0.408	0.0025	0.00085	0.0115	0.0398	0.00025	0.00125	0.025
	Jul	0.025	0.408	0.0025	0.00085	0.0115	0.0398	0.00025	0.00125	0.025
	Aug	0.025	0.408	0.0025	0.00085	0.0115	0.0398	0.00025	0.00125	0.025
	Sep	0.025	0.438	0.0025	0.00133	0.0151	0.0325	0.00025	0.00125	0.025
	Oct	0.025	0.438	0.0025	0.00133	0.0151	0.0325	0.00025	0.00125	0.025
	Nov	0.025	0.438	0.0025	0.00133	0.0151	0.0325	0.00025	0.00125	0.025
	Dec	0.025	0.9135	0.0025	0.001085	0.01685	0.04105	0.00025	0.00125	0.025
Jacko Lake Tributaries	Jan	0.005		0	0.000876077	0.001239804	0	0.00005	0.00025	0.20375457
	Feb	0.005		0	0.000876077	0.001239804	0	0.00005	0.00025	0.20375457
	Mar	0.005		0	0.000403211	0.00132578	0	0.00005	0.00025	0.091986137
	Apr	0		0	0.00005	0.002302792	0	0.00005	0.00025	0.103253917
	May	0		0	5E-05	0.004185212	0	5E-05	0.00025	0.24914143
	Jun	0.029708426		0	5E-05	0	0	5E-05	0.00025	0.162957004
	Jul	0.002735579		0.000731268	0.00005	0.001249326	0.054466582	0.00005	0.00025	0.022229107
	Aug	0.002529004		0.001054602	0.00005	0.001311299	0.056074272	0.00005	0.00025	0.021151326
	Sep	0.005		0.0018	0.00005	0.00116	0.0918	0.00005	0.050125	0.0135
	Oct	0.005		0.0018	0.00005	0.00116	0.0918	0.00005	0.050125	0.0135
	Nov	0.005		0.0018	0.00005	0.00116	0.0918	0.00005	0.050125	0.0135
	Dec	0.005		0.0016	0.00005	0.00139	0.0781	0.00005	0.00025	0.0085
PC03 Tributaries	Jan	0.01192097		0.002418936	0.00005	0.002108091	0.152347261	0.00005	0.00025	0.050799687
	Feb	0.01192097		0.002418936	0.00005	0.002108091	0.152347261	0.00005	0.00025	0.050799687
	Mar	0.008492321		0.001938925	0.00005	0.001504648	0.10407188	0.00005	0.00025	0.03777082
	Apr	0.012798269		0.000720173	0.000297158	0.002172213	0.093869213	0.00005	0.00025	0.075550997
	May	0.042754244		0	0.001016102	0.005407458	0.211296636	0.00005	0.00025	0.231322068
	Jun	0.004822178		0	0.001503307	0.009777622	0	5E-05	0.00025	0.213774213
	Jul	0.007060955		0	0.002846573	0.017613344	0	5E-05	0.00025	0.392876431
	Aug	0.008918729		0	0.003961237	0.024115551	0	5E-05	0.00025	0.541498311
	Sep	0.033604438		0.004100341	0.00011601	0.002383176	0.065200341	0.00005	0.00025	0.043302219
	Oct	0.031357697		0.003927515	0.000110825	0.00229417	0.065027515	0.00005	0.00025	0.042178849
	Nov	0.040989045		0.004668388	0.000133052	0.00267572	0.065768388	0.00005	0.00025	0.046994523
	Dec	0.01192097		0.002418936	0.00005	0.002108091	0.152347261	0.00005	0.00025	0.050799687
PC02.5 Tributaries	Jan	0.01415062		0.0018	0.00005	0.001477792	0.0223622	0.00005	0.00025	0.014294458
	Feb	0.01415062		0.0018	0.00005	0.001477792	0.0223622	0.00005	0.00025	0.014294458
	Mar	0.01183971		0.0018	0.00005	0.001426438	0.045899251	0.00005	0.00025	0.0211416
	Apr	0.005		0.001775874	0.00011	0.001840368	0.061368879	0.00005	0.00025	0.023965021
	May	0.005		0.002288921	0.00011	0.002789503	0.057777555	0.00005	0.00025	0.00344317
	Jun	0.031366664		0.000745333	0.00011	0.004652133	0.080175997	0.00005	0.00025	0.085733327
	Jul	0.059280072		0	0.00011	0.007555128	0.110322478	0.00005	0.00025	0.141560145
	Aug	0.084223425		0	0.00011	0.010149236	0.137261299	5E-05	0.00025	0.19144685
	Sep	0.003527086		0.001245953	1.79732E-05	0.002509321	0.063793244	0.00005	0.00025	0.024128425
	Oct	0.004281723		0.001332197	2.12074E-05	0.002470511	0.063804025	0.00005	0.00025	0.024721353
	Nov	0.000757651		0.000929446	6.10422E-06	0.002651749	0.063753681	0.00005	0.00025	0.02195244
	Dec	0.01415062		0.0018	0.00005	0.001477792	0.0223622	0.00005	0.00025	0.014294458
PC02.3 Tributaries	Jan	0		0	0	0	0	0	0	0
	Feb	0		0	0	0	0	0	0	0
	Mar	0.0102		0.0018	0.00005	0.00139	0.0626	0.00005	0.00025	0.026
	Apr	0.005		0.0016	0.00011	0.001515	0.0626	0.00005	0.00025	0.031
	May	0.005		0.0016	0.00011	0.001515	0.0626	5E-05	0.00025	0.031
	Jun	0.005		0.0018	0.00011	0.00191	0.0517	0.00005	0.00025	0.033
	Jul	0.005		0.0018	0.00011	0.00191	0.0517	5E-05	0.00025	0.033
	Aug	0.005		0.0018	0.00011	0.00191	0.0517	5E-05	0.00025	0.033
	Sep	0.011		0.0021	0.00005	0.002125	0.0639	0.00005	0.00025	0.03
	Oct	0.011		0.0021	0.00005	0.002125	0.0639	0.00005	0.00025	0.03
	Nov	0		0	0	0	0	0	0	0
	Dec	0		0	0	0	0	0	0	0
PC02 Tributaries	Jan	0.002267877		0	0.00005	0.00097252	0.03588127	0.00005	0.00025	0.15820205
	Feb	0.002345921		0	0.00005	0.000976627	0.036144154	0.00005	0.00025	0.156901322
	Mar	0.000998696		0	0.00005	0.000905721	0.031606134	0.00005	0.00025	0.179355066
	Apr	0.005		0.001102973	0.000159703	0.00337885	0.028553676	0.00005	0.00025	0.135375592
	May	0.005		0.000409344	0.000229066	0.005979958	0	5E-05	0.00025	0.28103766
	Jun	0.005		0.0018	0	0.013014125	0	0.00005	0.00025	0.223356426
	Jul	0.005		0.0018	0	0.018902628	0	5E-05	0.00025	0.324302195
	Aug	0.005		0.0018	0	0.023269112	0	0.00005	0.00025	0.399156199
	Sep	0.028527076		0	0.00005	0.000693622	0.043451744	0.00005	0.00025	0.193586047
	Oct	0.028892501		0	0.00005	0.000663779	0.043025415	0.00005	0.00025	0.196996679
	Nov	0.027642272		0	0.00005	0.000765881	0.044484016	0.00005	0.00025	0.185327873
	Dec	0.002267877		0	0.00005	0.00097252	0.03588127	0.00005	0.00025	0.15820205
Kamloops Lake		0.000836364	0.008055556	0.014081818	0.000025	0.000124273	0.00817	0.0001	0.00025	0.002836364

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NOTES:
1. UNITS ARE mg/L, UNLESS OTHERWISE STATED.
2. METHOD DETECTION LIMIT (MDL) REPRESENTS THE RANGE OF MDLs FOR THE BASELINE DATASET.

APPENDIX B - BASELINE WATER QUALITY MODEL INPUTS

BASE CASE MEDIAN CONCENTRATIONS

	Analytes	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium
	MDL	1E-005 to 8.5E-005	0.05 to 0.1	0.0001 to 0.018	0.0001 to 0.0015	0.0002 to 0.006	0.01 to 0.03	5E-005 to 0.0025	0.0005 to 0.025	0.1
INKS-S	Jan	0.00005	95.3	0.0005	0.0005	0.0025	0.045	0.00025	0.04545	1070
	Feb	0.00005	95.3	0.0005	0.0005	0.0025	0.045	0.00025	0.04545	1070
	Mar	0.00005	95.3	0.0005	0.0005	0.0025	0.045	0.00025	0.04545	1070
	Apr	0.00005	72.9	0.0005	0.0005	0.003	0.03	0.00025	0.0479	852
	May	0.00005	72.9	0.0005	0.0005	0.003	0.03	0.00025	0.0479	852
	Jun	0.000085	79.7	0.005	0.0015	0.01	0.03	0.0025	0.0499	887
	Jul	0.000085	79.7	0.005	0.0015	0.01	0.03	0.0025	0.0499	887
	Aug	0.000085	79.7	0.005	0.0015	0.01	0.03	0.0025	0.0499	887
	Sep	0.00005	83.2	0.0005	0.0005	0.001	0.045	0.00025	0.0537	1110
	Oct	0.00005	83.2	0.0005	0.0005	0.001	0.045	0.00025	0.0537	1110
	Nov	0.00005	83.2	0.0005	0.0005	0.001	0.045	0.00025	0.0537	1110
	Dec	0.00005	95.3	0.0005	0.0005	0.0025	0.045	0.00025	0.04545	1070
KC03	Jan	0.000005	70.8	0.00052	0.00005	0.0068	0.005	0.000025	0.0125	123
	Feb	0.000005	70.8	0.00052	0.00005	0.0068	0.005	0.000025	0.0125	123
	Mar	0.000005	70.8	0.00052	0.00005	0.0068	0.005	0.000025	0.0125	123
	Apr	0.000005	72	0.00045	0.00005	0.00572	0.005	0.000025	0.01295	125.5
	May	0.000005	72	0.00045	0.00005	0.00572	0.005	0.000025	0.01295	125.5
	Jun	0.000005	74.4	0.00041	0.00005	0.0049	0.005	0.000025	0.0132	134
	Jul	0.000005	74.4	0.00041	0.00005	0.0049	0.005	0.000025	0.0132	134
	Aug	0.000005	74.4	0.00041	0.00005	0.0049	0.005	0.000025	0.0132	134
	Sep	0.000005	74.4	0.00052	0.00005	0.0068	0.005	0.000025	0.0132	134
	Oct	0.000005	74.4	0.00052	0.00005	0.0068	0.005	0.000025	0.0132	134
	Nov	0.000005	74.4	0.00052	0.00005	0.0068	0.005	0.000025	0.0132	134
	Dec	0.000005	70.8	0.00052	0.00005	0.0068	0.005	0.000025	0.0125	123
JACL	Jan	0.000005	54.4	0.00005	0.00005	0.0009	0.005	0.000025	0.005845	40.8
	Feb	0.000005	54.4	0.00005	0.00005	0.0009	0.005	0.000025	0.005845	40.8
	Mar	0.000005	54.4	0.00005	0.00005	0.0009	0.005	0.000025	0.005845	40.8
	Apr	0.000005	57.05	0.00005	0.00005	0.00126	0.005	0.000025	0.005775	40.3
	May	0.000005	57.05	0.00005	0.00005	0.00126	0.005	0.000025	0.005775	40.3
	Jun	0.000005	55.9	0.00005	0.00005	0.001025	0.005	0.000025	0.0055	38.05
	Jul	0.000005	55.9	0.00005	0.00005	0.001025	0.005	0.000025	0.0055	38.05
	Aug	0.000005	55.9	0.00005	0.00005	0.001025	0.005	0.000025	0.0055	38.05
	Sep	0.000005	53.7	0.00005	0.00005	0.00055	0.005	0.000025	0.0059	40.4
	Oct	0.000005	53.7	0.00005	0.00005	0.00055	0.005	0.000025	0.0059	40.4
	Nov	0.000005	53.7	0.00005	0.00005	0.00055	0.005	0.000025	0.0059	40.4
	Dec	0.000005	54.4	0.00005	0.00005	0.0009	0.005	0.000025	0.005845	40.8
JC03-PC10	Jan	0.000005	99.2	0.000135	0.00032	0.0016	0.109	0.000025	0.004885	45.1
	Feb	0.000005	99.2	0.000135	0.00032	0.0016	0.109	0.000025	0.004885	45.1
	Mar	0.000005	99.2	0.000135	0.00032	0.0016	0.109	0.000025	0.004885	45.1
	Apr	0.000005	95.2	0.000125	0.00011	0.00244	0.0375	0.000025	0.00345	30.4
	May	0.000005	95.2	0.000125	0.00011	0.00244	0.0375	0.000025	0.00345	30.4
	Jun	0.000005	67	0.00011	0.00013	0.00223	0.047	0.000025	0.00386	28.75
	Jul	0.000005	67	0.00011	0.00013	0.00223	0.047	0.000025	0.00386	28.75
	Aug	0.000005	67	0.00011	0.00013	0.00223	0.047	0.000025	0.00386	28.75
	Sep	0.000005	98.7	0.00016	0.000235	0.00116	0.0635	0.000025	0.0054	37.4
	Oct	0.000005	98.7	0.00016	0.000235	0.00116	0.0635	0.000025	0.0054	37.4
	Nov	0.000005	98.7	0.00016	0.000235	0.00116	0.0635	0.000025	0.0054	37.4
	Dec	0.000005	99.2	0.000135	0.00032	0.0016	0.109	0.000025	0.004885	45.1
PC08	Jan	0.000005	67.6	0.00045	0.00024	0.00071	0.19	0.000025	0.004795	44
	Feb	0.000005	67.6	0.00045	0.00024	0.00071	0.19	0.000025	0.004795	44
	Mar	0.000005	67.6	0.00045	0.00024	0.00071	0.19	0.000025	0.004795	44
	Apr	0.000005	66.7	0.00029	0.00014	0.00106	0.086	0.000025	0.00493	43.7
	May	0.000005	66.7	0.00029	0.00014	0.00106	0.086	0.000025	0.00493	43.7
	Jun	0.000005	54.2	0.00005	0.00005	0.0011	0.019	0.000025	0.00513	36.3
	Jul	0.000005	54.2	0.00005	0.00005	0.0011	0.019	0.000025	0.00513	36.3
	Aug	0.000005	54.2	0.00005	0.00005	0.0011	0.019	0.000025	0.00513	36.3
	Sep	0.000005	67.4	0.00039	0.000205	0.00052	0.084	0.000025	0.00567	42.7
	Oct	0.000005	67.4	0.00039	0.000205	0.00052	0.084	0.000025	0.00567	42.7
	Nov	0.000005	67.4	0.00039	0.000205	0.00052	0.084	0.000025	0.00567	42.7
	Dec	0.000005	67.6	0.00045	0.00024	0.00071	0.19	0.000025	0.004795	44
HUMPH02	Jan	0.000005	121	0.00013	0.00005	0.00608	0.005	0.000025	0.00715	117
	Feb	0.000005	121	0.00013	0.00005	0.00608	0.005	0.000025	0.00715	117
	Mar	0.000005	121	0.00013	0.00005	0.00608	0.005	0.000025	0.00715	117
	Apr	0.000005	106	0.00016	0.00005	0.00681	0.005	0.000025	0.00646	99.5
	May	0.000005	106	0.00016	0.00005	0.00681	0.005	0.000025	0.00646	99.5
	Jun	0.000005	88.65	0.00008	0.00005	0.00675	0.005	0.000025	0.007595	85.15
	Jul	0.000005	88.65	0.00008	0.00005	0.00675	0.005	0.000025	0.007595	85.15
	Aug	0.000005	88.65	0.00008	0.00005	0.00675	0.005	0.000025	0.007595	85.15
	Sep	0.000005	101	0.00005	0.00005	0.005295	0.012	0.000025	0.00767	93.8
	Oct	0.000005	101	0.00005	0.00005	0.005295	0.012	0.000025	0.00767	93.8
	Nov	0.000005	101	0.00005	0.00005	0.005295	0.012	0.000025	0.00767	93.8
	Dec	0.000005	121	0.00013	0.00005	0.00608	0.005	0.000025	0.00715	117
PC03	Jan	0.000005	97	0.00016	0.00024	0.00063	0.1045	0.000025	0.00639	93.95
	Feb	0.000005	97	0.00016	0.00024	0.00063	0.1045	0.000025	0.00639	93.95
	Mar	0.000005	97	0.00016	0.00024	0.00063	0.1045	0.000025	0.00639	93.95
	Apr	0.000005	74.3	0.0001	0.000135	0.00124	0.0415	0.000025	0.00572	74.9
	May	0.000005	74.3	0.0001	0.000135	0.00124	0.0415	0.000025	0.00572	74.9
	Jun	0.000005	57.2	0.00005	0.00013	0.00147	0.033	0.000025	0.005405	43.4
	Jul	0.000005	57.2	0.00005	0.00013	0.00147	0.033	0.000025	0.005405	43.4
	Aug	0.000005	57.2	0.00005	0.00013	0.00147	0.033	0.000025	0.005405	43.4
	Sep	0.000005	71.85	0.0002	0.00018	0.001315	0.032	0.000025	0.0066	64.75
	Oct	0.000005	71.85	0.0002	0.00018	0.001315	0.032	0.000025	0.0066	64.75
	Nov	0.000005	71.85	0.0002	0.00018	0.001315	0.032	0.000025	0.0066	64.75
	Dec	0.000005	97	0.00016	0.00024	0.00063	0.1045	0.000025	0.00639	93.95
PC02.5	Jan	0.000005	87.8	0.00014	0.0002	0.00131	0.095	0.000025	0.00637	81.8
	Feb	0.000005	87.8	0.00014	0.0002	0.00131	0.095	0.000025	0.00637	81.8
	Mar	0.000005	87.8	0.00014	0.0002	0.00131	0.095	0.000025	0.00637	81.8
	Apr	0.000005	91.9	0.00012	0.00017	0.001855	0.042	0.000025	0.00626	80.85
	May	0.000005	91.9	0.00012	0.00017	0.001855	0.042	0.000025	0.00626	80.85
	Jun	0.000005	67	0.00012	0.00012	0.00209	0.026	0.000025	0.0061	50.8
	Jul	0.000005	67	0.00012	0.00012	0.00209	0.026	0.000025	0.0061	50.8
	Aug	0.000005	67	0.00012	0.00012	0.00209	0.026	0.000025	0.0061	50.8
	Sep	0.000005	81.2	0.00015	0.0002	0.00118	0.052	0.000025	0.0072	70.9
	Oct	0.000005	81.2	0.00015	0.0002	0.00118	0.052	0.000025	0.0072	70.9
	Nov	0.000005	81.2	0.00015	0.0002	0.00118	0.052	0.000025	0.0072	70.9
	Dec	0.000005	87.8	0.00014	0.0002	0.00131	0.095	0.000025	0.00637	81.8

NOTES:
1. UNITS ARE mg/L, UNLESS OTHERWISE STATED.
2. METHOD DETECTION LIMIT (MDL) REPRESENTS THE RANGE OF MDLs FOR THE BASELINE DATASET.

BASE CASE MEDIAN CONCENTRATIONS

	Analytes	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium
	MDL	1E-005 to 8.5E-005	0.05 to 0.1	0.0001 to 0.018	0.0001 to 0.0015	0.0002 to 0.006	0.01 to 0.03	5E-005 to 0.0025	0.0005 to 0.025	0.1
PC02.3	Jan	0.000005	87.8	0.00014	0.0002	0.00131	0.095	0.000025	0.00637	81.8
	Feb	0.000005	87.8	0.00014	0.0002	0.00131	0.095	0.000025	0.00637	81.8
	Mar	0.000005	87.8	0.00014	0.0002	0.00131	0.095	0.000025	0.00637	81.8
	Apr	0.000005	91.9	0.00012	0.00017	0.001855	0.042	0.000025	0.00626	80.85
	May	0.000005	91.9	0.00012	0.00017	0.001855	0.042	0.000025	0.00626	80.85
	Jun	0.000005	67	0.00012	0.00012	0.00209	0.026	0.000025	0.0061	50.8
	Jul	0.000005	67	0.00012	0.00012	0.00209	0.026	0.000025	0.0061	50.8
	Aug	0.000005	67	0.00012	0.00012	0.00209	0.026	0.000025	0.0061	50.8
	Sep	0.000005	81.2	0.00015	0.0002	0.00118	0.052	0.000025	0.0072	70.9
	Oct	0.000005	81.2	0.00015	0.0002	0.00118	0.052	0.000025	0.0072	70.9
	Nov	0.000005	81.2	0.00015	0.0002	0.00118	0.052	0.000025	0.0072	70.9
	Dec	0.000005	87.8	0.00014	0.0002	0.00131	0.095	0.000025	0.00637	81.8
PC02	Jan	0.000005	114	0.000115	0.00024	0.00173	0.0395	0.000025	0.00857	109
	Feb	0.000005	114	0.000115	0.00024	0.00173	0.0395	0.000025	0.00857	109
	Mar	0.000005	114	0.000115	0.00024	0.00173	0.0395	0.000025	0.00857	109
	Apr	0.000011	119	0.00016	0.00015	0.00236	0.023	0.000025	0.00812	113.5
	May	0.000011	119	0.00016	0.00015	0.00236	0.023	0.000025	0.00812	113.5
	Jun	0.000005	78.9	0.00013	0.00016	0.00227	0.0245	0.000025	0.00725	70.2
	Jul	0.000005	78.9	0.00013	0.00016	0.00227	0.0245	0.000025	0.00725	70.2
	Aug	0.000005	78.9	0.00013	0.00016	0.00227	0.0245	0.000025	0.00725	70.2
	Sep	0.000005	115	0.00012	0.00022	0.00165	0.033	0.000025	0.009885	108
	Oct	0.000005	115	0.00012	0.00022	0.00165	0.033	0.000025	0.009885	108
	Nov	0.000005	115	0.00012	0.00022	0.00165	0.033	0.000025	0.009885	108
	Dec	0.000005	114	0.000115	0.00024	0.00173	0.0395	0.000025	0.00857	109
NSP	Jan	0.000025	30.45	0.00025	0.00025	0.0005	0.01	0.000125	0.005	842.5
	Feb	0.000025	30.45	0.00025	0.00025	0.0005	0.01	0.000125	0.005	842.5
	Mar	0.000025	30.45	0.00025	0.00025	0.0005	0.01	0.000125	0.005	842.5
	Apr	0.0000175	23.5	0.000175	0.00023	0.001755	0.01	0.0000875	0.00243	456
	May	0.0000175	23.5	0.000175	0.00023	0.001755	0.01	0.0000875	0.00243	456
	Jun	0.000025	33.3	0.00025	0.00025	0.00109	0.01	0.000125	0.0029	586
	Jul	0.000025	33.3	0.00025	0.00025	0.00109	0.01	0.000125	0.0029	586
	Aug	0.000025	33.3	0.00025	0.00025	0.00109	0.01	0.000125	0.0029	586
	Sep	0.000025	24.7	0.00025	0.00025	0.0005	0.015	0.000125	0.0038	664
	Oct	0.000025	24.7	0.00025	0.00025	0.0005	0.015	0.000125	0.0038	664
	Nov	0.000025	24.7	0.00025	0.00025	0.0005	0.015	0.000125	0.0038	664
	Dec	0.000025	30.45	0.00025	0.00025	0.0005	0.01	0.000125	0.005	842.5
Jacko Lake Tributaries	Jan	5E-06	0	0	0	0	0	0.000025	0.019303799	0
	Feb	5E-06	0	0	0	0	0	0.000025	0.019303799	0
	Mar	0.000005	0	0	0	0	0	0.000025	0.01105013	17.48535464
	Apr	0.000005	0	0	0	0	0	0.000025	0.018188087	93.15572735
	May	0.000005	0	0	0	0	0	0.000025	0.040071215	186.3354941
	Jun	0.000005	0	0	0	0	0	0.000025	0.044301581	258.0833556
	Jul	0.000005	53.62615189	3.77089E-05	3.36119E-05	0.000778154	0	0.000025	0.005835956	39.95511598
	Aug	0.000005	55.62004712	4.84867E-05	4.79823E-05	0.000994609	0.003940719	0.000025	0.005541362	38.28455511
	Sep	0.000005	98.7	0.00016	0.000235	0.00116	0.0635	0.000025	0.0054	37.4
	Oct	0.000005	98.7	0.00016	0.000235	0.00116	0.0635	0.000025	0.0054	37.4
	Nov	0.000005	98.7	0.00016	0.000235	0.00116	0.0635	0.000025	0.0054	37.4
	Dec	0.000005	99.2	0.000135	0.00032	0.0016	0.109	0.000025	0.004885	45.1
PC03 Tributaries	Jan	0.000005	148.9906103	0	0.00024	0.000488529	0	0.000025	0.009210579	182.2809859
	Feb	0.000005	148.9906103	0	0.00024	0.000488529	0	0.000025	0.009210579	182.2809859
	Mar	0.000005	108.6696951	4.48908E-05	0.00024	0.000598246	0.070562621	0.000025	0.007023101	113.7765739
	Apr	0.000005	98.0067368	0	0.000119403	0.001801475	0	0.000025	0.008184253	172.2223932
	May	0.000005	189.0729014	0	5.94915E-05	0.003958306	0	0.000025	0.017650341	546.0729637
	Jun	0.000005	126.8653297	5E-05	0.001987742	0.010062057	0.358104872	0.000025	0.011790989	208.2746137
	Jul	5E-06	194.0286617	5E-05	0.003778764	0.018345535	0.671533755	0.000025	0.017947627	367.2278327
	Aug	5E-06	249.7618665	5E-05	0.005264983	0.025219297	0.931622044	0.000025	0.023056504	499.1297507
	Sep	0.000005	77.19151925	0	0.000149991	0.002269271	0	0.000025	0.007716318	91.21752795
	Oct	0.000005	76.42244252	4.77212E-06	0.000154312	0.002131875	0	0.000025	0.007555589	87.40670958
	Nov	0.000005	79.71932707	0	0.00013579	0.002720869	0	0.000025	0.008244601	103.7429577
	Dec	0.000005	148.9906103	0	0.00024	0.000488529	0	0.000025	0.009210579	182.2809859
PC02.5 Tributaries	Jan	0.000005	74.33862696	0.000110736	0.000141472	0.002304971	0.081099669	0.000025	0.006340736	64.02220844
	Feb	0.000005	74.33862696	0.000110736	0.000141472	0.002304971	0.081099669	0.000025	0.006340736	64.02220844
	Mar	0.000005	82.2128402	0.000127854	0.000175708	0.001722964	0.08923065	0.000025	0.006357854	74.42130527
	Apr	0.000005	122.8539082	0.000155175	0.000231556	0.002936628	0.042879372	0.000025	0.007209722	91.31453146
	May	0.000005	213.1500504	0.000257784	0.000411122	0.006091863	0.045444604	0.000025	0.009980172	121.8407841
	Jun	0.000005	170.3573216	0.000858267	1.45333E-05	0.008628933	0	0.000025	0.013429932	128.8453244
	Jul	5E-06	279.7778837	0.001639842	0	0.015551458	0	0.000025	0.02118986	211.4690142
	Aug	0.000005	377.5558252	0.002338256	0	0.021737409	0	2.5E-05	0.028124112	285.3013374
	Sep	0.000005	91.1816783	9.6622E-05	0.000221351	0.00103588	0.073351184	0.000025	0.007840536	77.46548894
	Oct	0.000005	90.17369914	0.000102012	0.000219195	0.001050433	0.071195078	0.000025	0.007775852	76.8024866
	Nov	0.000005	94.88085194	7.68404E-05	0.000229264	0.000982469	0.081263854	0.000025	0.008077916	79.89863524
	Dec	0.000005	74.33862696	0.000110736	0.000141472	0.002304971	0.081099669	0.000025	0.006340736	64.02220844
PC02.3 Tributaries	Jan	0	0	0	0	0	0	0	0	0
	Feb	0	0	0	0	0	0	0	0	0
	Mar	5E-06	87.8	0.00014	0.0002	0.00131	0.095	0.000025	0.00637	81.8
	Apr	5E-06	91.9	0.00012	0.00017	0.001855	0.042	0.000025	0.00626	80.85
	May	5E-06	91.9	0.00012	0.00017	0.001855	0.042	2.5E-05	0.00626	80.85
	Jun	5E-06	67	0.00012	0.00012	0.00209	0.026	0.000025	0.0061	50.8
	Jul	5E-06	67	0.00012	0.00012	0.00209	0.026	2.5E-05	0.0061	50.8
	Aug	5E-06	67	0.00012	0.00012	0.00209	0.026	2.5E-05	0.0061	50.8
	Sep	5E-06	81.2	0.00015	0.0002	0.00118	0.052	0.000025	0.0072	70.9
	Oct	5E-06	81.2	0.00015	0.0002	0.00118	0.052	0.000025	0.0072	70.9
	Nov	0	0	0	0	0	0	0	0	0
	Dec	0	0	0	0	0	0	0	0	0
PC02 Tributaries	Jan	0.000005	160.7198675	7.042E-05	0.000311328	0.002478944	0	0.000025	0.012493042	157.5030685
	Feb	0.000005	160.0024137	7.11046E-05	0.000310233	0.002467443	0	0.000025	0.012432798	156.758231
	Mar	0.000005	172.3874259	5.92868E-05	0.000329141	0.002665982	0	0.000025	0.013472761	169.6159536
	Apr	3.48216E-05	226.5942159	0.000318811	7.05947E-05	0.004364984	0	0.000025	0.015504695	243.1291937
	May	7.64393E-05	414.5676469	0.000596262	0	0.00786781	0	0.000025	0.028406193	469.5990285
	Jun	0.000005	255.7701228	0.00027863	0.000754521	0.004945346	0.002205447	0.000025	0.024342491	358.5428893
	Jul	0.000005	355.8746766	0.000362752	0.001091007	0.006459533	0	0.000025	0.03401646	521.7385485
	Aug	5E-06	430.1048977	0.00042513	0.001340521	0.007582343	0	0.000025	0.041189969	642.7525223
	Sep	0.000005	179.935864	6.23646E-05	0.000258424	0.002552954	0	0.000025	0.015043367	179.275756
	Oct	0.000005	181.9944239	6.05375E-05	0.000259642	0.002581579	0	0.000025	0.015206894	181.5352996
	Nov	0.000005	174.9514664	6.67886E-05	0.000255474	0.002483645	0	0.000025	0.014647417	173.8047161
	Dec	0.000005	160.7198675	7.042E-05	0.000311328	0.002478944	0	0.000025	0.012493042	157.5030685
Kamloops Lake		0.0000085	11.50545455	6.45455E-05	0.00005	0.000535455	0.016363636	0.000025	0.0025	1.93

NOTES:
1. UNITS ARE mg/L, UNLESS OTHERWISE STATED.
2. METHOD DETECTION LIMIT (MDL) REPRESENTS THE RANGE OF MDLs FOR THE BASELINE DATASET.

APPENDIX B - BASELINE WATER QUALITY MODEL INPUTS

BASE CASE MEDIAN CONCENTRATIONS

	Analytes	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silicon	Silver
	MDL	5E-005 to 0.0015	1E-005 to 5E-005	5E-005 to 0.005	0.0005 to 0.005	0.05 to 0.3	0.05 to 2	0.0001 to 0.006	0.05	1E-005 to 0.0001
INKS-S	Jan	0.06805	0.000005	0.0352	0.0025	0.27	251	0.0005	1.045	0.00005
	Feb	0.06805	0.000005	0.0352	0.0025	0.27	251	0.0005	1.045	0.00005
	Mar	0.06805	0.000005	0.0352	0.0025	0.27	251	0.0005	1.045	0.00005
	Apr	0.132	0.000005	0.0305	0.0025	0.3	200	0.0005	1.12	0.00005
	May	0.132	0.000005	0.0305	0.0025	0.3	200	0.0005	1.12	0.00005
	Jun	0.096	0.000005	0.03	0.005	0.3	202	0.0005	0.85	0.0001
	Jul	0.096	0.000005	0.03	0.005	0.3	202	0.0005	0.85	0.0001
	Aug	0.096	0.000005	0.03	0.005	0.3	202	0.0005	0.85	0.0001
	Sep	0.0494	0.000005	0.0379	0.0025	0.26	263	0.0005	2.7	0.00005
	Oct	0.0494	0.000005	0.0379	0.0025	0.26	263	0.0005	2.7	0.00005
	Nov	0.0494	0.000005	0.0379	0.0025	0.26	263	0.0005	2.7	0.00005
	Dec	0.06805	0.000005	0.0352	0.0025	0.27	251	0.0005	1.045	0.00005
KC03	Jan	0.000301	0.000005	0.0138	0.00168	0.142	21.8	0.00767	9.58	0.000005
	Feb	0.000301	0.000005	0.0138	0.00168	0.142	21.8	0.00767	9.58	0.000005
	Mar	0.000301	0.000005	0.0138	0.00168	0.142	21.8	0.00767	9.58	0.000005
	Apr	0.000198	0.000005	0.01335	0.00148	0.127	21.9	0.006145	9.54	0.000005
	May	0.000198	0.000005	0.01335	0.00148	0.127	21.9	0.006145	9.54	0.000005
	Jun	0.000217	0.000005	0.012	0.00147	0.11	22.9	0.00437	9.65	0.000005
	Jul	0.000217	0.000005	0.012	0.00147	0.11	22.9	0.00437	9.65	0.000005
	Aug	0.000217	0.000005	0.012	0.00147	0.11	22.9	0.00437	9.65	0.000005
	Sep	0.000301	0.000005	0.0138	0.00168	0.142	22.9	0.00767	9.65	0.000005
	Oct	0.000301	0.000005	0.0138	0.00168	0.142	22.9	0.00767	9.65	0.000005
	Nov	0.000301	0.000005	0.0138	0.00168	0.142	22.9	0.00767	9.65	0.000005
	Dec	0.000301	0.000005	0.0138	0.00168	0.142	21.8	0.00767	9.58	0.000005
JACL	Jan	0.016	0.000005	0.00233	0.00071	0.15	12.1	0.000145	3.57	0.000005
	Feb	0.016	0.000005	0.00233	0.00071	0.15	12.1	0.000145	3.57	0.000005
	Mar	0.016	0.000005	0.00233	0.00071	0.15	12.1	0.000145	3.57	0.000005
	Apr	0.00362	0.000005	0.0023	0.0007	0.0915	11.45	0.000145	4.24	0.000005
	May	0.00362	0.000005	0.0023	0.0007	0.0915	11.45	0.000145	4.24	0.000005
	Jun	0.004295	0.000005	0.0023	0.000695	0.15	11.45	0.000145	4.905	0.000005
	Jul	0.004295	0.000005	0.0023	0.000695	0.15	11.45	0.000145	4.905	0.000005
	Aug	0.004295	0.000005	0.0023	0.000695	0.15	11.45	0.000145	4.905	0.000005
	Sep	0.02365	0.000005	0.00222	0.00066	0.15	12.25	0.00015	5.315	0.000005
	Oct	0.02365	0.000005	0.00222	0.00066	0.15	12.25	0.00015	5.315	0.000005
	Nov	0.02365	0.000005	0.00222	0.00066	0.15	12.25	0.00015	5.315	0.000005
	Dec	0.016	0.000005	0.00233	0.00071	0.15	12.1	0.000145	3.57	0.000005
JC03-PC10	Jan	0.0975	0.000005	0.00261	0.0015	0.093	13.2	0.00028	9.5	0.000005
	Feb	0.0975	0.000005	0.00261	0.0015	0.093	13.2	0.00028	9.5	0.000005
	Mar	0.0975	0.000005	0.00261	0.0015	0.093	13.2	0.00028	9.5	0.000005
	Apr	0.0257	0.000005	0.00211	0.00092	0.15	8.5	0.00034	8.09	0.000005
	May	0.0257	0.000005	0.00211	0.00092	0.15	8.5	0.00034	8.09	0.000005
	Jun	0.02685	0.000005	0.00213	0.00118	0.143	8.625	0.00018	9.735	0.000005
	Jul	0.02685	0.000005	0.00213	0.00118	0.143	8.625	0.00018	9.735	0.000005
	Aug	0.02685	0.000005	0.00213	0.00118	0.143	8.625	0.00018	9.735	0.000005
	Sep	0.1195	0.000005	0.00249	0.00225	0.15	11.95	0.00015	11.25	0.000005
	Oct	0.1195	0.000005	0.00249	0.00225	0.15	11.95	0.00015	11.25	0.000005
	Nov	0.1195	0.000005	0.00249	0.00225	0.15	11.95	0.00015	11.25	0.000005
	Dec	0.0975	0.000005	0.00261	0.0015	0.093	13.2	0.00028	9.5	0.000005
PC08	Jan	0.193	0.000005	0.00246	0.00179	0.025	10.9	0.00011	9.08	0.000005
	Feb	0.193	0.000005	0.00246	0.00179	0.025	10.9	0.00011	9.08	0.000005
	Mar	0.193	0.000005	0.00246	0.00179	0.025	10.9	0.00011	9.08	0.000005
	Apr	0.127	0.000005	0.00217	0.0017	0.15	10.3	0.00013	8.13	0.000005
	May	0.127	0.000005	0.00217	0.0017	0.15	10.3	0.00013	8.13	0.000005
	Jun	0.0082	0.000005	0.00241	0.00074	0.025	10.5	0.00016	5.385	0.000005
	Jul	0.0082	0.000005	0.00241	0.00074	0.025	10.5	0.00016	5.385	0.000005
	Aug	0.0082	0.000005	0.00241	0.00074	0.025	10.5	0.00016	5.385	0.000005
	Sep	0.124	0.000005	0.00308	0.0022	0.025	11.9	0.000125	9.93	0.000005
	Oct	0.124	0.000005	0.00308	0.0022	0.025	11.9	0.000125	9.93	0.000005
	Nov	0.124	0.000005	0.00308	0.0022	0.025	11.9	0.000125	9.93	0.000005
	Dec	0.193	0.000005	0.00246	0.00179	0.025	10.9	0.00011	9.08	0.000005
HUMPH02	Jan	0.0153	0.000005	0.0245	0.00134	0.096	14.5	0.00486	8.79	0.000005
	Feb	0.0153	0.000005	0.0245	0.00134	0.096	14.5	0.00486	8.79	0.000005
	Mar	0.0153	0.000005	0.0245	0.00134	0.096	14.5	0.00486	8.79	0.000005
	Apr	0.00772	0.000005	0.0235	0.00121	0.078	13.7	0.00448	8.4	0.000005
	May	0.00772	0.000005	0.0235	0.00121	0.078	13.7	0.00448	8.4	0.000005
	Jun	0.009765	0.000005	0.02015	0.0014	0.112	15.6	0.00076	9.055	0.000005
	Jul	0.009765	0.000005	0.02015	0.0014	0.112	15.6	0.00076	9.055	0.000005
	Aug	0.009765	0.000005	0.02015	0.0014	0.112	15.6	0.00076	9.055	0.000005
	Sep	0.02285	0.000005	0.0171	0.001365	0.1155	15.25	0.00074	10.35	0.000005
	Oct	0.02285	0.000005	0.0171	0.001365	0.1155	15.25	0.00074	10.35	0.000005
	Nov	0.02285	0.000005	0.0171	0.001365	0.1155	15.25	0.00074	10.35	0.000005
	Dec	0.0153	0.000005	0.0245	0.00134	0.096	14.5	0.00486	8.79	0.000005
PC03	Jan	0.592	0.000005	0.01017	0.00157	0.1615	17.55	0.00024	10.8	0.000005
	Feb	0.592	0.000005	0.01017	0.00157	0.1615	17.55	0.00024	10.8	0.000005
	Mar	0.592	0.000005	0.01017	0.00157	0.1615	17.55	0.00024	10.8	0.000005
	Apr	0.106	0.000005	0.0184	0.00153	0.15	14.5	0.00021	4.55	0.000005
	May	0.106	0.000005	0.0184	0.00153	0.15	14.5	0.00021	4.55	0.000005
	Jun	0.0437	0.000005	0.0062	0.00113	0.062	11.8	0.00022	4.4	0.000005
	Jul	0.0437	0.000005	0.0062	0.00113	0.062	11.8	0.00022	4.4	0.000005
	Aug	0.0437	0.000005	0.0062	0.00113	0.062	11.8	0.00022	4.4	0.000005
	Sep	0.0846	0.000005	0.01275	0.00175	0.056	15.35	0.00026	9.01	0.000005
	Oct	0.0846	0.000005	0.01275	0.00175	0.056	15.35	0.00026	9.01	0.000005
	Nov	0.0846	0.000005	0.01275	0.00175	0.056	15.35	0.00026	9.01	0.000005
	Dec	0.592	0.000005	0.01017	0.00157	0.1615	17.55	0.00024	10.8	0.000005
PC02.5	Jan	0.228	0.000005	0.00648	0.00209	0.148	16.2	0.00017	11.4	0.000005
	Feb	0.228	0.000005	0.00648	0.00209	0.148	16.2	0.00017	11.4	0.000005
	Mar	0.228	0.000005	0.00648	0.00209	0.148	16.2	0.00017	11.4	0.000005
	Apr	0.07715	0.000005	0.0114	0.002175	0.112	15.8	0.00019	7.375	0.000005
	May	0.07715	0.000005	0.0114	0.002175	0.112	15.8	0.00019	7.375	0.000005
	Jun	0.0235	0.000005	0.00937	0.00174	0.107	13	0.00022	6.84	0.000005
	Jul	0.0235	0.000005	0.00937	0.00174	0.107	13	0.00022	6.84	0.000005
	Aug	0.0235	0.000005	0.00937	0.00174	0.107	13	0.00022	6.84	0.000005
	Sep	0.275	0.000005	0.00825	0.002305	0.1505	16.4	0.00019	12.4	0.000005
	Oct	0.275	0.000005	0.00825	0.002305	0.1505	16.4	0.00019	12.4	0.000005
	Nov	0.275	0.000005	0.00825	0.002305	0.1505	16.4	0.00019	12.4	0.000005
	Dec	0.228	0.000005	0.00648	0.00209	0.148	16.2	0.00017	11.4	0.000005

NOTES:
1. UNITS ARE mg/L, UNLESS OTHERWISE STATED.
2. METHOD DETECTION LIMIT (MDL) REPRESENTS THE RANGE OF MDLs FOR THE BASELINE DATASET.

BASE CASE MEDIAN CONCENTRATIONS

	Analytes	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silicon	Silver
	MDL	5E-005 to 0.0015	1E-005 to 5E-005	5E-005 to 0.005	0.0005 to 0.005	0.05 to 0.3	0.05 to 2	0.0001 to 0.006	0.05	1E-005 to 0.0001
PC02.3	Jan	0.228	0.000005	0.00648	0.00209	0.148	16.2	0.00017	11.4	0.000005
	Feb	0.228	0.000005	0.00648	0.00209	0.148	16.2	0.00017	11.4	0.000005
	Mar	0.228	0.000005	0.00648	0.00209	0.148	16.2	0.00017	11.4	0.000005
	Apr	0.07715	0.000005	0.0114	0.002175	0.112	15.8	0.00019	7.375	0.000005
	May	0.07715	0.000005	0.0114	0.002175	0.112	15.8	0.00019	7.375	0.000005
	Jun	0.0235	0.000005	0.00937	0.00174	0.107	13	0.00022	6.84	0.000005
	Jul	0.0235	0.000005	0.00937	0.00174	0.107	13	0.00022	6.84	0.000005
	Aug	0.0235	0.000005	0.00937	0.00174	0.107	13	0.00022	6.84	0.000005
	Sep	0.275	0.000005	0.00825	0.002305	0.1505	16.4	0.00019	12.4	0.000005
	Oct	0.275	0.000005	0.00825	0.002305	0.1505	16.4	0.00019	12.4	0.000005
	Nov	0.275	0.000005	0.00825	0.002305	0.1505	16.4	0.00019	12.4	0.000005
	Dec	0.228	0.000005	0.00648	0.00209	0.148	16.2	0.00017	11.4	0.000005
PC02	Jan	0.0932	0.000005	0.00881	0.0039	0.079	19.8	0.00068	8.93	0.000005
	Feb	0.0932	0.000005	0.00881	0.0039	0.079	19.8	0.00068	8.93	0.000005
	Mar	0.0932	0.000005	0.00881	0.0039	0.079	19.8	0.00068	8.93	0.000005
	Apr	0.07355	0.000005	0.01215	0.00273	0.15	19.45	0.00159	7.84	0.000005
	May	0.07355	0.000005	0.01215	0.00273	0.15	19.45	0.00159	7.84	0.000005
	Jun	0.0394	0.000005	0.011	0.00266	0.1365	16.1	0.00029	7.37	0.000005
	Jul	0.0394	0.000005	0.011	0.00266	0.1365	16.1	0.00029	7.37	0.000005
	Aug	0.0394	0.000005	0.011	0.00266	0.1365	16.1	0.00029	7.37	0.000005
	Sep	0.165	0.000005	0.0104	0.00428	0.0805	21.9	0.00023	10.2	0.000005
	Oct	0.165	0.000005	0.0104	0.00428	0.0805	21.9	0.00023	10.2	0.000005
	Nov	0.165	0.000005	0.0104	0.00428	0.0805	21.9	0.00023	10.2	0.000005
	Dec	0.0932	0.000005	0.00881	0.0039	0.079	19.8	0.00068	8.93	0.000005
NSP	Jan	0.1125	0.000005	0.01665	0.00125	0.815	145	0.0012	7.375	0.000025
	Feb	0.1125	0.000005	0.01665	0.00125	0.815	145	0.0012	7.375	0.000025
	Mar	0.1125	0.000005	0.01665	0.00125	0.815	145	0.0012	7.375	0.000025
	Apr	0.0916	0.000005	0.0173	0.001075	0.541	78.8	0.001165	3.61	0.0000175
	May	0.0916	0.000005	0.0173	0.001075	0.541	78.8	0.001165	3.61	0.0000175
	Jun	0.0299	0.000005	0.0175	0.00125	0.389	105	0.00103	4.26	0.000025
	Jul	0.0299	0.000005	0.0175	0.00125	0.389	105	0.00103	4.26	0.000025
	Aug	0.0299	0.000005	0.0175	0.00125	0.389	105	0.00103	4.26	0.000025
	Sep	0.0879	0.000005	0.0209	0.00125	0.4	122	0.000945	4.94	0.000025
	Oct	0.0879	0.000005	0.0209	0.00125	0.4	122	0.000945	4.94	0.000025
	Nov	0.0879	0.000005	0.0209	0.00125	0.4	122	0.000945	4.94	0.000025
	Dec	0.1125	0.000005	0.01665	0.00125	0.815	145	0.0012	7.375	0.000025
Jacko Lake Tributaries	Jan	0	5E-06	0	0	0.949116192	0	0	0	5E-06
	Feb	0	5E-06	0	0	0.949116192	0	0	0	5E-06
	Mar	0	0.000005	0.000811837	0	0.459054601	6.135788397	0	0	0.000005
	Apr	0	0.000005	0.003314403	0	0	27.19993896	0	0	0.000005
	May	0	0.000005	0.005102701	0	0	54.96562704	0	0	0.000005
	Jun	0	0.000005	0.006322115	0	0.315616504	78.28808921	0	0	0.000005
	Jul	0	0.000005	0.002334825	0.000595647	0.151433958	12.02870459	0.00013783	3.915568796	0.000005
	Aug	0.003726141	0.000005	0.002304288	0.000682768	0.150176547	11.52124927	0.000144117	4.783182667	0.000005
	Sep	0.1195	0.000005	0.00249	0.00225	0.15	11.95	0.00015	11.25	0.000005
	Oct	0.1195	0.000005	0.00249	0.00225	0.15	11.95	0.00015	11.25	0.000005
	Nov	0.1195	0.000005	0.00249	0.00225	0.15	11.95	0.00015	11.25	0.000005
	Dec	0.0975	0.000005	0.00261	0.0015	0.093	13.2	0.00028	9.5	0.000005
PC03 Tributaries	Jan	1.297586854	0.000005	0.023804272	0.001180955	0.402884977	29.30978091	0.00046989	13.84162754	0.000005
	Feb	1.297586854	0.000005	0.023804272	0.001180955	0.402884977	29.30978091	0.00046989	13.84162754	0.000005
	Mar	0.750374434	0.000005	0.013230318	0.001482676	0.215680727	20.1895739	0.000291601	11.48271686	0.000005
	Apr	0.040494543	0.000005	0.06902636	0.000999718	0.15	27.60109139	0.000459545	0	0.000005
	May	0	0.000005	0.263500551	0	0.15	77.92712973	0.001418136	0	0.000005
	Jun	0.868073069	0.000005	0.094210533	0.010186493	0.921205733	41.98830955	0.001613307	0	0.000005
	Jul	1.662839164	5E-06	0.179060209	0.018917726	1.749553494	71.09242008	0.002956573	0	5E-06
	Aug	2.322348754	5E-06	0.249469825	0.026163043	2.436929687	95.24347549	0.004071237	0	5E-06
	Sep	0.037306549	0.000005	0.024357301	0.001209846	0.093210584	19.49117784	0.000422046	7.905685909	0.000005
	Oct	0.044115902	0.000005	0.022686072	0.001287618	0.08785297	18.89492735	0.000398715	8.06468604	0.000005
	Nov	0.014925509	0.000005	0.029850313	0.000954225	0.110820031	21.45093897	0.000498732	7.383082942	0.000005
	Dec	1.297586854	0.000005	0.023804272	0.001180955	0.402884977	29.30978091	0.00046989	13.84162754	0.000005
PC02.5 Tributaries	Jan	0	0.000005	0.001080819	0.00285086	0.128246898	14.22468983	6.75765E-05	12.27791563	0.000005
	Feb	0	0.000005	0.001080819	0.00285086	0.128246898	14.22468983	6.75765E-05	12.27791563	0.000005
	Mar	0.006942808	0.000005	0.004239063	0.002405796	0.13980145	15.38014503	0.000127489	11.76437999	0.000005
	Apr	0.026410213	0.000005	0	0.00330939	0.045167698	18.08636822	0.000154825	12.34345401	0.000005
	May	0	0.000005	0	0.006618539	0	24.75596963	5.22159E-05	26.83701093	0.000005
	Jun	0	0.000005	0.04280293	0.008173466	0.581599946	25.65599856	0.00022	32.57386373	0.000005
	Jul	0	5E-06	0.078197132	0.014984338	1.084041303	39.05443474	0.00022	59.81735064	5E-06
	Aug	0	0.000005	0.109825303	0.021070516	1.533021646	51.0272439	0.00022	84.1620626	0.000005
	Sep	0.478263267	0.000005	0.003445984	0.002897495	0.251384342	17.52093714	0.000115271	16.01902561	0.000005
	Oct	0.457737146	0.000005	0.003931107	0.002837663	0.241196745	17.40774161	0.000122817	15.65356578	0.000005
	Nov	0.553591894	0.000005	0.001665633	0.003117072	0.288771712	17.93635236	8.75765E-05	17.36022333	0.000005
	Dec	0	0.000005	0.001080819	0.00285086	0.128246898	14.22468983	6.75765E-05	12.27791563	0.000005
PC02.3 Tributaries	Jan	0	0	0	0	0	0	0	0	0
	Feb	0	0	0	0	0	0	0	0	0
	Mar	0.228	5E-06	0.00648	0.00209	0.148	16.2	0.00017	11.4	5E-06
	Apr	0.07715	5E-06	0.0114	0.002175	0.112	15.8	0.00019	7.375	5E-06
	May	0.07715	5E-06	0.0114	0.002175	0.112	15.8	0.00019	7.375	5E-06
	Jun	0.0235	5E-06	0.00937	0.00174	0.107	13	0.00022	6.84	5E-06
	Jul	0.0235	5E-06	0.00937	0.00174	0.107	13	0.00022	6.84	5E-06
	Aug	0.0235	5E-06	0.00937	0.00174	0.107	13	0.00022	6.84	5E-06
	Sep	0.275	5E-06	0.00825	0.002305	0.1505	16.4	0.00019	12.4	5E-06
	Oct	0.275	5E-06	0.00825	0.002305	0.1505	16.4	0.00019	12.4	5E-06
	Nov	0	0	0	0	0	0	0	0	0
	Dec	0	0	0	0	0	0	0	0	0
PC02 Tributaries	Jan	0	0.000005	0.012964858	0.007127594	0	26.21952377	0.001589433	4.52549341	0.000005
	Feb	0	0.000005	0.012901054	0.007078029	0	26.12094234	0.001575467	4.59313123	0.000005
	Mar	0	0.000005	0.01400247	0.007933635	0	27.82269975	0.001816549	3.425536564	0.000005
	Apr	0.059257041	0.000005	0.0151277	0.004933498	0.300870118	33.94147189	0.007148373	9.686173816	0.000005
	May	0.034286401	0.000005	0.020329916	0.008783138	0.564449099	59.25892661	0.016859177	12.91154818	0.000005
	Jun	0.275722265	0.000005	0.035226748	0.016333993	0.574959548	62.17541014	0.001330412	15.24740883	0.000005
	Jul	0.409475408	0.000005	0.048938548	0.024073168	0.823117896	88.25306702	0.001919263	19.70584694	0.000005
	Aug	0.508656964	5E-06	0.059106217	0.029811975	1.00713399	107.5903515	0.002355911	23.01189881	5E-06
	Sep	0	0.000005	0.014530536	0.008074329	0	32.46648674	0.000306847	5.973405304	0.000005
	Oct	0	0.000005	0.01466148	0.008194615	0	32.80145951	0.000309283	5.839416196	0.000005
	Nov	0	0.000005	0.014213481	0.007783081	0	31.65541613	0.000300948	6.297833547	0.000005
	Dec	0	0.000005	0.012964858	0.007127594	0	26.21952377	0.001589433	4.52549341	0.000005
Kamloops Lake		0.001827727	0.000005	0.000680818	0.000424545	0.15	0.838272727	7.18182E-05	2.508181818	0.000005

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NOTES:
1. UNITS ARE mg/L, UNLESS OTHERWISE STATED.
2. METHOD DETECTION LIMIT (MDL) REPRESENTS THE RANGE OF MDLs FOR THE BASELINE DATASET.

BASE CASE MEDIAN CONCENTRATIONS

	Analytes	Sodium	Strontium	Sulphur	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
	MDL	0.05 to 2	0.0001 to 0.005	0.5	1E-005 to 0.001	0.0001 to 0.0025	0.01	1E-005 to 0.001	0.001 to 0.03	0.001 to 0.006
INKS-S	Jan	1870	6.47	2520	0.00005	0.0005	0.015	0.003545	0.005	0.0125
	Feb	1870	6.47	2520	0.00005	0.0005	0.015	0.003545	0.005	0.0125
	Mar	1870	6.47	2520	0.00005	0.0005	0.015	0.003545	0.005	0.0125
	Apr	1600	5.55	2000	0.00005	0.0005	0.015	0.00328	0.005	0.013
	May	1600	5.55	2000	0.00005	0.0005	0.015	0.00328	0.005	0.013
	Jun	1660	5.95	2380	0.001	0.0025	0.015	0.00276	0.005	0.005
	Jul	1660	5.95	2380	0.001	0.0025	0.015	0.00276	0.005	0.005
	Aug	1660	5.95	2380	0.001	0.0025	0.015	0.00276	0.005	0.005
	Sep	1950	6.89	2610	0.00005	0.0005	0.05	0.00392	0.005	0.005
	Oct	1950	6.89	2610	0.00005	0.0005	0.05	0.00392	0.005	0.005
	Nov	1950	6.89	2610	0.00005	0.0005	0.05	0.00392	0.005	0.005
	Dec	1870	6.47	2520	0.00005	0.0005	0.015	0.003545	0.005	0.0125
KC03	Jan	97.3	1.18	109	0.000005	0.00005	0.005	0.00544	0.0074	0.0005
	Feb	97.3	1.18	109	0.000005	0.00005	0.005	0.00544	0.0074	0.0005
	Mar	97.3	1.18	109	0.000005	0.00005	0.005	0.00544	0.0074	0.0005
	Apr	98.6	1.22	112.5	0.000005	0.00005	0.005	0.00539	0.0072	0.0005
	May	98.6	1.22	112.5	0.000005	0.00005	0.005	0.00539	0.0072	0.0005
	Jun	98.9	1.26	110	0.000005	0.00005	0.005	0.00525	0.0066	0.0005
	Jul	98.9	1.26	110	0.000005	0.00005	0.005	0.00525	0.0066	0.0005
	Aug	98.9	1.26	110	0.000005	0.00005	0.005	0.00525	0.0066	0.0005
	Sep	98.9	1.26	112.5	0.000005	0.00005	0.005	0.00544	0.0074	0.0005
	Oct	98.9	1.26	112.5	0.000005	0.00005	0.005	0.00544	0.0074	0.0005
	Nov	98.9	1.26	112.5	0.000005	0.00005	0.005	0.00544	0.0074	0.0005
	Dec	97.3	1.18	109	0.000005	0.00005	0.005	0.00544	0.0074	0.0005
JACL	Jan	36.6	0.383	20.3	0.000005	0.00005	0.005	0.00114	0.002	0.0036
	Feb	36.6	0.383	20.3	0.000005	0.00005	0.005	0.00114	0.002	0.0036
	Mar	36.6	0.383	20.3	0.000005	0.00005	0.005	0.00114	0.002	0.0036
	Apr	36.55	0.3715	17.4	0.000005	0.00005	0.005	0.00111	0.002	0.0014
	May	36.55	0.3715	17.4	0.000005	0.00005	0.005	0.00111	0.002	0.0014
	Jun	35.05	0.365	15.85	0.000005	0.00005	0.005	0.00106	0.002	0.0008
	Jul	35.05	0.365	15.85	0.000005	0.00005	0.005	0.00106	0.002	0.0008
	Aug	35.05	0.365	15.85	0.000005	0.00005	0.005	0.00106	0.002	0.0008
	Sep	36.9	0.3605	16.35	0.000005	0.00005	0.005	0.001065	0.0021	0.0012
	Oct	36.9	0.3605	16.35	0.000005	0.00005	0.005	0.001065	0.0021	0.0012
	Nov	36.9	0.3605	16.35	0.000005	0.00005	0.005	0.001065	0.0021	0.0012
	Dec	36.6	0.383	20.3	0.000005	0.00005	0.005	0.00114	0.002	0.0036
JC03-PC10	Jan	36.5	0.471	24.45	0.000005	0.00005	0.005	0.00229	0.0026	0.0019
	Feb	36.5	0.471	24.45	0.000005	0.00005	0.005	0.00229	0.0026	0.0019
	Mar	36.5	0.471	24.45	0.000005	0.00005	0.005	0.00229	0.0026	0.0019
	Apr	34.7	0.3765	17	0.000005	0.00005	0.005	0.00139	0.0025	0.00145
	May	34.7	0.3765	17	0.000005	0.00005	0.005	0.00139	0.0025	0.00145
	Jun	26.25	0.3085	8.915	0.000005	0.00005	0.005	0.000771	0.00285	0.0012
	Jul	26.25	0.3085	8.915	0.000005	0.00005	0.005	0.000771	0.00285	0.0012
	Aug	26.25	0.3085	8.915	0.000005	0.00005	0.005	0.000771	0.00285	0.0012
	Sep	34	0.419	15.7	0.000005	0.00005	0.005	0.0011	0.0016	0.00185
	Oct	34	0.419	15.7	0.000005	0.00005	0.005	0.0011	0.0016	0.00185
	Nov	34	0.419	15.7	0.000005	0.00005	0.005	0.0011	0.0016	0.00185
	Dec	36.5	0.471	24.45	0.000005	0.00005	0.005	0.00229	0.0026	0.0019
PC08	Jan	36	0.447	13.35	0.000005	0.00005	0.005	0.000474	0.0013	0.0005
	Feb	36	0.447	13.35	0.000005	0.00005	0.005	0.000474	0.0013	0.0005
	Mar	36	0.447	13.35	0.000005	0.00005	0.005	0.000474	0.0013	0.0005
	Apr	36.1	0.436	16.2	0.000005	0.00005	0.005	0.00059	0.0013	0.0009
	May	36.1	0.436	16.2	0.000005	0.00005	0.005	0.00059	0.0013	0.0009
	Jun	32.9	0.348	15.1	0.000005	0.00005	0.005	0.001	0.0024	0.00135
	Jul	32.9	0.348	15.1	0.000005	0.00005	0.005	0.001	0.0024	0.00135
	Aug	32.9	0.348	15.1	0.000005	0.00005	0.005	0.001	0.0024	0.00135
	Sep	40.1	0.439	8.39	0.000005	0.00005	0.005	0.00048	0.0014	0.0005
	Oct	40.1	0.439	8.39	0.000005	0.00005	0.005	0.00048	0.0014	0.0005
	Nov	40.1	0.439	8.39	0.000005	0.00005	0.005	0.00048	0.0014	0.0005
	Dec	36	0.447	13.35	0.000005	0.00005	0.005	0.000474	0.0013	0.0005
HUMPH02	Jan	65.6	1.01	123	0.000005	0.00005	0.005	0.00455	0.0049	0.0005
	Feb	65.6	1.01	123	0.000005	0.00005	0.005	0.00455	0.0049	0.0005
	Mar	65.6	1.01	123	0.000005	0.00005	0.005	0.00455	0.0049	0.0005
	Apr	62.5	0.955	100	0.000005	0.00005	0.005	0.004	0.0052	0.0005
	May	62.5	0.955	100	0.000005	0.00005	0.005	0.004	0.0052	0.0005
	Jun	59.4	0.8125	58.25	0.000005	0.00005	0.005	0.002685	0.0051	0.0005
	Jul	59.4	0.8125	58.25	0.000005	0.00005	0.005	0.002685	0.0051	0.0005
	Aug	59.4	0.8125	58.25	0.000005	0.00005	0.005	0.002685	0.0051	0.0005
	Sep	61.5	0.9185	74.6	0.000005	0.00005	0.005	0.00247	0.00335	0.00115
	Oct	61.5	0.9185	74.6	0.000005	0.00005	0.005	0.00247	0.00335	0.00115
	Nov	61.5	0.9185	74.6	0.000005	0.00005	0.005	0.00247	0.00335	0.00115
	Dec	65.6	1.01	123	0.000005	0.00005	0.005	0.00455	0.0049	0.0005
PC03	Jan	67.65	0.895	67.2	0.000005	0.00005	0.005	0.00112	0.00145	0.0017
	Feb	67.65	0.895	67.2	0.000005	0.00005	0.005	0.00112	0.00145	0.0017
	Mar	67.65	0.895	67.2	0.000005	0.00005	0.005	0.00112	0.00145	0.0017
	Apr	52.4	0.636	77.2	0.000005	0.00005	0.005	0.00152	0.0026	0.00125
	May	52.4	0.636	77.2	0.000005	0.00005	0.005	0.00152	0.0026	0.00125
	Jun	38.2	0.4085	21.2	0.000005	0.00005	0.005	0.00085	0.0021	0.0005
	Jul	38.2	0.4085	21.2	0.000005	0.00005	0.005	0.00085	0.0021	0.0005
	Aug	38.2	0.4085	21.2	0.000005	0.00005	0.005	0.00085	0.0021	0.0005
	Sep	52.55	0.649	96.7	0.000005	0.00005	0.005	0.00122	0.003	0.00185
	Oct	52.55	0.649	96.7	0.000005	0.00005	0.005	0.00122	0.003	0.00185
	Nov	52.55	0.649	96.7	0.000005	0.00005	0.005	0.00122	0.003	0.00185
	Dec	67.65	0.895	67.2	0.000005	0.00005	0.005	0.00112	0.00145	0.0017
PC02.5	Jan	59.6	0.737	46.75	0.000005	0.00005	0.005	0.000821	0.0019	0.0017
	Feb	59.6	0.737	46.75	0.000005	0.00005	0.005	0.000821	0.0019	0.0017
	Mar	59.6	0.737	46.75	0.000005	0.00005	0.005	0.000821	0.0019	0.0017
	Apr	56.75	0.725	85.8	0.000005	0.00005	0.005	0.00137	0.0028	0.0014
	May	56.75	0.725	85.8	0.000005	0.00005	0.005	0.00137	0.0028	0.0014
	Jun	43	0.49	30.9	0.000005	0.00005	0.005	0.00108	0.0022	0.0005
	Jul	43	0.49	30.9	0.000005	0.00005	0.005	0.00108	0.0022	0.0005
	Aug	43	0.49	30.9	0.000005	0.00005	0.005	0.00108	0.0022	0.0005
	Sep	59.05	0.703	46.4	0.000005	0.00005	0.005	0.00104	0.0025	0.0005
	Oct	59.05	0.703	46.4	0.000005	0.00005	0.005	0.00104	0.0025	0.0005
	Nov	59.05	0.703	46.4	0.000005	0.00005	0.005	0.00104	0.0025	0.0005
	Dec	59.6	0.737	46.75	0.000005	0.00005	0.005	0.000821	0.0019	0.0017

NOTES:
1. UNITS ARE mg/L, UNLESS OTHERWISE STATED.
2. METHOD DETECTION LIMIT (MDL) REPRESENTS THE RANGE OF MDLs FOR THE BASELINE DATASET.

BASE CASE MEDIAN CONCENTRATIONS

	Analytes	Sodium	Strontium	Sulphur	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
	MDL	0.05 to 2	0.0001 to 0.005	0.5	1E-005 to 0.001	0.0001 to 0.0025	0.01	1E-005 to 0.001	0.001 to 0.03	0.001 to 0.006
PC02.3	Jan	59.6	0.737	46.75	0.000005	0.00005	0.005	0.000821	0.0019	0.0017
	Feb	59.6	0.737	46.75	0.000005	0.00005	0.005	0.000821	0.0019	0.0017
	Mar	59.6	0.737	46.75	0.000005	0.00005	0.005	0.000821	0.0019	0.0017
	Apr	56.75	0.725	85.8	0.000005	0.00005	0.005	0.00137	0.0028	0.0014
	May	56.75	0.725	85.8	0.000005	0.00005	0.005	0.00137	0.0028	0.0014
	Jun	43	0.49	30.9	0.000005	0.00005	0.005	0.00108	0.0022	0.0005
	Jul	43	0.49	30.9	0.000005	0.00005	0.005	0.00108	0.0022	0.0005
	Aug	43	0.49	30.9	0.000005	0.00005	0.005	0.00108	0.0022	0.0005
	Sep	59.05	0.703	46.4	0.000005	0.00005	0.005	0.00104	0.0025	0.0005
	Oct	59.05	0.703	46.4	0.000005	0.00005	0.005	0.00104	0.0025	0.0005
	Nov	59.05	0.703	46.4	0.000005	0.00005	0.005	0.00104	0.0025	0.0005
	Dec	59.6	0.737	46.75	0.000005	0.00005	0.005	0.000821	0.0019	0.0017
PC02	Jan	96.9	1.03	112	0.000005	0.00005	0.005	0.00271	0.0026	0.0005
	Feb	96.9	1.03	112	0.000005	0.00005	0.005	0.00271	0.0026	0.0005
	Mar	96.9	1.03	112	0.000005	0.00005	0.005	0.00271	0.0026	0.0005
	Apr	96.15	1.07	117	0.000005	0.00005	0.005	0.003095	0.0035	0.0018
	May	96.15	1.07	117	0.000005	0.00005	0.005	0.003095	0.0035	0.0018
	Jun	58.9	0.6905	56.5	0.000005	0.00005	0.005	0.00137	0.0028	0.0012
	Jul	58.9	0.6905	56.5	0.000005	0.00005	0.005	0.00137	0.0028	0.0012
	Aug	58.9	0.6905	56.5	0.000005	0.00005	0.005	0.00137	0.0028	0.0012
	Sep	103	1.06	114	0.000005	0.00005	0.005	0.00262	0.00275	0.0005
	Oct	103	1.06	114	0.000005	0.00005	0.005	0.00262	0.00275	0.0005
	Nov	103	1.06	114	0.000005	0.00005	0.005	0.00262	0.00275	0.0005
	Dec	96.9	1.03	112	0.000005	0.00005	0.005	0.00271	0.0026	0.0005
NSP	Jan	861	4.98	1295	0.000025	0.00025	0.025	0.006455	0.0025	0.0025
	Feb	861	4.98	1295	0.000025	0.00025	0.025	0.006455	0.0025	0.0025
	Mar	861	4.98	1295	0.000025	0.00025	0.025	0.006455	0.0025	0.0025
	Apr	462.5	2.71	498	0.0000175	0.000175	0.005	0.004645	0.0028	0.00435
	May	462.5	2.71	498	0.0000175	0.000175	0.005	0.004645	0.0028	0.00435
	Jun	588	3.44	795	0.000025	0.00025	0.01	0.00509	0.0025	0.0025
	Jul	588	3.44	795	0.000025	0.00025	0.01	0.00509	0.0025	0.0025
	Aug	588	3.44	795	0.000025	0.00025	0.01	0.00509	0.0025	0.0025
	Sep	696	3.93	961	0.000025	0.00025	0.025	0.00561	0.0025	0.0025
	Oct	696	3.93	961	0.000025	0.00025	0.025	0.00561	0.0025	0.0025
	Nov	696	3.93	961	0.000025	0.00025	0.025	0.00561	0.0025	0.0025
	Dec	861	4.98	1295	0.000025	0.00025	0.025	0.006455	0.0025	0.0025
Jacko Lake Tributaries	Jan	38.00195823	0	0	5E-06	0.00005	0.005	0	0	0.02743329
	Feb	38.00195823	0	0	5E-06	0.00005	0.005	0	0	0.02743329
	Mar	37.14220105	0	0	0.000005	0.00005	0.005	0	0	0.012817418
	Apr	46.42708036	0.344805188	19.53558494	0.000005	0.00005	0.005	0	0	0.001133052
	May	63.83946103	0.2977447	23.30042401	0.000005	5E-05	0.005	0	0	0.000662447
	Jun	243.2536053	1.701761784	179.9286367	0.000005	5E-05	0.005	0.007897596	0	0
	Jul	36.85269039	0.376574092	17.27064294	0.000005	0.00005	0.005	0.001119202	0.001825876	0.00071806
	Aug	35.27194462	0.366424985	16.0249075	0.000005	0.00005	0.005	0.001067289	0.001978562	0.000789912
	Sep	34	0.419	15.7	0.000005	0.00005	0.005	0.0011	0.0016	0.00185
	Oct	34	0.419	15.7	0.000005	0.00005	0.005	0.0011	0.0016	0.00185
	Nov	34	0.419	15.7	0.000005	0.00005	0.005	0.0011	0.0016	0.00185
	Dec	36.5	0.471	24.45	0.000005	0.00005	0.005	0.00229	0.0026	0.0019
PC03 Tributaries	Jan	123.6194836	1.687237872	162.4276995	0.000005	0.00005	0.005	0.002262379	0.001715258	0.003822066
	Feb	123.6194836	1.687237872	162.4276995	0.000005	0.00005	0.005	0.002262379	0.001715258	0.003822066
	Mar	80.21278405	1.072823926	88.57459466	0.000005	0.00005	0.005	0.001376416	0.001509539	0.002176314
	Apr	103.2447118	1.259861495	267.4777559	0.000005	0.00005	0.005	0.004420956	0.0066551	0.002341758
	May	298.5576701	3.656339511	998.4035509	0.000005	0.00005	0.005	0.015564579	0.022232207	0.006535594
	Jun	161.2754159	1.813417483	162.8528371	0.000005	5E-05	0.005	0	0	0
	Jul	279.9306357	3.167878011	299.4182788	5E-06	5E-05	0.005	0	0	0
	Aug	378.3926308	4.291830975	412.7424619	5E-06	5E-05	0.005	0	0	0
	Sep	67.49425048	0.901071695	202.7021494	0.000005	0.00005	0.005	0.002108253	0.004920546	0.003470461
	Oct	65.34256391	0.864778186	187.439865	0.000005	0.00005	0.005	0.001980361	0.004644024	0.003237145
	Nov	74.56643192	1.020361502	252.8663537	0.000005	0.00005	0.005	0.002528607	0.005829421	0.004237324
	Dec	123.6194836	1.687237872	162.4276995	0.000005	0.00005	0.005	0.002262379	0.001715258	0.003822066
PC02.5 Tributaries	Jan	47.82129859	0.50581555	16.82770885	0.000005	0.00005	0.005	0.000383505	0.002558437	0.0017
	Feb	47.82129859	0.50581555	16.82770885	0.000005	0.00005	0.005	0.000383505	0.002558437	0.0017
	Mar	54.71123518	0.641046603	34.33071545	0.000005	0.00005	0.005	0.000639417	0.002173285	0.0017
	Apr	64.40053981	0.881528286	100.9252051	0.000005	0.00005	0.005	0.001106188	0.003151749	0.001663812
	May	86.71805223	1.33813946	145.0471837	0.000005	0.00005	0.005	0.000336619	0.004177841	0.002433381
	Jun	93.62399423	1.349553235	133.202655	0.000005	0.00005	0.005	0.003505733	0.003254667	0.0005
	Jul	147.217739	2.25953036	241.5066808	5E-06	0.00005	0.005	0.006073767	0.004371203	0.0005
	Aug	195.1089756	3.072683648	338.2868882	0.000005	5E-05	0.005	0.008368555	0.005368937	0.0005
	Sep	65.98913465	0.760648196	0	0.000005	0.00005	0.005	0.000847839	0.00196622	0
	Oct	65.28840047	0.754826712	0	0.000005	0.00005	0.005	0.000867244	0.002020123	0
	Nov	68.56075269	0.782012407	0	0.000005	0.00005	0.005	0.000776625	0.001768404	0
	Dec	47.82129859	0.50581555	16.82770885	0.000005	0.00005	0.005	0.000383505	0.002558437	0.0017
PC02.3 Tributaries	Jan	0	0	0	0	0	0	0	0	0
	Feb	0	0	0	0	0	0	0	0	0
	Mar	59.6	0.737	46.75	5E-06	0.00005	0.005	0.000821	0.0019	0.0017
	Apr	56.75	0.725	85.8	5E-06	0.00005	0.005	0.00137	0.0028	0.0014
	May	56.75	0.725	85.8	5E-06	5E-05	0.005	0.00137	0.0028	0.0014
	Jun	43	0.49	30.9	5E-06	0.00005	0.005	0.00108	0.0022	0.0005
	Jul	43	0.49	30.9	5E-06	5E-05	0.005	0.00108	0.0022	0.0005
	Aug	43	0.49	30.9	5E-06	5E-05	0.005	0.00108	0.0022	0.0005
	Sep	59.05	0.703	46.4	5E-06	0.00005	0.005	0.00104	0.0025	0.0005
	Oct	59.05	0.703	46.4	5E-06	0.00005	0.005	0.00104	0.0025	0.0005
	Nov	0	0	0	0	0	0	0	0	0
	Dec	0	0	0	0	0	0	0	0	0
PC02 Tributaries	Jan	163.4133991	1.552477907	228.3538684	0.000005	0.00005	0.005	0.006078467	0.003848241	0
	Feb	162.3919859	1.544454474	226.5670799	0.000005	0.00005	0.005	0.006026739	0.003829072	0
	Mar	180.0240835	1.682958618	257.4114329	0.000005	0.00005	0.005	0.006919689	0.004159969	0
	Apr	252.5784911	2.439741863	240.8723077	0.000005	0.00005	0.005	0.009943709	0.006279186	0.003388107
	May	525.8682763	4.832761556	457.2845234	0.000005	5E-05	0.005	0.021908808	0.011134589	0.006162622
	Jun	295.2222649	3.670538624	436.9937096	0.000005	0.00005	0.005	0.00568028	0.011717821	0.011604125
	Jul	428.9754083	5.357174173	652.3446825	0.000005	5E-05	0.005	0.008119803	0.01676511	0.017492628
	Aug	528.1569642	6.607859831	812.0332253	5E-06	0.00005	0.005	0.009928775	0.02050781	0.021859112
	Sep	187.435835	1.745861048	243.8717279	0.000005	0.00005	0.005	0.005655463	0.003230295	0.0005
	Oct	190.1125719	1.767603826	247.9888478	0.000005	0.00005	0.005	0.005751692	0.003245521	0.0005
	Nov	180.9546435	1.693215193	233.9029328	0.000005	0.00005	0.005	0.005422465	0.003193428	0.0005
	Dec	163.4133991	1.552477907	228.3538684	0.000005	0.00005	0.005	0.006078467	0.003848241	0
Kamloops Lake		2.353636364	0.073218182	0	0.000025	6.81818E-05	0.005	0.000259182	0.000292545	0.0015

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NOTES:
1. UNITS ARE mg/L, UNLESS OTHERWISE STATED.
2. METHOD DETECTION LIMIT (MDL) REPRESENTS THE RANGE OF MDLs FOR THE BASELINE DATASET.

APPENDIX C

WATER QUALITY MODEL SUMMARY TABLES

Appendix C1	Jacko Lake
Appendix C2	PCDP
Appendix C3	PC02.3
Appendix C4	PC02
Appendix C5	Humphrey Creek

APPENDIX C1

JACKO LAKE

(Tables C1-1 to C1-6)

TABLE C1-1

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
JACKO LAKE - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO PRIMARY EFFECTS ASSESSMENT WATER QUALITY GUIDELINES

Print Jul/21/15 8:25:58

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG-30 D	BCWQG-MAX	BCWQG-WILDLIFE	WQB/SBEB
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX				
Conventional Parameters and Major Ions																																			
Baseline Hardness	mg/L $CaCO_3$	296	296	297	302	300	303	304	304	296	296	299	302	301	304	304	304	296	296	299	728	301	304	304	304	296	296	299	302	301	304	304	304				
Hardness - Dissolved	mg/L $CaCO_3$	317	317	322	329	330	336	350	363	337	352	374	380	380	384	413	418	378	379	382	384	388	391	419	421	381	382	386	386	392	393	423	424				
Bromide (Br^-)	mg/L	0.11	0.12	0.12	0.12	0.12	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13				
Chloride (Cl^-)	mg/L	58	58	59	59	59	59	62	65	59	59	60	60	61	61	66	66	60	60	60	60	61	61	66	66	60	60	61	61	62	62	67	67	150	600	600	388
Fluoride (F^-)	mg/L	0.20	0.21	0.21	0.21	0.21	0.21	0.22	0.23	0.21	0.22	0.23	0.23	0.23	0.24	0.25	0.25	0.23	0.23	0.23	0.23	0.24	0.24	0.25	0.25	0.23	0.23	0.23	0.23	0.24	0.24	0.25	0.25	1.57		1	
Sulphate (SO_4^{2-})	mg/L	59	59	59	59	60	59	63	65	57	57	58	58	59	60	64	65	57	58	58	58	59	60	64	65	58	58	59	59	60	60	65	66	429			429 / 730
Calcium (Ca)	mg/L	60	60	62	65	65	67	70	72	68	74	82	85	84	86	92	94	85	85	86	86	87	88	94	95	85	86	87	87	88	88	95	96				
Magnesium (Mg)	mg/L	41	41	41	41	41	41	43	45	41	41	41	41	41	42	45	45	41	41	41	41	42	42	45	45	41	41	41	41	42	42	45	45				
Potassium (K)	mg/L	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13				
Sodium (Na)	mg/L	36	37	37	37	37	37	39	40	37	37	37	37	38	38	40	41	37	37	37	37	38	38	41	41	37	37	37	37	38	38	41	41				
Nutrients																																					
Ammonia	mg/L N	0.093	0.093	0.094	0.105	0.101	0.106	0.107	0.108	0.058	0.059	0.059	0.062	0.065	0.066	0.085	0.098	0.058	0.058	0.058	0.058	0.060	0.061	0.065	0.065	0.056	0.056	0.057	0.057	0.058	0.060	0.064	0.065	0.66			
Nitrate	mg/L N	0.188	0.188	0.190	0.222	0.211	0.224	0.225	0.225	0.093	0.093	0.097	0.102	0.110	0.110	0.163	0.192	0.093	0.093	0.094	0.095	0.097	0.099	0.106	0.106	0.082	0.082	0.082	0.083	0.085	0.088	0.092	0.104	3.0	32.800		
Nitrite	mg/L	0.0045	0.0046	0.0046	0.0048	0.0047	0.0048	0.0050	0.0052	0.0041	0.0041	0.0042	0.0044	0.0044	0.0045	0.0047	0.0050	0.0042	0.0043	0.0043	0.0043	0.0044	0.0045	0.0048	0.0049	0.0040	0.0040	0.0041	0.0041	0.0042	0.0043	0.0046	0.0048	0.2	0.60		
Phosphorus	mg/L	0.089	0.090	0.090	0.090	0.091	0.090	0.094	0.096	0.090	0.090	0.091	0.091	0.092	0.092	0.096	0.096	0.090	0.090	0.091	0.091	0.092	0.092	0.096	0.096	0.089	0.089	0.089	0.090	0.090	0.092	0.095	0.096				
Dissolved Metals																																					
Aluminum (Al)	mg/L	0.0015	0.0015	0.0017	0.0018	0.0020	0.0025	0.0026	0.0026	0.0026	0.0034	0.0050	0.0055	0.0052	0.0056	0.0059	0.0062	0.0055	0.0055	0.0056	0.0056	0.0057	0.0057	0.0062	0.0062	0.0029	0.0029	0.0029	0.0029	0.0030	0.0030	0.0036	0.0058	0.050	0.100	5	
Antimony (Sb)	mg/L	0.00009	0.00009	0.00009	0.00010	0.00009	0.00010	0.00010	0.00010	0.00008	0.00008	0.00009	0.00009	0.00009	0.00009	0.00010	0.00010	0.00008	0.00008	0.00008	0.00009	0.00009	0.00009	0.00009	0.00009	0.00007	0.00007	0.00007	0.00007	0.00007	0.00008	0.00008	0.00009	0.009			
Arsenic (As)	mg/L	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0015	0.0015	0.0014	0.0015	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0017	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0017	0.0017		0.0050	0.0250	0.0320
Barium (Ba)	mg/L	0.056	0.056	0.057	0.059	0.059	0.061	0.063	0.065	0.062	0.066	0.073	0.074	0.074	0.075	0.080	0.082	0.074	0.074	0.075	0.075	0.076	0.076	0.082	0.082	0.074	0.074	0.075	0.075	0.076	0.076	0.082	0.082	1.0			
Boron (B)	mg/L	0.021	0.021	0.021	0.021	0.021	0.021	0.022	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023		1.2	5.0	
Cadmium (Cd)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000006	0.000007	0.000008	0.000008	0.000008	0.000008	0.000009	0.000009	0.000008	0.000008	0.000008	0.000008	0.000008	0.000008	0.000009	0.000009	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000009	0.00046	0.00180		
Chromium (Cr)	mg/L	0.00011	0.00011	0.00013	0.00013	0.00015	0.00018	0.00020	0.00020	0.00020	0.00025	0.00037	0.00040	0.00038	0.00041	0.00043	0.00046	0.00040	0.00040	0.00041	0.00041	0.00042	0.00042	0.00046	0.00046	0.00013	0.00013	0.00013	0.00013	0.00014	0.00014	0.00021	0.00042	0.001/0.0089			
Cobalt (Co)	mg/L	0.00007	0.00008	0.00008	0.00009	0.00009	0.00011	0.00011	0.00011	0.00011	0.00014	0.00018	0.00019	0.00019	0.00020	0.00021	0.00022	0.00019	0.00019	0.00020	0.00020	0.00020	0.00020	0.00022	0.00022	0.00015	0.00015	0.00015	0.00015	0.00015	0.00016	0.00017	0.00021	0.004	0.110		
Copper (Cu)	mg/L	0.0013	0.0013	0.0013	0.0014	0.0015	0.0017	0.0017	0.0017	0.0017	0.0020	0.0026	0.0028	0.0027	0.0028	0.0030	0.0031	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0031	0.0031	0.0022	0.0022	0.0022	0.0022	0.0023	0.0023	0.0024	0.0030	0.010	0.026	0.3	0.0256
Iron (Fe)	mg/L	0.015	0.015	0.017	0.020	0.021	0.025	0.026	0.026	0.027	0.035	0.050	0.054	0.052	0.056	0.058	0.060	0.054	0.055	0.055	0.056	0.056	0.057	0.060	0.060	0.049	0.049	0.050	0.050	0.051	0.052	0.054	0.059		0.350		
Lead (Pb)	mg/L	0.000031	0.000031	0.000034	0.000034	0.000036	0.000040	0.000041	0.000042	0.000041	0.000047	0.000059	0.000062	0.000061	0.000064	0.000068	0.000070	0.000062	0.000062	0.000063	0.000064	0.000064	0.000064	0.000070	0.000071	0.000027	0.000027	0.000027	0.000027	0.000029	0.000028	0.000037	0.000064	0.016	0.324	0.10	
Lithium (Li)	mg/L	0.0058	0.0058	0.0058	0.0058	0.0059	0.0058	0.0062	0.0064	0.0058	0.0058	0.0058	0.0058	0.0059	0.0060	0.0064	0.0064	0.0058	0.0058	0.0058	0.0059	0.0059	0.0060	0.0064	0.0064	0.0058	0.0058	0.0059	0.0059	0.0060	0.0060	0.0064	0.0064				
Manganese (Mn)	mg/L	0.019	0.019	0.022	0.024	0.023	0.025	0.026	0.027	0.027	0.030	0.038	0.040	0.039	0.041	0.043	0.044	0.039	0.039	0.040	0.041	0.041	0.042	0.044	0.044	0.039	0.039	0.040	0.041	0.041	0.042	0.043	0.044	1.91	3.80		
Molybdenum (Mo)	mg/L	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.004	1.00	2.00	0.05	0.180
Nickel (Ni)	mg/L	0.0008	0.0008	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0012	0.0014	0.0015	0.0014	0.0015	0.0016	0.0016	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	0.0013	0.0016		0.1500		
Selenium (Se)	mg/L	0.00017	0.00017	0.00017	0.00018	0.00019	0.00020	0.00021	0.00021	0.00020	0.00023	0.00028	0.00030	0.00029	0.00030	0.00032	0.00034	0.00030	0.00030	0.00030	0.00031	0.00031	0.00031	0.00034	0.00035	0.00029	0.00030	0.00030	0.00031	0.00031	0.00032	0.00034	0.00036	0.0020		0.0020	0.0025 / 0.005
Silicon (Si)		4.6	4.7	4.9	5.1	5.3	5.8	5.9	5.9	5.9	6.7	8.4	8.9	8.6	9.0	9.3	9.6	8.9	8.9	9.0	9.1	9.1	9.2	9.6	9.7	8.9	9.0	9.1	9.1	9.2	9.2	9.7	9.7				
Silver (Ag)	mg/L	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000006	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000005	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.001500			
Strontium (Sr)	mg/L	0.38	0.38	0.39	0.39	0.39	0.39	0.41	0.42	0.39	0.39	0.39	0.40	0.40	0.40	0.43	0.43	0.39	0.39	0.40	0.40	0.40	0.40	0.43	0.44	0.40	0.40	0.40	0.40	0.41	0.41	0.44	0.44				
Thallium (Tl)	mg/L	0.000005	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000008	0.000008	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.0008			
Tin (Sn)		0.00005	0.00005	0.00005	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00007	0.00007	0.00007	0.00006	0.00006	0.00007	0.00007	0.00007	0.00007	0.00007	0.00007	0.00005	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00007				
Uranium (U)	mg/L	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	0.0012	0.0012	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0015	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0015	0.0015	0.0085			
Vanadium (V)	mg/L	0.0022	0.0022	0.0022	0.0023	0.0023	0.0023	0.0024	0.0025	0.0023	0.0025	0.0028	0.0029	0.0028	0.0029	0.0030	0.0031	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0031	0.0031	0.0026	0.0026	0.0026	0.0026	0.0027	0.0027	0.0028	0.0031				
Zinc (Zn)	mg/L	0.0028	0.0028	0.0028	0.0031	0.0030	0.0032	0.0032	0.0032	0.0017	0.0017	0.0017	0.0018	0.0019	0.0020	0.0025	0.0029	0.0017	0.0017	0.0017	0.0017	0.0017	0.0018	0.0019	0.0019	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0018	0.0019	0.162	0.187		

\\ivan11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-1 Ajax_LOM_WQM_Base Case Summary Tables.xlsx]TC1 JL BC SUMM STATS

NOTES:
1. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - 30 DAY AVERAGE (BCWQG-30 D) - FRESHWATER AQUATIC LIFE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
3. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - WILDLIFE (WILDLIFE).
4. WATER QUALITY BENCHMARKS (WQB) AND SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
5. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS AN AQUATIC LIFE GUIDELINE.
6. GREEN HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG-WILDLIFE.
7. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS A WATER QUALITY BENCHMARK (WQB) OR SCIENCE BASED ENVIRONMENTAL BENCHARK (WQB).
8. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
9. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELCIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
10. SULPHATE SBEB IS 429 mg/L FOR WATER HARDNESS UP TO 800 mg/L CaCO3 AND IS INTENDED FOR LAKES AND CREEKS WHERE EARLY LIFESTAGES OF TROUT ARE PRESENT; SBEB OF 730 mg/L FOR HARDNESS UP TO 1377 mg/L CaCO3 FOR CREEKS WHERE FISH ARE ABSENT OR PERIODS OF THE YEAR WHEN EARLY LIFESTAGES OF TROUT ARE ABSENT.
11. SULPHATE GUIDELINE EXCEEDANCE HIGHLIGHTING IN THIS TABLE DOES NOT ACCOUNT FOR THE TIMING OF THE OCCURANCE OF THE PREDICTED CONCENTRATIONS; THEREFORE IT MAY NOT BE A TRUE EXCEEDANCE.
12. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
13. SELENIUM WQB IS 0.0025 mg/L FOR LENTIC SYSTEMS AND 0.005 mg/L FOR LOTIC SYSTEMS.

TABLE C1-2

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
JACKO LAKE - BASE CASE MODEL SUMMARY STATISTICS COMPARED TOCANADIAN ENVIRONMENTAL QUALITY GUIDELINES FOR THE PROTECTION OF AQUATIC LIFE (CEQG-PAL)

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		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								CEQG - PAL
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	
Conventional Parameters and Major Ions																																
Baseline Hardness	mg/L $CaCO_3$	296	296	297	302	300	303	304	304	296	296	299	302	301	304	304	304	296	296	299	728	301	304	304	304	296	296	299	302	301	304	304	304	-
Hardness - Dissolved	mg/L $CaCO_3$	317	317	322	329	330	336	350	363	337	352	374	380	380	384	413	418	378	379	382	384	388	391	419	421	381	382	386	386	392	393	423	424	-
Bromide (Br^-)	mg/L	0.11	0.12	0.12	0.12	0.12	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	1.5
Chloride (Cl^-)	mg/L	58	58	59	59	59	59	62	65	59	59	60	60	61	61	66	66	60	60	60	60	61	61	66	66	60	60	61	61	62	62	67	67	120
Fluoride (F^-)	mg/L	0.20	0.21	0.21	0.21	0.21	0.21	0.22	0.23	0.21	0.22	0.23	0.23	0.23	0.24	0.25	0.25	0.23	0.23	0.23	0.23	0.24	0.24	0.25	0.25	0.23	0.23	0.23	0.23	0.24	0.24	0.25	0.25	0.12
Sulphate (SO_4^{2-})	mg/L	59	59	59	59	60	59	63	65	57	57	58	58	59	60	64	65	57	58	58	58	59	60	64	65	58	58	59	59	60	60	65	66	-
Calcium (Ca)	mg/L	60	60	62	65	65	67	70	72	68	74	82	85	84	86	92	94	85	85	86	86	87	88	94	95	85	86	87	87	88	88	95	96	-
Magnesium (Mg)	mg/L	41	41	41	41	41	41	43	45	41	41	41	41	41	42	45	45	41	41	41	41	42	42	45	45	41	41	41	41	42	42	45	45	-
Potassium (K)	mg/L	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	-
Sodium (Na)	mg/L	36	37	37	37	37	37	39	40	37	37	37	37	38	38	40	41	37	37	37	37	38	38	41	41	37	37	37	37	38	38	41	41	-
Nutrients																																		
Ammonia	mg/L N	0.093	0.093	0.094	0.105	0.101	0.106	0.107	0.108	0.058	0.059	0.059	0.062	0.065	0.066	0.085	0.098	0.058	0.058	0.058	0.058	0.060	0.061	0.065	0.065	0.056	0.056	0.057	0.057	0.058	0.060	0.064	0.065	0.65
Nitrate	mg/L N	0.188	0.188	0.190	0.222	0.211	0.224	0.225	0.225	0.093	0.093	0.097	0.102	0.110	0.110	0.163	0.192	0.093	0.093	0.093	0.094	0.095	0.097	0.099	0.106	0.106	0.082	0.082	0.082	0.083	0.085	0.088	0.092	0.104	3
Nitrite	mg/L	0.0045	0.0046	0.0046	0.0048	0.0047	0.0048	0.0050	0.0052	0.0041	0.0041	0.0042	0.0044	0.0044	0.0045	0.0047	0.0050	0.0042	0.0043	0.0043	0.0043	0.0044	0.0045	0.0048	0.0049	0.0040	0.0040	0.0041	0.0041	0.0042	0.0043	0.0046	0.0048	0.06
Phosphorus	mg/L	0.089	0.090	0.090	0.090	0.091	0.090	0.094	0.096	0.090	0.090	0.091	0.091	0.092	0.092	0.096	0.096	0.090	0.090	0.091	0.091	0.092	0.092	0.096	0.096	0.089	0.089	0.089	0.090	0.090	0.092	0.095	0.096	-
Dissolved Metals																																		
Aluminum (Al)	mg/L	0.0015	0.0015	0.0017	0.0018	0.0020	0.0025	0.0026	0.0026	0.0026	0.0034	0.0050	0.0055	0.0052	0.0056	0.0059	0.0062	0.0055	0.0055	0.0056	0.0056	0.0057	0.0057	0.0062	0.0062	0.0029	0.0029	0.0029	0.0029	0.0030	0.0030	0.0036	0.0058	0.1
Antimony (Sb)	mg/L	0.00009	0.00009	0.00009	0.00010	0.00009	0.00010	0.00010	0.00010	0.00008	0.00008	0.00009	0.00009	0.00009	0.00009	0.00010	0.00010	0.00008	0.00008	0.00008	0.00009	0.00009	0.00009	0.00009	0.00009	0.00007	0.00007	0.00007	0.00007	0.00007	0.00008	0.00008	0.00009	-
Arsenic (As)	mg/L	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0015	0.0015	0.0014	0.0015	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0017	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0017	0.0017	0.005
Barium (Ba)	mg/L	0.056	0.056	0.057	0.059	0.059	0.061	0.063	0.065	0.062	0.066	0.073	0.074	0.074	0.075	0.080	0.082	0.074	0.074	0.075	0.075	0.076	0.076	0.082	0.082	0.074	0.074	0.075	0.075	0.076	0.076	0.082	0.082	-
Boron (B)	mg/L	0.021	0.021	0.021	0.021	0.021	0.021	0.022	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	-
Cadmium (Cd)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000006	0.000007	0.000008	0.000008	0.000008	0.000008	0.000009	0.000009	0.000008	0.000008	0.000008	0.000008	0.000008	0.000009	0.000009	0.000009	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000009	0.000036
Chromium (Cr)	mg/L	0.00011	0.00011	0.00013	0.00013	0.00015	0.00018	0.00020	0.00020	0.00020	0.00025	0.00037	0.00040	0.00038	0.00041	0.00043	0.00046	0.00040	0.00040	0.00041	0.00041	0.00042	0.00042	0.00046	0.00046	0.00013	0.00013	0.00013	0.00013	0.00014	0.00014	0.00021	0.00042	0.001/0.089
Cobalt (Co)	mg/L	0.00007	0.00008	0.00008	0.00009	0.00009	0.00011	0.00011	0.00011	0.00011	0.00014	0.00018	0.00019	0.00019	0.00020	0.00021	0.00022	0.00019	0.00019	0.00020	0.00020	0.00020	0.00020	0.00022	0.00022	0.00015	0.00015	0.00015	0.00015	0.00015	0.00016	0.00017	0.00021	-
Copper (Cu)	mg/L	0.0013	0.0013	0.0013	0.0014	0.0015	0.0017	0.0017	0.0017	0.0017	0.0020	0.0026	0.0028	0.0027	0.0028	0.0030	0.0031	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0031	0.0031	0.0022	0.0022	0.0022	0.0022	0.0023	0.0023	0.0024	0.0030	0.004
Iron (Fe)	mg/L	0.015	0.015	0.017	0.020	0.021	0.025	0.026	0.026	0.027	0.035	0.050	0.054	0.052	0.056	0.058	0.060	0.054	0.055	0.055	0.056	0.056	0.057	0.060	0.060	0.049	0.049	0.050	0.050	0.051	0.052	0.054	0.059	0.3
Lead (Pb)	mg/L	0.000031	0.000031	0.000034	0.000034	0.000036	0.000040	0.000041	0.000042	0.000041	0.000047	0.000059	0.000062	0.000061	0.000064	0.000068	0.000070	0.000062	0.000062	0.000063	0.000064	0.000064	0.000064	0.000070	0.000071	0.000027	0.000027	0.000027	0.000027	0.000029	0.000028	0.000037	0.000064	0.001
Lithium (Li)	mg/L	0.0058	0.0058	0.0058	0.0058	0.0059	0.0058	0.0062	0.0064	0.0058	0.0058	0.0058	0.0058	0.0059	0.0060	0.0064	0.0064	0.0058	0.0058	0.0058	0.0059	0.0059	0.0060	0.0064	0.0064	0.0058	0.0058	0.0059	0.0059	0.0060	0.0060	0.0064	0.0064	-
Manganese (Mn)	mg/L	0.019	0.019	0.022	0.024	0.023	0.025	0.026	0.027	0.027	0.030	0.038	0.040	0.039	0.041	0.043	0.044	0.039	0.039	0.040	0.041	0.041	0.042	0.044	0.044	0.039	0.039	0.040	0.041	0.041	0.042	0.043	0.044	-
Molybdenum (Mo)	mg/L	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.073
Nickel (Ni)	mg/L	0.0008	0.0008	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0012	0.0014	0.0015	0.0014	0.0015	0.0016	0.0016	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	0.0013	0.0016	0.15
Selenium (Se)	mg/L	0.00017	0.00017	0.00017	0.00018	0.00019	0.00020	0.00021	0.00021	0.00020	0.00023	0.00028	0.00030	0.00029	0.00030	0.00032	0.00034	0.00030	0.00030	0.00030	0.00031	0.00031	0.00031	0.00034	0.00035	0.00029	0.00030	0.00030	0.00031	0.00031	0.00032	0.00034	0.00036	0.001
Silicon (Si)		4.6	4.7	4.9	5.1	5.3	5.8	5.9	5.9	5.9	6.7	8.4	8.9	8.6	9.0	9.3	9.6	8.9	8.9	9.0	9.1	9.1	9.2	9.6	9.7	8.9	9.0	9.1	9.1	9.2	9.2	9.7	9.7	-
Silver (Ag)	mg/L	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000006	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000005	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.0001
Strontium (Sr)	mg/L	0.38	0.38	0.39	0.39	0.39	0.39	0.41	0.42	0.39	0.39	0.39	0.40	0.40	0.40	0.43	0.43	0.39	0.39	0.40	0.40	0.40	0.41	0.43	0.44	0.40	0.40	0.40	0.40	0.41	0.41	0.44	0.44	-
Thallium (Tl)	mg/L	0.000005	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000008	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.0008
Tin (Sn)		0.00005	0.00005	0.00005	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00007	0.00007	0.00007	0.00006	0.00006	0.00007	0.00007	0.00007	0.00007	0.00007	0.00007	0.00005	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00007	-
Uranium (U)	mg/L	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	0.0012	0.0012	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0015	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0015	0.0015	0.015
Vanadium (V)	mg/L	0.0022	0.0022	0.0022	0.0023	0.0023	0.0023	0.0024	0.0025	0.0023	0.0025	0.0028	0.0029	0.0028	0.0029	0.0030	0.0031	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0031	0.0031	0.0026	0.0026	0.0026	0.0026	0.0027	0.0027	0.0028	0.0031	-
Zinc (Zn)	mg/L	0.0028	0.0028	0.0028	0.0031	0.0030	0.0032	0.0032	0.0032	0.0017	0.0017	0.0017	0.0018	0.0019	0.0020	0.0025	0.0029	0.0017	0.0017	0.0017	0.0017	0.0017	0.0018	0.0019	0.0019	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0018	0.0019	0.03

\\van11\prj_file\1\011\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-2 Ajax_LOM_WQM_Base Case Appendix Tables_CEQ PAL GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE.
2. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - PROTECTION OF AQUATIC LIFE (PAL).
3. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE CEQG PAL.
4. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
5. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELSIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
7. MERCURY AND BERYLLIUM MODELLED DATA HAVE BEEN EXCLUDED FROM THE RESULTS TABLES; THESE PARAMETERS ARE UNDERSTOOD TO BE MODELLED BASED ON DETECTION LIMITS THAT ARE NEAR TO THE GUIDELINES, RESULTING IN PREDICTED EXCEEDANCES THAT ARE NOT EXPECTED.

TABLE C1-3

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
JACKO LAKE - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO LIVESTOCK WATER QUALITY GUIDELINES

Print Jul/21/15 8:38:44

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - LIVESTOCK	CEQG - LIVESTOCK
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	296	296	297	302	300	303	304	304	296	296	299	302	301	304	304	304	296	296	299	728	301	304	304	304	296	296	299	302	301	304	304	304	-	-
Hardness - Dissolved	mg/L $CaCO_3$	317	317	322	329	330	336	350	363	337	352	374	380	380	384	413	418	378	379	382	384	388	391	419	421	381	382	386	386	392	393	423	424	-	-
Bromide (Br^-)	mg/L	0.11	0.12	0.12	0.12	0.12	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	-	-
Chloride (Cl^-)	mg/L	58	58	59	59	59	59	62	65	59	59	60	60	61	61	66	66	60	60	60	60	61	61	66	66	60	60	61	61	62	62	67	67	600	-
Fluoride (F^-)	mg/L	0.20	0.21	0.21	0.21	0.21	0.21	0.22	0.23	0.21	0.22	0.23	0.23	0.23	0.24	0.25	0.25	0.23	0.23	0.23	0.23	0.24	0.24	0.25	0.25	0.23	0.23	0.23	0.23	0.24	0.24	0.25	0.25	1	1
Sulphate (SO_4^{2-})	mg/L	59	59	59	59	60	59	63	65	57	57	58	58	59	60	64	65	57	58	58	58	59	60	64	65	58	58	59	59	60	60	65	66	1,000	1,000
Calcium (Ca)	mg/L	60	60	62	65	65	67	70	72	68	74	82	85	84	86	92	94	85	85	86	86	87	88	94	95	85	86	87	87	88	88	95	96	1,000	1,000
Magnesium (Mg)	mg/L	41	41	41	41	41	41	43	45	41	41	41	41	41	42	45	45	41	41	41	41	42	42	45	45	41	41	41	41	42	42	45	45	-	-
Potassium (K)	mg/L	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	-	-
Sodium (Na)	mg/L	36	37	37	37	37	37	39	40	37	37	37	37	38	38	40	41	37	37	37	37	38	38	41	41	37	37	37	37	38	38	41	41	-	-
Nutrients																																	
Ammonia	mg/L N	0.09	0.09	0.09	0.10	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.07	0.08	0.10	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	-	-
Nitrate	mg/L N	0.19	0.19	0.19	0.22	0.21	0.22	0.23	0.23	0.09	0.09	0.10	0.10	0.11	0.11	0.16	0.19	0.09	0.09	0.09	0.09	0.10	0.10	0.11	0.11	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.10	100	-
Nitrite	mg/L	0.0045	0.0046	0.0046	0.0048	0.0047	0.0048	0.0050	0.0052	0.0041	0.0041	0.0042	0.0044	0.0044	0.0045	0.0047	0.0050	0.0042	0.0043	0.0043	0.0043	0.0044	0.0045	0.0048	0.0049	0.0040	0.0040	0.0041	0.0041	0.0042	0.0043	0.0046	0.0048	1	-
Phosphorus	mg/L	0.089	0.090	0.090	0.090	0.091	0.090	0.094	0.096	0.090	0.090	0.091	0.091	0.092	0.092	0.096	0.096	0.090	0.090	0.091	0.091	0.092	0.092	0.096	0.096	0.089	0.089	0.089	0.090	0.090	0.092	0.095	0.096	-	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0015	0.0015	0.0017	0.0018	0.0020	0.0025	0.0026	0.0026	0.0026	0.0034	0.0050	0.0055	0.0052	0.0056	0.0059	0.0062	0.0055	0.0055	0.0056	0.0056	0.0057	0.0057	0.0062	0.0062	0.0029	0.0029	0.0029	0.0029	0.0030	0.0030	0.0036	0.0058	5	5
Antimony (Sb)	mg/L	0.000090	0.000090	0.000090	0.000096	0.000095	0.000097	0.000099	0.000101	0.000084	0.000085	0.000086	0.000089	0.000089	0.000092	0.000097	0.000104	0.000082	0.000083	0.000084	0.000085	0.000086	0.000087	0.000092	0.000095	0.000069	0.000070	0.000072	0.000074	0.000074	0.000076	0.000081	0.000092	-	-
Arsenic (As)	mg/L	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0015	0.0015	0.0014	0.0015	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0017	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0017	0.0017	0.025	0.025
Barium (Ba)	mg/L	0.056	0.056	0.057	0.059	0.059	0.061	0.063	0.065	0.062	0.066	0.073	0.074	0.074	0.075	0.080	0.082	0.074	0.074	0.075	0.075	0.076	0.076	0.082	0.082	0.074	0.074	0.075	0.075	0.076	0.076	0.082	0.082	-	-
Boron (B)	mg/L	0.021	0.021	0.021	0.021	0.021	0.021	0.022	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	5.0	5.0
Cadmium (Cd)	mg/L	0.0000055	0.0000055	0.0000057	0.0000058	0.0000059	0.0000062	0.0000064	0.0000067	0.0000063	0.0000068	0.0000077	0.0000080	0.0000079	0.0000081	0.0000087	0.0000090	0.0000080	0.0000080	0.0000081	0.0000082	0.0000082	0.0000082	0.0000089	0.0000090	0.0000055	0.0000055	0.0000056	0.0000056	0.0000058	0.0000058	0.0000064	0.0000085	0.0800	0.0800
Chromium (Cr)	mg/L	0.00011	0.00011	0.00013	0.00013	0.00015	0.00018	0.00020	0.00020	0.00020	0.00025	0.00037	0.00040	0.00038	0.00041	0.00043	0.00046	0.00040	0.00040	0.00041	0.00041	0.00042	0.00042	0.00046	0.00046	0.00013	0.00013	0.00013	0.00013	0.00014	0.00014	0.00021	0.00042	0.050/0.050	0.050/0.050
Cobalt (Co)	mg/L	0.00007	0.00008	0.00008	0.00009	0.00009	0.00011	0.00011	0.00011	0.00011	0.00014	0.00018	0.00019	0.00019	0.00020	0.00021	0.00022	0.00019	0.00019	0.00020	0.00020	0.00020	0.00020	0.00022	0.00022	0.00015	0.00015	0.00015	0.00015	0.00015	0.00016	0.00017	0.00021	1	1
Copper (Cu)	mg/L	0.0013	0.0013	0.0013	0.0014	0.0015	0.0017	0.0017	0.0017	0.0017	0.0020	0.0026	0.0028	0.0027	0.0028	0.0030	0.0031	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0031	0.0031	0.0022	0.0022	0.0022	0.0022	0.0023	0.0023	0.0024	0.0030	0.3	1.0
Iron (Fe)	mg/L	0.015	0.015	0.017	0.020	0.021	0.025	0.026	0.026	0.027	0.035	0.050	0.054	0.052	0.056	0.058	0.060	0.054	0.055	0.055	0.056	0.056	0.057	0.060	0.060	0.049	0.049	0.050	0.050	0.051	0.052	0.054	0.059	-	-
Lead (Pb)	mg/L	0.000031	0.000031	0.000034	0.000034	0.000036	0.000040	0.000041	0.000042	0.000041	0.000047	0.000059	0.000062	0.000061	0.000064	0.000068	0.000070	0.000062	0.000062	0.000063	0.000064	0.000064	0.000064	0.000070	0.000071	0.000027	0.000027	0.000027	0.000027	0.000029	0.000028	0.000037	0.000064	0.1	0.1
Lithium (Li)	mg/L	0.0058	0.0058	0.0058	0.0058	0.0059	0.0058	0.0062	0.0064	0.0058	0.0058	0.0058	0.0058	0.0059	0.0060	0.0064	0.0064	0.0058	0.0058	0.0058	0.0059	0.0059	0.0060	0.0064	0.0064	0.0058	0.0058	0.0059	0.0059	0.0060	0.0060	0.0064	0.0064	-	-
Manganese (Mn)	mg/L	0.019	0.019	0.022	0.024	0.023	0.025	0.026	0.027	0.027	0.030	0.038	0.040	0.039	0.041	0.043	0.044	0.039	0.039	0.040	0.041	0.041	0.042	0.044	0.044	0.039	0.039	0.040	0.041	0.041	0.042	0.043	0.044	-	-
Molybdenum (Mo)	mg/L	0.0023	0.0023	0.0024	0.0024	0.0024	0.0024	0.0025	0.0026	0.0024	0.0024	0.0026	0.0027	0.0028	0.0029	0.0032	0.0035	0.0031	0.0031	0.0032	0.0034	0.0034	0.0035	0.0038	0.0039	0.0034	0.0034	0.0035	0.0037	0.0037	0.0039	0.0041	0.0044	0.05	0.50
Nickel (Ni)	mg/L	0.00082	0.00083	0.00088	0.00092	0.00093	0.00100	0.00103	0.00103	0.00103	0.00115	0.00140	0.00147	0.00143	0.00151	0.00155	0.00162	0.00145	0.00146	0.00150	0.00151	0.00152	0.00153	0.00161	0.00163	0.00119	0.00120	0.00123	0.00124	0.00125	0.00126	0.00132	0.00158	1	1
Selenium (Se)	mg/L	0.00017	0.00017	0.00017	0.00018	0.00019	0.00020	0.00021	0.00021	0.00020	0.00023	0.00028	0.00030	0.00029	0.00030	0.00032	0.00034	0.00030	0.00030	0.00030	0.00031	0.00031	0.00031	0.00034	0.00035	0.00029	0.00030	0.00030	0.00031	0.00031	0.00032	0.00034	0.00036	0.03	0.05
Silicon (Si)		4.6	4.7	4.9	5.1	5.3	5.8	5.9	5.9	5.9	6.7	8.4	8.9	8.6	9.0	9.3	9.6	8.9	8.9	9.0	9.1	9.1	9.2	9.6	9.7	8.9	9.0	9.1	9.1	9.2	9.2	9.7	9.7	-	-
Silver (Ag)	mg/L	0.0000051	0.0000051	0.0000051	0.0000052	0.0000052	0.0000052	0.0000054	0.0000056	0.0000052	0.0000053	0.0000055	0.0000055	0.0000055	0.0000056	0.0000060	0.0000060	0.0000055	0.0000055	0.0000055	0.0000055	0.0000056	0.0000056	0.0000060	0.0000060	0.0000054	0.0000054	0.0000054	0.0000054	0.0000055	0.0000056	0.0000059	0.0000060	-	-
Strontium (Sr)	mg/L	0.38	0.38	0.39	0.39	0.39	0.39	0.41	0.42	0.39	0.39	0.39	0.40	0.40	0.40	0.43	0.43	0.39	0.39	0.40	0.40	0.40	0.41	0.43	0.44	0.40	0.40	0.40	0.40	0.41	0.41	0.44	0.44	-	-
Thallium (Tl)	mg/L	0.0000052	0.0000053	0.0000054	0.0000055	0.0000055	0.0000057	0.0000059	0.0000061	0.0000057	0.0000060	0.0000066	0.0000067	0.0000067	0.0000068	0.0000073	0.0000074	0.0000067	0.0000067	0.0000068	0.0000069	0.0000069	0.0000070	0.0000075	0.0000076	0.0000055	0.0000056	0.0000056	0.0000057	0.0000057	0.0000058	0.0000062	0.0000073	-	-
Tin (Sn)		0.000052	0.000052	0.000053	0.000054	0.000055	0.000056	0.000058	0.000060	0.000056	0.000059	0.000063	0.000065	0.000064	0.000065	0.000070	0.000071	0.000064	0.000064	0.000065	0.000065	0.000066	0.000066	0.000071	0.000071	0.000054	0.000054	0.000055	0.000055	0.000056	0.000057	0.000060	0.000070	-	-
Uranium (U)	mg/L	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	0.0012	0.0012	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0015	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0015	0.0015	0.2	0.2
Vanadium (V)	mg/L	0.0022	0.0022	0.0022	0.0023	0.0023	0.0023	0.0024	0.0025	0.0023	0.0025	0.0028	0.0029	0.0028	0.0029	0.0030	0.0031	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0031	0.0031	0.0026	0.0026	0.0026	0.0026	0.0027	0.0027	0.0028	0.0031	0.1	0.1
Zinc (Zn)	mg/L	0.0028	0.0028	0.0028	0.0031	0.0030	0.0032	0.0032	0.0032	0.0017	0.0017	0.0017	0.0018	0.0019	0.0020	0.0025	0.0029	0.0017	0.0017	0.0017	0.0017	0.0017	0.0018	0.0019	0.0019	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0018	0.0019	2	50

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-3 Ajax_LOM_WQM_Base Case Appendix Tables_Livestock GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUE SELECTED) - LIVESTOCK WATERING.
3. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - WATER QUALITY GUIDELINES FOR THE PROTECTION OF AGRICULTURE - LIVESTOCK.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR LIVESTOCK.
5. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
6. WHEN APPLICABLE, THE GUIDELINE SELECTED FOR LIVESTOCK WATERING USE WAS THAT CORRESPONDING TO CATTLE.

TABLE C1-4

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
JACKO LAKE - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO IRRIGATION GUIDELINES

Print Jul/21/15 8:41:14

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - IRRIGATION	CEQG - IRRIGATION
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	296	296	297	302	300	303	304	304	296	296	299	302	301	304	304	304	296	296	299	728	301	304	304	304	296	296	299	302	301	304	304	304	-	-
Hardness - Dissolved	mg/L $CaCO_3$	317	317	322	329	330	336	350	363	337	352	374	380	380	384	413	418	378	379	382	384	388	391	419	421	381	382	386	386	392	393	423	424	-	-
Bromide (Br^-)	mg/L	0.11	0.12	0.12	0.12	0.12	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	-	-
Chloride (Cl^-)	mg/L	58	58	59	59	59	59	62	65	59	59	60	60	61	61	66	66	60	60	60	60	61	61	66	66	60	60	61	61	62	62	67	67	100	250
Fluoride (F^-)	mg/L	0.20	0.21	0.21	0.21	0.21	0.21	0.22	0.23	0.21	0.22	0.23	0.23	0.23	0.24	0.25	0.25	0.23	0.23	0.23	0.23	0.24	0.24	0.25	0.25	0.23	0.23	0.23	0.23	0.24	0.24	0.25	0.25	1	1
Sulphate (SO_4^{2-})	mg/L	59	59	59	59	60	59	63	65	57	57	58	58	59	60	64	65	57	58	58	58	59	60	64	65	58	58	59	59	60	60	65	66	-	-
Calcium (Ca)	mg/L	60	60	62	65	65	67	70	72	68	74	82	85	84	86	92	94	85	85	86	86	87	88	94	95	85	86	87	87	88	88	95	96	-	-
Magnesium (Mg)	mg/L	41	41	41	41	41	41	43	45	41	41	41	41	41	42	45	45	41	41	41	41	42	42	45	45	41	41	41	41	42	42	45	45	-	-
Potassium (K)	mg/L	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	-	-
Sodium (Na)	mg/L	36	37	37	37	37	37	39	40	37	37	37	37	38	38	40	41	37	37	37	37	38	38	41	41	37	37	37	37	38	38	41	41	-	-
Nutrients																																	
Ammonia	mg/L N	0.09	0.09	0.09	0.10	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.07	0.08	0.10	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	-	-
Nitrate	mg/L N	0.19	0.19	0.19	0.22	0.21	0.22	0.23	0.23	0.09	0.09	0.10	0.10	0.11	0.11	0.16	0.19	0.09	0.09	0.09	0.09	0.10	0.10	0.11	0.11	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.10	-	-
Nitrite	mg/L	0.0045	0.0046	0.0046	0.0048	0.0047	0.0048	0.0050	0.0052	0.0041	0.0041	0.0042	0.0044	0.0044	0.0045	0.0047	0.0050	0.0042	0.0043	0.0043	0.0043	0.0044	0.0045	0.0048	0.0049	0.0040	0.0040	0.0041	0.0041	0.0042	0.0043	0.0046	0.0048	-	10
Phosphorus	mg/L	0.089	0.090	0.090	0.090	0.091	0.090	0.094	0.096	0.090	0.090	0.091	0.091	0.092	0.092	0.096	0.096	0.090	0.090	0.091	0.091	0.092	0.092	0.096	0.096	0.089	0.089	0.089	0.090	0.090	0.092	0.095	0.096	-	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0015	0.0015	0.0017	0.0018	0.0020	0.0025	0.0026	0.0026	0.0026	0.0034	0.0050	0.0055	0.0052	0.0056	0.0059	0.0062	0.0055	0.0055	0.0056	0.0056	0.0057	0.0057	0.0062	0.0062	0.0029	0.0029	0.0029	0.0029	0.0030	0.0030	0.0036	0.0058	5	5
Antimony (Sb)	mg/L	0.000090	0.000090	0.000090	0.000096	0.000095	0.000097	0.000099	0.000101	0.000084	0.000085	0.000086	0.000089	0.000089	0.000092	0.000097	0.000104	0.000082	0.000083	0.000084	0.000085	0.000086	0.000087	0.000092	0.000095	0.000069	0.000070	0.000072	0.000074	0.000074	0.000076	0.000081	0.000092	-	-
Arsenic (As)	mg/L	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0015	0.0015	0.0014	0.0015	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0017	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0017	0.0017	0.100	0.100
Barium (Ba)	mg/L	0.056	0.056	0.057	0.059	0.059	0.061	0.063	0.065	0.062	0.066	0.073	0.074	0.074	0.075	0.080	0.082	0.074	0.074	0.075	0.075	0.076	0.076	0.082	0.082	0.074	0.074	0.075	0.075	0.076	0.076	0.082	0.082	-	-
Boron (B)	mg/L	0.021	0.021	0.021	0.021	0.021	0.021	0.022	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	0.5	0.5
Cadmium (Cd)	mg/L	0.0000055	0.0000055	0.0000057	0.0000058	0.0000059	0.0000062	0.0000064	0.0000067	0.0000063	0.0000068	0.0000077	0.0000080	0.0000079	0.0000081	0.0000087	0.0000090	0.0000080	0.0000080	0.0000081	0.0000082	0.0000082	0.0000082	0.0000089	0.0000090	0.0000055	0.0000055	0.0000056	0.0000056	0.0000058	0.0000058	0.0000064	0.0000085	0.0051	0.0051
Chromium (Cr)	mg/L	0.00011	0.00011	0.00013	0.00013	0.00015	0.00018	0.00020	0.00020	0.00020	0.00025	0.00037	0.00040	0.00038	0.00041	0.00043	0.00046	0.00040	0.00040	0.00041	0.00041	0.00042	0.00042	0.00046	0.00046	0.00013	0.00013	0.00013	0.00013	0.00014	0.00014	0.00021	0.00042	0.008/0.0049	0.008/0.0049
Cobalt (Co)	mg/L	0.00007	0.00008	0.00008	0.00009	0.00009	0.00011	0.00011	0.00011	0.00011	0.00014	0.00018	0.00019	0.00019	0.00020	0.00021	0.00022	0.00019	0.00019	0.00020	0.00020	0.00020	0.00020	0.00022	0.00022	0.00015	0.00015	0.00015	0.00015	0.00015	0.00016	0.00017	0.00021	0.05	0.05
Copper (Cu)	mg/L	0.0013	0.0013	0.0013	0.0014	0.0015	0.0017	0.0017	0.0017	0.0017	0.0020	0.0026	0.0028	0.0027	0.0028	0.0030	0.0031	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0031	0.0031	0.0022	0.0022	0.0022	0.0022	0.0023	0.0023	0.0024	0.0030	0.2	1.0
Iron (Fe)	mg/L	0.015	0.015	0.017	0.020	0.021	0.025	0.026	0.026	0.027	0.035	0.050	0.054	0.052	0.056	0.058	0.060	0.054	0.055	0.055	0.056	0.056	0.057	0.060	0.060	0.049	0.049	0.050	0.050	0.051	0.052	0.054	0.059	-	5.0
Lead (Pb)	mg/L	0.000031	0.000031	0.000034	0.000034	0.000036	0.000040	0.000041	0.000042	0.000041	0.000047	0.000059	0.000062	0.000061	0.000064	0.000068	0.000070	0.000062	0.000062	0.000063	0.000064	0.000064	0.000064	0.000070	0.000071	0.000027	0.000027	0.000027	0.000027	0.000029	0.000028	0.000037	0.000064	0.2	0.2
Lithium (Li)	mg/L	0.0058	0.0058	0.0058	0.0058	0.0059	0.0058	0.0062	0.0064	0.0058	0.0058	0.0058	0.0058	0.0059	0.0060	0.0064	0.0064	0.0058	0.0058	0.0058	0.0059	0.0059	0.0060	0.0064	0.0064	0.0058	0.0058	0.0059	0.0059	0.0060	0.0060	0.0064	0.0064	0.75	2.50
Manganese (Mn)	mg/L	0.019	0.019	0.022	0.024	0.023	0.025	0.026	0.027	0.027	0.030	0.038	0.040	0.039	0.041	0.043	0.044	0.039	0.039	0.040	0.041	0.041	0.042	0.044	0.044	0.039	0.039	0.040	0.041	0.041	0.042	0.043	0.044	0.2	0.2
Molybdenum (Mo)	mg/L	0.0023	0.0023	0.0024	0.0024	0.0024	0.0024	0.0025	0.0026	0.0024	0.0024	0.0026	0.0027	0.0028	0.0029	0.0032	0.0035	0.0031	0.0031	0.0032	0.0034	0.0034	0.0035	0.0038	0.0039	0.0034	0.0034	0.0035	0.0037	0.0037	0.0039	0.0041	0.0044	0.05	0.05
Nickel (Ni)	mg/L	0.00082	0.00083	0.00088	0.00092	0.00093	0.00100	0.00103	0.00103	0.00103	0.00115	0.00140	0.00147	0.00143	0.00151	0.00155	0.00162	0.00145	0.00146	0.00150	0.00151	0.00152	0.00153	0.00161	0.00163	0.00119	0.00120	0.00123	0.00124	0.00125	0.00126	0.00132	0.00158	0.2	0.2
Selenium (Se)	mg/L	0.00017	0.00017	0.00017	0.00018	0.00019	0.00020	0.00021	0.00021	0.00020	0.00023	0.00028	0.00030	0.00029	0.00030	0.00032	0.00034	0.00030	0.00030	0.00030	0.00031	0.00031	0.00031	0.00034	0.00035	0.00029	0.00030	0.00030	0.00031	0.00031	0.00032	0.00034	0.00036	0.01	0.05
Silicon (Si)		4.6	4.7	4.9	5.1	5.3	5.8	5.9	5.9	5.9	6.7	8.4	8.9	8.6	9.0	9.3	9.6	8.9	8.9	9.0	9.1	9.1	9.2	9.6	9.7	8.9	9.0	9.1	9.1	9.2	9.2	9.7	9.7	-	-
Silver (Ag)	mg/L	0.0000051	0.0000051	0.0000051	0.0000052	0.0000052	0.0000052	0.0000054	0.0000056	0.0000052	0.0000053	0.0000055	0.0000055	0.0000055	0.0000056	0.0000060	0.0000060	0.0000055	0.0000055	0.0000055	0.0000055	0.0000056	0.0000056	0.0000060	0.0000060	0.0000054	0.0000054	0.0000054	0.0000054	0.0000055	0.0000056	0.0000059	0.0000060	-	-
Strontium (Sr)	mg/L	0.38	0.38	0.39	0.39	0.39	0.39	0.41	0.42	0.39	0.39	0.39	0.40	0.40	0.40	0.43	0.43	0.39	0.39	0.40	0.40	0.40	0.41	0.43	0.44	0.40	0.40	0.40	0.40	0.41	0.41	0.44	0.44	-	-
Thallium (Tl)	mg/L	0.0000052	0.0000053	0.0000054	0.0000055	0.0000055	0.0000057	0.0000059	0.0000061	0.0000057	0.0000060	0.0000066	0.0000067	0.0000067	0.0000068	0.0000073	0.0000074	0.0000067	0.0000067	0.0000068	0.0000069	0.0000069	0.0000070	0.0000075	0.0000076	0.0000055	0.0000056	0.0000056	0.0000057	0.0000057	0.0000058	0.0000062	0.0000073	-	-
Tin (Sn)		0.000052	0.000052	0.000053	0.000054	0.000055	0.000056	0.000058	0.000060	0.000056	0.000059	0.000063	0.000065	0.000064	0.000065	0.000070	0.000071	0.000064	0.000064	0.000065	0.000065	0.000066	0.000066	0.000071	0.000071	0.000054	0.000054	0.000055	0.000055	0.000056	0.000057	0.000060	0.000070	-	-
Uranium (U)	mg/L	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	0.0012	0.0012	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0015	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0015	0.0015	0.01	0.01
Vanadium (V)	mg/L	0.0022	0.0022	0.0022	0.0023	0.0023	0.0023	0.0024	0.0025	0.0023	0.0025	0.0028	0.0029	0.0028	0.0029	0.0030	0.0031	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0031	0.0031	0.0026	0.0026	0.0026	0.0026	0.0027	0.0027	0.0028	0.0031	0.1	0.1
Zinc (Zn)	mg/L	0.0028	0.0028	0.0028	0.0031	0.0030	0.0032	0.0032	0.0032	0.0017	0.0017	0.0017	0.0018	0.0019	0.0020	0.0025	0.0029	0.0017	0.0017	0.0017	0.0017	0.0017	0.0018	0.0019	0.0019	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0018	0.0019	1	1

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-4 Ajax_LOM_WQM_Base Case Appendix Tables_Irrigation GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUES SELECTED) - IRRIGATION.
3. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - WATER QUALITY GUIDELINES FOR THE PROTECTION OF AGRICULTURE - IRRIGATION.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR IRRIGATION.
5. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS THE CEQG FOR IRRIGATION.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
7. WHEN APPLICABLE, THE GUIDELINE SELECTED FOR IRRIGATION USE WAS THAT CORRESPONDING TO THE MOST SENSITIVE CROP OR SOIL TYPE LISTED.

TABLE C1-5

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
JACKO LAKE - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO DRINKING WATER GUIDELINES

Print Jul/21/15 8:43:37

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - DRINKING WATER	HC - DRINKING WATER
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	296	296	297	302	300	303	304	304	296	296	299	302	301	304	304	304	296	296	299	728	301	304	304	304	296	296	299	302	301	304	304	304	-	-
Hardness - Dissolved	mg/L $CaCO_3$	317	317	322	329	330	336	350	363	337	352	374	380	380	384	413	418	378	379	382	384	388	391	419	421	381	382	386	386	392	393	423	424	-	-
Bromide (Br^-)	mg/L	0.11	0.12	0.12	0.12	0.12	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	-	-
Chloride (Cl^-)	mg/L	58	58	59	59	59	59	62	65	59	59	60	60	61	61	66	66	60	60	60	60	61	61	66	66	60	60	61	61	62	62	67	67	250	250
Fluoride (F^-)	mg/L	0.20	0.21	0.21	0.21	0.21	0.21	0.22	0.23	0.21	0.22	0.23	0.23	0.23	0.24	0.25	0.25	0.23	0.23	0.23	0.23	0.24	0.24	0.25	0.25	0.23	0.23	0.23	0.23	0.24	0.24	0.25	0.25	2	2
Sulphate (SO_4^{2-})	mg/L	59	59	59	59	60	59	63	65	57	57	58	58	59	60	64	65	57	58	58	58	59	60	64	65	58	58	59	59	60	60	65	66	500	500
Calcium (Ca)	mg/L	60	60	62	65	65	67	70	72	68	74	82	85	84	86	92	94	85	85	86	86	87	88	94	95	85	86	87	87	88	88	95	96	-	-
Magnesium (Mg)	mg/L	41	41	41	41	41	41	43	45	41	41	41	41	41	42	45	45	41	41	41	41	42	42	45	45	41	41	41	41	42	42	45	45	-	-
Potassium (K)	mg/L	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	-	-
Sodium (Na)	mg/L	36	37	37	37	37	37	39	40	37	37	37	37	38	38	40	41	37	37	37	37	38	38	41	41	37	37	37	37	38	38	41	41	-	200
Nutrients																																			
Ammonia	mg/L N	0.09	0.09	0.09	0.10	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.07	0.08	0.10	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	-	-
Nitrate	mg/L N	0.19	0.19	0.19	0.22	0.21	0.22	0.23	0.23	0.09	0.09	0.10	0.10	0.11	0.11	0.16	0.19	0.09	0.09	0.09	0.09	0.10	0.10	0.11	0.11	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.10	10	10
Nitrite	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.005	1	1
Phosphorus	mg/L	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.10	-	-
Dissolved Metals																																			
Aluminum (Al)	mg/L	0.0015	0.0015	0.0017	0.0018	0.0020	0.0025	0.0026	0.0026	0.0026	0.0034	0.0050	0.0055	0.0052	0.0056	0.0059	0.0062	0.0055	0.0055	0.0056	0.0056	0.0057	0.0057	0.0062	0.0062	0.0029	0.0029	0.0029	0.0029	0.0030	0.0030	0.0036	0.0058	0.2	0.2
Antimony (Sb)	mg/L	0.00009	0.00009	0.00009	0.00010	0.00009	0.00010	0.00010	0.00010	0.00008	0.00008	0.00009	0.00009	0.00009	0.00009	0.00010	0.00010	0.00008	0.00008	0.00008	0.00009	0.00009	0.00009	0.00009	0.00009	0.00007	0.00007	0.00007	0.00007	0.00007	0.00008	0.00008	0.00009	-	0.006
Arsenic (As)	mg/L	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0015	0.0015	0.0014	0.0015	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0017	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0017	0.0017	0.025	0.010
Barium (Ba)	mg/L	0.056	0.056	0.057	0.059	0.059	0.061	0.063	0.065	0.062	0.066	0.073	0.074	0.074	0.075	0.080	0.082	0.074	0.074	0.075	0.075	0.076	0.076	0.082	0.082	0.074	0.074	0.075	0.075	0.076	0.076	0.082	0.082	-	1
Boron (B)	mg/L	0.021	0.021	0.021	0.021	0.021	0.021	0.022	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	-	5
Cadmium (Cd)	mg/L	0.0000055	0.0000055	0.0000057	0.0000058	0.0000059	0.0000062	0.0000064	0.0000067	0.0000063	0.0000068	0.0000077	0.0000080	0.0000079	0.0000081	0.0000087	0.0000090	0.0000080	0.0000080	0.0000081	0.0000082	0.0000082	0.0000082	0.0000089	0.0000090	0.0000055	0.0000055	0.0000056	0.0000056	0.0000058	0.0000058	0.0000064	0.0000085	-	0.005000
Chromium (Cr)	mg/L	0.00011	0.00011	0.00013	0.00013	0.00015	0.00018	0.00020	0.00020	0.00020	0.00025	0.00037	0.00040	0.00038	0.00041	0.00043	0.00046	0.00040	0.00040	0.00041	0.00041	0.00042	0.00042	0.00046	0.00046	0.00013	0.00013	0.00013	0.00013	0.00014	0.00014	0.00021	0.00042	-	0.050
Cobalt (Co)	mg/L	0.00007	0.00008	0.00008	0.00009	0.00009	0.00011	0.00011	0.00011	0.00011	0.00014	0.00018	0.00019	0.00019	0.00020	0.00021	0.00022	0.00019	0.00019	0.00020	0.00020	0.00020	0.00020	0.00022	0.00022	0.00015	0.00015	0.00015	0.00015	0.00015	0.00016	0.00017	0.00021	-	-
Copper (Cu)	mg/L	0.0013	0.0013	0.0013	0.0014	0.0015	0.0017	0.0017	0.0017	0.0017	0.0020	0.0026	0.0028	0.0027	0.0028	0.0030	0.0031	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0031	0.0031	0.0022	0.0022	0.0022	0.0022	0.0023	0.0023	0.0024	0.0030	0.5	1.0
Iron (Fe)	mg/L	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.05	0.05	0.05	0.06	0.06	0.06	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	-	0.3
Lead (Pb)	mg/L	0.000031	0.000031	0.000034	0.000034	0.000036	0.000040	0.000041	0.000042	0.000041	0.000047	0.000059	0.000062	0.000061	0.000064	0.000068	0.000070	0.000062	0.000062	0.000063	0.000064	0.000064	0.000064	0.000070	0.000071	0.000027	0.000027	0.000027	0.000027	0.000029	0.000028	0.000037	0.000064	0.05	0.01
Lithium (Li)	mg/L	0.0058	0.0058	0.0058	0.0058	0.0059	0.0058	0.0062	0.0064	0.0058	0.0058	0.0058	0.0058	0.0059	0.0060	0.0064	0.0064	0.0058	0.0058	0.0058	0.0059	0.0059	0.0060	0.0064	0.0064	0.0058	0.0058	0.0059	0.0059	0.0060	0.0060	0.0064	0.0064	-	-
Manganese (Mn)	mg/L	0.019	0.019	0.022	0.024	0.023	0.025	0.026	0.027	0.027	0.030	0.038	0.040	0.039	0.041	0.043	0.044	0.039	0.039	0.040	0.041	0.041	0.042	0.044	0.044	0.039	0.039	0.040	0.041	0.041	0.042	0.043	0.044	-	0.05
Molybdenum (Mo)	mg/L	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.25	-
Nickel (Ni)	mg/L	0.0008	0.0008	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0012	0.0014	0.0015	0.0014	0.0015	0.0016	0.0016	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	0.0013	0.0016	-	-
Selenium (Se)	mg/L	0.00017	0.00017	0.00017	0.00018	0.00019	0.00020	0.00021	0.00021	0.00020	0.00023	0.00028	0.00030	0.00029	0.00030	0.00032	0.00034	0.00030	0.00030	0.00030	0.00031	0.00031	0.00031	0.00034	0.00035	0.00029	0.00030	0.00030	0.00031	0.00031	0.00032	0.00034	0.00036	0.01	0.05
Silicon (Si)		4.6	4.7	4.9	5.1	5.3	5.8	5.9	5.9	5.9	6.7	8.4	8.9	8.6	9.0	9.3	9.6	8.9	8.9	9.0	9.1	9.1	9.2	9.6	9.7	8.9	9.0	9.1	9.1	9.2	9.2	9.7	9.7	-	-
Silver (Ag)	mg/L	0.0000051	0.0000051	0.0000051	0.0000052	0.0000052	0.0000052	0.0000054	0.0000056	0.0000052	0.0000053	0.0000055	0.0000055	0.0000055	0.0000056	0.0000060	0.0000060	0.0000055	0.0000055	0.0000055	0.0000055	0.0000056	0.0000056	0.0000060	0.0000060	0.0000054	0.0000054	0.0000054	0.0000054	0.0000055	0.0000056	0.0000059	0.0000060	-	-
Strontium (Sr)	mg/L	0.38	0.38	0.39	0.39	0.39	0.39	0.41	0.42	0.39	0.39	0.39	0.40	0.40	0.40	0.43	0.43	0.39	0.39	0.40	0.40	0.40	0.41	0.43	0.44	0.40	0.40	0.40	0.40	0.41	0.41	0.44	0.44	-	-
Thallium (Tl)	mg/L	0.0000052	0.0000053	0.0000054	0.0000055	0.0000055	0.0000057	0.0000059	0.0000061	0.0000057	0.0000060	0.0000066	0.0000067	0.0000067	0.0000068	0.0000073	0.0000074	0.0000067	0.0000067	0.0000068	0.0000069	0.0000069	0.0000070	0.0000075	0.0000076	0.0000055	0.0000056	0.0000056	0.0000057	0.0000057	0.0000058	0.0000062	0.0000073	-	-
Tin (Sn)		0.000052	0.000052	0.000053	0.000054	0.000055	0.000056	0.000058	0.000060	0.000056	0.000059	0.000063	0.000065	0.000064	0.000065	0.000070	0.000071	0.000064	0.000064	0.000065	0.000065	0.000066	0.000066	0.000071	0.000071	0.000054	0.000054	0.000055	0.000055	0.000056	0.000057	0.000060	0.000070	-	-
Uranium (U)	mg/L	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	0.0012	0.0012	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0015	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0015	0.0015	-	0.02
Vanadium (V)	mg/L	0.0022	0.0022	0.0022	0.0023	0.0023	0.0023	0.0024	0.0025	0.0023	0.0025	0.0028	0.0029	0.0028	0.0029	0.0030	0.0031	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0031	0.0031	0.0026	0.0026	0.0026	0.0026	0.0027	0.0027	0.0028	0.0031	-	-
Zinc (Zn)	mg/L	0.0028	0.0028	0.0028	0.0031	0.0030	0.0032	0.0032	0.0032	0.0017	0.0017	0.0017	0.0018	0.0019	0.0020	0.0025	0.0029	0.0017	0.0017	0.0017	0.0017	0.0017	0.0018	0.0019	0.0019	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0018	0.0019	5	5

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-5 Ajax_LOM_WQM_Base Case Appendix Tables_DW GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUE SELECTED) - RAW DRINKING WATER.
3. HEALTH CANADA (HC) - GUIDELINES FOR CANADIAN DRINKING WATER QUALITY.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR RAW DRINKING WATER.
5. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS THE HC GUIDELINE FOR CANADIAN DRINKING WATER QUALITY.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.

TABLE C1-6

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
JACKO LAKE - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO RECREATION AND AESTHETIC WATER QUALITY GUIDELINES

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		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - REC &AES
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	296	296	297	302	300	303	304	304	296	296	299	302	301	304	304	304	296	296	299	728	301	304	304	304	296	296	299	302	301	304	304	304	-
Hardness - Dissolved	mg/L $CaCO_3$	317	317	322	329	330	336	350	363	337	352	374	380	380	384	413	418	378	379	382	384	388	391	419	421	381	382	386	386	392	393	423	424	-
Bromide (Br^-)	mg/L	0.11	0.12	0.12	0.12	0.12	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.13	-
Chloride (Cl^-)	mg/L	58	58	59	59	59	59	62	65	59	59	60	60	61	61	66	66	60	60	60	60	61	61	66	66	60	60	61	61	62	62	67	67	-
Fluoride (F^-)	mg/L	0.20	0.21	0.21	0.21	0.21	0.21	0.22	0.23	0.21	0.22	0.23	0.23	0.23	0.24	0.25	0.25	0.23	0.23	0.23	0.23	0.24	0.24	0.25	0.25	0.23	0.23	0.23	0.23	0.24	0.24	0.25	0.25	-
Sulphate (SO_4^{2-})	mg/L	59	59	59	59	60	59	63	65	57	57	58	58	59	60	64	65	57	58	58	58	59	60	64	65	58	58	59	59	60	60	65	66	-
Calcium (Ca)	mg/L	60	60	62	65	65	67	70	72	68	74	82	85	84	86	92	94	85	85	86	86	87	88	94	95	85	86	87	87	88	88	95	96	-
Magnesium (Mg)	mg/L	41	41	41	41	41	41	43	45	41	41	41	41	41	42	45	45	41	41	41	41	42	42	45	45	41	41	41	41	42	42	45	45	-
Potassium (K)	mg/L	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	12	12	12	12	12	12	13	13	-
Sodium (Na)	mg/L	36	37	37	37	37	37	39	40	37	37	37	37	38	38	40	41	37	37	37	37	38	38	41	41	37	37	37	37	38	38	41	41	-
Nutrients																																	
Ammonia	mg/L N	0.093	0.093	0.094	0.105	0.101	0.106	0.107	0.108	0.058	0.059	0.059	0.062	0.065	0.066	0.085	0.098	0.058	0.058	0.058	0.058	0.060	0.061	0.065	0.065	0.056	0.056	0.057	0.057	0.058	0.060	0.064	0.065	-
Nitrate	mg/L N	0.188	0.188	0.190	0.222	0.211	0.224	0.225	0.225	0.093	0.093	0.097	0.102	0.110	0.110	0.163	0.192	0.093	0.093	0.094	0.095	0.097	0.099	0.106	0.106	0.082	0.082	0.082	0.083	0.085	0.088	0.092	0.104	10
Nitrite	mg/L	0.0045	0.0046	0.0046	0.0048	0.0047	0.0048	0.0050	0.0052	0.0041	0.0041	0.0042	0.0044	0.0044	0.0045	0.0047	0.0050	0.0042	0.0043	0.0043	0.0043	0.0044	0.0045	0.0048	0.0049	0.0040	0.0040	0.0041	0.0041	0.0042	0.0043	0.0046	0.0048	1
Phosphorus	mg/L	0.089	0.090	0.090	0.090	0.091	0.090	0.094	0.096	0.090	0.090	0.091	0.091	0.092	0.092	0.096	0.096	0.090	0.090	0.091	0.091	0.092	0.092	0.096	0.096	0.089	0.089	0.089	0.090	0.090	0.092	0.095	0.096	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0015	0.0015	0.0017	0.0018	0.0020	0.0025	0.0026	0.0026	0.0026	0.0034	0.0050	0.0055	0.0052	0.0056	0.0059	0.0062	0.0055	0.0055	0.0056	0.0056	0.0057	0.0057	0.0062	0.0062	0.0029	0.0029	0.0029	0.0029	0.0030	0.0030	0.0036	0.0058	0.2
Antimony (Sb)	mg/L	0.00009	0.00009	0.00009	0.00010	0.00009	0.00010	0.00010	0.00010	0.00008	0.00008	0.00009	0.00009	0.00009	0.00009	0.00010	0.00010	0.00008	0.00008	0.00008	0.00009	0.00009	0.00009	0.00009	0.00009	0.00007	0.00007	0.00007	0.00007	0.00007	0.00008	0.00008	0.00009	-
Arsenic (As)	mg/L	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0015	0.0015	0.0014	0.0015	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0017	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0017	0.0017	-
Barium (Ba)	mg/L	0.056	0.056	0.057	0.059	0.059	0.061	0.063	0.065	0.062	0.066	0.073	0.074	0.074	0.075	0.080	0.082	0.074	0.074	0.075	0.075	0.076	0.076	0.082	0.082	0.074	0.074	0.075	0.075	0.076	0.076	0.082	0.082	-
Boron (B)	mg/L	0.021	0.021	0.021	0.021	0.021	0.021	0.022	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	0.021	0.021	0.021	0.021	0.021	0.021	0.023	0.023	-
Cadmium (Cd)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000006	0.000007	0.000008	0.000008	0.000008	0.000008	0.000009	0.000009	0.000008	0.000008	0.000008	0.000008	0.000008	0.000008	0.000009	0.000009	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000009	-
Chromium (Cr)	mg/L	0.00011	0.00011	0.00013	0.00013	0.00015	0.00018	0.00020	0.00020	0.00020	0.00025	0.00037	0.00040	0.00038	0.00041	0.00043	0.00046	0.00040	0.00040	0.00041	0.00041	0.00042	0.00042	0.00046	0.00046	0.00013	0.00013	0.00013	0.00013	0.00014	0.00014	0.00021	0.00042	-
Cobalt (Co)	mg/L	0.00007	0.00008	0.00008	0.00009	0.00009	0.00011	0.00011	0.00011	0.00011	0.00014	0.00018	0.00019	0.00019	0.00020	0.00021	0.00022	0.00019	0.00019	0.00020	0.00020	0.00020	0.00020	0.00022	0.00022	0.00015	0.00015	0.00015	0.00015	0.00015	0.00016	0.00017	0.00021	-
Copper (Cu)	mg/L	0.0013	0.0013	0.0013	0.0014	0.0015	0.0017	0.0017	0.0017	0.0017	0.0020	0.0026	0.0028	0.0027	0.0028	0.0030	0.0031	0.0028	0.0028	0.0028	0.0028	0.0028	0.0028	0.0031	0.0031	0.0022	0.0022	0.0022	0.0022	0.0023	0.0023	0.0024	0.0030	1
Iron (Fe)	mg/L	0.015	0.015	0.017	0.020	0.021	0.025	0.026	0.026	0.027	0.035	0.050	0.054	0.052	0.056	0.058	0.060	0.054	0.055	0.055	0.056	0.056	0.057	0.060	0.060	0.049	0.049	0.050	0.050	0.051	0.052	0.054	0.059	-
Lead (Pb)	mg/L	0.000031	0.000031	0.000034	0.000034	0.000036	0.000040	0.000041	0.000042	0.000041	0.000047	0.000059	0.000062	0.000061	0.000064	0.000068	0.000070	0.000062	0.000062	0.000063	0.000064	0.000064	0.000064	0.000070	0.000071	0.000027	0.000027	0.000027	0.000027	0.000029	0.000028	0.000037	0.000064	0.05
Lithium (Li)	mg/L	0.0058	0.0058	0.0058	0.0058	0.0059	0.0058	0.0062	0.0064	0.0058	0.0058	0.0058	0.0058	0.0059	0.0060	0.0064	0.0064	0.0058	0.0058	0.0058	0.0059	0.0059	0.0060	0.0064	0.0064	0.0058	0.0058	0.0059	0.0059	0.0060	0.0060	0.0064	0.0064	-
Manganese (Mn)	mg/L	0.019	0.019	0.022	0.024	0.023	0.025	0.026	0.027	0.027	0.030	0.038	0.040	0.039	0.041	0.043	0.044	0.039	0.039	0.040	0.041	0.041	0.042	0.044	0.044	0.039	0.039	0.040	0.041	0.041	0.042	0.043	0.044	-
Molybdenum (Mo)	mg/L	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.004	-
Nickel (Ni)	mg/L	0.0008	0.0008	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0012	0.0014	0.0015	0.0014	0.0015	0.0016	0.0016	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	0.0013	0.0016	-
Selenium (Se)	mg/L	0.00017	0.00017	0.00017	0.00018	0.00019	0.00020	0.00021	0.00021	0.00020	0.00023	0.00028	0.00030	0.00029	0.00030	0.00032	0.00034	0.00030	0.00030	0.00030	0.00031	0.00031	0.00031	0.00034	0.00035	0.00029	0.00030	0.00030	0.00031	0.00031	0.00032	0.00034	0.00036	-
Silicon (Si)		4.6	4.7	4.9	5.1	5.3	5.8	5.9	5.9	5.9	6.7	8.4	8.9	8.6	9.0	9.3	9.6	8.9	8.9	9.0	9.1	9.1	9.2	9.6	9.7	8.9	9.0	9.1	9.1	9.2	9.2	9.7	9.7	-
Silver (Ag)	mg/L	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000006	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000005	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	-
Strontium (Sr)	mg/L	0.38	0.38	0.39	0.39	0.39	0.39	0.41	0.42	0.39	0.39	0.39	0.40	0.40	0.40	0.43	0.43	0.39	0.39	0.40	0.40	0.40	0.41	0.43	0.44	0.40	0.40	0.40	0.40	0.41	0.41	0.44	0.44	-
Thallium (Tl)	mg/L	0.000005	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000008	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	-
Tin (Sn)		0.00005	0.00005	0.00005	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00007	0.00007	0.00007	0.00006	0.00006	0.00007	0.00007	0.00007	0.00007	0.00007	0.00007	0.00005	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00007	-
Uranium (U)	mg/L	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	0.0012	0.0012	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0015	0.0013	0.0013	0.0013	0.0013	0.0013	0.0014	0.0015	0.0015	-
Vanadium (V)	mg/L	0.0022	0.0022	0.0022	0.0023	0.0023	0.0023	0.0024	0.0025	0.0023	0.0025	0.0028	0.0029	0.0028	0.0029	0.0030	0.0031	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0031	0.0031	0.0026	0.0026	0.0026	0.0026	0.0027	0.0027	0.0028	0.0031	-
Zinc (Zn)	mg/L	0.0028	0.0028	0.0028	0.0031	0.0030	0.0032	0.0032	0.0032	0.0017	0.0017	0.0017	0.0018	0.0019	0.0020	0.0025	0.0029	0.0017	0.0017	0.0017	0.0017	0.0017	0.0018	0.0019	0.0019	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0018	0.0019	5

\\van11\prj_file\1\011\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-6 Ajax_LOM_WQM_Base Case Appendix Tables_Rec&Aes GL.xlsx]TC1 JL BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - RECREATION AND AESTHETIC (REC & AES) USES.

APPENDIX C2

PCDP

(Tables C2-1 to C2-6)

TABLE C2-1

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PCDP - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO PRIMARY EFFECTS ASSESSMENT WATER QUALITY GUIDELINES

Print Jul/21/15 8:25:58

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG-30 D	BCWQG-MAX	BCWQG-WILDLIFE	WQB/SBEB
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX				
Conventional Parameters and Major Ions																																			
Baseline Hardness	mg/L $CaCO_3$	360	360	397	508	486	554	564	564	360	360	471	531	496	554	564	564	360	360	471	728	496	554	564	564	360	360	471	531	496	554	564	564				
Hardness - Dissolved	mg/L $CaCO_3$	364	370	404	448	444	469	563	570	389	412	443	484	488	507	597	637	427	429	484	502	530	545	725	736	429	430	480	503	518	546	649	655				
Bromide (Br^-)	mg/L	0.16	0.19	0.20	0.22	0.22	0.23	0.24	0.26	0.15	0.16	0.18	0.20	0.20	0.22	0.24	0.26	0.20	0.20	0.22	0.24	0.24	0.26	0.32	0.33	0.20	0.20	0.23	0.24	0.24	0.25	0.29	0.29				
Chloride (Cl^-)	mg/L	60	60	62	63	63	63	65	69	59	59	62	63	63	64	67	70	60	61	62	64	64	64	66	66	58	58	62	63	63	63	65	65	150	600	600	388
Fluoride (F^-)	mg/L	0.24	0.24	0.26	0.27	0.27	0.27	0.28	0.28	0.25	0.26	0.27	0.28	0.28	0.29	0.30	0.31	0.26	0.26	0.27	0.28	0.28	0.28	0.29	0.29	0.24	0.24	0.26	0.28	0.27	0.28	0.29	0.29	1.57		1	
Sulphate (SO_4^{2-})	mg/L	71	72	80	99	100	110	152	165	67	69	80	99	104	116	166	170	76	77	103	115	142	141	305	319	77	77	103	116	138	152	263	269	429			429 / 730
Calcium (Ca)	mg/L	68	69	76	81	82	85	96	99	78	88	94	98	98	102	109	117	92	92	99	101	104	105	126	127	92	93	99	102	103	106	117	119				
Magnesium (Mg)	mg/L	47	47	52	58	59	62	77	81	45	46	51	58	59	64	81	84	48	48	58	61	66	69	100	103	48	48	57	61	64	68	87	88				
Potassium (K)	mg/L	13	13	14	15	15	15	16	16	13	13	14	15	15	15	17	17	13	13	14	15	16	16	20	20	13	13	15	15	15	16	17	17				
Sodium (Na)	mg/L	41	41	44	49	48	51	57	59	40	41	44	48	48	52	59	61	42	42	48	51	53	54	70	71	42	42	48	50	51	54	62	63				
Nutrients																																			
Ammonia	mg/L N	0.070	0.075	0.090	0.096	0.093	0.098	0.106	0.106	0.049	0.055	0.061	0.065	0.065	0.067	0.079	0.091	0.053	0.054	0.057	0.059	0.067	0.069	0.116	0.119	0.048	0.049	0.055	0.058	0.064	0.068	0.101	0.142	0.66			
Nitrate	mg/L N	0.165	0.189	0.197	0.203	0.208	0.221	0.231	0.232	0.105	0.111	0.124	0.151	0.150	0.171	0.191	0.226	0.102	0.105	0.124	0.131	0.138	0.144	0.180	0.263	0.084	0.087	0.093	0.101	0.113	0.123	0.173	0.220	3.0	32.800		
Nitrite	mg/L	0.0054	0.0059	0.0063	0.0064	0.0066	0.0067	0.0075	0.0086	0.0051	0.0054	0.0059	0.0065	0.0067	0.0073	0.0091	0.0099	0.0053	0.0055	0.0064	0.0072	0.0075	0.0077	0.0102	0.0135	0.0050	0.0051	0.0057	0.0068	0.0073	0.0076	0.0127	0.0168	0.2	0.60		
Phosphorus	mg/L	0.117	0.117	0.121	0.144	0.141	0.160	0.162	0.162	0.108	0.109	0.119	0.134	0.134	0.150	0.162	0.162	0.115	0.116	0.124	0.134	0.135	0.145	0.155	0.155	0.109	0.109	0.117	0.130	0.127	0.138	0.140	0.145				
Dissolved Metals																																			
Aluminum (Al)	mg/L	0.0026	0.0029	0.0040	0.0097	0.0098	0.0152	0.0169	0.0175	0.0043	0.0058	0.0069	0.0118	0.0125	0.0182	0.0200	0.0205	0.0058	0.0058	0.0070	0.0121	0.0128	0.0188	0.0203	0.0203	0.0023	0.0023	0.0028	0.0029	0.0029	0.0029	0.0034	0.0191	0.050	0.100	5	
Antimony (Sb)	mg/L	0.00011	0.00011	0.00013	0.00015	0.00014	0.00016	0.00017	0.00017	0.00010	0.00012	0.00014	0.00021	0.00022	0.00030	0.00035	0.00043	0.00012	0.00013	0.00018	0.00019	0.00021	0.00023	0.00041	0.00047	0.00011	0.00012	0.00016	0.00020	0.00022	0.00025	0.00043	0.00058	0.009			
Arsenic (As)	mg/L	0.0017	0.0017	0.0018	0.0021	0.0020	0.0022	0.0023	0.0023	0.0017	0.0017	0.0019	0.0023	0.0022	0.0024	0.0026	0.0026	0.0019	0.0019	0.0022	0.0024	0.0024	0.0024	0.0034	0.0034	0.0019	0.0019	0.0023	0.0024	0.0024	0.0025	0.0032	0.0036		0.0050	0.0250	0.0320
Barium (Ba)	mg/L	0.059	0.060	0.064	0.065	0.065	0.066	0.069	0.070	0.067	0.071	0.074	0.077	0.076	0.079	0.080	0.081	0.076	0.077	0.078	0.080	0.081	0.082	0.090	0.090	0.076	0.076	0.078	0.079	0.079	0.080	0.088	0.088	1.0			
Boron (B)	mg/L	0.023	0.025	0.026	0.028	0.027	0.029	0.029	0.029	0.023	0.023	0.025	0.027	0.027	0.027	0.028	0.029	0.030	0.027	0.027	0.030	0.031	0.032	0.034	0.042	0.045	0.027	0.027	0.030	0.031	0.032	0.033	0.036	0.038		1.2	5.0	
Cadmium (Cd)	mg/L	0.000006	0.000006	0.000007	0.000009	0.000009	0.000011	0.000012	0.000013	0.000007	0.000008	0.000009	0.000011	0.000011	0.000014	0.000015	0.000015	0.000009	0.000009	0.000010	0.000012	0.000012	0.000014	0.000014	0.000015	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000008	0.000014	0.00046	0.00220		
Chromium (Cr)	mg/L	0.00023	0.00024	0.00031	0.00066	0.00067	0.00099	0.00111	0.00115	0.00034	0.00044	0.00052	0.00083	0.00086	0.00121	0.00133	0.00137	0.00047	0.00051	0.00053	0.00084	0.00089	0.00125	0.00134	0.00134	0.00016	0.00016	0.00017	0.00018	0.00019	0.00021	0.00025	0.00126	0.001/0.0089			
Cobalt (Co)	mg/L	0.00009	0.00010	0.00014	0.00021	0.00020	0.00026	0.00030	0.00030	0.00014	0.00019	0.00022	0.00028	0.00028	0.00035	0.00038	0.00038	0.00024	0.00025	0.00027	0.00031	0.00032	0.00037	0.00040	0.00040	0.00017	0.00018	0.00019	0.00020	0.00020	0.00021	0.00024	0.00039	0.004	0.110		
Copper (Cu)	mg/L	0.0020	0.0020	0.0027	0.0037	0.0036	0.0046	0.0049	0.0050	0.0026	0.0033	0.0036	0.0046	0.0047	0.0057	0.0059	0.0059	0.0035	0.0035	0.0042	0.0048	0.0049	0.0059	0.0060	0.0060	0.0027	0.0027	0.0029	0.0030	0.0030	0.0031	0.0035	0.0059	0.010	0.026	0.3	0.0256
Iron (Fe)	mg/L	0.018	0.019	0.030	0.045	0.044	0.058	0.065	0.066	0.034	0.047	0.057	0.070	0.069	0.084	0.089	0.090	0.050	0.051	0.065	0.079	0.076	0.089	0.093	0.093	0.042	0.042	0.055	0.055	0.055	0.057	0.065	0.094		0.350		
Lead (Pb)	mg/L	0.000040	0.000042	0.000050	0.000091	0.000092	0.000129	0.000143	0.000147	0.000053	0.000065	0.000074	0.000110	0.000114	0.000154	0.000167	0.000171	0.000068	0.000068	0.000075	0.000111	0.000116	0.000157	0.000168	0.000168	0.000028	0.000028	0.000030	0.000031	0.000032	0.000032	0.000038	0.000159	0.016	0.330	0.10	
Lithium (Li)	mg/L	0.0064	0.0064	0.0068	0.0072	0.0070	0.0073	0.0074	0.0076	0.0062	0.0063	0.0067	0.0070	0.0070	0.0073	0.0076	0.0077	0.0064	0.0064	0.0070	0.0073	0.0073	0.0074	0.0083	0.0086	0.0064	0.0064	0.0069	0.0072	0.0071	0.0074	0.0076	0.0078				
Manganese (Mn)	mg/L	0.021	0.023	0.026	0.064	0.061	0.093	0.098	0.099	0.028	0.035	0.040	0.067	0.067	0.089	0.107	0.110	0.042	0.043	0.064	0.078	0.082	0.091	0.169	0.169	0.040	0.040	0.062	0.078	0.079	0.091	0.157	0.161	1.90	3.80		
Molybdenum (Mo)	mg/L	0.004	0.005	0.005	0.006	0.006	0.007	0.008	0.010	0.004	0.005	0.005	0.007	0.007	0.008	0.011	0.014	0.007	0.007	0.011	0.011	0.015	0.017	0.036	0.045	0.007	0.008	0.012	0.014	0.016	0.020	0.032	0.039	1.00	2.00	0.05	0.180
Nickel (Ni)	mg/L	0.0013	0.0013	0.0016	0.0021	0.0021	0.0025	0.0027	0.0027	0.0016	0.0018	0.0020	0.0026	0.0025	0.0029	0.0031	0.0031	0.0020	0.0020	0.0023	0.0028	0.0027	0.0031	0.0031	0.0031	0.0016	0.0017	0.0018	0.0020	0.0020	0.0021	0.0025	0.0031		0.1500		
Selenium (Se)	mg/L	0.00020	0.00020	0.00024	0.00029	0.00040	0.00042	0.00111	0.00112	0.00024	0.00032	0.00039	0.00053	0.00064	0.00067	0.00144	0.00159	0.00035	0.00038	0.00047	0.00057	0.00071	0.00073	0.00164	0.00183	0.00036	0.00038	0.00046	0.00059	0.00072	0.00081	0.00148	0.00159	0.0020		0.0020	0.0025 / 0.005
Silicon (Si)		6.2	6.3	7.4	8.3	8.3	9.0	9.6	10.3	8.0	9.5	10.3	10.9	10.8	11.2	11.9	12.3	9.9	10.0	10.2	10.9	10.8	11.3	12.2	12.3	9.4	9.4	10.1	10.9	10.7	11.3	11.6	11.7				
Silver (Ag)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000006	0.000006	0.000006	0.000007	0.000006	0.000007	0.000007	0.000007	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.001500			
Strontium (Sr)	mg/L	0.45	0.45	0.50	0.56	0.56	0.60	0.73	0.73	0.44	0.45	0.50	0.57	0.57	0.62	0.74	0.80	0.47	0.47	0.55	0.60	0.63	0.65	0.94	0.97	0.47	0.47	0.55	0.61	0.62	0.68	0.83	0.85				
Thallium (Tl)	mg/L	0.000006	0.000006	0.000006	0.000008	0.000008	0.000009	0.000010	0.000010	0.000006	0.000007	0.000008	0.000009	0.000009	0.000011	0.000012	0.000012	0.000007	0.000007	0.000009	0.000011	0.000010	0.000011	0.000012	0.000012	0.000006	0.000006	0.000007	0.000007	0.000007	0.000007	0.000009	0.000011	0.0008			
Tin (Sn)		0.00006	0.00006	0.00006	0.00008	0.00008	0.00009	0.00010	0.00010	0.00006	0.00007	0.00007	0.00008	0.00009	0.00010	0.00011	0.00011	0.00007	0.00007	0.00007	0.00009	0.00009	0.00010	0.00011	0.00011	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00010				
Uranium (U)	mg/L	0.0013	0.0014	0.0014	0.0015	0.0015	0.0016	0.0019	0.0019	0.0014	0.0014	0.0015	0.0016	0.0017	0.0017	0.0021	0.0022	0.0014	0.0014	0.0016	0.0017	0.0018	0.0019	0.0028	0.0029	0.0014	0.0014	0.0016	0.0017	0.0018	0.0019	0.0025	0.0026	0.0085			
Vanadium (V)	mg/L	0.0024	0.0024	0.0028	0.0033	0.0032	0.0035	0.0037	0.0037	0.0027	0.0030	0.0033	0.0040	0.0038	0.0042	0.0043	0.0044	0.0031	0.0031	0.0036	0.0043	0.0042	0.0044	0.0056	0.0057	0.0028	0.0028	0.0032	0.0033	0.0035	0.0038	0.0050	0.0054				
Zinc (Zn)	mg/L	0.0024	0.0025	0.0027	0.0028	0.0028	0.0030	0.0032	0.0032	0.0017	0.0017	0.0018	0.0019	0.0019	0.0020	0.0024	0.0028	0.0017	0.0017	0.0019	0.0019	0.0020	0.0020	0.0025	0.0027	0.0017	0.0017	0.0018	0.0018	0.0019	0.0021	0.0023	0.0024	0.210	0.236		

\\ivan11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-1 Ajax_LOM_WQM_Base Case Summary Tables.xlsx]TC1 JL BC SUMM STATS

NOTES:
1. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - 30 DAY AVERAGE (BCWQG-30 D) - FRESHWATER AQUATIC LIFE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
3. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - WILDLIFE (WILDLIFE).
4. WATER QUALITY BENCHMARKS (WQB) AND SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
5. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS AN AQUATIC LIFE GUIDELINE.
6. GREEN HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG-WILDLIFE.
7. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS A WATER QUALITY BENCHMARK (WQB) OR SCIENCE BASED ENVIRONMENTAL BENCHARK (WQB).
8. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
9. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELCIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
10. SULPHATE SBEB IS 429 mg/L FOR WATER HARDNESS UP TO 800 mg/L CaCO3 AND IS INTENDED FOR LAKES AND CREEKS WHERE EARLY LIFESTAGES OF TROUT ARE PRESENT; SBEB OF 730 mg/L FOR HARDNESS UP TO 1377 mg/L CaCO3 FOR CREEKS WHERE FISH ARE ABSENT OR PERIODS OF THE YEAR WHEN EARLY LIFESTAGES OF TROUT ARE ABSENT.
11. SULPHATE GUIDELINE EXCEEDANCE HIGHLIGHTING IN THIS TABLE DOES NOT ACCOUNT FOR THE TIMING OF THE OCCURANCE OF THE PREDICTED CONCENTRATIONS; THEREFORE IT MAY NOT BE A TRUE EXCEEDANCE.
12. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
13. SELENIUM WQB IS 0.0025 mg/L FOR LENTIC SYSTEMS AND 0.005 mg/L FOR LOTIC SYSTEMS.

TABLE C2-2

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PCDP - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO CANADIAN ENVIRONMENTAL QUALITY GUIDELINES FOR THE PROTECTION OF AQUATIC LIFE (CEQG-PAL)

Print Jul/17/15 21:09:19

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								CEQG - PAL
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	
Conventional Parameters and Major Ions																																
Baseline Hardness	mg/L $CaCO_3$	360	360	397	508	486	554	564	564	360	360	471	531	496	554	564	564	360	360	471	728	496	554	564	564	360	360	471	531	496	554	564	564	-
Hardness - Dissolved	mg/L $CaCO_3$	364	370	404	448	444	469	563	570	389	412	443	484	488	507	597	637	427	429	484	502	530	545	725	736	429	430	480	503	518	546	649	655	-
Bromide (Br^-)	mg/L	0.16	0.19	0.20	0.22	0.22	0.23	0.24	0.26	0.15	0.16	0.18	0.20	0.20	0.22	0.24	0.26	0.20	0.20	0.22	0.24	0.24	0.26	0.32	0.33	0.20	0.20	0.23	0.24	0.24	0.25	0.29	0.29	1.5
Chloride (Cl^-)	mg/L	60	60	62	63	63	63	65	69	59	59	62	63	63	64	67	70	60	61	62	64	64	64	66	66	58	58	62	63	63	63	65	65	120
Fluoride (F^-)	mg/L	0.24	0.24	0.26	0.27	0.27	0.27	0.28	0.28	0.25	0.26	0.27	0.28	0.28	0.29	0.30	0.31	0.26	0.26	0.27	0.28	0.28	0.28	0.29	0.29	0.24	0.24	0.26	0.28	0.27	0.28	0.29	0.29	0.12
Sulphate (SO_4^{2-})	mg/L	71	72	80	99	100	110	152	165	67	69	80	99	104	116	166	170	76	77	103	115	142	141	305	319	77	77	103	116	138	152	263	269	-
Calcium (Ca)	mg/L	68	69	76	81	82	85	96	99	78	88	94	98	98	102	109	117	92	92	99	101	104	105	126	127	92	93	99	102	103	106	117	119	-
Magnesium (Mg)	mg/L	47	47	52	58	59	62	77	81	45	46	51	58	59	64	81	84	48	48	58	61	66	69	100	103	48	48	57	61	64	68	87	88	-
Potassium (K)	mg/L	13	13	14	15	15	15	16	16	13	13	14	15	15	15	17	17	13	13	14	15	16	16	20	20	13	13	15	15	15	16	17	17	-
Sodium (Na)	mg/L	41	41	44	49	48	51	57	59	40	41	44	48	48	52	59	61	42	42	48	51	53	54	70	71	42	42	48	50	51	54	62	63	-
Nutrients																																
Ammonia	mg/L N	0.070	0.075	0.090	0.096	0.093	0.098	0.106	0.106	0.049	0.055	0.061	0.065	0.065	0.067	0.079	0.091	0.053	0.054	0.057	0.059	0.067	0.069	0.116	0.119	0.048	0.049	0.055	0.058	0.064	0.068	0.101	0.142	0.65
Nitrate	mg/L N	0.165	0.189	0.197	0.203	0.208	0.221	0.231	0.232	0.105	0.111	0.124	0.151	0.150	0.171	0.191	0.226	0.102	0.105	0.124	0.131	0.138	0.144	0.180	0.263	0.084	0.087	0.093	0.101	0.113	0.123	0.173	0.220	3
Nitrite	mg/L	0.0054	0.0059	0.0063	0.0064	0.0066	0.0067	0.0075	0.0086	0.0051	0.0054	0.0059	0.0065	0.0067	0.0073	0.0091	0.0099	0.0053	0.0055	0.0064	0.0072	0.0075	0.0077	0.0102	0.0135	0.0050	0.0051	0.0057	0.0068	0.0073	0.0076	0.0127	0.0168	0.06
Phosphorus	mg/L	0.117	0.117	0.121	0.144	0.141	0.160	0.162	0.162	0.108	0.109	0.119	0.134	0.134	0.150	0.162	0.162	0.115	0.116	0.124	0.134	0.135	0.145	0.155	0.155	0.109	0.109	0.117	0.130	0.127	0.138	0.140	0.145	-
Dissolved Metals																																
Aluminum (Al)	mg/L	0.0026	0.0029	0.0040	0.0097	0.0098	0.0152	0.0169	0.0175	0.0043	0.0058	0.0069	0.0118	0.0125	0.0182	0.0200	0.0205	0.0058	0.0058	0.0070	0.0121	0.0128	0.0188	0.0203	0.0203	0.0023	0.0023	0.0028	0.0029	0.0029	0.0029	0.0034	0.0191	0.1
Antimony (Sb)	mg/L	0.00011	0.00011	0.00013	0.00015	0.00014	0.00016	0.00017	0.00017	0.00010	0.00012	0.00014	0.00021	0.00022	0.00030	0.00035	0.00043	0.00012	0.00013	0.00018	0.00019	0.00021	0.00023	0.00041	0.00047	0.00011	0.00012	0.00016	0.00020	0.00022	0.00025	0.00043	0.00058	-
Arsenic (As)	mg/L	0.0017	0.0017	0.0018	0.0021	0.0020	0.0022	0.0023	0.0023	0.0017	0.0017	0.0019	0.0023	0.0022	0.0024	0.0026	0.0026	0.0019	0.0019	0.0022	0.0024	0.0024	0.0024	0.0034	0.0034	0.0019	0.0019	0.0023	0.0024	0.0024	0.0025	0.0032	0.0036	0.005
Barium (Ba)	mg/L	0.059	0.060	0.064	0.065	0.065	0.066	0.069	0.070	0.067	0.071	0.074	0.077	0.076	0.079	0.080	0.081	0.076	0.077	0.078	0.080	0.081	0.082	0.090	0.090	0.076	0.076	0.078	0.079	0.079	0.080	0.088	0.088	-
Boron (B)	mg/L	0.023	0.025	0.026	0.028	0.027	0.029	0.029	0.029	0.023	0.023	0.025	0.027	0.027	0.028	0.029	0.030	0.027	0.027	0.030	0.031	0.032	0.034	0.042	0.045	0.027	0.027	0.030	0.031	0.032	0.033	0.036	0.038	-
Cadmium (Cd)	mg/L	0.000006	0.000006	0.000007	0.000009	0.000009	0.000011	0.000012	0.000013	0.000007	0.000008	0.000009	0.000011	0.000011	0.000014	0.000015	0.000015	0.000009	0.000009	0.000010	0.000012	0.000012	0.000014	0.000014	0.000015	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000008	0.000014	0.000036
Chromium (Cr)	mg/L	0.00023	0.00024	0.00031	0.00066	0.00067	0.00099	0.00111	0.00115	0.00034	0.00044	0.00052	0.00083	0.00086	0.00121	0.00133	0.00137	0.00047	0.00051	0.00053	0.00084	0.00089	0.00125	0.00134	0.00134	0.00016	0.00016	0.00017	0.00018	0.00019	0.00021	0.00025	0.00126	0.001/0.089
Cobalt (Co)	mg/L	0.00009	0.00010	0.00014	0.00021	0.00020	0.00026	0.00030	0.00030	0.00014	0.00019	0.00022	0.00028	0.00028	0.00035	0.00038	0.00038	0.00024	0.00025	0.00027	0.00031	0.00032	0.00037	0.00040	0.00040	0.00017	0.00018	0.00019	0.00020	0.00020	0.00021	0.00024	0.00039	-
Copper (Cu)	mg/L	0.0020	0.0020	0.0027	0.0037	0.0036	0.0046	0.0049	0.0050	0.0026	0.0033	0.0036	0.0046	0.0047	0.0057	0.0059	0.0059	0.0035	0.0035	0.0042	0.0048	0.0049	0.0059	0.0060	0.0060	0.0027	0.0027	0.0029	0.0030	0.0030	0.0031	0.0035	0.0059	0.004
Iron (Fe)	mg/L	0.018	0.019	0.030	0.045	0.044	0.058	0.065	0.066	0.034	0.047	0.057	0.070	0.069	0.084	0.089	0.090	0.050	0.051	0.065	0.079	0.076	0.089	0.093	0.093	0.042	0.042	0.055	0.055	0.055	0.057	0.065	0.094	0.3
Lead (Pb)	mg/L	0.000040	0.000042	0.000050	0.000091	0.000092	0.000129	0.000143	0.000147	0.000053	0.000065	0.000074	0.000110	0.000114	0.000154	0.000167	0.000171	0.000068	0.000068	0.000075	0.000111	0.000116	0.000157	0.000168	0.000168	0.000028	0.000028	0.000030	0.000031	0.000032	0.000032	0.000038	0.000159	0.001
Lithium (Li)	mg/L	0.0064	0.0064	0.0068	0.0072	0.0070	0.0073	0.0074	0.0076	0.0062	0.0063	0.0067	0.0070	0.0070	0.0073	0.0076	0.0077	0.0064	0.0064	0.0070	0.0073	0.0073	0.0074	0.0083	0.0086	0.0064	0.0064	0.0069	0.0072	0.0071	0.0074	0.0076	0.0078	-
Manganese (Mn)	mg/L	0.021	0.023	0.026	0.064	0.061	0.093	0.098	0.099	0.028	0.035	0.040	0.067	0.067	0.089	0.107	0.110	0.042	0.043	0.064	0.078	0.082	0.091	0.169	0.169	0.040	0.040	0.062	0.078	0.079	0.091	0.157	0.161	-
Molybdenum (Mo)	mg/L	0.004	0.005	0.005	0.006	0.006	0.007	0.008	0.010	0.004	0.005	0.005	0.007	0.007	0.008	0.011	0.014	0.007	0.007	0.011	0.011	0.015	0.017	0.036	0.045	0.007	0.008	0.012	0.014	0.016	0.020	0.032	0.039	0.073
Nickel (Ni)	mg/L	0.0013	0.0013	0.0016	0.0021	0.0021	0.0025	0.0027	0.0027	0.0016	0.0018	0.0020	0.0026	0.0025	0.0029	0.0031	0.0031	0.0020	0.0020	0.0023	0.0028	0.0027	0.0031	0.0031	0.0031	0.0016	0.0017	0.0018	0.0020	0.0020	0.0021	0.0025	0.0031	0.15
Selenium (Se)	mg/L	0.00020	0.00020	0.00024	0.00029	0.00040	0.00042	0.00111	0.00112	0.00024	0.00032	0.00039	0.00053	0.00064	0.00067	0.00144	0.00159	0.00035	0.00038	0.00047	0.00057	0.00071	0.00073	0.00164	0.00183	0.00036	0.00038	0.00046	0.00059	0.00072	0.00081	0.00148	0.00159	0.001
Silicon (Si)		6.2	6.3	7.4	8.3	8.3	9.0	9.6	10.3	8.0	9.5	10.3	10.9	10.8	11.2	11.9	12.3	9.9	10.0	10.2	10.9	10.8	11.3	12.2	12.3	9.4	9.4	10.1	10.9	10.7	11.3	11.6	11.7	-
Silver (Ag)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000006	0.000006	0.000006	0.000007	0.000006	0.000007	0.000007	0.000007	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.0001
Strontium (Sr)	mg/L	0.45	0.45	0.50	0.56	0.56	0.60	0.73	0.73	0.44	0.45	0.50	0.57	0.57	0.62	0.74	0.80	0.47	0.47	0.55	0.60	0.63	0.65	0.94	0.97	0.47	0.47	0.55	0.61	0.62	0.68	0.83	0.85	-
Thallium (Tl)	mg/L	0.000006	0.000006	0.000006	0.000008	0.000008	0.000009	0.000010	0.000010	0.000006	0.000007	0.000008	0.000009	0.000009	0.000011	0.000012	0.000012	0.000007	0.000007	0.000009	0.000011	0.000010	0.000011	0.000012	0.000012	0.000006	0.000006	0.000007	0.000007	0.000007	0.000007	0.000009	0.000011	0.0008
Tin (Sn)		0.00006	0.00006	0.00006	0.00008	0.00008	0.00009	0.00010	0.00010	0.00006	0.00007	0.00007	0.00008	0.00009	0.00010	0.00011	0.00011	0.00007	0.00007	0.00007	0.00009	0.00009	0.00010	0.00011	0.00011	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00010	-
Uranium (U)	mg/L	0.0013	0.0014	0.0014	0.0015	0.0015	0.0016	0.0019	0.0019	0.0014	0.0014	0.0015	0.0016	0.0017	0.0017	0.0021	0.0022	0.0014	0.0014	0.0016	0.0017	0.0018	0.0019	0.0028	0.0029	0.0014	0.0014	0.0016	0.0017	0.0018	0.0019	0.0025	0.0026	0.015
Vanadium (V)	mg/L	0.0024	0.0024	0.0028	0.0033	0.0032	0.0035	0.0037	0.0037	0.0027	0.0030	0.0033	0.0040	0.0038	0.0042	0.0043	0.0044	0.0031	0.0031	0.0036	0.0043	0.0042	0.0044	0.0056	0.0057	0.0028	0.0028	0.0032	0.0033	0.0035	0.0038	0.0050	0.0054	-
Zinc (Zn)	mg/L	0.0024	0.0025	0.0027	0.0028	0.0028	0.0030	0.0032	0.0032	0.0017	0.0017	0.0018	0.0019	0.0019	0.0020	0.0024	0.0028	0.0017	0.0017	0.0019	0.0019	0.0020	0.0020	0.0025	0.0027	0.0017	0.0017	0.0018	0.0018	0.0019	0.0021	0.0023	0.0024	0.03

M:\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-2 Ajax_LOM_WQM_Base Case Appendix Tables_CEQ PAL GL.xlsx]TC2 PCDP BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE.
2. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - PROTECTION OF AQUATIC LIFE (PAL).
3. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE CEQG PAL.
4. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
5. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELSIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
7. MERCURY AND BERYLLIUM MODELLED DATA HAVE BEEN EXCLUDED FROM THE RESULTS TABLES; THESE PARAMETERS ARE UNDERSTOOD TO BE MODELLED BASED ON DETECTION LIMITS THAT ARE NEAR TO THE GUIDELINES, RESULTING IN PREDICTED EXCEEDANCES THAT ARE NOT EXPECTED.

TABLE C2-3

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PCDP - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO LIVESTOCK WATER QUALITY GUIDELINES

Print Jul/21/15 8:38:44

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - LIVESTOCK	CEQG - LIVESTOCK
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	360	360	397	508	486	554	564	564	360	360	471	531	496	554	564	564	360	360	471	728	496	554	564	564	360	360	471	531	496	554	564	564	-	-
Hardness - Dissolved	mg/L $CaCO_3$	364	370	404	448	444	469	563	570	389	412	443	484	488	507	597	637	427	429	484	502	530	545	725	736	429	430	480	503	518	546	649	655	-	-
Bromide (Br^-)	mg/L	0.16	0.19	0.20	0.22	0.22	0.23	0.24	0.26	0.15	0.16	0.18	0.20	0.20	0.22	0.24	0.26	0.20	0.20	0.22	0.24	0.24	0.26	0.32	0.33	0.20	0.20	0.23	0.24	0.24	0.25	0.29	0.29	-	-
Chloride (Cl^-)	mg/L	60	60	62	63	63	63	65	69	59	59	62	63	63	64	67	70	60	61	62	64	64	64	66	66	58	58	62	63	63	63	65	65	600	-
Fluoride (F^-)	mg/L	0.24	0.24	0.26	0.27	0.27	0.27	0.28	0.28	0.25	0.26	0.27	0.28	0.28	0.29	0.30	0.31	0.26	0.26	0.27	0.28	0.28	0.28	0.29	0.29	0.24	0.24	0.26	0.28	0.27	0.28	0.29	0.29	1	1
Sulphate (SO_4^{2-})	mg/L	71	72	80	99	100	110	152	165	67	69	80	99	104	116	166	170	76	77	103	115	142	141	305	319	77	77	103	116	138	152	263	269	1,000	1,000
Calcium (Ca)	mg/L	68	69	76	81	82	85	96	99	78	88	94	98	98	102	109	117	92	92	99	101	104	105	126	127	92	93	99	102	103	106	117	119	1,000	1,000
Magnesium (Mg)	mg/L	47	47	52	58	59	62	77	81	45	46	51	58	59	64	81	84	48	48	58	61	66	69	100	103	48	48	57	61	64	68	87	88	-	-
Potassium (K)	mg/L	13	13	14	15	15	15	16	16	13	13	14	15	15	15	17	17	13	13	14	15	16	16	20	20	13	13	15	15	15	16	17	17	-	-
Sodium (Na)	mg/L	41	41	44	49	48	51	57	59	40	41	44	48	48	52	59	61	42	42	48	51	53	54	70	71	42	42	48	50	51	54	62	63	-	-
Nutrients																																	
Ammonia	mg/L N	0.07	0.07	0.09	0.10	0.09	0.10	0.11	0.11	0.05	0.05	0.06	0.06	0.06	0.07	0.08	0.09	0.05	0.05	0.06	0.06	0.07	0.07	0.12	0.12	0.05	0.05	0.05	0.06	0.06	0.07	0.10	0.14	-	-
Nitrate	mg/L N	0.17	0.19	0.20	0.20	0.21	0.22	0.23	0.23	0.10	0.11	0.12	0.15	0.15	0.17	0.19	0.23	0.10	0.11	0.12	0.13	0.14	0.14	0.18	0.26	0.08	0.09	0.09	0.10	0.11	0.12	0.17	0.22	100	-
Nitrite	mg/L	0.0054	0.0059	0.0063	0.0064	0.0066	0.0067	0.0075	0.0086	0.0051	0.0054	0.0059	0.0065	0.0067	0.0073	0.0091	0.0099	0.0053	0.0055	0.0064	0.0072	0.0075	0.0077	0.0102	0.0135	0.0050	0.0051	0.0057	0.0068	0.0073	0.0076	0.0127	0.0168	1	-
Phosphorus	mg/L	0.117	0.117	0.121	0.144	0.141	0.160	0.162	0.162	0.108	0.109	0.119	0.134	0.134	0.150	0.162	0.162	0.115	0.116	0.124	0.134	0.135	0.145	0.155	0.155	0.109	0.109	0.117	0.130	0.127	0.138	0.140	0.145	-	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0026	0.0029	0.0040	0.0097	0.0098	0.0152	0.0169	0.0175	0.0043	0.0058	0.0069	0.0118	0.0125	0.0182	0.0200	0.0205	0.0058	0.0058	0.0070	0.0121	0.0128	0.0188	0.0203	0.0203	0.0023	0.0023	0.0028	0.0029	0.0029	0.0029	0.0034	0.0191	5	5
Antimony (Sb)	mg/L	0.000109	0.000112	0.000125	0.000149	0.000143	0.000159	0.000170	0.000173	0.000103	0.000116	0.000142	0.000214	0.000224	0.000296	0.000349	0.000435	0.000121	0.000131	0.000179	0.000195	0.000213	0.000233	0.000411	0.000472	0.000109	0.000118	0.000156	0.000196	0.000218	0.000245	0.000430	0.000578	-	-
Arsenic (As)	mg/L	0.0017	0.0017	0.0018	0.0021	0.0020	0.0022	0.0023	0.0023	0.0017	0.0017	0.0019	0.0023	0.0022	0.0024	0.0026	0.0026	0.0019	0.0019	0.0022	0.0024	0.0024	0.0024	0.0034	0.0034	0.0019	0.0019	0.0023	0.0024	0.0024	0.0025	0.0032	0.0036	0.025	0.025
Barium (Ba)	mg/L	0.059	0.060	0.064	0.065	0.065	0.066	0.069	0.070	0.067	0.071	0.074	0.077	0.076	0.079	0.080	0.081	0.076	0.077	0.078	0.080	0.081	0.082	0.090	0.090	0.076	0.076	0.078	0.079	0.079	0.080	0.088	0.088	-	-
Boron (B)	mg/L	0.023	0.025	0.026	0.028	0.027	0.029	0.029	0.029	0.023	0.023	0.025	0.027	0.027	0.028	0.029	0.030	0.027	0.027	0.030	0.031	0.032	0.034	0.042	0.045	0.027	0.027	0.030	0.031	0.032	0.033	0.036	0.038	5.0	5.0
Cadmium (Cd)	mg/L	0.0000061	0.0000062	0.0000071	0.0000094	0.0000094	0.0000114	0.0000124	0.0000126	0.0000072	0.0000083	0.0000088	0.0000112	0.0000113	0.0000136	0.0000145	0.0000148	0.0000087	0.0000088	0.0000097	0.0000116	0.0000117	0.0000137	0.0000145	0.0000146	0.0000058	0.0000059	0.0000064	0.0000067	0.0000068	0.0000069	0.0000081	0.0000140	0.0800	0.0800
Chromium (Cr)	mg/L	0.00023	0.00024	0.00031	0.00066	0.00067	0.00099	0.00111	0.00115	0.00034	0.00044	0.00052	0.00083	0.00086	0.00121	0.00133	0.00137	0.00047	0.00051	0.00053	0.00084	0.00089	0.00125	0.00134	0.00134	0.00016	0.00016	0.00017	0.00018	0.00019	0.00021	0.00025	0.00126	0.050/0.050	0.050/0.050
Cobalt (Co)	mg/L	0.00009	0.00010	0.00014	0.00021	0.00020	0.00026	0.00030	0.00030	0.00014	0.00019	0.00022	0.00028	0.00028	0.00035	0.00038	0.00038	0.00024	0.00025	0.00027	0.00031	0.00032	0.00037	0.00040	0.00040	0.00017	0.00018	0.00019	0.00020	0.00020	0.00021	0.00024	0.00039	1	1
Copper (Cu)	mg/L	0.0020	0.0020	0.0027	0.0037	0.0036	0.0046	0.0049	0.0050	0.0026	0.0033	0.0036	0.0046	0.0047	0.0057	0.0059	0.0059	0.0035	0.0035	0.0042	0.0048	0.0049	0.0059	0.0060	0.0060	0.0027	0.0027	0.0029	0.0030	0.0030	0.0031	0.0035	0.0059	0.3	1.0
Iron (Fe)	mg/L	0.018	0.019	0.030	0.045	0.044	0.058	0.065	0.066	0.034	0.047	0.057	0.070	0.069	0.084	0.089	0.090	0.050	0.051	0.065	0.079	0.076	0.089	0.093	0.093	0.042	0.042	0.055	0.055	0.055	0.057	0.065	0.094	-	-
Lead (Pb)	mg/L	0.000040	0.000042	0.000050	0.000091	0.000092	0.000129	0.000143	0.000147	0.000053	0.000065	0.000074	0.000110	0.000114	0.000154	0.000167	0.000171	0.000068	0.000068	0.000075	0.000111	0.000116	0.000157	0.000168	0.000168	0.000028	0.000028	0.000030	0.000031	0.000032	0.000032	0.000038	0.000159	0.1	0.1
Lithium (Li)	mg/L	0.0064	0.0064	0.0068	0.0072	0.0070	0.0073	0.0074	0.0076	0.0062	0.0063	0.0067	0.0070	0.0070	0.0073	0.0076	0.0077	0.0064	0.0064	0.0070	0.0073	0.0073	0.0074	0.0083	0.0086	0.0064	0.0064	0.0069	0.0072	0.0071	0.0074	0.0076	0.0078	-	-
Manganese (Mn)	mg/L	0.021	0.023	0.026	0.064	0.061	0.093	0.098	0.099	0.028	0.035	0.040	0.067	0.067	0.089	0.107	0.110	0.042	0.043	0.064	0.078	0.082	0.091	0.169	0.169	0.040	0.040	0.062	0.078	0.079	0.091	0.157	0.161	-	-
Molybdenum (Mo)	mg/L	0.0042	0.0047	0.0052	0.0064	0.0063	0.0070	0.0079	0.0100	0.0042	0.0047	0.0054	0.0073	0.0073	0.0083	0.0114	0.0137	0.0065	0.0075	0.0106	0.0113	0.0149	0.0166	0.0363	0.0451	0.0073	0.0079	0.0115	0.0141	0.0164	0.0200	0.0324	0.0390	0.05	0.50
Nickel (Ni)	mg/L	0.00133	0.00134	0.00163	0.00213	0.00208	0.00252	0.00267	0.00267	0.00158	0.00183	0.00204	0.00264	0.00252	0.00295	0.00308	0.00314	0.00197	0.00200	0.00230	0.00281	0.00267	0.00305	0.00311	0.00313	0.00163	0.00165	0.00184	0.00202	0.00203	0.00212	0.00251	0.00308	1	1
Selenium (Se)	mg/L	0.00020	0.00020	0.00024	0.00029	0.00040	0.00042	0.00111	0.00112	0.00024	0.00032	0.00039	0.00053	0.00064	0.00067	0.00144	0.00159	0.00035	0.00038	0.00047	0.00057	0.00071	0.00073	0.00164	0.00183	0.00036	0.00038	0.00046	0.00059	0.00072	0.00081	0.00148	0.00159	0.03	0.05
Silicon (Si)		6.2	6.3	7.4	8.3	8.3	9.0	9.6	10.3	8.0	9.5	10.3	10.9	10.8	11.2	11.9	12.3	9.9	10.0	10.2	10.9	10.8	11.3	12.2	12.3	9.4	9.4	10.1	10.9	10.7	11.3	11.6	11.7	-	-
Silver (Ag)	mg/L	0.0000053	0.0000053	0.0000056	0.0000060	0.0000059	0.0000062	0.0000063	0.0000063	0.0000055	0.0000057	0.0000059	0.0000062	0.0000062	0.0000065	0.0000066	0.0000066	0.0000057	0.0000058	0.0000062	0.0000065	0.0000064	0.0000067	0.0000067	0.0000069	0.0000055	0.0000055	0.0000058	0.0000059	0.0000059	0.0000060	0.0000061	0.0000066	-	-
Strontium (Sr)	mg/L	0.45	0.45	0.50	0.56	0.56	0.60	0.73	0.73	0.44	0.45	0.50	0.57	0.57	0.62	0.74	0.80	0.47	0.47	0.55	0.60	0.63	0.65	0.94	0.97	0.47	0.47	0.55	0.61	0.62	0.68	0.83	0.85	-	-
Thallium (Tl)	mg/L	0.0000058	0.0000058	0.0000064	0.0000081	0.0000080	0.0000095	0.0000100	0.0000102	0.0000064	0.0000070	0.0000076	0.0000092	0.0000093	0.0000109	0.0000116	0.0000119	0.0000074	0.0000075	0.0000089	0.0000106	0.0000100	0.0000113	0.0000117	0.0000118	0.0000058	0.0000060	0.0000066	0.0000070	0.0000071	0.0000074	0.0000091	0.0000114	-	-
Tin (Sn)		0.000057	0.000058	0.000063	0.000079	0.000078	0.000093	0.000098	0.000099	0.000062	0.000068	0.000071	0.000084	0.000086	0.000102	0.000107	0.000108	0.000070	0.000070	0.000075	0.000088	0.000089	0.000103	0.000108	0.000108	0.000056	0.000056	0.000059	0.000060	0.000060	0.000061	0.000062	0.000105	-	-
Uranium (U)	mg/L	0.0013	0.0014	0.0014	0.0015	0.0015	0.0016	0.0019	0.0019	0.0014	0.0014	0.0015	0.0016	0.0017	0.0017	0.0021	0.0022	0.0014	0.0014	0.0016	0.0017	0.0018	0.0019	0.0028	0.0029	0.0014	0.0014	0.0016	0.0017	0.0018	0.0019	0.0025	0.0026	0.2	0.2
Vanadium (V)	mg/L	0.0024	0.0024	0.0028	0.0033	0.0032	0.0035	0.0037	0.0037	0.0027	0.0030	0.0033	0.0040	0.0038	0.0042	0.0043	0.0044	0.0031	0.0031	0.0036	0.0043	0.0042	0.0044	0.0056	0.0057	0.0028	0.0028	0.0032	0.0033	0.0035	0.0038	0.0050	0.0054	0.1	0.1
Zinc (Zn)	mg/L	0.0024	0.0025	0.0027	0.0028	0.0028	0.0030	0.0032	0.0032	0.0017	0.0017	0.0018	0.0019	0.0019	0.0020	0.0024	0.0028	0.0017	0.0017	0.0019	0.0019	0.0020	0.0020	0.0025	0.0027	0.0017	0.0017	0.0018	0.0018	0.0019	0.0021	0.0023	0.0024	2	50

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-3 Ajax_LOM_WQM_Base Case Appendix Tables_Livestock GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUE SELECTED) - LIVESTOCK WATERING.
3. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - WATER QUALITY GUIDELINES FOR THE PROTECTION OF AGRICULTURE - LIVESTOCK.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR LIVESTOCK.
5. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
6. WHEN APPLICABLE, THE GUIDELINE SELECTED FOR LIVESTOCK WATERING USE WAS THAT CORRESPONDING TO CATTLE.

TABLE C2-4

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PCDP - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO IRRIGATION GUIDELINES

Print Jul/21/15 8:41:14

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - IRRIGATION	CEQG - IRRIGATION
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	360	360	397	508	486	554	564	564	360	360	471	531	496	554	564	564	360	360	471	728	496	554	564	564	360	360	471	531	496	554	564	564	-	-
Hardness - Dissolved	mg/L $CaCO_3$	364	370	404	448	444	469	563	570	389	412	443	484	488	507	597	637	427	429	484	502	530	545	725	736	429	430	480	503	518	546	649	655	-	-
Bromide (Br^-)	mg/L	0.16	0.19	0.20	0.22	0.22	0.23	0.24	0.26	0.15	0.16	0.18	0.20	0.20	0.22	0.24	0.26	0.20	0.20	0.22	0.24	0.24	0.26	0.32	0.33	0.20	0.20	0.23	0.24	0.24	0.25	0.29	0.29	-	-
Chloride (Cl^-)	mg/L	60	60	62	63	63	63	65	69	59	59	62	63	63	64	67	70	60	61	62	64	64	64	66	66	58	58	62	63	63	63	65	65	100	250
Fluoride (F^-)	mg/L	0.24	0.24	0.26	0.27	0.27	0.27	0.28	0.28	0.25	0.26	0.27	0.28	0.28	0.29	0.30	0.31	0.26	0.26	0.27	0.28	0.28	0.28	0.29	0.29	0.24	0.24	0.26	0.28	0.27	0.28	0.29	0.29	1	1
Sulphate (SO_4^{2-})	mg/L	71	72	80	99	100	110	152	165	67	69	80	99	104	116	166	170	76	77	103	115	142	141	305	319	77	77	103	116	138	152	263	269	-	-
Calcium (Ca)	mg/L	68	69	76	81	82	85	96	99	78	88	94	98	98	102	109	117	92	92	99	101	104	105	126	127	92	93	99	102	103	106	117	119	-	-
Magnesium (Mg)	mg/L	47	47	52	58	59	62	77	81	45	46	51	58	59	64	81	84	48	48	58	61	66	69	100	103	48	48	57	61	64	68	87	88	-	-
Potassium (K)	mg/L	13	13	14	15	15	15	16	16	13	13	14	15	15	15	17	17	13	13	14	15	16	16	20	20	13	13	15	15	15	16	17	17	-	-
Sodium (Na)	mg/L	41	41	44	49	48	51	57	59	40	41	44	48	48	52	59	61	42	42	48	51	53	54	70	71	42	42	48	50	51	54	62	63	-	-
Nutrients																																	
Ammonia	mg/L N	0.07	0.07	0.09	0.10	0.09	0.10	0.11	0.11	0.05	0.05	0.06	0.06	0.06	0.07	0.08	0.09	0.05	0.05	0.06	0.06	0.07	0.07	0.12	0.12	0.05	0.05	0.05	0.06	0.06	0.07	0.10	0.14	-	-
Nitrate	mg/L N	0.17	0.19	0.20	0.20	0.21	0.22	0.23	0.23	0.10	0.11	0.12	0.15	0.15	0.17	0.19	0.23	0.10	0.11	0.12	0.13	0.14	0.14	0.18	0.26	0.08	0.09	0.09	0.10	0.11	0.12	0.17	0.22	-	-
Nitrite	mg/L	0.0054	0.0059	0.0063	0.0064	0.0066	0.0067	0.0075	0.0086	0.0051	0.0054	0.0059	0.0065	0.0067	0.0073	0.0091	0.0099	0.0053	0.0055	0.0064	0.0072	0.0075	0.0077	0.0102	0.0135	0.0050	0.0051	0.0057	0.0068	0.0073	0.0076	0.0127	0.0168	-	10
Phosphorus	mg/L	0.117	0.117	0.121	0.144	0.141	0.160	0.162	0.162	0.108	0.109	0.119	0.134	0.134	0.150	0.162	0.162	0.115	0.116	0.124	0.134	0.135	0.145	0.155	0.155	0.109	0.109	0.117	0.130	0.127	0.138	0.140	0.145	-	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0026	0.0029	0.0040	0.0097	0.0098	0.0152	0.0169	0.0175	0.0043	0.0058	0.0069	0.0118	0.0125	0.0182	0.0200	0.0205	0.0058	0.0058	0.0070	0.0121	0.0128	0.0188	0.0203	0.0203	0.0023	0.0023	0.0028	0.0029	0.0029	0.0029	0.0034	0.0191	5	5
Antimony (Sb)	mg/L	0.000109	0.000112	0.000125	0.000149	0.000143	0.000159	0.000170	0.000173	0.000103	0.000116	0.000142	0.000214	0.000224	0.000296	0.000349	0.000435	0.000121	0.000131	0.000179	0.000195	0.000213	0.000233	0.000411	0.000472	0.000109	0.000118	0.000156	0.000196	0.000218	0.000245	0.000430	0.000578	-	-
Arsenic (As)	mg/L	0.0017	0.0017	0.0018	0.0021	0.0020	0.0022	0.0023	0.0023	0.0017	0.0017	0.0019	0.0023	0.0022	0.0024	0.0026	0.0026	0.0019	0.0019	0.0022	0.0024	0.0024	0.0024	0.0034	0.0034	0.0019	0.0019	0.0023	0.0024	0.0024	0.0025	0.0032	0.0036	0.100	0.100
Barium (Ba)	mg/L	0.059	0.060	0.064	0.065	0.065	0.066	0.069	0.070	0.067	0.071	0.074	0.077	0.076	0.079	0.080	0.081	0.076	0.077	0.078	0.080	0.081	0.082	0.090	0.090	0.076	0.076	0.078	0.079	0.079	0.080	0.088	0.088	-	-
Boron (B)	mg/L	0.023	0.025	0.026	0.028	0.027	0.029	0.029	0.029	0.023	0.023	0.025	0.027	0.027	0.028	0.029	0.030	0.027	0.027	0.030	0.031	0.032	0.034	0.042	0.045	0.027	0.027	0.030	0.031	0.032	0.033	0.036	0.038	0.5	0.5
Cadmium (Cd)	mg/L	0.0000061	0.0000062	0.0000071	0.0000094	0.0000094	0.0000114	0.0000124	0.0000126	0.0000072	0.0000083	0.0000088	0.0000112	0.0000113	0.0000136	0.0000145	0.0000148	0.0000087	0.0000088	0.0000097	0.0000116	0.0000117	0.0000137	0.0000145	0.0000146	0.0000058	0.0000059	0.0000064	0.0000067	0.0000068	0.0000069	0.0000081	0.0000140	0.0051	0.0051
Chromium (Cr)	mg/L	0.00023	0.00024	0.00031	0.00066	0.00067	0.00099	0.00111	0.00115	0.00034	0.00044	0.00052	0.00083	0.00086	0.00121	0.00133	0.00137	0.00047	0.00051	0.00053	0.00084	0.00089	0.00125	0.00134	0.00134	0.00016	0.00016	0.00017	0.00018	0.00019	0.00021	0.00025	0.00126	0.008/0.0049	0.008/0.0049
Cobalt (Co)	mg/L	0.00009	0.00010	0.00014	0.00021	0.00020	0.00026	0.00030	0.00030	0.00014	0.00019	0.00022	0.00028	0.00028	0.00035	0.00038	0.00038	0.00024	0.00025	0.00027	0.00031	0.00032	0.00037	0.00040	0.00040	0.00017	0.00018	0.00019	0.00020	0.00020	0.00021	0.00024	0.00039	0.05	0.05
Copper (Cu)	mg/L	0.0020	0.0020	0.0027	0.0037	0.0036	0.0046	0.0049	0.0050	0.0026	0.0033	0.0036	0.0046	0.0047	0.0057	0.0059	0.0059	0.0035	0.0035	0.0042	0.0048	0.0049	0.0059	0.0060	0.0060	0.0027	0.0027	0.0029	0.0030	0.0030	0.0031	0.0035	0.0059	0.2	1.0
Iron (Fe)	mg/L	0.018	0.019	0.030	0.045	0.044	0.058	0.065	0.066	0.034	0.047	0.057	0.070	0.069	0.084	0.089	0.090	0.050	0.051	0.065	0.079	0.076	0.089	0.093	0.093	0.042	0.042	0.055	0.055	0.055	0.057	0.065	0.094	-	5.0
Lead (Pb)	mg/L	0.000040	0.000042	0.000050	0.000091	0.000092	0.000129	0.000143	0.000147	0.000053	0.000065	0.000074	0.000110	0.000114	0.000154	0.000167	0.000171	0.000068	0.000068	0.000075	0.000111	0.000116	0.000157	0.000168	0.000168	0.000028	0.000028	0.000030	0.000031	0.000032	0.000032	0.000038	0.000159	0.2	0.2
Lithium (Li)	mg/L	0.0064	0.0064	0.0068	0.0072	0.0070	0.0073	0.0074	0.0076	0.0062	0.0063	0.0067	0.0070	0.0070	0.0073	0.0076	0.0077	0.0064	0.0064	0.0070	0.0073	0.0073	0.0074	0.0083	0.0086	0.0064	0.0064	0.0069	0.0072	0.0071	0.0074	0.0076	0.0078	0.75	2.50
Manganese (Mn)	mg/L	0.021	0.023	0.026	0.064	0.061	0.093	0.098	0.099	0.028	0.035	0.040	0.067	0.067	0.089	0.107	0.110	0.042	0.043	0.064	0.078	0.082	0.091	0.169	0.169	0.040	0.040	0.062	0.078	0.079	0.091	0.157	0.161	0.2	0.2
Molybdenum (Mo)	mg/L	0.0042	0.0047	0.0052	0.0064	0.0063	0.0070	0.0079	0.0100	0.0042	0.0047	0.0054	0.0073	0.0073	0.0083	0.0114	0.0137	0.0065	0.0075	0.0106	0.0113	0.0149	0.0166	0.0363	0.0451	0.0073	0.0079	0.0115	0.0141	0.0164	0.0200	0.0324	0.0390	0.05	0.05
Nickel (Ni)	mg/L	0.00133	0.00134	0.00163	0.00213	0.00208	0.00252	0.00267	0.00267	0.00158	0.00183	0.00204	0.00264	0.00252	0.00295	0.00308	0.00314	0.00197	0.00200	0.00230	0.00281	0.00267	0.00305	0.00311	0.00313	0.00163	0.00165	0.00184	0.00202	0.00203	0.00212	0.00251	0.00308	0.2	0.2
Selenium (Se)	mg/L	0.00020	0.00020	0.00024	0.00029	0.00040	0.00042	0.00111	0.00112	0.00024	0.00032	0.00039	0.00053	0.00064	0.00067	0.00144	0.00159	0.00035	0.00038	0.00047	0.00057	0.00071	0.00073	0.00164	0.00183	0.00036	0.00038	0.00046	0.00059	0.00072	0.00081	0.00148	0.00159	0.01	0.05
Silicon (Si)		6.2	6.3	7.4	8.3	8.3	9.0	9.6	10.3	8.0	9.5	10.3	10.9	10.8	11.2	11.9	12.3	9.9	10.0	10.2	10.9	10.8	11.3	12.2	12.3	9.4	9.4	10.1	10.9	10.7	11.3	11.6	11.7	-	-
Silver (Ag)	mg/L	0.0000053	0.0000053	0.0000056	0.0000060	0.0000059	0.0000062	0.0000063	0.0000063	0.0000055	0.0000057	0.0000059	0.0000062	0.0000062	0.0000065	0.0000066	0.0000066	0.0000057	0.0000058	0.0000062	0.0000065	0.0000064	0.0000067	0.0000067	0.0000069	0.0000055	0.0000055	0.0000058	0.0000059	0.0000059	0.0000060	0.0000061	0.0000066	-	-
Strontium (Sr)	mg/L	0.45	0.45	0.50	0.56	0.56	0.60	0.73	0.73	0.44	0.45	0.50	0.57	0.57	0.62	0.74	0.80	0.47	0.47	0.55	0.60	0.63	0.65	0.94	0.97	0.47	0.47	0.55	0.61	0.62	0.68	0.83	0.85	-	-
Thallium (Tl)	mg/L	0.0000058	0.0000058	0.0000064	0.0000081	0.0000080	0.0000095	0.0000100	0.0000102	0.0000064	0.0000070	0.0000076	0.0000092	0.0000093	0.0000109	0.0000116	0.0000119	0.0000074	0.0000075	0.0000089	0.0000106	0.0000100	0.0000113	0.0000117	0.0000118	0.0000058	0.0000060	0.0000066	0.0000070	0.0000071	0.0000074	0.0000091	0.0000114	-	-
Tin (Sn)		0.000057	0.000058	0.000063	0.000079	0.000078	0.000093	0.000098	0.000099	0.000062	0.000068	0.000071	0.000084	0.000086	0.000102	0.000107	0.000108	0.000070	0.000070	0.000075	0.000088	0.000089	0.000103	0.000108	0.000108	0.000056	0.000056	0.000059	0.000060	0.000060	0.000061	0.000062	0.000105	-	-
Uranium (U)	mg/L	0.0013	0.0014	0.0014	0.0015	0.0015	0.0016	0.0019	0.0019	0.0014	0.0014	0.0015	0.0016	0.0017	0.0017	0.0021	0.0022	0.0014	0.0014	0.0016	0.0017	0.0018	0.0019	0.0028	0.0029	0.0014	0.0014	0.0016	0.0017	0.0018	0.0019	0.0025	0.0026	0.01	0.01
Vanadium (V)	mg/L	0.0024	0.0024	0.0028	0.0033	0.0032	0.0035	0.0037	0.0037	0.0027	0.0030	0.0033	0.0040	0.0038	0.0042	0.0043	0.0044	0.0031	0.0031	0.0036	0.0043	0.0042	0.0044	0.0056	0.0057	0.0028	0.0028	0.0032	0.0033	0.0033	0.0035	0.0038	0.0050	0.0054	0.1	0.1
Zinc (Zn)	mg/L	0.0024	0.0025	0.0027	0.0028	0.0028	0.0030	0.0032	0.0032	0.0017	0.0017	0.0018	0.0019	0.0019	0.0020	0.0024	0.0028	0.0017	0.0017	0.0019	0.0019	0.0020	0.0020	0.0025	0.0027	0.0017	0.0017	0.0018	0.0018	0.0019	0.0021	0.0023	0.0024	1	1

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-4 Ajax_LOM_WQM_Base Case Appendix Tables_Irrigation GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUES SELECTED) - IRRIGATION.
3. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - WATER QUALITY GUIDELINES FOR THE PROTECTION OF AGRICULTURE - IRRIGATION.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR IRRIGATION.
5. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS THE CEQG FOR IRRIGATION.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
7. WHEN APPLICABLE, THE GUIDELINE SELECTED FOR IRRIGATION USE WAS THAT CORRESPONDING TO THE MOST SENSITIVE CROP OR SOIL TYPE LISTED.

TABLE C2-5

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PCDP - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO DRINKING WATER GUIDELINES

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		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - DRINKING WATER	HC - DRINKING WATER
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	360	360	397	508	486	554	564	564	360	360	471	531	496	554	564	564	360	360	471	728	496	554	564	564	360	360	471	531	496	554	564	564	-	-
Hardness - Dissolved	mg/L $CaCO_3$	364	370	404	448	444	469	563	570	389	412	443	484	488	507	597	637	427	429	484	502	530	545	725	736	429	430	480	503	518	546	649	655	-	-
Bromide (Br^-)	mg/L	0.16	0.19	0.20	0.22	0.22	0.23	0.24	0.26	0.15	0.16	0.18	0.20	0.20	0.22	0.24	0.26	0.20	0.20	0.22	0.24	0.24	0.26	0.32	0.33	0.20	0.20	0.23	0.24	0.24	0.25	0.29	0.29	-	-
Chloride (Cl^-)	mg/L	60	60	62	63	63	63	65	69	59	59	62	63	63	64	67	70	60	61	62	64	64	64	66	66	58	58	62	63	63	63	65	65	250	250
Fluoride (F^-)	mg/L	0.24	0.24	0.26	0.27	0.27	0.27	0.28	0.28	0.25	0.26	0.27	0.28	0.28	0.29	0.30	0.31	0.26	0.26	0.27	0.28	0.28	0.28	0.29	0.29	0.24	0.24	0.26	0.28	0.27	0.28	0.29	0.29	2	2
Sulphate (SO_4^{2-})	mg/L	71	72	80	99	100	110	152	165	67	69	80	99	104	116	166	170	76	77	103	115	142	141	305	319	77	77	103	116	138	152	263	269	500	500
Calcium (Ca)	mg/L	68	69	76	81	82	85	96	99	78	88	94	98	98	102	109	117	92	92	99	101	104	105	126	127	92	93	99	102	103	106	117	119	-	-
Magnesium (Mg)	mg/L	47	47	52	58	59	62	77	81	45	46	51	58	59	64	81	84	48	48	58	61	66	69	100	103	48	48	57	61	64	68	87	88	-	-
Potassium (K)	mg/L	13	13	14	15	15	15	16	16	13	13	14	15	15	15	17	17	13	13	14	15	16	16	20	20	13	13	15	15	15	16	17	17	-	-
Sodium (Na)	mg/L	41	41	44	49	48	51	57	59	40	41	44	48	48	52	59	61	42	42	48	51	53	54	70	71	42	42	48	50	51	54	62	63	-	200
Nutrients																																			
Ammonia	mg/L N	0.07	0.07	0.09	0.10	0.09	0.10	0.11	0.11	0.05	0.05	0.06	0.06	0.06	0.07	0.08	0.09	0.05	0.05	0.06	0.06	0.07	0.07	0.12	0.12	0.05	0.05	0.05	0.06	0.06	0.07	0.10	0.14	-	-
Nitrate	mg/L N	0.17	0.19	0.20	0.20	0.21	0.22	0.23	0.23	0.10	0.11	0.12	0.15	0.15	0.17	0.19	0.23	0.10	0.11	0.12	0.13	0.14	0.14	0.18	0.26	0.08	0.09	0.09	0.10	0.11	0.12	0.17	0.22	10	10
Nitrite	mg/L	0.005	0.006	0.006	0.006	0.007	0.007	0.008	0.009	0.005	0.005	0.006	0.007	0.007	0.007	0.009	0.010	0.005	0.005	0.006	0.007	0.007	0.008	0.010	0.014	0.005	0.005	0.006	0.007	0.007	0.008	0.013	0.017	1	1
Phosphorus	mg/L	0.12	0.12	0.12	0.14	0.14	0.16	0.16	0.16	0.11	0.11	0.12	0.13	0.13	0.15	0.16	0.16	0.12	0.12	0.12	0.13	0.13	0.15	0.16	0.16	0.11	0.11	0.12	0.13	0.13	0.14	0.14	0.14	-	-
Dissolved Metals																																			
Aluminum (Al)	mg/L	0.0026	0.0029	0.0040	0.0097	0.0098	0.0152	0.0169	0.0175	0.0043	0.0058	0.0069	0.0118	0.0125	0.0182	0.0200	0.0205	0.0058	0.0058	0.0070	0.0121	0.0128	0.0188	0.0203	0.0203	0.0023	0.0023	0.0028	0.0029	0.0029	0.0029	0.0034	0.0191	0.2	0.2
Antimony (Sb)	mg/L	0.00011	0.00011	0.00013	0.00015	0.00014	0.00016	0.00017	0.00017	0.00010	0.00012	0.00014	0.00021	0.00022	0.00030	0.00035	0.00043	0.00012	0.00013	0.00018	0.00019	0.00021	0.00023	0.00041	0.00047	0.00011	0.00012	0.00016	0.00020	0.00022	0.00025	0.00043	0.00058	-	0.006
Arsenic (As)	mg/L	0.0017	0.0017	0.0018	0.0021	0.0020	0.0022	0.0023	0.0023	0.0017	0.0017	0.0019	0.0023	0.0022	0.0024	0.0026	0.0026	0.0019	0.0019	0.0022	0.0024	0.0024	0.0024	0.0034	0.0034	0.0019	0.0019	0.0023	0.0024	0.0024	0.0025	0.0032	0.0036	0.025	0.010
Barium (Ba)	mg/L	0.059	0.060	0.064	0.065	0.065	0.066	0.069	0.070	0.067	0.071	0.074	0.077	0.076	0.079	0.080	0.081	0.076	0.077	0.078	0.080	0.081	0.082	0.090	0.090	0.076	0.076	0.078	0.079	0.079	0.080	0.088	0.088	-	1
Boron (B)	mg/L	0.023	0.025	0.026	0.028	0.027	0.029	0.029	0.029	0.023	0.023	0.025	0.027	0.027	0.028	0.029	0.030	0.027	0.027	0.030	0.031	0.032	0.034	0.042	0.045	0.027	0.027	0.030	0.031	0.032	0.033	0.036	0.038	-	5
Cadmium (Cd)	mg/L	0.0000061	0.0000062	0.0000071	0.0000094	0.0000094	0.0000114	0.0000124	0.0000126	0.0000072	0.0000083	0.0000088	0.0000112	0.0000113	0.0000136	0.0000145	0.0000148	0.0000087	0.0000088	0.0000097	0.0000116	0.0000117	0.0000137	0.0000145	0.0000146	0.0000058	0.0000059	0.0000064	0.0000067	0.0000068	0.0000069	0.0000081	0.0000140	-	0.005000
Chromium (Cr)	mg/L	0.00023	0.00024	0.00031	0.00066	0.00067	0.00099	0.00111	0.00115	0.00034	0.00044	0.00052	0.00083	0.00086	0.00121	0.00133	0.00137	0.00047	0.00051	0.00053	0.00084	0.00089	0.00125	0.00134	0.00134	0.00016	0.00016	0.00017	0.00018	0.00019	0.00021	0.00025	0.00126	-	0.050
Cobalt (Co)	mg/L	0.00009	0.00010	0.00014	0.00021	0.00020	0.00026	0.00030	0.00030	0.00014	0.00019	0.00022	0.00028	0.00028	0.00035	0.00038	0.00038	0.00024	0.00025	0.00027	0.00031	0.00032	0.00037	0.00040	0.00040	0.00017	0.00018	0.00019	0.00020	0.00020	0.00021	0.00024	0.00039	-	-
Copper (Cu)	mg/L	0.0020	0.0020	0.0027	0.0037	0.0036	0.0046	0.0049	0.0050	0.0026	0.0033	0.0036	0.0046	0.0047	0.0057	0.0059	0.0059	0.0035	0.0035	0.0042	0.0048	0.0049	0.0059	0.0060	0.0060	0.0027	0.0027	0.0029	0.0030	0.0030	0.0031	0.0035	0.0059	0.5	1.0
Iron (Fe)	mg/L	0.02	0.02	0.03	0.04	0.04	0.06	0.07	0.07	0.03	0.05	0.06	0.07	0.07	0.08	0.09	0.09	0.05	0.05	0.06	0.08	0.08	0.09	0.09	0.09	0.04	0.04	0.05	0.06	0.05	0.06	0.06	0.09	-	0.3
Lead (Pb)	mg/L	0.000040	0.000042	0.000050	0.000091	0.000092	0.000129	0.000143	0.000147	0.000053	0.000065	0.000074	0.000110	0.000114	0.000154	0.000167	0.000171	0.000068	0.000068	0.000075	0.000111	0.000116	0.000157	0.000168	0.000168	0.000028	0.000028	0.000030	0.000031	0.000032	0.000032	0.000038	0.000159	0.05	0.01
Lithium (Li)	mg/L	0.0064	0.0064	0.0068	0.0072	0.0070	0.0073	0.0074	0.0076	0.0062	0.0063	0.0067	0.0070	0.0070	0.0073	0.0076	0.0077	0.0064	0.0064	0.0070	0.0073	0.0073	0.0074	0.0083	0.0086	0.0064	0.0064	0.0069	0.0072	0.0071	0.0074	0.0076	0.0078	-	-
Manganese (Mn)	mg/L	0.021	0.023	0.026	**0.064**	**0.061**	**0.093**	**0.098**	**0.099**	0.028	0.035	0.040	**0.067**	**0.067**	**0.089**	**0.107**	**0.110**	0.042	0.043	**0.064**	**0.078**	**0.082**	**0.091**	**0.169**	**0.169**	0.040	0.040	**0.062**	**0.078**	**0.079**	**0.091**	**0.157**	**0.161**	-	0.05
Molybdenum (Mo)	mg/L	0.004	0.005	0.005	0.006	0.006	0.007	0.008	0.010	0.004	0.005	0.005	0.007	0.007	0.008	0.011	0.014	0.007	0.007	0.011	0.011	0.015	0.017	0.036	0.045	0.007	0.008	0.012	0.014	0.016	0.020	0.032	0.039	0.25	-
Nickel (Ni)	mg/L	0.0013	0.0013	0.0016	0.0021	0.0021	0.0025	0.0027	0.0027	0.0016	0.0018	0.0020	0.0026	0.0025	0.0029	0.0031	0.0031	0.0020	0.0020	0.0023	0.0028	0.0027	0.0031	0.0031	0.0031	0.0016	0.0017	0.0018	0.0020	0.0020	0.0021	0.0025	0.0031	-	-
Selenium (Se)	mg/L	0.00020	0.00020	0.00024	0.00029	0.00040	0.00042	0.00111	0.00112	0.00024	0.00032	0.00039	0.00053	0.00064	0.00067	0.00144	0.00159	0.00035	0.00038	0.00047	0.00057	0.00071	0.00073	0.00164	0.00183	0.00036	0.00038	0.00046	0.00059	0.00072	0.00081	0.00148	0.00159	0.01	0.05
Silicon (Si)		6.2	6.3	7.4	8.3	8.3	9.0	9.6	10.3	8.0	9.5	10.3	10.9	10.8	11.2	11.9	12.3	9.9	10.0	10.2	10.9	10.8	11.3	12.2	12.3	9.4	9.4	10.1	10.9	10.7	11.3	11.6	11.7	-	-
Silver (Ag)	mg/L	0.0000053	0.0000053	0.0000056	0.0000060	0.0000059	0.0000062	0.0000063	0.0000063	0.0000055	0.0000057	0.0000059	0.0000062	0.0000062	0.0000065	0.0000066	0.0000066	0.0000057	0.0000058	0.0000062	0.0000065	0.0000064	0.0000067	0.0000067	0.0000069	0.0000055	0.0000055	0.0000058	0.0000059	0.0000059	0.0000060	0.0000061	0.0000066	-	-
Strontium (Sr)	mg/L	0.45	0.45	0.50	0.56	0.56	0.60	0.73	0.73	0.44	0.45	0.50	0.57	0.57	0.62	0.74	0.80	0.47	0.47	0.55	0.60	0.63	0.65	0.94	0.97	0.47	0.47	0.55	0.61	0.62	0.68	0.83	0.85	-	-
Thallium (Tl)	mg/L	0.0000058	0.0000058	0.0000064	0.0000081	0.0000080	0.0000095	0.0000100	0.0000102	0.0000064	0.0000070	0.0000076	0.0000092	0.0000093	0.0000109	0.0000116	0.0000119	0.0000074	0.0000075	0.0000089	0.0000106	0.0000100	0.0000113	0.0000117	0.0000118	0.0000058	0.0000060	0.0000066	0.0000070	0.0000071	0.0000074	0.0000091	0.0000114	-	-
Tin (Sn)		0.000057	0.000058	0.000063	0.000079	0.000078	0.000093	0.000098	0.000099	0.000062	0.000068	0.000071	0.000084	0.000086	0.000102	0.000107	0.000108	0.000070	0.000070	0.000075	0.000088	0.000089	0.000103	0.000108	0.000108	0.000056	0.000056	0.000059	0.000060	0.000060	0.000061	0.000062	0.000105	-	-
Uranium (U)	mg/L	0.0013	0.0014	0.0014	0.0015	0.0015	0.0016	0.0019	0.0019	0.0014	0.0014	0.0015	0.0016	0.0017	0.0017	0.0021	0.0022	0.0014	0.0014	0.0016	0.0017	0.0018	0.0019	0.0028	0.0029	0.0014	0.0014	0.0016	0.0017	0.0018	0.0019	0.0025	0.0026	-	0.02
Vanadium (V)	mg/L	0.0024	0.0024	0.0028	0.0033	0.0032	0.0035	0.0037	0.0037	0.0027	0.0030	0.0033	0.0040	0.0038	0.0042	0.0043	0.0044	0.0031	0.0031	0.0036	0.0043	0.0042	0.0044	0.0056	0.0057	0.0028	0.0028	0.0032	0.0033	0.0035	0.0038	0.0050	0.0054	-	-
Zinc (Zn)	mg/L	0.0024	0.0025	0.0027	0.0028	0.0028	0.0030	0.0032	0.0032	0.0017	0.0017	0.0018	0.0019	0.0019	0.0020	0.0024	0.0028	0.0017	0.0017	0.0019	0.0019	0.0020	0.0020	0.0025	0.0027	0.0017	0.0017	0.0018	0.0018	0.0019	0.0021	0.0023	0.0024	5	5

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-5 Ajax_LOM_WQM_Base Case Appendix Tables_DW GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUE SELECTED) - RAW DRINKING WATER.
3. HEALTH CANADA (HC) - GUIDELINES FOR CANADIAN DRINKING WATER QUALITY.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR RAW DRINKING WATER.
5. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS THE HC GUIDELINE FOR CANADIAN DRINKING WATER QUALITY.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.

TABLE C2-6

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PCDP - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO RECREATION AND AESTHETIC WATER QUALITY GUIDELINES

Print Jul/21/15 8:45:51

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - REC &AES
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	360	360	397	508	486	554	564	564	360	360	471	531	496	554	564	564	360	360	471	728	496	554	564	564	360	360	471	531	496	554	564	564	-
Hardness - Dissolved	mg/L $CaCO_3$	364	370	404	448	444	469	563	570	389	412	443	484	488	507	597	637	427	429	484	502	530	545	725	736	429	430	480	503	518	546	649	655	-
Bromide (Br^-)	mg/L	0.16	0.19	0.20	0.22	0.22	0.23	0.24	0.26	0.15	0.16	0.18	0.20	0.20	0.22	0.24	0.26	0.20	0.20	0.22	0.24	0.24	0.26	0.32	0.33	0.20	0.20	0.23	0.24	0.24	0.25	0.29	0.29	-
Chloride (Cl^-)	mg/L	60	60	62	63	63	63	65	69	59	59	62	63	63	64	67	70	60	61	62	64	64	64	66	66	58	58	62	63	63	63	65	65	-
Fluoride (F^-)	mg/L	0.24	0.24	0.26	0.27	0.27	0.27	0.28	0.28	0.25	0.26	0.27	0.28	0.28	0.29	0.30	0.31	0.26	0.26	0.27	0.28	0.28	0.28	0.29	0.29	0.24	0.24	0.26	0.28	0.27	0.28	0.29	0.29	-
Sulphate (SO_4^{2-})	mg/L	71	72	80	99	100	110	152	165	67	69	80	99	104	116	166	170	76	77	103	115	142	141	305	319	77	77	103	116	138	152	263	269	-
Calcium (Ca)	mg/L	68	69	76	81	82	85	96	99	78	88	94	98	98	102	109	117	92	92	99	101	104	105	126	127	92	93	99	102	103	106	117	119	-
Magnesium (Mg)	mg/L	47	47	52	58	59	62	77	81	45	46	51	58	59	64	81	84	48	48	58	61	66	69	100	103	48	48	57	61	64	68	87	88	-
Potassium (K)	mg/L	13	13	14	15	15	15	16	16	13	13	14	15	15	15	17	17	13	13	14	15	16	16	20	20	13	13	15	15	15	16	17	17	-
Sodium (Na)	mg/L	41	41	44	49	48	51	57	59	40	41	44	48	48	52	59	61	42	42	48	51	53	54	70	71	42	42	48	50	51	54	62	63	-
Nutrients																																	
Ammonia	mg/L N	0.070	0.075	0.090	0.096	0.093	0.098	0.106	0.106	0.049	0.055	0.061	0.065	0.065	0.067	0.079	0.091	0.053	0.054	0.057	0.059	0.067	0.069	0.116	0.119	0.048	0.049	0.055	0.058	0.064	0.068	0.101	0.142	-
Nitrate	mg/L N	0.165	0.189	0.197	0.203	0.208	0.221	0.231	0.232	0.105	0.111	0.124	0.151	0.150	0.171	0.191	0.226	0.102	0.105	0.124	0.131	0.138	0.144	0.180	0.263	0.084	0.087	0.093	0.101	0.113	0.123	0.173	0.220	10
Nitrite	mg/L	0.0054	0.0059	0.0063	0.0064	0.0066	0.0067	0.0075	0.0086	0.0051	0.0054	0.0059	0.0065	0.0067	0.0073	0.0091	0.0099	0.0053	0.0055	0.0064	0.0072	0.0075	0.0077	0.0102	0.0135	0.0050	0.0051	0.0057	0.0068	0.0073	0.0076	0.0127	0.0168	1
Phosphorus	mg/L	0.117	0.117	0.121	0.144	0.141	0.160	0.162	0.162	0.108	0.109	0.119	0.134	0.134	0.150	0.162	0.162	0.115	0.116	0.124	0.134	0.135	0.145	0.155	0.155	0.109	0.109	0.117	0.130	0.127	0.138	0.140	0.145	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0026	0.0029	0.0040	0.0097	0.0098	0.0152	0.0169	0.0175	0.0043	0.0058	0.0069	0.0118	0.0125	0.0182	0.0200	0.0205	0.0058	0.0058	0.0070	0.0121	0.0128	0.0188	0.0203	0.0203	0.0023	0.0023	0.0028	0.0029	0.0029	0.0029	0.0034	0.0191	0.2
Antimony (Sb)	mg/L	0.00011	0.00011	0.00013	0.00015	0.00014	0.00016	0.00017	0.00017	0.00010	0.00012	0.00014	0.00021	0.00022	0.00030	0.00035	0.00043	0.00012	0.00013	0.00018	0.00019	0.00021	0.00023	0.00041	0.00047	0.00011	0.00012	0.00016	0.00020	0.00022	0.00025	0.00043	0.00058	-
Arsenic (As)	mg/L	0.0017	0.0017	0.0018	0.0021	0.0020	0.0022	0.0023	0.0023	0.0017	0.0017	0.0019	0.0023	0.0022	0.0024	0.0026	0.0026	0.0019	0.0019	0.0022	0.0024	0.0024	0.0024	0.0034	0.0034	0.0019	0.0019	0.0023	0.0024	0.0024	0.0025	0.0032	0.0036	-
Barium (Ba)	mg/L	0.059	0.060	0.064	0.065	0.065	0.066	0.069	0.070	0.067	0.071	0.074	0.077	0.076	0.079	0.080	0.081	0.076	0.077	0.078	0.080	0.081	0.082	0.090	0.090	0.076	0.076	0.078	0.079	0.079	0.080	0.088	0.088	-
Boron (B)	mg/L	0.023	0.025	0.026	0.028	0.027	0.029	0.029	0.029	0.023	0.023	0.025	0.027	0.027	0.028	0.029	0.030	0.027	0.027	0.030	0.031	0.032	0.034	0.042	0.045	0.027	0.027	0.030	0.031	0.032	0.033	0.036	0.038	-
Cadmium (Cd)	mg/L	0.000006	0.000006	0.000007	0.000009	0.000009	0.000011	0.000012	0.000013	0.000007	0.000008	0.000009	0.000011	0.000011	0.000014	0.000015	0.000015	0.000009	0.000009	0.000010	0.000012	0.000012	0.000014	0.000014	0.000015	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000008	0.000014	-
Chromium (Cr)	mg/L	0.00023	0.00024	0.00031	0.00066	0.00067	0.00099	0.00111	0.00115	0.00034	0.00044	0.00052	0.00083	0.00086	0.00121	0.00133	0.00137	0.00047	0.00051	0.00053	0.00084	0.00089	0.00125	0.00134	0.00134	0.00016	0.00016	0.00017	0.00018	0.00019	0.00021	0.00025	0.00126	-
Cobalt (Co)	mg/L	0.00009	0.00010	0.00014	0.00021	0.00020	0.00026	0.00030	0.00030	0.00014	0.00019	0.00022	0.00028	0.00028	0.00035	0.00038	0.00038	0.00024	0.00025	0.00027	0.00031	0.00032	0.00037	0.00040	0.00040	0.00017	0.00018	0.00019	0.00020	0.00020	0.00021	0.00024	0.00039	-
Copper (Cu)	mg/L	0.0020	0.0020	0.0027	0.0037	0.0036	0.0046	0.0049	0.0050	0.0026	0.0033	0.0036	0.0046	0.0047	0.0057	0.0059	0.0059	0.0035	0.0035	0.0042	0.0048	0.0049	0.0059	0.0060	0.0060	0.0027	0.0027	0.0029	0.0030	0.0030	0.0031	0.0035	0.0059	1
Iron (Fe)	mg/L	0.018	0.019	0.030	0.045	0.044	0.058	0.065	0.066	0.034	0.047	0.057	0.070	0.069	0.084	0.089	0.090	0.050	0.051	0.065	0.079	0.076	0.089	0.093	0.093	0.042	0.042	0.055	0.055	0.055	0.057	0.065	0.094	-
Lead (Pb)	mg/L	0.000040	0.000042	0.000050	0.000091	0.000092	0.000129	0.000143	0.000147	0.000053	0.000065	0.000074	0.000110	0.000114	0.000154	0.000167	0.000171	0.000068	0.000068	0.000075	0.000111	0.000116	0.000157	0.000168	0.000168	0.000028	0.000028	0.000030	0.000031	0.000032	0.000032	0.000038	0.000159	0.05
Lithium (Li)	mg/L	0.0064	0.0064	0.0068	0.0072	0.0070	0.0073	0.0074	0.0076	0.0062	0.0063	0.0067	0.0070	0.0070	0.0073	0.0076	0.0077	0.0064	0.0064	0.0070	0.0073	0.0073	0.0074	0.0083	0.0086	0.0064	0.0064	0.0069	0.0072	0.0071	0.0074	0.0076	0.0078	-
Manganese (Mn)	mg/L	0.021	0.023	0.026	0.064	0.061	0.093	0.098	0.099	0.028	0.035	0.040	0.067	0.067	0.089	0.107	0.110	0.042	0.043	0.064	0.078	0.082	0.091	0.169	0.169	0.040	0.040	0.062	0.078	0.079	0.091	0.157	0.161	-
Molybdenum (Mo)	mg/L	0.004	0.005	0.005	0.006	0.006	0.007	0.008	0.010	0.004	0.005	0.005	0.007	0.007	0.008	0.011	0.014	0.007	0.007	0.011	0.011	0.015	0.017	0.036	0.045	0.007	0.008	0.012	0.014	0.016	0.020	0.032	0.039	-
Nickel (Ni)	mg/L	0.0013	0.0013	0.0016	0.0021	0.0021	0.0025	0.0027	0.0027	0.0016	0.0018	0.0020	0.0026	0.0025	0.0029	0.0031	0.0031	0.0020	0.0020	0.0023	0.0028	0.0027	0.0031	0.0031	0.0031	0.0016	0.0017	0.0018	0.0020	0.0020	0.0021	0.0025	0.0031	-
Selenium (Se)	mg/L	0.00020	0.00020	0.00024	0.00029	0.00040	0.00042	0.00111	0.00112	0.00024	0.00032	0.00039	0.00053	0.00064	0.00067	0.00144	0.00159	0.00035	0.00038	0.00047	0.00057	0.00071	0.00073	0.00164	0.00183	0.00036	0.00038	0.00046	0.00059	0.00072	0.00081	0.00148	0.00159	-
Silicon (Si)		6.2	6.3	7.4	8.3	8.3	9.0	9.6	10.3	8.0	9.5	10.3	10.9	10.8	11.2	11.9	12.3	9.9	10.0	10.2	10.9	10.8	11.3	12.2	12.3	9.4	9.4	10.1	10.9	10.7	11.3	11.6	11.7	-
Silver (Ag)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000006	0.000006	0.000006	0.000007	0.000006	0.000007	0.000007	0.000007	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	-
Strontium (Sr)	mg/L	0.45	0.45	0.50	0.56	0.56	0.60	0.73	0.73	0.44	0.45	0.50	0.57	0.57	0.62	0.74	0.80	0.47	0.47	0.55	0.60	0.63	0.65	0.94	0.97	0.47	0.47	0.55	0.61	0.62	0.68	0.83	0.85	-
Thallium (Tl)	mg/L	0.000006	0.000006	0.000006	0.000008	0.000008	0.000009	0.000010	0.000010	0.000006	0.000007	0.000008	0.000009	0.000009	0.000011	0.000012	0.000012	0.000007	0.000007	0.000009	0.000011	0.000010	0.000011	0.000012	0.000012	0.000006	0.000006	0.000007	0.000007	0.000007	0.000007	0.000009	0.000011	-
Tin (Sn)		0.00006	0.00006	0.00006	0.00008	0.00008	0.00009	0.00010	0.00010	0.00006	0.00007	0.00007	0.00008	0.00009	0.00010	0.00011	0.00011	0.00007	0.00007	0.00007	0.00009	0.00009	0.00010	0.00011	0.00011	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00010	-
Uranium (U)	mg/L	0.0013	0.0014	0.0014	0.0015	0.0015	0.0016	0.0019	0.0019	0.0014	0.0014	0.0015	0.0016	0.0017	0.0017	0.0021	0.0022	0.0014	0.0014	0.0016	0.0017	0.0018	0.0019	0.0028	0.0029	0.0014	0.0014	0.0016	0.0017	0.0018	0.0019	0.0025	0.0026	-
Vanadium (V)	mg/L	0.0024	0.0024	0.0028	0.0033	0.0032	0.0035	0.0037	0.0037	0.0027	0.0030	0.0033	0.0040	0.0038	0.0042	0.0043	0.0044	0.0031	0.0031	0.0036	0.0043	0.0042	0.0044	0.0056	0.0057	0.0028	0.0028	0.0032	0.0033	0.0035	0.0038	0.0050	0.0054	-
Zinc (Zn)	mg/L	0.0024	0.0025	0.0027	0.0028	0.0028	0.0030	0.0032	0.0032	0.0017	0.0017	0.0018	0.0019	0.0019	0.0020	0.0024	0.0028	0.0017	0.0017	0.0019	0.0019	0.0020	0.0020	0.0025	0.0027	0.0017	0.0017	0.0018	0.0018	0.0019	0.0021	0.0023	0.0024	5

\\van11\prj_file\1\011\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-6 Ajax_LOM_WQM_Base Case Appendix Tables_Rec&Aes GL.xlsx]TC1 JL BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - RECREATION AND AESTHETIC (REC & AES) USES.

APPENDIX C3

PC02.3

(Tables C3-1 to C3-6)

TABLE C3-1

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PC02.3 - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO PRIMARY EFFECTS ASSESSMENT WATER QUALITY GUIDELINES

Print Jul/21/15 8:25:58

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG-30 D	BCWQG-MAX	BCWQG-WILDLIFE	WQB/SBEB
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX				
Conventional Parameters and Major Ions																																			
Baseline Hardness	mg/L $CaCO_3$	424	424	438	481	465	481	481	481	424	424	467	481	467	481	481	481	424	424	467	728	467	481	481	481	424	424	467	481	467	481	481	481				
Hardness - Dissolved	mg/L $CaCO_3$	368	378	416	441	532	646	796	965	390	413	447	480	502	518	678	689	427	430	461	486	528	562	727	756	429	432	473	522	529	589	661	675				
Bromide (Br^-)	mg/L	0.18	0.20	0.21	0.22	0.25	0.31	0.33	0.39	0.15	0.16	0.18	0.20	0.20	0.22	0.26	0.29	0.18	0.20	0.22	0.23	0.24	0.26	0.32	0.33	0.20	0.20	0.22	0.25	0.24	0.26	0.29	0.30				
Chloride (Cl^-)	mg/L	57	58	58	60	61	63	67	69	58	58	60	61	62	64	67	70	58	58	59	61	61	63	66	66	57	58	59	62	61	63	65	65	150	600	600	388
Fluoride (F^-)	mg/L	0.24	0.24	0.25	0.26	0.26	0.27	0.30	0.31	0.25	0.26	0.26	0.27	0.27	0.28	0.30	0.31	0.26	0.26	0.26	0.26	0.27	0.27	0.29	0.29	0.24	0.24	0.26	0.27	0.27	0.29	0.30	0.32	1.57		1	
Sulphate (SO_4^{2-})	mg/L	77	78	97	110	229	403	545	680	68	71	91	105	138	188	281	295	77	78	103	119	164	204	333	358	78	79	115	160	166	213	293	307	429			429 / 730
Calcium (Ca)	mg/L	64	68	71	76	76	79	89	94	77	85	91	93	95	97	107	115	89	90	93	94	100	104	124	126	92	93	95	101	102	111	117	122				
Magnesium (Mg)	mg/L	48	49	56	60	83	117	145	183	46	47	53	59	65	73	100	103	48	49	56	60	68	74	102	108	48	49	58	67	67	76	90	91				
Potassium (K)	mg/L	13	13	14	14	19	25	29	34	13	13	14	15	15	17	19	20	13	13	14	15	16	17	20	21	13	13	14	15	16	17	18	19				
Sodium (Na)	mg/L	42	43	46	48	74	112	139	167	40	41	45	49	55	66	82	83	42	43	47	49	56	63	76	81	43	43	48	57	56	62	68	69				
Nutrients																																					
Ammonia	mg/L N	0.080	0.080	0.089	0.103	0.168	0.152	0.445	0.492	0.055	0.061	0.063	0.071	0.093	0.125	0.164	0.168	0.049	0.049	0.052	0.067	0.086	0.114	0.163	0.195	0.045	0.047	0.058	0.068	0.080	0.097	0.139	0.179	0.66			
Nitrate	mg/L N	0.169	0.177	0.193	0.200	0.199	0.204	0.231	0.231	0.104	0.111	0.124	0.146	0.147	0.163	0.190	0.225	0.102	0.105	0.115	0.124	0.135	0.145	0.192	0.255	0.085	0.087	0.091	0.098	0.113	0.127	0.181	0.255	3.0	32.800		
Nitrite	mg/L	0.0058	0.0059	0.0062	0.0065	0.0070	0.0079	0.0085	0.0107	0.0052	0.0054	0.0059	0.0066	0.0067	0.0071	0.0096	0.0103	0.0053	0.0055	0.0064	0.0068	0.0073	0.0075	0.0098	0.0128	0.0050	0.0051	0.0059	0.0068	0.0073	0.0077	0.0120	0.0162	0.2	0.60		
Phosphorus	mg/L	0.117	0.118	0.132	0.148	0.158	0.172	0.227	0.254	0.108	0.109	0.121	0.136	0.137	0.151	0.166	0.175	0.115	0.116	0.121	0.132	0.130	0.136	0.141	0.170	0.106	0.107	0.117	0.126	0.123	0.130	0.134	0.137				
Dissolved Metals																																					
Aluminum (Al)	mg/L	0.0026	0.0029	0.0039	0.0084	0.0090	0.0140	0.0156	0.0161	0.0043	0.0057	0.0069	0.0107	0.0119	0.0173	0.0189	0.0193	0.0054	0.0054	0.0069	0.0106	0.0117	0.0174	0.0186	0.0186	0.0024	0.0024	0.0027	0.0029	0.0029	0.0030	0.0034	0.0176	0.050	0.100	5	
Antimony (Sb)	mg/L	0.00011	0.00011	0.00014	0.00015	0.00017	0.00024	0.00026	0.00029	0.00010	0.00012	0.00015	0.00023	0.00023	0.00029	0.00037	0.00047	0.00012	0.00013	0.00018	0.00018	0.00024	0.00027	0.00047	0.00054	0.00011	0.00012	0.00016	0.00023	0.00027	0.00029	0.00060	0.00104	0.009			
Arsenic (As)	mg/L	0.0017	0.0017	0.0020	0.0020	0.0024	0.0032	0.0036	0.0043	0.0017	0.0017	0.0019	0.0022	0.0022	0.0024	0.0030	0.0031	0.0019	0.0019	0.0022	0.0023	0.0026	0.0027	0.0040	0.0042	0.0019	0.0019	0.0023	0.0026	0.0028	0.0030	0.0042	0.0047		0.0050	0.0250	0.0320
Barium (Ba)	mg/L	0.055	0.059	0.060	0.061	0.062	0.064	0.066	0.066	0.064	0.069	0.072	0.074	0.074	0.076	0.079	0.079	0.071	0.072	0.074	0.076	0.077	0.079	0.088	0.089	0.071	0.072	0.075	0.076	0.077	0.078	0.086	0.086	1.0			
Boron (B)	mg/L	0.023	0.025	0.026	0.026	0.026	0.027	0.027	0.028	0.023	0.023	0.025	0.026	0.026	0.027	0.028	0.029	0.026	0.027	0.028	0.029	0.031	0.034	0.041	0.044	0.027	0.027	0.029	0.033	0.032	0.034	0.037	0.040		1.2	5.0	
Cadmium (Cd)	mg/L	0.000006	0.000006	0.000008	0.000010	0.000010	0.000011	0.000012	0.000012	0.000007	0.000008	0.000009	0.000011	0.000011	0.000013	0.000014	0.000014	0.000009	0.000009	0.000010	0.000011	0.000011	0.000013	0.000013	0.000013	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000009	0.000013	0.00046	0.00260		
Chromium (Cr)	mg/L	0.00023	0.00024	0.00031	0.00058	0.00062	0.00091	0.00102	0.00105	0.00034	0.00044	0.00052	0.00076	0.00082	0.00115	0.00126	0.00128	0.00048	0.00050	0.00053	0.00075	0.00083	0.00115	0.00123	0.00123	0.00015	0.00015	0.00017	0.00019	0.00020	0.00023	0.00028	0.00116	0.001/0.0089			
Cobalt (Co)	mg/L	0.00009	0.00010	0.00014	0.00021	0.00020	0.00025	0.00028	0.00029	0.00014	0.00019	0.00022	0.00027	0.00028	0.00034	0.00036	0.00037	0.00024	0.00025	0.00026	0.00030	0.00031	0.00035	0.00037	0.00037	0.00017	0.00018	0.00020	0.00022	0.00028	0.00028	0.00054	0.00074	0.004	0.110		
Copper (Cu)	mg/L	0.0020	0.0020	0.0025	0.0033	0.0033	0.0042	0.0045	0.0046	0.0026	0.0033	0.0036	0.0045	0.0045	0.0054	0.0056	0.0056	0.0035	0.0035	0.0040	0.0044	0.0046	0.0054	0.0055	0.0055	0.0026	0.0027	0.0028	0.0029	0.0029	0.0030	0.0034	0.0054	0.010	0.026	0.3	0.0256
Iron (Fe)	mg/L	0.018	0.019	0.030	0.044	0.044	0.061	0.068	0.069	0.034	0.047	0.057	0.069	0.069	0.084	0.089	0.090	0.050	0.051	0.065	0.075	0.074	0.087	0.091	0.091	0.043	0.045	0.058	0.070	0.123	0.100	0.349	0.545		0.350		
Lead (Pb)	mg/L	0.000041	0.000042	0.000053	0.000091	0.000089	0.000119	0.000131	0.000135	0.000053	0.000065	0.000074	0.000103	0.000110	0.000146	0.000158	0.000161	0.000066	0.000066	0.000074	0.000101	0.000108	0.000145	0.000154	0.000154	0.000028	0.000028	0.000029	0.000034	0.000034	0.000037	0.000042	0.000147	0.016	0.330	0.10	
Lithium (Li)	mg/L	0.0061	0.0062	0.0065	0.0068	0.0067	0.0068	0.0072	0.0072	0.0062	0.0062	0.0066	0.0067	0.0068	0.0070	0.0075	0.0076	0.0064	0.0064	0.0066	0.0067	0.0070	0.0072	0.0080	0.0082	0.0064	0.0064	0.0067	0.0070	0.0071	0.0074	0.0079	0.0088				
Manganese (Mn)	mg/L	0.022	0.023	0.027	0.073	0.064	0.095	0.100	0.101	0.028	0.036	0.040	0.071	0.068	0.091	0.107	0.110	0.043	0.043	0.063	0.078	0.080	0.090	0.145	0.164	0.040	0.042	0.062	0.107	0.161	0.156	0.451	0.690	1.90	3.80		
Molybdenum (Mo)	mg/L	0.004	0.005	0.005	0.006	0.006	0.007	0.009	0.011	0.004	0.005	0.005	0.007	0.007	0.008	0.011	0.014	0.007	0.007	0.010	0.011	0.015	0.017	0.035	0.043	0.007	0.008	0.011	0.015	0.017	0.022	0.032	0.040	1.00	2.00	0.05	0.180
Nickel (Ni)	mg/L	0.0013	0.0013	0.0016	0.0020	0.0020	0.0023	0.0025	0.0025	0.0016	0.0018	0.0020	0.0026	0.0024	0.0028	0.0029	0.0030	0.0020	0.0020	0.0023	0.0028	0.0026	0.0028	0.0030	0.0031	0.0016	0.0017	0.0019	0.0020	0.0021	0.0024	0.0027	0.0030		0.1500		
Selenium (Se)	mg/L	0.00020	0.00021	0.00026	0.00032	0.00041	0.00039	0.00111	0.00112	0.00024	0.00031	0.00039	0.00051	0.00063	0.00066	0.00143	0.00157	0.00035	0.00038	0.00045	0.00056	0.00070	0.00070	0.00160	0.00175	0.00036	0.00038	0.00049	0.00061	0.00074	0.00082	0.00152	0.00188	0.0020		0.0020	0.0025 / 0.005
Silicon (Si)		6.2	6.3	7.4	7.9	7.9	8.5	9.2	9.8	8.0	9.4	10.1	10.5	10.5	10.9	11.5	12.0	9.9	9.9	10.0	10.3	10.3	10.4	11.6	12.0	9.3	9.4	10.1	10.5	10.6	11.1	11.7	12.7				
Silver (Ag)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000007	0.000008	0.000009	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.001500			
Strontium (Sr)	mg/L	0.46	0.46	0.54	0.56	0.69	0.87	1.06	1.30	0.44	0.46	0.52	0.57	0.60	0.62	0.86	0.88	0.47	0.47	0.55	0.57	0.64	0.69	0.95	0.99	0.47	0.48	0.57	0.63	0.64	0.71	0.86	0.89				
Thallium (Tl)	mg/L	0.000006	0.000006	0.000007	0.000009	0.000008	0.000009	0.000010	0.000011	0.000006	0.000007	0.000008	0.000009	0.000009	0.000010	0.000011	0.000011	0.000007	0.000008	0.000009	0.000010	0.000010	0.000011	0.000013	0.000014	0.000006	0.000006	0.000007	0.000008	0.000008	0.000009	0.000012	0.000014	0.0008			
Tin (Sn)		0.00006	0.00006	0.00007	0.00009	0.00008	0.00009	0.00010	0.00010	0.00006	0.00007	0.00007	0.00009	0.00009	0.00010	0.00010	0.00010	0.00007	0.00007	0.00008	0.00009	0.00009	0.00010	0.00010	0.00010	0.00006	0.00006	0.00006	0.00006	0.00006	0.00007	0.00007	0.00010				
Uranium (U)	mg/L	0.0013	0.0014	0.0014	0.0015	0.0017	0.0018	0.0023	0.0025	0.0014	0.0014	0.0015	0.0016	0.0017	0.0016	0.0022	0.0022	0.0014	0.0014	0.0015	0.0016	0.0018	0.0018	0.0027	0.0028	0.0014	0.0014	0.0016	0.0018	0.0020	0.0024	0.0026	0.0032	0.0085			
Vanadium (V)	mg/L	0.0024	0.0024	0.0027	0.0032	0.0030	0.0033	0.0035	0.0035	0.0027	0.0030	0.0033	0.0038	0.0037	0.0040	0.0042	0.0043	0.0031	0.0031	0.0035	0.0040	0.0040	0.0042	0.0055	0.0056	0.0028	0.0028	0.0030	0.0031	0.0035	0.0041	0.0051	0.0060				
Zinc (Zn)	mg/L	0.0024	0.0024	0.0026	0.0027	0.0027	0.0028	0.0032	0.0032	0.0017	0.0017	0.0018	0.0018	0.0019	0.0019	0.0023	0.0028	0.0017	0.0017	0.0017	0.0018	0.0019	0.0020	0.0025	0.0028	0.0016	0.0017	0.0017	0.0020	0.0020	0.0023	0.0024	0.0028	0.240	0.265		

\\ivan11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-1 Ajax_LOM_WQM_Base Case Summary Tables.xlsx]TC1 JL BC SUMM STATS

NOTES:
1. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - 30 DAY AVERAGE (BCWQG-30 D) - FRESHWATER AQUATIC LIFE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
3. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - WILDLIFE (WILDLIFE).
4. WATER QUALITY BENCHMARKS (WQB) AND SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
5. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS AN AQUATIC LIFE GUIDELINE.
6. GREEN HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG-WILDLIFE.
7. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS A WATER QUALITY BENCHMARK (WQB) OR SCIENCE BASED ENVIRONMENTAL BENCHARK (WQB).
8. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
9. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELCIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
10. SULPHATE SBEB IS 429 mg/L FOR WATER HARDNESS UP TO 800 mg/L CaCO3 AND IS INTENDED FOR LAKES AND CREEKS WHERE EARLY LIFESTAGES OF TROUT ARE PRESENT; SBEB OF 730 mg/L FOR HARDNESS UP TO 1377 mg/L CaCO3 FOR CREEKS WHERE FISH ARE ABSENT OR PERIODS OF THE YEAR WHEN EARLY LIFESTAGES OF TROUT ARE ABSENT.
11. SULPHATE GUIDELINE EXCEEDANCE HIGHLIGHTING IN THIS TABLE DOES NOT ACCOUNT FOR THE TIMING OF THE OCCURANCE OF THE PREDICTED CONCENTRATIONS; THEREFORE IT MAY NOT BE A TRUE EXCEEDANCE.
12. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
13. SELENIUM WQB IS 0.0025 mg/L FOR LENTIC SYSTEMS AND 0.005 mg/L FOR LOTIC SYSTEMS.

TABLE C3-2

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PC02.3 - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO CANADIAN ENVIRONMENTAL QUALITY GUIDELINES FOR THE PROTECTION OF AQUATIC LIFE (CEQG-PAL)

Print Jul/17/15 21:11:22

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								CEQG - PAL
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	
Conventional Parameters and Major Ions																																
Baseline Hardness	mg/L $CaCO_3$	424	424	438	481	465	481	481	481	424	424	467	481	467	481	481	481	424	424	467	728	467	481	481	481	424	424	467	481	467	481	481	481	-
Hardness - Dissolved	mg/L $CaCO_3$	368	378	416	441	532	646	796	965	390	413	447	480	502	518	678	689	427	430	461	486	528	562	727	756	429	432	473	522	529	589	661	675	-
Bromide (Br^-)	mg/L	0.18	0.20	0.21	0.22	0.25	0.31	0.33	0.39	0.15	0.16	0.18	0.20	0.20	0.22	0.26	0.29	0.18	0.20	0.22	0.23	0.24	0.26	0.32	0.33	0.20	0.20	0.22	0.25	0.24	0.26	0.29	0.30	1.5
Chloride (Cl^-)	mg/L	57	58	58	60	61	63	67	69	58	58	60	61	62	64	67	70	58	58	59	61	61	63	66	66	57	58	59	62	61	63	65	65	120
Fluoride (F^-)	mg/L	0.24	0.24	0.25	0.26	0.26	0.27	0.30	0.31	0.25	0.26	0.26	0.27	0.27	0.28	0.30	0.31	0.26	0.26	0.26	0.26	0.27	0.27	0.29	0.29	0.24	0.24	0.26	0.27	0.27	0.29	0.30	0.32	0.12
Sulphate (SO_4^{2-})	mg/L	77	78	97	110	229	403	545	680	68	71	91	105	138	188	281	295	77	78	103	119	164	204	333	358	78	79	115	160	166	213	293	307	-
Calcium (Ca)	mg/L	64	68	71	76	76	79	89	94	77	85	91	93	95	97	107	115	89	90	93	94	100	104	124	126	92	93	95	101	102	111	117	122	-
Magnesium (Mg)	mg/L	48	49	56	60	83	117	145	183	46	47	53	59	65	73	100	103	48	49	56	60	68	74	102	108	48	49	58	67	67	76	90	91	-
Potassium (K)	mg/L	13	13	14	14	19	25	29	34	13	13	14	15	15	17	19	20	13	13	14	15	16	17	20	21	13	13	14	15	16	17	18	19	-
Sodium (Na)	mg/L	42	43	46	48	74	112	139	167	40	41	45	49	55	66	82	83	42	43	47	49	56	63	76	81	43	43	48	57	56	62	68	69	-
Nutrients																																		
Ammonia	mg/L N	0.080	0.080	0.089	0.103	0.168	0.152	0.445	0.492	0.055	0.061	0.063	0.071	0.093	0.125	0.164	0.168	0.049	0.049	0.052	0.067	0.086	0.114	0.163	0.195	0.045	0.047	0.058	0.068	0.080	0.097	0.139	0.179	0.65
Nitrate	mg/L N	0.169	0.177	0.193	0.200	0.199	0.204	0.231	0.231	0.104	0.111	0.124	0.146	0.147	0.163	0.190	0.225	0.102	0.105	0.115	0.124	0.135	0.145	0.192	0.255	0.085	0.087	0.091	0.098	0.113	0.127	0.181	0.255	3
Nitrite	mg/L	0.0058	0.0059	0.0062	0.0065	0.0070	0.0079	0.0085	0.0107	0.0052	0.0054	0.0059	0.0066	0.0067	0.0071	0.0096	0.0103	0.0053	0.0055	0.0064	0.0068	0.0073	0.0075	0.0098	0.0128	0.0050	0.0051	0.0059	0.0068	0.0073	0.0077	0.0120	0.0162	0.06
Phosphorus	mg/L	0.117	0.118	0.132	0.148	0.158	0.172	0.227	0.254	0.108	0.109	0.121	0.136	0.137	0.151	0.166	0.175	0.115	0.116	0.121	0.132	0.130	0.136	0.141	0.170	0.106	0.107	0.117	0.126	0.123	0.130	0.134	0.137	-
Dissolved Metals																																		
Aluminum (Al)	mg/L	0.0026	0.0029	0.0039	0.0084	0.0090	0.0140	0.0156	0.0161	0.0043	0.0057	0.0069	0.0107	0.0119	0.0173	0.0189	0.0193	0.0054	0.0054	0.0069	0.0106	0.0117	0.0174	0.0186	0.0186	0.0024	0.0024	0.0027	0.0029	0.0029	0.0030	0.0034	0.0176	0.1
Antimony (Sb)	mg/L	0.00011	0.00011	0.00014	0.00015	0.00017	0.00024	0.00026	0.00029	0.00010	0.00012	0.00015	0.00023	0.00023	0.00029	0.00037	0.00047	0.00012	0.00013	0.00018	0.00018	0.00024	0.00027	0.00047	0.00054	0.00011	0.00012	0.00016	0.00023	0.00027	0.00029	0.00060	0.00104	-
Arsenic (As)	mg/L	0.0017	0.0017	0.0020	0.0020	0.0024	0.0032	0.0036	0.0043	0.0017	0.0017	0.0019	0.0022	0.0022	0.0024	0.0030	0.0031	0.0019	0.0019	0.0022	0.0023	0.0026	0.0027	0.0040	0.0042	0.0019	0.0019	0.0023	0.0026	0.0028	0.0030	0.0042	0.0047	0.005
Barium (Ba)	mg/L	0.055	0.059	0.060	0.061	0.062	0.064	0.066	0.066	0.064	0.069	0.072	0.074	0.074	0.076	0.079	0.079	0.071	0.072	0.074	0.076	0.077	0.079	0.088	0.089	0.071	0.072	0.075	0.076	0.077	0.078	0.086	0.086	-
Boron (B)	mg/L	0.023	0.025	0.026	0.026	0.026	0.027	0.027	0.028	0.023	0.023	0.025	0.026	0.026	0.027	0.028	0.029	0.026	0.027	0.028	0.029	0.031	0.034	0.041	0.044	0.027	0.027	0.029	0.033	0.032	0.034	0.037	0.040	-
Cadmium (Cd)	mg/L	0.000006	0.000006	0.000008	0.000010	0.000010	0.000011	0.000012	0.000012	0.000007	0.000008	0.000009	0.000011	0.000011	0.000013	0.000014	0.000014	0.000009	0.000009	0.000010	0.000011	0.000011	0.000013	0.000013	0.000013	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000009	0.000013	0.000036
Chromium (Cr)	mg/L	0.00023	0.00024	0.00031	0.00058	0.00062	0.00091	0.00102	0.00105	0.00034	0.00044	0.00052	0.00076	0.00082	0.00115	0.00126	0.00128	0.00048	0.00050	0.00053	0.00075	0.00083	0.00115	0.00123	0.00123	0.00015	0.00015	0.00017	0.00019	0.00020	0.00023	0.00028	0.00116	0.001/0.089
Cobalt (Co)	mg/L	0.00009	0.00010	0.00014	0.00021	0.00020	0.00025	0.00028	0.00029	0.00014	0.00019	0.00022	0.00027	0.00028	0.00034	0.00036	0.00037	0.00024	0.00025	0.00026	0.00030	0.00031	0.00035	0.00037	0.00037	0.00017	0.00018	0.00020	0.00022	0.00028	0.00028	0.00054	0.00074	-
Copper (Cu)	mg/L	0.0020	0.0020	0.0025	0.0033	0.0033	0.0042	0.0045	0.0046	0.0026	0.0033	0.0036	0.0045	0.0045	0.0054	0.0056	0.0056	0.0035	0.0035	0.0040	0.0044	0.0046	0.0054	0.0055	0.0055	0.0026	0.0027	0.0028	0.0029	0.0029	0.0030	0.0034	0.0054	0.004
Iron (Fe)	mg/L	0.018	0.019	0.030	0.044	0.044	0.061	0.068	0.069	0.034	0.047	0.057	0.069	0.069	0.084	0.089	0.090	0.050	0.051	0.065	0.075	0.074	0.087	0.091	0.091	0.043	0.045	0.058	0.070	0.123	0.100	0.349	0.545	0.3
Lead (Pb)	mg/L	0.000041	0.000042	0.000053	0.000091	0.000089	0.000119	0.000131	0.000135	0.000053	0.000065	0.000074	0.000103	0.000110	0.000146	0.000158	0.000161	0.000066	0.000066	0.000074	0.000101	0.000108	0.000145	0.000154	0.000154	0.000028	0.000028	0.000029	0.000034	0.000034	0.000037	0.000042	0.000147	0.001
Lithium (Li)	mg/L	0.0061	0.0062	0.0065	0.0068	0.0067	0.0068	0.0072	0.0072	0.0062	0.0062	0.0066	0.0067	0.0068	0.0070	0.0075	0.0076	0.0064	0.0064	0.0066	0.0067	0.0070	0.0072	0.0080	0.0082	0.0064	0.0064	0.0067	0.0070	0.0071	0.0074	0.0079	0.0088	-
Manganese (Mn)	mg/L	0.022	0.023	0.027	0.073	0.064	0.095	0.100	0.101	0.028	0.036	0.040	0.071	0.068	0.091	0.107	0.110	0.043	0.043	0.063	0.078	0.080	0.090	0.145	0.164	0.040	0.042	0.062	0.107	0.161	0.156	0.451	0.690	-
Molybdenum (Mo)	mg/L	0.004	0.005	0.005	0.006	0.006	0.007	0.009	0.011	0.004	0.005	0.005	0.007	0.007	0.008	0.011	0.014	0.007	0.007	0.010	0.011	0.015	0.017	0.035	0.043	0.007	0.008	0.011	0.015	0.017	0.022	0.032	0.040	0.073
Nickel (Ni)	mg/L	0.0013	0.0013	0.0016	0.0020	0.0020	0.0023	0.0025	0.0025	0.0016	0.0018	0.0020	0.0026	0.0024	0.0028	0.0029	0.0030	0.0020	0.0020	0.0023	0.0028	0.0026	0.0028	0.0030	0.0031	0.0016	0.0017	0.0019	0.0020	0.0021	0.0024	0.0027	0.0030	0.15
Selenium (Se)	mg/L	0.00020	0.00021	0.00026	0.00032	0.00041	0.00039	0.00111	0.00112	0.00024	0.00031	0.00039	0.00051	0.00063	0.00066	0.00143	0.00157	0.00035	0.00038	0.00045	0.00056	0.00070	0.00070	0.00160	0.00175	0.00036	0.00038	0.00049	0.00061	0.00074	0.00082	0.00152	0.00188	0.001
Silicon (Si)		6.2	6.3	7.4	7.9	7.9	8.5	9.2	9.8	8.0	9.4	10.1	10.5	10.5	10.9	11.5	12.0	9.9	9.9	10.0	10.3	10.3	10.4	11.6	12.0	9.3	9.4	10.1	10.5	10.6	11.1	11.7	12.7	-
Silver (Ag)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000007	0.000008	0.000009	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.0001
Strontium (Sr)	mg/L	0.46	0.46	0.54	0.56	0.69	0.87	1.06	1.30	0.44	0.46	0.52	0.57	0.60	0.62	0.86	0.88	0.47	0.47	0.55	0.57	0.64	0.69	0.95	0.99	0.47	0.48	0.57	0.63	0.64	0.71	0.86	0.89	-
Thallium (Tl)	mg/L	0.000006	0.000006	0.000007	0.000009	0.000008	0.000009	0.000010	0.000011	0.000006	0.000007	0.000008	0.000009	0.000009	0.000010	0.000011	0.000011	0.000007	0.000008	0.000009	0.000010	0.000010	0.000011	0.000013	0.000014	0.000006	0.000006	0.000007	0.000008	0.000008	0.000009	0.000012	0.000014	0.0008
Tin (Sn)		0.00006	0.00006	0.00007	0.00009	0.00008	0.00009	0.00010	0.00010	0.00006	0.00007	0.00007	0.00009	0.00009	0.00010	0.00010	0.00010	0.00007	0.00007	0.00008	0.00009	0.00009	0.00010	0.00010	0.00010	0.00006	0.00006	0.00006	0.00006	0.00006	0.00007	0.00007	0.00010	-
Uranium (U)	mg/L	0.0013	0.0014	0.0014	0.0015	0.0017	0.0018	0.0023	0.0025	0.0014	0.0014	0.0015	0.0016	0.0017	0.0016	0.0022	0.0022	0.0014	0.0014	0.0015	0.0016	0.0018	0.0018	0.0027	0.0028	0.0014	0.0014	0.0016	0.0018	0.0020	0.0024	0.0026	0.0032	0.015
Vanadium (V)	mg/L	0.0024	0.0024	0.0027	0.0032	0.0030	0.0033	0.0035	0.0035	0.0027	0.0030	0.0033	0.0038	0.0037	0.0040	0.0042	0.0043	0.0031	0.0031	0.0035	0.0040	0.0040	0.0042	0.0055	0.0056	0.0028	0.0028	0.0030	0.0031	0.0035	0.0041	0.0051	0.0060	-
Zinc (Zn)	mg/L	0.0024	0.0024	0.0026	0.0027	0.0027	0.0028	0.0032	0.0032	0.0017	0.0017	0.0018	0.0018	0.0019	0.0019	0.0023	0.0028	0.0017	0.0017	0.0017	0.0018	0.0019	0.0020	0.0025	0.0028	0.0016	0.0017	0.0017	0.0020	0.0020	0.0023	0.0024	0.0028	0.03

M:\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-2 Ajax_LOM_WQM_Base Case Appendix Tables_CEQ PAL GL.xlsx]TC3 PCO2.3 BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE.
2. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - PROTECTION OF AQUATIC LIFE (PAL).
3. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE CEQG PAL.
4. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
5. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELSIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
7. MERCURY AND BERYLLIUM MODELLED DATA HAVE BEEN EXCLUDED FROM THE RESULTS TABLES; THESE PARAMETERS ARE UNDERSTOOD TO BE MODELLED BASED ON DETECTION LIMITS THAT ARE NEAR TO THE GUIDELINES, RESULTING IN PREDICTED EXCEEDANCES THAT ARE NOT EXPECTED.

TABLE C3-3

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PC02.3 - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO LIVESTOCK WATER QUALITY GUIDELINES

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		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - LIVESTOCK	CEQG - LIVESTOCK
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	424	424	438	481	465	481	481	481	424	424	467	481	467	481	481	481	424	424	467	728	467	481	481	481	424	424	467	481	467	481	481	481	-	-
Hardness - Dissolved	mg/L $CaCO_3$	368	378	416	441	532	646	796	965	390	413	447	480	502	518	678	689	427	430	461	486	528	562	727	756	429	432	473	522	529	589	661	675	-	-
Bromide (Br^-)	mg/L	0.18	0.20	0.21	0.22	0.25	0.31	0.33	0.39	0.15	0.16	0.18	0.20	0.20	0.22	0.26	0.29	0.18	0.20	0.22	0.23	0.24	0.26	0.32	0.33	0.20	0.20	0.22	0.25	0.24	0.26	0.29	0.30	-	-
Chloride (Cl^-)	mg/L	57	58	58	60	61	63	67	69	58	58	60	61	62	64	67	70	58	58	59	61	61	63	66	66	57	58	59	62	61	63	65	65	600	-
Fluoride (F^-)	mg/L	0.24	0.24	0.25	0.26	0.26	0.27	0.30	0.31	0.25	0.26	0.26	0.27	0.27	0.28	0.30	0.31	0.26	0.26	0.26	0.26	0.27	0.27	0.29	0.29	0.24	0.24	0.26	0.27	0.27	0.29	0.30	0.32	1	1
Sulphate (SO_4^{2-})	mg/L	77	78	97	110	229	403	545	680	68	71	91	105	138	188	281	295	77	78	103	119	164	204	333	358	78	79	115	160	166	213	293	307	1,000	1,000
Calcium (Ca)	mg/L	64	68	71	76	76	79	89	94	77	85	91	93	95	97	107	115	89	90	93	94	100	104	124	126	92	93	95	101	102	111	117	122	1,000	1,000
Magnesium (Mg)	mg/L	48	49	56	60	83	117	145	183	46	47	53	59	65	73	100	103	48	49	56	60	68	74	102	108	48	49	58	67	67	76	90	91	-	-
Potassium (K)	mg/L	13	13	14	14	19	25	29	34	13	13	14	15	15	17	19	20	13	13	14	15	16	17	20	21	13	13	14	15	16	17	18	19	-	-
Sodium (Na)	mg/L	42	43	46	48	74	112	139	167	40	41	45	49	55	66	82	83	42	43	47	49	56	63	76	81	43	43	48	57	56	62	68	69	-	-
Nutrients																																	
Ammonia	mg/L N	0.08	0.08	0.09	0.10	0.17	0.15	0.45	0.49	0.05	0.06	0.06	0.07	0.09	0.12	0.16	0.17	0.05	0.05	0.05	0.07	0.09	0.11	0.16	0.20	0.05	0.05	0.06	0.07	0.08	0.10	0.14	0.18	-	-
Nitrate	mg/L N	0.17	0.18	0.19	0.20	0.20	0.20	0.23	0.23	0.10	0.11	0.12	0.15	0.15	0.16	0.19	0.23	0.10	0.11	0.12	0.12	0.14	0.14	0.19	0.25	0.09	0.09	0.09	0.10	0.11	0.13	0.18	0.25	100	-
Nitrite	mg/L	0.0058	0.0059	0.0062	0.0065	0.0070	0.0079	0.0085	0.0107	0.0052	0.0054	0.0059	0.0066	0.0067	0.0071	0.0096	0.0103	0.0053	0.0055	0.0064	0.0068	0.0073	0.0075	0.0098	0.0128	0.0050	0.0051	0.0059	0.0068	0.0073	0.0077	0.0120	0.0162	1	-
Phosphorus	mg/L	0.117	0.118	0.132	0.148	0.158	0.172	0.227	0.254	0.108	0.109	0.121	0.136	0.137	0.151	0.166	0.175	0.115	0.116	0.121	0.132	0.130	0.136	0.141	0.170	0.106	0.107	0.117	0.126	0.123	0.130	0.134	0.137	-	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0026	0.0029	0.0039	0.0084	0.0090	0.0140	0.0156	0.0161	0.0043	0.0057	0.0069	0.0107	0.0119	0.0173	0.0189	0.0193	0.0054	0.0054	0.0069	0.0106	0.0117	0.0174	0.0186	0.0186	0.0024	0.0024	0.0027	0.0029	0.0029	0.0030	0.0034	0.0176	5	5
Antimony (Sb)	mg/L	0.000111	0.000113	0.000136	0.000149	0.000175	0.000235	0.000261	0.000291	0.000104	0.000117	0.000148	0.000233	0.000230	0.000295	0.000375	0.000474	0.000121	0.000131	0.000177	0.000183	0.000236	0.000270	0.000474	0.000545	0.000110	0.000119	0.000163	0.000225	0.000272	0.000289	0.000597	0.001040	-	-
Arsenic (As)	mg/L	0.0017	0.0017	0.0020	0.0020	0.0024	0.0032	0.0036	0.0043	0.0017	0.0017	0.0019	0.0022	0.0022	0.0024	0.0030	0.0031	0.0019	0.0019	0.0022	0.0023	0.0026	0.0027	0.0040	0.0042	0.0019	0.0019	0.0023	0.0026	0.0028	0.0030	0.0042	0.0047	0.025	0.025
Barium (Ba)	mg/L	0.055	0.059	0.060	0.061	0.062	0.064	0.066	0.066	0.064	0.069	0.072	0.074	0.074	0.076	0.079	0.079	0.071	0.072	0.074	0.076	0.077	0.079	0.088	0.089	0.071	0.072	0.075	0.076	0.077	0.078	0.086	0.086	-	-
Boron (B)	mg/L	0.023	0.025	0.026	0.026	0.026	0.027	0.027	0.028	0.023	0.023	0.025	0.026	0.026	0.027	0.028	0.029	0.026	0.027	0.028	0.029	0.031	0.034	0.041	0.044	0.027	0.027	0.029	0.033	0.032	0.034	0.037	0.040	5.0	5.0
Cadmium (Cd)	mg/L	0.0000062	0.0000063	0.0000076	0.0000103	0.0000095	0.0000112	0.0000117	0.0000119	0.0000072	0.0000083	0.0000091	0.0000109	0.0000111	0.0000129	0.0000137	0.0000139	0.0000087	0.0000088	0.0000100	0.0000113	0.0000112	0.0000127	0.0000133	0.0000133	0.0000058	0.0000059	0.0000061	0.0000069	0.0000070	0.0000075	0.0000086	0.0000131	0.0800	0.0800
Chromium (Cr)	mg/L	0.00023	0.00024	0.00031	0.00058	0.00062	0.00091	0.00102	0.00105	0.00034	0.00044	0.00052	0.00076	0.00082	0.00115	0.00126	0.00128	0.00048	0.00050	0.00053	0.00075	0.00083	0.00115	0.00123	0.00123	0.00015	0.00015	0.00017	0.00019	0.00020	0.00023	0.00028	0.00116	0.050/0.050	0.050/0.050
Cobalt (Co)	mg/L	0.00009	0.00010	0.00014	0.00021	0.00020	0.00025	0.00028	0.00029	0.00014	0.00019	0.00022	0.00027	0.00028	0.00034	0.00036	0.00037	0.00024	0.00025	0.00026	0.00030	0.00031	0.00035	0.00037	0.00037	0.00017	0.00018	0.00020	0.00022	0.00028	0.00028	0.00054	0.00074	1	1
Copper (Cu)	mg/L	0.0020	0.0020	0.0025	0.0033	0.0033	0.0042	0.0045	0.0046	0.0026	0.0033	0.0036	0.0045	0.0045	0.0054	0.0056	0.0056	0.0035	0.0035	0.0040	0.0044	0.0046	0.0054	0.0055	0.0055	0.0026	0.0027	0.0028	0.0029	0.0029	0.0030	0.0034	0.0054	0.3	1.0
Iron (Fe)	mg/L	0.018	0.019	0.030	0.044	0.044	0.061	0.068	0.069	0.034	0.047	0.057	0.069	0.069	0.084	0.089	0.090	0.050	0.051	0.065	0.075	0.074	0.087	0.091	0.091	0.043	0.045	0.058	0.070	0.123	0.100	0.349	0.545	-	-
Lead (Pb)	mg/L	0.000041	0.000042	0.000053	0.000091	0.000089	0.000119	0.000131	0.000135	0.000053	0.000065	0.000074	0.000103	0.000110	0.000146	0.000158	0.000161	0.000066	0.000066	0.000074	0.000101	0.000108	0.000145	0.000154	0.000154	0.000028	0.000028	0.000029	0.000034	0.000034	0.000037	0.000042	0.000147	0.1	0.1
Lithium (Li)	mg/L	0.0061	0.0062	0.0065	0.0068	0.0067	0.0068	0.0072	0.0072	0.0062	0.0062	0.0066	0.0067	0.0068	0.0070	0.0075	0.0076	0.0064	0.0064	0.0066	0.0067	0.0070	0.0072	0.0080	0.0082	0.0064	0.0064	0.0067	0.0070	0.0071	0.0074	0.0079	0.0088	-	-
Manganese (Mn)	mg/L	0.022	0.023	0.027	0.073	0.064	0.095	0.100	0.101	0.028	0.036	0.040	0.071	0.068	0.091	0.107	0.110	0.043	0.043	0.063	0.078	0.080	0.090	0.145	0.164	0.040	0.042	0.062	0.107	0.161	0.156	0.451	0.690	-	-
Molybdenum (Mo)	mg/L	0.0044	0.0048	0.0052	0.0065	0.0064	0.0069	0.0086	0.0108	0.0043	0.0047	0.0054	0.0072	0.0072	0.0079	0.0114	0.0137	0.0065	0.0075	0.0099	0.0108	0.0148	0.0167	0.0346	0.0426	0.0073	0.0079	0.0115	0.0155	0.0170	0.0216	0.0320	0.0398	0.05	0.50
Nickel (Ni)	mg/L	0.00133	0.00134	0.00159	0.00202	0.00196	0.00234	0.00247	0.00247	0.00158	0.00183	0.00203	0.00257	0.00243	0.00280	0.00292	0.00298	0.00197	0.00200	0.00227	0.00275	0.00257	0.00283	0.00298	0.00307	0.00162	0.00166	0.00188	0.00203	0.00212	0.00244	0.00267	0.00296	1	1
Selenium (Se)	mg/L	0.00020	0.00021	0.00026	0.00032	0.00041	0.00039	0.00111	0.00112	0.00024	0.00031	0.00039	0.00051	0.00063	0.00066	0.00143	0.00157	0.00035	0.00038	0.00045	0.00056	0.00070	0.00070	0.00160	0.00175	0.00036	0.00038	0.00049	0.00061	0.00074	0.00082	0.00152	0.00188	0.03	0.05
Silicon (Si)		6.2	6.3	7.4	7.9	7.9	8.5	9.2	9.8	8.0	9.4	10.1	10.5	10.5	10.9	11.5	12.0	9.9	9.9	10.0	10.3	10.3	10.4	11.6	12.0	9.3	9.4	10.1	10.5	10.6	11.1	11.7	12.7	-	-
Silver (Ag)	mg/L	0.0000053	0.0000054	0.0000057	0.0000058	0.0000064	0.0000074	0.0000079	0.0000086	0.0000055	0.0000057	0.0000059	0.0000062	0.0000062	0.0000063	0.0000068	0.0000069	0.0000057	0.0000058	0.0000060	0.0000061	0.0000063	0.0000066	0.0000071	0.0000071	0.0000054	0.0000054	0.0000056	0.0000060	0.0000060	0.0000062	0.0000065	0.0000068	-	-
Strontium (Sr)	mg/L	0.46	0.46	0.54	0.56	0.69	0.87	1.06	1.30	0.44	0.46	0.52	0.57	0.60	0.62	0.86	0.88	0.47	0.47	0.55	0.57	0.64	0.69	0.95	0.99	0.47	0.48	0.57	0.63	0.64	0.71	0.86	0.89	-	-
Thallium (Tl)	mg/L	0.0000058	0.0000059	0.0000068	0.0000088	0.0000083	0.0000092	0.0000103	0.0000105	0.0000064	0.0000071	0.0000077	0.0000092	0.0000092	0.0000105	0.0000110	0.0000113	0.0000074	0.0000075	0.0000089	0.0000104	0.0000102	0.0000109	0.0000133	0.0000143	0.0000058	0.0000060	0.0000065	0.0000079	0.0000081	0.0000088	0.0000120	0.0000138	-	-
Tin (Sn)		0.000058	0.000058	0.000067	0.000087	0.000081	0.000090	0.000101	0.000104	0.000062	0.000068	0.000072	0.000086	0.000085	0.000096	0.000101	0.000102	0.000070	0.000070	0.000076	0.000086	0.000086	0.000095	0.000099	0.000099	0.000055	0.000055	0.000057	0.000062	0.000061	0.000065	0.000067	0.000098	-	-
Uranium (U)	mg/L	0.0013	0.0014	0.0014	0.0015	0.0017	0.0018	0.0023	0.0025	0.0014	0.0014	0.0015	0.0016	0.0017	0.0016	0.0022	0.0022	0.0014	0.0014	0.0015	0.0016	0.0018	0.0018	0.0027	0.0028	0.0014	0.0014	0.0016	0.0018	0.0020	0.0024	0.0026	0.0032	0.2	0.2
Vanadium (V)	mg/L	0.0024	0.0024	0.0027	0.0032	0.0030	0.0033	0.0035	0.0035	0.0027	0.0030	0.0033	0.0038	0.0037	0.0040	0.0042	0.0043	0.0031	0.0031	0.0035	0.0040	0.0040	0.0042	0.0055	0.0056	0.0028	0.0028	0.0030	0.0031	0.0035	0.0041	0.0051	0.0060	0.1	0.1
Zinc (Zn)	mg/L	0.0024	0.0024	0.0026	0.0027	0.0027	0.0028	0.0032	0.0032	0.0017	0.0017	0.0018	0.0018	0.0019	0.0019	0.0023	0.0028	0.0017	0.0017	0.0017	0.0018	0.0019	0.0020	0.0025	0.0028	0.0016	0.0017	0.0017	0.0020	0.0020	0.0023	0.0024	0.0028	2	50

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-3 Ajax_LOM_WQM_Base Case Appendix Tables_Livestock GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUE SELECTED) - LIVESTOCK WATERING.
3. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - WATER QUALITY GUIDELINES FOR THE PROTECTION OF AGRICULTURE - LIVESTOCK.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR LIVESTOCK.
5. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
6. WHEN APPLICABLE, THE GUIDELINE SELECTED FOR LIVESTOCK WATERING USE WAS THAT CORRESPONDING TO CATTLE.

TABLE C3-4

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PC02.3 - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO IRRIGATION GUIDELINES

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		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - IRRIGATION	CEQG - IRRIGATION
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	424	424	438	481	465	481	481	481	424	424	467	481	467	481	481	481	424	424	467	728	467	481	481	481	424	424	467	481	467	481	481	481	-	-
Hardness - Dissolved	mg/L $CaCO_3$	368	378	416	441	532	646	796	965	390	413	447	480	502	518	678	689	427	430	461	486	528	562	727	756	429	432	473	522	529	589	661	675	-	-
Bromide (Br^-)	mg/L	0.18	0.20	0.21	0.22	0.25	0.31	0.33	0.39	0.15	0.16	0.18	0.20	0.20	0.22	0.26	0.29	0.18	0.20	0.22	0.23	0.24	0.26	0.32	0.33	0.20	0.20	0.22	0.25	0.24	0.26	0.29	0.30	-	-
Chloride (Cl^-)	mg/L	57	58	58	60	61	63	67	69	58	58	60	61	62	64	67	70	58	58	59	61	61	63	66	66	57	58	59	62	61	63	65	65	100	250
Fluoride (F^-)	mg/L	0.24	0.24	0.25	0.26	0.26	0.27	0.30	0.31	0.25	0.26	0.26	0.27	0.27	0.28	0.30	0.31	0.26	0.26	0.26	0.26	0.27	0.27	0.29	0.29	0.24	0.24	0.26	0.27	0.27	0.29	0.30	0.32	1	1
Sulphate (SO_4^{2-})	mg/L	77	78	97	110	229	403	545	680	68	71	91	105	138	188	281	295	77	78	103	119	164	204	333	358	78	79	115	160	166	213	293	307	-	-
Calcium (Ca)	mg/L	64	68	71	76	76	79	89	94	77	85	91	93	95	97	107	115	89	90	93	94	100	104	124	126	92	93	95	101	102	111	117	122	-	-
Magnesium (Mg)	mg/L	48	49	56	60	83	117	145	183	46	47	53	59	65	73	100	103	48	49	56	60	68	74	102	108	48	49	58	67	67	76	90	91	-	-
Potassium (K)	mg/L	13	13	14	14	19	25	29	34	13	13	14	15	15	17	19	20	13	13	14	15	16	17	20	21	13	13	14	15	16	17	18	19	-	-
Sodium (Na)	mg/L	42	43	46	48	74	112	139	167	40	41	45	49	55	66	82	83	42	43	47	49	56	63	76	81	43	43	48	57	56	62	68	69	-	-
Nutrients																																	
Ammonia	mg/L N	0.08	0.08	0.09	0.10	0.17	0.15	0.45	0.49	0.05	0.06	0.06	0.07	0.09	0.12	0.16	0.17	0.05	0.05	0.05	0.07	0.09	0.11	0.16	0.20	0.05	0.05	0.06	0.07	0.08	0.10	0.14	0.18	-	-
Nitrate	mg/L N	0.17	0.18	0.19	0.20	0.20	0.20	0.23	0.23	0.10	0.11	0.12	0.15	0.15	0.16	0.19	0.23	0.10	0.11	0.12	0.12	0.14	0.14	0.19	0.25	0.09	0.09	0.09	0.10	0.11	0.13	0.18	0.25	-	-
Nitrite	mg/L	0.0058	0.0059	0.0062	0.0065	0.0070	0.0079	0.0085	0.0107	0.0052	0.0054	0.0059	0.0066	0.0067	0.0071	0.0096	0.0103	0.0053	0.0055	0.0064	0.0068	0.0073	0.0075	0.0098	0.0128	0.0050	0.0051	0.0059	0.0068	0.0073	0.0077	0.0120	0.0162	-	10
Phosphorus	mg/L	0.117	0.118	0.132	0.148	0.158	0.172	0.227	0.254	0.108	0.109	0.121	0.136	0.137	0.151	0.166	0.175	0.115	0.116	0.121	0.132	0.130	0.136	0.141	0.170	0.106	0.107	0.117	0.126	0.123	0.130	0.134	0.137	-	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0026	0.0029	0.0039	0.0084	0.0090	0.0140	0.0156	0.0161	0.0043	0.0057	0.0069	0.0107	0.0119	0.0173	0.0189	0.0193	0.0054	0.0054	0.0069	0.0106	0.0117	0.0174	0.0186	0.0186	0.0024	0.0024	0.0027	0.0029	0.0029	0.0030	0.0034	0.0176	5	5
Antimony (Sb)	mg/L	0.000111	0.000113	0.000136	0.000149	0.000175	0.000235	0.000261	0.000291	0.000104	0.000117	0.000148	0.000233	0.000230	0.000295	0.000375	0.000474	0.000121	0.000131	0.000177	0.000183	0.000236	0.000270	0.000474	0.000545	0.000110	0.000119	0.000163	0.000225	0.000272	0.000289	0.000597	0.001040	-	-
Arsenic (As)	mg/L	0.0017	0.0017	0.0020	0.0020	0.0024	0.0032	0.0036	0.0043	0.0017	0.0017	0.0019	0.0022	0.0022	0.0024	0.0030	0.0031	0.0019	0.0019	0.0022	0.0023	0.0026	0.0027	0.0040	0.0042	0.0019	0.0019	0.0023	0.0026	0.0028	0.0030	0.0042	0.0047	0.100	0.100
Barium (Ba)	mg/L	0.055	0.059	0.060	0.061	0.062	0.064	0.066	0.066	0.064	0.069	0.072	0.074	0.074	0.076	0.079	0.079	0.071	0.072	0.074	0.076	0.077	0.079	0.088	0.089	0.071	0.072	0.075	0.076	0.077	0.078	0.086	0.086	-	-
Boron (B)	mg/L	0.023	0.025	0.026	0.026	0.026	0.027	0.027	0.028	0.023	0.023	0.025	0.026	0.026	0.027	0.028	0.029	0.026	0.027	0.028	0.029	0.031	0.034	0.041	0.044	0.027	0.027	0.029	0.033	0.032	0.034	0.037	0.040	0.5	0.5
Cadmium (Cd)	mg/L	0.0000062	0.0000063	0.0000076	0.0000103	0.0000095	0.0000112	0.0000117	0.0000119	0.0000072	0.0000083	0.0000091	0.0000109	0.0000111	0.0000129	0.0000137	0.0000139	0.0000087	0.0000088	0.0000100	0.0000113	0.0000112	0.0000127	0.0000133	0.0000133	0.0000058	0.0000059	0.0000061	0.0000069	0.0000070	0.0000075	0.0000086	0.0000131	0.0051	0.0051
Chromium (Cr)	mg/L	0.00023	0.00024	0.00031	0.00058	0.00062	0.00091	0.00102	0.00105	0.00034	0.00044	0.00052	0.00076	0.00082	0.00115	0.00126	0.00128	0.00048	0.00050	0.00053	0.00075	0.00083	0.00115	0.00123	0.00123	0.00015	0.00015	0.00017	0.00019	0.00020	0.00023	0.00028	0.00116	0.008/0.0049	0.008/0.0049
Cobalt (Co)	mg/L	0.00009	0.00010	0.00014	0.00021	0.00020	0.00025	0.00028	0.00029	0.00014	0.00019	0.00022	0.00027	0.00028	0.00034	0.00036	0.00037	0.00024	0.00025	0.00026	0.00030	0.00031	0.00035	0.00037	0.00037	0.00017	0.00018	0.00020	0.00022	0.00028	0.00028	0.00054	0.00074	0.05	0.05
Copper (Cu)	mg/L	0.0020	0.0020	0.0025	0.0033	0.0033	0.0042	0.0045	0.0046	0.0026	0.0033	0.0036	0.0045	0.0045	0.0054	0.0056	0.0056	0.0035	0.0035	0.0040	0.0044	0.0046	0.0054	0.0055	0.0055	0.0026	0.0027	0.0028	0.0029	0.0029	0.0030	0.0034	0.0054	0.2	1.0
Iron (Fe)	mg/L	0.018	0.019	0.030	0.044	0.044	0.061	0.068	0.069	0.034	0.047	0.057	0.069	0.069	0.084	0.089	0.090	0.050	0.051	0.065	0.075	0.074	0.087	0.091	0.091	0.043	0.045	0.058	0.070	0.123	0.100	0.349	0.545	-	5.0
Lead (Pb)	mg/L	0.000041	0.000042	0.000053	0.000091	0.000089	0.000119	0.000131	0.000135	0.000053	0.000065	0.000074	0.000103	0.000110	0.000146	0.000158	0.000161	0.000066	0.000066	0.000074	0.000101	0.000108	0.000145	0.000154	0.000154	0.000028	0.000028	0.000029	0.000034	0.000034	0.000037	0.000042	0.000147	0.2	0.2
Lithium (Li)	mg/L	0.0061	0.0062	0.0065	0.0068	0.0067	0.0068	0.0072	0.0072	0.0062	0.0062	0.0066	0.0067	0.0068	0.0070	0.0075	0.0076	0.0064	0.0064	0.0066	0.0067	0.0070	0.0072	0.0080	0.0082	0.0064	0.0064	0.0067	0.0070	0.0071	0.0074	0.0079	0.0088	0.75	2.50
Manganese (Mn)	mg/L	0.022	0.023	0.027	0.073	0.064	0.095	0.100	0.101	0.028	0.036	0.040	0.071	0.068	0.091	0.107	0.110	0.043	0.043	0.063	0.078	0.080	0.090	0.145	0.164	0.040	0.042	0.062	0.107	0.161	0.156	**0.451**	**0.690**	0.2	0.2
Molybdenum (Mo)	mg/L	0.0044	0.0048	0.0052	0.0065	0.0064	0.0069	0.0086	0.0108	0.0043	0.0047	0.0054	0.0072	0.0072	0.0079	0.0114	0.0137	0.0065	0.0075	0.0099	0.0108	0.0148	0.0167	0.0346	0.0426	0.0073	0.0079	0.0115	0.0155	0.0170	0.0216	0.0320	0.0398	0.05	0.05
Nickel (Ni)	mg/L	0.00133	0.00134	0.00159	0.00202	0.00196	0.00234	0.00247	0.00247	0.00158	0.00183	0.00203	0.00257	0.00243	0.00280	0.00292	0.00298	0.00197	0.00200	0.00227	0.00275	0.00257	0.00283	0.00298	0.00307	0.00162	0.00166	0.00188	0.00203	0.00212	0.00244	0.00267	0.00296	0.2	0.2
Selenium (Se)	mg/L	0.00020	0.00021	0.00026	0.00032	0.00041	0.00039	0.00111	0.00112	0.00024	0.00031	0.00039	0.00051	0.00063	0.00066	0.00143	0.00157	0.00035	0.00038	0.00045	0.00056	0.00070	0.00070	0.00160	0.00175	0.00036	0.00038	0.00049	0.00061	0.00074	0.00082	0.00152	0.00188	0.01	0.05
Silicon (Si)		6.2	6.3	7.4	7.9	7.9	8.5	9.2	9.8	8.0	9.4	10.1	10.5	10.5	10.9	11.5	12.0	9.9	9.9	10.0	10.3	10.3	10.4	11.6	12.0	9.3	9.4	10.1	10.5	10.6	11.1	11.7	12.7	-	-
Silver (Ag)	mg/L	0.0000053	0.0000054	0.0000057	0.0000058	0.0000064	0.0000074	0.0000079	0.0000086	0.0000055	0.0000057	0.0000059	0.0000062	0.0000062	0.0000063	0.0000068	0.0000069	0.0000057	0.0000058	0.0000060	0.0000061	0.0000063	0.0000066	0.0000071	0.0000071	0.0000054	0.0000054	0.0000056	0.0000060	0.0000060	0.0000062	0.0000065	0.0000068	-	-
Strontium (Sr)	mg/L	0.46	0.46	0.54	0.56	0.69	0.87	1.06	1.30	0.44	0.46	0.52	0.57	0.60	0.62	0.86	0.88	0.47	0.47	0.55	0.57	0.64	0.69	0.95	0.99	0.47	0.48	0.57	0.63	0.64	0.71	0.86	0.89	-	-
Thallium (Tl)	mg/L	0.0000058	0.0000059	0.0000068	0.0000088	0.0000083	0.0000092	0.0000103	0.0000105	0.0000064	0.0000071	0.0000077	0.0000092	0.0000092	0.0000105	0.0000110	0.0000113	0.0000074	0.0000075	0.0000089	0.0000104	0.0000102	0.0000109	0.0000133	0.0000143	0.0000058	0.0000060	0.0000065	0.0000079	0.0000081	0.0000088	0.0000120	0.0000138	-	-
Tin (Sn)		0.000058	0.000058	0.000067	0.000087	0.000081	0.000090	0.000101	0.000104	0.000062	0.000068	0.000072	0.000086	0.000085	0.000096	0.000101	0.000102	0.000070	0.000070	0.000076	0.000086	0.000086	0.000095	0.000099	0.000099	0.000055	0.000055	0.000057	0.000062	0.000061	0.000065	0.000067	0.000098	-	-
Uranium (U)	mg/L	0.0013	0.0014	0.0014	0.0015	0.0017	0.0018	0.0023	0.0025	0.0014	0.0014	0.0015	0.0016	0.0017	0.0016	0.0022	0.0022	0.0014	0.0014	0.0015	0.0016	0.0018	0.0018	0.0027	0.0028	0.0014	0.0014	0.0016	0.0018	0.0020	0.0024	0.0026	0.0032	0.01	0.01
Vanadium (V)	mg/L	0.0024	0.0024	0.0027	0.0032	0.0030	0.0033	0.0035	0.0035	0.0027	0.0030	0.0033	0.0038	0.0037	0.0040	0.0042	0.0043	0.0031	0.0031	0.0035	0.0040	0.0040	0.0042	0.0055	0.0056	0.0028	0.0028	0.0030	0.0031	0.0035	0.0041	0.0051	0.0060	0.1	0.1
Zinc (Zn)	mg/L	0.0024	0.0024	0.0026	0.0027	0.0027	0.0028	0.0032	0.0032	0.0017	0.0017	0.0018	0.0018	0.0019	0.0019	0.0023	0.0028	0.0017	0.0017	0.0017	0.0018	0.0019	0.0020	0.0025	0.0028	0.0016	0.0017	0.0017	0.0020	0.0020	0.0023	0.0024	0.0028	1	1

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NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUES SELECTED) - IRRIGATION.
3. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - WATER QUALITY GUIDELINES FOR THE PROTECTION OF AGRICULTURE - IRRIGATION.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR IRRIGATION.
5. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS THE CEQG FOR IRRIGATION.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
7. WHEN APPLICABLE, THE GUIDELINE SELECTED FOR IRRIGATION USE WAS THAT CORRESPONDING TO THE MOST SENSITIVE CROP OR SOIL TYPE LISTED.

TABLE C3-5

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PC02.3 - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO DRINKING WATER GUIDELINES

Print Jul/21/15 8:43:37

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - DRINKING WATER	HC - DRINKING WATER
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	424	424	438	481	465	481	481	481	424	424	467	481	467	481	481	481	424	424	467	728	467	481	481	481	424	424	467	481	467	481	481	481	-	-
Hardness - Dissolved	mg/L $CaCO_3$	368	378	416	441	532	646	796	965	390	413	447	480	502	518	678	689	427	430	461	486	528	562	727	756	429	432	473	522	529	589	661	675	-	-
Bromide (Br^-)	mg/L	0.18	0.20	0.21	0.22	0.25	0.31	0.33	0.39	0.15	0.16	0.18	0.20	0.20	0.22	0.26	0.29	0.18	0.20	0.22	0.23	0.24	0.26	0.32	0.33	0.20	0.20	0.22	0.25	0.24	0.26	0.29	0.30	-	-
Chloride (Cl^-)	mg/L	57	58	58	60	61	63	67	69	58	58	60	61	62	64	67	70	58	58	59	61	61	63	66	66	57	58	59	62	61	63	65	65	250	250
Fluoride (F^-)	mg/L	0.24	0.24	0.25	0.26	0.26	0.27	0.30	0.31	0.25	0.26	0.26	0.27	0.27	0.28	0.30	0.31	0.26	0.26	0.26	0.26	0.27	0.27	0.29	0.29	0.24	0.24	0.26	0.27	0.27	0.29	0.30	0.32	2	2
Sulphate (SO_4^{2-})	mg/L	77	78	97	110	229	403	**545**	**680**	68	71	91	105	138	188	281	295	77	78	103	119	164	204	333	358	78	79	115	160	166	213	293	307	500	500
Calcium (Ca)	mg/L	64	68	71	76	76	79	89	94	77	85	91	93	95	97	107	115	89	90	93	94	100	104	124	126	92	93	95	101	102	111	117	122	-	-
Magnesium (Mg)	mg/L	48	49	56	60	83	117	145	183	46	47	53	59	65	73	100	103	48	49	56	60	68	74	102	108	48	49	58	67	67	76	90	91	-	-
Potassium (K)	mg/L	13	13	14	14	19	25	29	34	13	13	14	15	15	17	19	20	13	13	14	15	16	17	20	21	13	13	14	15	16	17	18	19	-	-
Sodium (Na)	mg/L	42	43	46	48	74	112	139	167	40	41	45	49	55	66	82	83	42	43	47	49	56	63	76	81	43	43	48	57	56	62	68	69	-	200
Nutrients																																	
Ammonia	mg/L N	0.08	0.08	0.09	0.10	0.17	0.15	0.45	0.49	0.05	0.06	0.06	0.07	0.09	0.12	0.16	0.17	0.05	0.05	0.05	0.07	0.09	0.11	0.16	0.20	0.05	0.05	0.06	0.07	0.08	0.10	0.14	0.18	-	-
Nitrate	mg/L N	0.17	0.18	0.19	0.20	0.20	0.20	0.23	0.23	0.10	0.11	0.12	0.15	0.15	0.16	0.19	0.23	0.10	0.11	0.12	0.12	0.14	0.14	0.19	0.25	0.09	0.09	0.09	0.10	0.11	0.13	0.18	0.25	10	10
Nitrite	mg/L	0.006	0.006	0.006	0.006	0.007	0.008	0.009	0.011	0.005	0.005	0.006	0.007	0.007	0.007	0.010	0.010	0.005	0.005	0.006	0.007	0.007	0.008	0.010	0.013	0.005	0.005	0.006	0.007	0.007	0.008	0.012	0.016	1	1
Phosphorus	mg/L	0.12	0.12	0.13	0.15	0.16	0.17	0.23	0.25	0.11	0.11	0.12	0.14	0.14	0.15	0.17	0.17	0.12	0.12	0.12	0.13	0.13	0.14	0.14	0.17	0.11	0.11	0.12	0.13	0.12	0.13	0.13	0.14	-	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0026	0.0029	0.0039	0.0084	0.0090	0.0140	0.0156	0.0161	0.0043	0.0057	0.0069	0.0107	0.0119	0.0173	0.0189	0.0193	0.0054	0.0054	0.0069	0.0106	0.0117	0.0174	0.0186	0.0186	0.0024	0.0024	0.0027	0.0029	0.0029	0.0030	0.0034	0.0176	0.2	0.2
Antimony (Sb)	mg/L	0.00011	0.00011	0.00014	0.00015	0.00017	0.00024	0.00026	0.00029	0.00010	0.00012	0.00015	0.00023	0.00023	0.00029	0.00037	0.00047	0.00012	0.00013	0.00018	0.00018	0.00024	0.00027	0.00047	0.00054	0.00011	0.00012	0.00016	0.00023	0.00027	0.00029	0.00060	0.00104	-	0.006
Arsenic (As)	mg/L	0.0017	0.0017	0.0020	0.0020	0.0024	0.0032	0.0036	0.0043	0.0017	0.0017	0.0019	0.0022	0.0022	0.0024	0.0030	0.0031	0.0019	0.0019	0.0022	0.0023	0.0026	0.0027	0.0040	0.0042	0.0019	0.0019	0.0023	0.0026	0.0028	0.0030	0.0042	0.0047	0.025	0.010
Barium (Ba)	mg/L	0.055	0.059	0.060	0.061	0.062	0.064	0.066	0.066	0.064	0.069	0.072	0.074	0.074	0.076	0.079	0.079	0.071	0.072	0.074	0.076	0.077	0.079	0.088	0.089	0.071	0.072	0.075	0.076	0.077	0.078	0.086	0.086	-	1
Boron (B)	mg/L	0.023	0.025	0.026	0.026	0.026	0.027	0.027	0.028	0.023	0.023	0.025	0.026	0.026	0.027	0.028	0.029	0.026	0.027	0.028	0.029	0.031	0.034	0.041	0.044	0.027	0.027	0.029	0.033	0.032	0.034	0.037	0.040	-	5
Cadmium (Cd)	mg/L	0.0000062	0.0000063	0.0000076	0.0000103	0.0000095	0.0000112	0.0000117	0.0000119	0.0000072	0.0000083	0.0000091	0.0000109	0.0000111	0.0000129	0.0000137	0.0000139	0.0000087	0.0000088	0.0000100	0.0000113	0.0000112	0.0000127	0.0000133	0.0000133	0.0000058	0.0000059	0.0000061	0.0000069	0.0000070	0.0000075	0.0000086	0.0000131	-	0.005000
Chromium (Cr)	mg/L	0.00023	0.00024	0.00031	0.00058	0.00062	0.00091	0.00102	0.00105	0.00034	0.00044	0.00052	0.00076	0.00082	0.00115	0.00126	0.00128	0.00048	0.00050	0.00053	0.00075	0.00083	0.00115	0.00123	0.00123	0.00015	0.00015	0.00017	0.00019	0.00020	0.00023	0.00028	0.00116	-	0.050
Cobalt (Co)	mg/L	0.00009	0.00010	0.00014	0.00021	0.00020	0.00025	0.00028	0.00029	0.00014	0.00019	0.00022	0.00027	0.00028	0.00034	0.00036	0.00037	0.00024	0.00025	0.00026	0.00030	0.00031	0.00035	0.00037	0.00037	0.00017	0.00018	0.00020	0.00022	0.00028	0.00028	0.00054	0.00074	-	-
Copper (Cu)	mg/L	0.0020	0.0020	0.0025	0.0033	0.0033	0.0042	0.0045	0.0046	0.0026	0.0033	0.0036	0.0045	0.0045	0.0054	0.0056	0.0056	0.0035	0.0035	0.0040	0.0044	0.0046	0.0054	0.0055	0.0055	0.0026	0.0027	0.0028	0.0029	0.0029	0.0030	0.0034	0.0054	0.5	1.0
Iron (Fe)	mg/L	0.02	0.02	0.03	0.04	0.04	0.06	0.07	0.07	0.03	0.05	0.06	0.07	0.07	0.08	0.09	0.09	0.05	0.05	0.06	0.08	0.07	0.09	0.09	0.09	0.04	0.05	0.06	0.07	0.12	0.10	**0.35**	**0.55**	-	0.3
Lead (Pb)	mg/L	0.000041	0.000042	0.000053	0.000091	0.000089	0.000119	0.000131	0.000135	0.000053	0.000065	0.000074	0.000103	0.000110	0.000146	0.000158	0.000161	0.000066	0.000066	0.000074	0.000101	0.000108	0.000145	0.000154	0.000154	0.000028	0.000028	0.000029	0.000034	0.000034	0.000037	0.000042	0.000147	0.05	0.01
Lithium (Li)	mg/L	0.0061	0.0062	0.0065	0.0068	0.0067	0.0068	0.0072	0.0072	0.0062	0.0062	0.0066	0.0067	0.0068	0.0070	0.0075	0.0076	0.0064	0.0064	0.0066	0.0067	0.0070	0.0072	0.0080	0.0082	0.0064	0.0064	0.0067	0.0070	0.0071	0.0074	0.0079	0.0088	-	-
Manganese (Mn)	mg/L	0.022	0.023	0.027	**0.073**	**0.064**	**0.095**	**0.100**	**0.101**	0.028	0.036	0.040	**0.071**	**0.068**	**0.091**	**0.107**	**0.110**	0.043	0.043	**0.063**	**0.078**	**0.080**	**0.090**	**0.145**	**0.164**	0.040	0.042	**0.062**	**0.107**	**0.161**	**0.156**	**0.451**	**0.690**	-	0.05
Molybdenum (Mo)	mg/L	0.004	0.005	0.005	0.006	0.006	0.007	0.009	0.011	0.004	0.005	0.005	0.007	0.007	0.008	0.011	0.014	0.007	0.007	0.010	0.011	0.015	0.017	0.035	0.043	0.007	0.008	0.011	0.015	0.017	0.022	0.032	0.040	0.25	-
Nickel (Ni)	mg/L	0.0013	0.0013	0.0016	0.0020	0.0020	0.0023	0.0025	0.0025	0.0016	0.0018	0.0020	0.0026	0.0024	0.0028	0.0029	0.0030	0.0020	0.0020	0.0023	0.0028	0.0026	0.0028	0.0030	0.0031	0.0016	0.0017	0.0019	0.0020	0.0021	0.0024	0.0027	0.0030	-	-
Selenium (Se)	mg/L	0.00020	0.00021	0.00026	0.00032	0.00041	0.00039	0.00111	0.00112	0.00024	0.00031	0.00039	0.00051	0.00063	0.00066	0.00143	0.00157	0.00035	0.00038	0.00045	0.00056	0.00070	0.00070	0.00160	0.00175	0.00036	0.00038	0.00049	0.00061	0.00074	0.00082	0.00152	0.00188	0.01	0.05
Silicon (Si)		6.2	6.3	7.4	7.9	7.9	8.5	9.2	9.8	8.0	9.4	10.1	10.5	10.5	10.9	11.5	12.0	9.9	9.9	10.0	10.3	10.3	10.4	11.6	12.0	9.3	9.4	10.1	10.5	10.6	11.1	11.7	12.7	-	-
Silver (Ag)	mg/L	0.0000053	0.0000054	0.0000057	0.0000058	0.0000064	0.0000074	0.0000079	0.0000086	0.0000055	0.0000057	0.0000059	0.0000062	0.0000062	0.0000063	0.0000068	0.0000069	0.0000057	0.0000058	0.0000060	0.0000061	0.0000063	0.0000066	0.0000071	0.0000071	0.0000054	0.0000054	0.0000056	0.0000060	0.0000060	0.0000062	0.0000065	0.0000068	-	-
Strontium (Sr)	mg/L	0.46	0.46	0.54	0.56	0.69	0.87	1.06	1.30	0.44	0.46	0.52	0.57	0.60	0.62	0.86	0.88	0.47	0.47	0.55	0.57	0.64	0.69	0.95	0.99	0.47	0.48	0.57	0.63	0.64	0.71	0.86	0.89	-	-
Thallium (Tl)	mg/L	0.0000058	0.0000059	0.0000068	0.0000088	0.0000083	0.0000092	0.0000103	0.0000105	0.0000064	0.0000071	0.0000077	0.0000092	0.0000092	0.0000105	0.0000110	0.0000113	0.0000074	0.0000075	0.0000089	0.0000104	0.0000102	0.0000109	0.0000133	0.0000143	0.0000058	0.0000060	0.0000065	0.0000079	0.0000081	0.0000088	0.0000120	0.0000138	-	-
Tin (Sn)		0.000058	0.000058	0.000067	0.000087	0.000081	0.000090	0.000101	0.000104	0.000062	0.000068	0.000072	0.000086	0.000085	0.000096	0.000101	0.000102	0.000070	0.000070	0.000076	0.000086	0.000086	0.000095	0.000099	0.000099	0.000055	0.000055	0.000057	0.000062	0.000061	0.000065	0.000067	0.000098	-	-
Uranium (U)	mg/L	0.0013	0.0014	0.0014	0.0015	0.0017	0.0018	0.0023	0.0025	0.0014	0.0014	0.0015	0.0016	0.0017	0.0016	0.0022	0.0022	0.0014	0.0014	0.0015	0.0016	0.0018	0.0018	0.0027	0.0028	0.0014	0.0014	0.0016	0.0018	0.0020	0.0024	0.0026	0.0032	-	0.02
Vanadium (V)	mg/L	0.0024	0.0024	0.0027	0.0032	0.0030	0.0033	0.0035	0.0035	0.0027	0.0030	0.0033	0.0038	0.0037	0.0040	0.0042	0.0043	0.0031	0.0031	0.0035	0.0040	0.0040	0.0042	0.0055	0.0056	0.0028	0.0028	0.0030	0.0031	0.0035	0.0041	0.0051	0.0060	-	-
Zinc (Zn)	mg/L	0.0024	0.0024	0.0026	0.0027	0.0027	0.0028	0.0032	0.0032	0.0017	0.0017	0.0018	0.0018	0.0019	0.0019	0.0023	0.0028	0.0017	0.0017	0.0017	0.0018	0.0019	0.0020	0.0025	0.0028	0.0016	0.0017	0.0017	0.0020	0.0020	0.0023	0.0024	0.0028	5	5

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NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUE SELECTED) - RAW DRINKING WATER.
3. HEALTH CANADA (HC) - GUIDELINES FOR CANADIAN DRINKING WATER QUALITY.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR RAW DRINKING WATER.
5. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS THE HC GUIDELINE FOR CANADIAN DRINKING WATER QUALITY.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.

TABLE C3-6

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PC02.3 - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO RECREATION AND AESTHETIC WATER QUALITY GUIDELINES

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		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - REC &AES
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	
Conventional Parameters and Major Ions																																		
Baseline Hardness	mg/L $CaCO_3$	424	424	438	481	465	481	481	481	424	424	467	481	467	481	481	481	424	424	467	728	467	481	481	481	424	424	467	481	467	481	481	481	-
Hardness - Dissolved	mg/L $CaCO_3$	368	378	416	441	532	646	796	965	390	413	447	480	502	518	678	689	427	430	461	486	528	562	727	756	429	432	473	522	529	589	661	675	-
Bromide (Br^-)	mg/L	0.18	0.20	0.21	0.22	0.25	0.31	0.33	0.39	0.15	0.16	0.18	0.20	0.20	0.22	0.26	0.29	0.18	0.20	0.22	0.23	0.24	0.26	0.32	0.33	0.20	0.20	0.22	0.25	0.24	0.26	0.29	0.30	-
Chloride (Cl^-)	mg/L	57	58	58	60	61	63	67	69	58	58	60	61	62	64	67	70	58	58	59	61	61	63	66	66	57	58	59	62	61	63	65	65	-
Fluoride (F^-)	mg/L	0.24	0.24	0.25	0.26	0.26	0.27	0.30	0.31	0.25	0.26	0.26	0.27	0.27	0.28	0.30	0.31	0.26	0.26	0.26	0.26	0.27	0.27	0.29	0.29	0.24	0.24	0.26	0.27	0.27	0.29	0.30	0.32	-
Sulphate (SO_4^{2-})	mg/L	77	78	97	110	229	403	545	680	68	71	91	105	138	188	281	295	77	78	103	119	164	204	333	358	78	79	115	160	166	213	293	307	-
Calcium (Ca)	mg/L	64	68	71	76	76	79	89	94	77	85	91	93	95	97	107	115	89	90	93	94	100	104	124	126	92	93	95	101	102	111	117	122	-
Magnesium (Mg)	mg/L	48	49	56	60	83	117	145	183	46	47	53	59	65	73	100	103	48	49	56	60	68	74	102	108	48	49	58	67	67	76	90	91	-
Potassium (K)	mg/L	13	13	14	14	19	25	29	34	13	13	14	15	15	17	19	20	13	13	14	15	16	17	20	21	13	13	14	15	16	17	18	19	-
Sodium (Na)	mg/L	42	43	46	48	74	112	139	167	40	41	45	49	55	66	82	83	42	43	47	49	56	63	76	81	43	43	48	57	56	62	68	69	-
Nutrients																																		
Ammonia	mg/L N	0.080	0.080	0.089	0.103	0.168	0.152	0.445	0.492	0.055	0.061	0.063	0.071	0.093	0.125	0.164	0.168	0.049	0.049	0.052	0.067	0.086	0.114	0.163	0.195	0.045	0.047	0.058	0.068	0.080	0.097	0.139	0.179	-
Nitrate	mg/L N	0.169	0.177	0.193	0.200	0.199	0.204	0.231	0.231	0.104	0.111	0.124	0.146	0.147	0.163	0.190	0.225	0.102	0.105	0.115	0.124	0.135	0.145	0.192	0.255	0.085	0.087	0.091	0.098	0.113	0.127	0.181	0.255	10
Nitrite	mg/L	0.0058	0.0059	0.0062	0.0065	0.0070	0.0079	0.0085	0.0107	0.0052	0.0054	0.0059	0.0066	0.0067	0.0071	0.0096	0.0103	0.0053	0.0055	0.0064	0.0068	0.0073	0.0075	0.0098	0.0128	0.0050	0.0051	0.0059	0.0068	0.0073	0.0077	0.0120	0.0162	1
Phosphorus	mg/L	0.117	0.118	0.132	0.148	0.158	0.172	0.227	0.254	0.108	0.109	0.121	0.136	0.137	0.151	0.166	0.175	0.115	0.116	0.121	0.132	0.130	0.136	0.141	0.170	0.106	0.107	0.117	0.126	0.123	0.130	0.134	0.137	-
Dissolved Metals																																		
Aluminum (Al)	mg/L	0.0026	0.0029	0.0039	0.0084	0.0090	0.0140	0.0156	0.0161	0.0043	0.0057	0.0069	0.0107	0.0119	0.0173	0.0189	0.0193	0.0054	0.0054	0.0069	0.0106	0.0117	0.0174	0.0186	0.0186	0.0024	0.0024	0.0027	0.0029	0.0029	0.0030	0.0034	0.0176	0.2
Antimony (Sb)	mg/L	0.00011	0.00011	0.00014	0.00015	0.00017	0.00024	0.00026	0.00029	0.00010	0.00012	0.00015	0.00023	0.00023	0.00029	0.00037	0.00047	0.00012	0.00013	0.00018	0.00018	0.00024	0.00027	0.00047	0.00054	0.00011	0.00012	0.00016	0.00023	0.00027	0.00029	0.00060	0.00104	-
Arsenic (As)	mg/L	0.0017	0.0017	0.0020	0.0020	0.0024	0.0032	0.0036	0.0043	0.0017	0.0017	0.0019	0.0022	0.0022	0.0024	0.0030	0.0031	0.0019	0.0019	0.0022	0.0023	0.0026	0.0027	0.0040	0.0042	0.0019	0.0019	0.0023	0.0026	0.0028	0.0030	0.0042	0.0047	-
Barium (Ba)	mg/L	0.055	0.059	0.060	0.061	0.062	0.064	0.066	0.066	0.064	0.069	0.072	0.074	0.074	0.076	0.079	0.079	0.071	0.072	0.074	0.076	0.077	0.079	0.088	0.089	0.071	0.072	0.075	0.076	0.077	0.078	0.086	0.086	-
Boron (B)	mg/L	0.023	0.025	0.026	0.026	0.026	0.027	0.027	0.028	0.023	0.023	0.025	0.026	0.026	0.027	0.028	0.029	0.026	0.027	0.028	0.029	0.031	0.034	0.041	0.044	0.027	0.027	0.029	0.033	0.032	0.034	0.037	0.040	-
Cadmium (Cd)	mg/L	0.000006	0.000006	0.000008	0.000010	0.000010	0.000011	0.000012	0.000012	0.000007	0.000008	0.000009	0.000011	0.000011	0.000013	0.000014	0.000014	0.000009	0.000009	0.000010	0.000011	0.000011	0.000013	0.000013	0.000013	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000009	0.000013	-
Chromium (Cr)	mg/L	0.00023	0.00024	0.00031	0.00058	0.00062	0.00091	0.00102	0.00105	0.00034	0.00044	0.00052	0.00076	0.00082	0.00115	0.00126	0.00128	0.00048	0.00050	0.00053	0.00075	0.00083	0.00115	0.00123	0.00123	0.00015	0.00015	0.00017	0.00019	0.00020	0.00023	0.00028	0.00116	-
Cobalt (Co)	mg/L	0.00009	0.00010	0.00014	0.00021	0.00020	0.00025	0.00028	0.00029	0.00014	0.00019	0.00022	0.00027	0.00028	0.00034	0.00036	0.00037	0.00024	0.00025	0.00026	0.00030	0.00031	0.00035	0.00037	0.00037	0.00017	0.00018	0.00020	0.00022	0.00028	0.00028	0.00054	0.00074	-
Copper (Cu)	mg/L	0.0020	0.0020	0.0025	0.0033	0.0033	0.0042	0.0045	0.0046	0.0026	0.0033	0.0036	0.0045	0.0045	0.0054	0.0056	0.0056	0.0035	0.0035	0.0040	0.0044	0.0046	0.0054	0.0055	0.0055	0.0026	0.0027	0.0028	0.0029	0.0029	0.0030	0.0034	0.0054	1
Iron (Fe)	mg/L	0.018	0.019	0.030	0.044	0.044	0.061	0.068	0.069	0.034	0.047	0.057	0.069	0.069	0.084	0.089	0.090	0.050	0.051	0.065	0.075	0.074	0.087	0.091	0.091	0.043	0.045	0.058	0.070	0.123	0.100	0.349	0.545	-
Lead (Pb)	mg/L	0.000041	0.000042	0.000053	0.000091	0.000089	0.000119	0.000131	0.000135	0.000053	0.000065	0.000074	0.000103	0.000110	0.000146	0.000158	0.000161	0.000066	0.000066	0.000074	0.000101	0.000108	0.000145	0.000154	0.000154	0.000028	0.000028	0.000029	0.000034	0.000034	0.000037	0.000042	0.000147	0.05
Lithium (Li)	mg/L	0.0061	0.0062	0.0065	0.0068	0.0067	0.0068	0.0072	0.0072	0.0062	0.0062	0.0066	0.0067	0.0068	0.0070	0.0075	0.0076	0.0064	0.0064	0.0066	0.0067	0.0070	0.0072	0.0080	0.0082	0.0064	0.0064	0.0067	0.0070	0.0071	0.0074	0.0079	0.0088	-
Manganese (Mn)	mg/L	0.022	0.023	0.027	0.073	0.064	0.095	0.100	0.101	0.028	0.036	0.040	0.071	0.068	0.091	0.107	0.110	0.043	0.043	0.063	0.078	0.080	0.090	0.145	0.164	0.040	0.042	0.062	0.107	0.161	0.156	0.451	0.690	-
Molybdenum (Mo)	mg/L	0.004	0.005	0.005	0.006	0.006	0.007	0.009	0.011	0.004	0.005	0.005	0.007	0.007	0.008	0.011	0.014	0.007	0.007	0.010	0.011	0.015	0.017	0.035	0.043	0.007	0.008	0.011	0.015	0.017	0.022	0.032	0.040	-
Nickel (Ni)	mg/L	0.0013	0.0013	0.0016	0.0020	0.0020	0.0023	0.0025	0.0025	0.0016	0.0018	0.0020	0.0026	0.0024	0.0028	0.0029	0.0030	0.0020	0.0020	0.0023	0.0028	0.0026	0.0028	0.0030	0.0031	0.0016	0.0017	0.0019	0.0020	0.0021	0.0024	0.0027	0.0030	-
Selenium (Se)	mg/L	0.00020	0.00021	0.00026	0.00032	0.00041	0.00039	0.00111	0.00112	0.00024	0.00031	0.00039	0.00051	0.00063	0.00066	0.00143	0.00157	0.00035	0.00038	0.00045	0.00056	0.00070	0.00070	0.00160	0.00175	0.00036	0.00038	0.00049	0.00061	0.00074	0.00082	0.00152	0.00188	-
Silicon (Si)		6.2	6.3	7.4	7.9	7.9	8.5	9.2	9.8	8.0	9.4	10.1	10.5	10.5	10.9	11.5	12.0	9.9	9.9	10.0	10.3	10.3	10.4	11.6	12.0	9.3	9.4	10.1	10.5	10.6	11.1	11.7	12.7	-
Silver (Ag)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000007	0.000008	0.000009	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	-
Strontium (Sr)	mg/L	0.46	0.46	0.54	0.56	0.69	0.87	1.06	1.30	0.44	0.46	0.52	0.57	0.60	0.62	0.86	0.88	0.47	0.47	0.55	0.57	0.64	0.69	0.95	0.99	0.47	0.48	0.57	0.63	0.64	0.71	0.86	0.89	-
Thallium (Tl)	mg/L	0.000006	0.000006	0.000007	0.000009	0.000008	0.000009	0.000010	0.000011	0.000006	0.000007	0.000008	0.000009	0.000009	0.000010	0.000011	0.000011	0.000007	0.000008	0.000009	0.000010	0.000010	0.000011	0.000013	0.000014	0.000006	0.000006	0.000007	0.000008	0.000008	0.000009	0.000012	0.000014	-
Tin (Sn)		0.00006	0.00006	0.00007	0.00009	0.00008	0.00009	0.00010	0.00010	0.00006	0.00007	0.00007	0.00009	0.00009	0.00010	0.00010	0.00010	0.00007	0.00007	0.00008	0.00009	0.00009	0.00010	0.00010	0.00010	0.00006	0.00006	0.00006	0.00006	0.00006	0.00007	0.00007	0.00010	-
Uranium (U)	mg/L	0.0013	0.0014	0.0014	0.0015	0.0017	0.0018	0.0023	0.0025	0.0014	0.0014	0.0015	0.0016	0.0017	0.0016	0.0022	0.0022	0.0014	0.0014	0.0015	0.0016	0.0018	0.0018	0.0027	0.0028	0.0014	0.0014	0.0016	0.0018	0.0020	0.0024	0.0026	0.0032	-
Vanadium (V)	mg/L	0.0024	0.0024	0.0027	0.0032	0.0030	0.0033	0.0035	0.0035	0.0027	0.0030	0.0033	0.0038	0.0037	0.0040	0.0042	0.0043	0.0031	0.0031	0.0035	0.0040	0.0040	0.0042	0.0055	0.0056	0.0028	0.0028	0.0030	0.0031	0.0035	0.0041	0.0051	0.0060	-
Zinc (Zn)	mg/L	0.0024	0.0024	0.0026	0.0027	0.0027	0.0028	0.0032	0.0032	0.0017	0.0017	0.0018	0.0018	0.0019	0.0019	0.0023	0.0028	0.0017	0.0017	0.0017	0.0018	0.0019	0.0020	0.0025	0.0028	0.0016	0.0017	0.0017	0.0020	0.0020	0.0023	0.0024	0.0028	5

\\van11\prj_file\1\011\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-6 Ajax_LOM_WQM_Base Case Appendix Tables_Rec&Aes GL.xlsx]TC1 JL BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - RECREATION AND AESTHETIC (REC & AES) USES.

APPENDIX C4

PC02

(Tables C4-1 to C4-6)

TABLE C4-1

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PC02 - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO PRIMARY EFFECTS ASSESSMENT WATER QUALITY GUIDELINES

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		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG-30 D	BCWQG-MAX	BCWQG-WILDLIFE	WQB/SBEB
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX				
Conventional Parameters and Major Ions																																			
Baseline Hardness	mg/L $CaCO_3$	486	486	543	715	663	740	761	761	486	486	658	728	674	740	761	761	486	486	658	728	674	740	761	761	486	486	658	728	674	740	761	761				
Hardness - Dissolved	mg/L $CaCO_3$	531	533	620	979	883	1,047	1,102	1,144	549	569	692	908	840	977	1,032	1,056	585	587	789	921	852	954	1,027	1,027	586	589	757	902	836	946	1,007	1,029				
Bromide (Br^-)	mg/L	0.20	0.21	0.29	0.76	0.59	0.77	0.82	0.82	0.17	0.17	0.40	0.71	0.58	0.75	0.80	0.82	0.20	0.20	0.47	0.69	0.59	0.77	0.80	0.80	0.20	0.20	0.45	0.63	0.57	0.77	0.79	0.79				
Chloride (Cl^-)	mg/L	74	74	89	161	136	168	172	174	75	75	117	160	141	170	177	182	75	75	112	151	137	174	176	176	74	74	110	137	133	172	175	175	150	600	600	388
Fluoride (F^-)	mg/L	0.19	0.19	0.21	0.22	0.22	0.24	0.25	0.25	0.17	0.17	0.19	0.21	0.21	0.25	0.26	0.27	0.17	0.17	0.19	0.21	0.21	0.24	0.27	0.27	0.17	0.17	0.20	0.22	0.22	0.24	0.26	0.27	1.57		1	
Sulphate (SO_4^{2-})	mg/L	229	230	292	690	570	712	782	823	210	212	336	596	495	612	671	696	227	228	437	595	506	616	666	667	227	229	398	547	490	627	642	658	429			429 / 730
Calcium (Ca)	mg/L	85	85	99	134	124	141	147	148	95	105	121	140	135	150	156	159	108	108	132	142	137	150	155	156	108	109	128	142	136	146	155	158				
Magnesium (Mg)	mg/L	77	78	91	157	140	169	182	189	74	74	94	137	123	147	157	161	77	77	110	138	124	142	156	156	77	77	106	131	121	142	151	155				
Potassium (K)	mg/L	18	18	20	27	26	31	34	35	17	17	19	24	23	25	29	30	18	18	21	24	23	25	29	29	18	18	21	23	23	25	28	29				
Sodium (Na)	mg/L	66	67	82	158	138	173	185	194	64	64	89	137	120	142	162	166	66	66	97	136	119	142	160	161	66	66	93	125	116	145	155	159				
Nutrients																																			
Ammonia	mg/L N	0.028	0.029	0.101	0.133	0.130	0.142	0.224	0.275	0.036	0.037	0.038	0.059	0.057	0.070	0.081	0.093	0.034	0.034	0.035	0.057	0.058	0.071	0.100	0.108	0.034	0.034	0.039	0.056	0.056	0.068	0.093	0.121	0.66			
Nitrate	mg/L N	0.113	0.113	0.124	0.256	0.474	0.842	1.114	1.118	0.087	0.093	0.138	0.366	0.536	1.046	1.159	1.160	0.088	0.088	0.138	0.350	0.519	0.950	1.163	1.173	0.084	0.085	0.125	0.309	0.487	0.872	1.167	1.174	3.0	32.800		
Nitrite	mg/L	0.0041	0.0041	0.0058	0.0063	0.0111	0.0215	0.0233	0.0234	0.0032	0.0034	0.0041	0.0057	0.0094	0.0106	0.0233	0.0240	0.0031	0.0033	0.0048	0.0063	0.0098	0.0131	0.0230	0.0231	0.0032	0.0033	0.0050	0.0056	0.0094	0.0125	0.0228	0.0239	0.2	0.60		
Phosphorus	mg/L	0.053	0.053	0.070	0.089	0.106	0.153	0.161	0.162	0.031	0.035	0.041	0.066	0.083	0.121	0.156	0.158	0.033	0.034	0.035	0.069	0.083	0.122	0.158	0.159	0.033	0.033	0.034	0.073	0.081	0.117	0.155	0.156				
Dissolved Metals																																			
Aluminum (Al)	mg/L	0.0017	0.0019	0.0032	0.0037	0.0036	0.0040	0.0050	0.0054	0.0019	0.0022	0.0041	0.0045	0.0050	0.0062	0.0081	0.0084	0.0024	0.0024	0.0037	0.0046	0.0050	0.0063	0.0079	0.0080	0.0006	0.0006	0.0008	0.0016	0.0017	0.0028	0.0029	0.0063	0.050	0.100	5	
Antimony (Sb)	mg/L	0.00011	0.00011	0.00011	0.00012	0.00013	0.00014	0.00019	0.00022	0.00008	0.00008	0.00010	0.00012	0.00014	0.00015	0.00026	0.00033	0.00008	0.00008	0.00008	0.00013	0.00016	0.00023	0.00039	0.00044	0.00008	0.00008	0.00009	0.00013	0.00019	0.00026	0.00045	0.00094	0.009			
Arsenic (As)	mg/L	0.0016	0.0016	0.0018	0.0020	0.0022	0.0027	0.0029	0.0033	0.0011	0.0011	0.0013	0.0016	0.0019	0.0028	0.0030	0.0031	0.0012	0.0012	0.0013	0.0019	0.0022	0.0030	0.0038	0.0039	0.0012	0.0013	0.0014	0.0025	0.0023	0.0031	0.0037	0.0045		0.0050	0.0250	0.0320
Barium (Ba)	mg/L	0.042	0.042	0.046	0.049	0.051	0.056	0.060	0.061	0.042	0.043	0.047	0.051	0.056	0.071	0.072	0.073	0.042	0.043	0.048	0.056	0.059	0.072	0.080	0.080	0.043	0.043	0.049	0.059	0.059	0.072	0.079	0.079	1.0			
Boron (B)	mg/L	0.041	0.042	0.045	0.119	0.096	0.134	0.147	0.147	0.040	0.041	0.047	0.115	0.096	0.128	0.153	0.158	0.044	0.045	0.056	0.113	0.098	0.129	0.152	0.152	0.044	0.045	0.054	0.106	0.095	0.128	0.148	0.150		1.2	5.0	
Cadmium (Cd)	mg/L	0.000006	0.000006	0.000007	0.000007	0.000008	0.000008	0.000016	0.000016	0.000006	0.000006	0.000007	0.000007	0.000009	0.000009	0.000018	0.000019	0.000006	0.000006	0.000007	0.000008	0.000009	0.000009	0.000017	0.000018	0.000005	0.000005	0.000006	0.000006	0.000007	0.000007	0.000015	0.000016	0.00046	0.00280		
Chromium (Cr)	mg/L	0.00017	0.00018	0.00029	0.00030	0.00030	0.00031	0.00037	0.00045	0.00018	0.00020	0.00032	0.00036	0.00040	0.00049	0.00065	0.00067	0.00022	0.00022	0.00030	0.00041	0.00041	0.00050	0.00066	0.00067	0.00009	0.00009	0.00010	0.00017	0.00016	0.00020	0.00028	0.00048	0.001/0.0089			
Cobalt (Co)	mg/L	0.00014	0.00015	0.00018	0.00024	0.00023	0.00027	0.00030	0.00030	0.00015	0.00017	0.00025	0.00027	0.00027	0.00031	0.00031	0.00032	0.00019	0.00020	0.00027	0.00030	0.00029	0.00031	0.00032	0.00032	0.00016	0.00016	0.00024	0.00026	0.00028	0.00030	0.00042	0.00045	0.004	0.110		
Copper (Cu)	mg/L	0.0023	0.0023	0.0026	0.0028	0.0028	0.0029	0.0035	0.0036	0.0026	0.0028	0.0031	0.0032	0.0034	0.0037	0.0045	0.0046	0.0028	0.0028	0.0030	0.0035	0.0035	0.0038	0.0046	0.0046	0.0024	0.0025	0.0025	0.0029	0.0029	0.0032	0.0036	0.0039	0.010	0.026	0.3	0.0256
Iron (Fe)	mg/L	0.009	0.011	0.016	0.018	0.019	0.025	0.029	0.030	0.013	0.014	0.021	0.027	0.033	0.050	0.056	0.057	0.017	0.017	0.020	0.032	0.037	0.057	0.062	0.062	0.029	0.030	0.033	0.053	0.062	0.059	0.133	0.164		0.350		
Lead (Pb)	mg/L	0.000040	0.000041	0.000047	0.000052	0.000051	0.000056	0.000064	0.000068	0.000039	0.000041	0.000053	0.000057	0.000060	0.000068	0.000087	0.000090	0.000042	0.000042	0.000051	0.000058	0.000061	0.000071	0.000087	0.000087	0.000026	0.000026	0.000028	0.000029	0.000030	0.000033	0.000037	0.000070	0.016	0.330	0.10	
Lithium (Li)	mg/L	0.0080	0.0080	0.0083	0.0107	0.0103	0.0120	0.0125	0.0126	0.0079	0.0079	0.0087	0.0106	0.0103	0.0113	0.0129	0.0131	0.0080	0.0080	0.0092	0.0106	0.0104	0.0112	0.0128	0.0128	0.0080	0.0080	0.0089	0.0104	0.0102	0.0115	0.0128	0.0131				
Manganese (Mn)	mg/L	0.018	0.020	0.029	0.030	0.035	0.044	0.049	0.051	0.014	0.017	0.024	0.032	0.037	0.052	0.062	0.063	0.019	0.019	0.021	0.037	0.047	0.077	0.086	0.088	0.036	0.040	0.042	0.079	0.085	0.110	0.169	0.207	1.90	3.80		
Molybdenum (Mo)	mg/L	0.006	0.007	0.008	0.011	0.010	0.012	0.013	0.013	0.006	0.007	0.008	0.011	0.011	0.012	0.013	0.014	0.009	0.010	0.012	0.013	0.016	0.018	0.029	0.035	0.010	0.010	0.013	0.014	0.016	0.018	0.028	0.035	1.00	2.00	0.05	0.180
Nickel (Ni)	mg/L	0.0025	0.0026	0.0028	0.0057	0.0046	0.0059	0.0063	0.0063	0.0026	0.0029	0.0031	0.0056	0.0048	0.0060	0.0066	0.0068	0.0029	0.0029	0.0034	0.0056	0.0049	0.0061	0.0066	0.0066	0.0024	0.0025	0.0030	0.0051	0.0046	0.0060	0.0064	0.0066		0.1500		
Selenium (Se)	mg/L	0.00030	0.00031	0.00033	0.00035	0.00083	0.00127	0.00221	0.00278	0.00030	0.00033	0.00038	0.00087	0.00113	0.00138	0.00340	0.00360	0.00033	0.00033	0.00043	0.00100	0.00114	0.00139	0.00311	0.00327	0.00033	0.00034	0.00046	0.00103	0.00113	0.00142	0.00281	0.00322	0.0020		0.0020	0.0025 / 0.005
Silicon (Si)		5.5	5.5	6.2	6.8	6.9	7.7	8.6	9.2	5.5	5.7	6.3	7.3	8.2	10.5	10.9	11.2	5.6	5.7	6.5	7.8	8.2	10.5	10.6	10.6	5.7	5.7	6.9	8.3	8.4	10.4	10.6	10.6				
Silver (Ag)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000007	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.001500			
Strontium (Sr)	mg/L	0.75	0.75	0.86	1.42	1.26	1.51	1.60	1.65	0.74	0.74	0.93	1.31	1.18	1.41	1.49	1.53	0.76	0.77	1.05	1.34	1.20	1.36	1.48	1.48	0.76	0.77	1.01	1.28	1.17	1.36	1.45	1.48				
Thallium (Tl)	mg/L	0.000006	0.000006	0.000007	0.000007	0.000007	0.000007	0.000007	0.000008	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000008	0.000008	0.000006	0.000006	0.000006	0.000007	0.000008	0.000009	0.000010	0.000011	0.000005	0.000005	0.000006	0.000006	0.000007	0.000008	0.000010	0.000012	0.0008			
Tin (Sn)		0.00006	0.00006	0.00006	0.00007	0.00007	0.00007	0.00007	0.00008	0.00006	0.00006	0.00006	0.00006	0.00007	0.00007	0.00008	0.00008	0.00006	0.00006	0.00006	0.00007	0.00007	0.00007	0.00008	0.00008	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00006	0.00007				
Uranium (U)	mg/L	0.0018	0.0018	0.0023	0.0044	0.0038	0.0047	0.0049	0.0049	0.0018	0.0018	0.0031	0.0045	0.0039	0.0049	0.0050	0.0050	0.0018	0.0018	0.0036	0.0044	0.0039	0.0049	0.0050	0.0050	0.0018	0.0018	0.0033	0.0042	0.0039	0.0050	0.0054	0.0055	0.0085			
Vanadium (V)	mg/L	0.0031	0.0031	0.0032	0.0034	0.0035	0.0036	0.0040	0.0042	0.0031	0.0032	0.0035	0.0038	0.0038	0.0040	0.0049	0.0050	0.0032	0.0032	0.0037	0.0039	0.0041	0.0042	0.0057	0.0058	0.0031	0.0031	0.0036	0.0036	0.0039	0.0041	0.0054	0.0063				
Zinc (Zn)	mg/L	0.0007	0.0007	0.0011	0.0013	0.0020	0.0035	0.0040	0.0041	0.0004	0.0004	0.0007	0.0009	0.0015	0.0025	0.0029	0.0035	0.0004	0.0004	0.0007	0.0011	0.0015	0.0027	0.0028	0.0029	0.0004	0.0004	0.0007	0.0014	0.0016	0.0026	0.0027	0.0029	0.240	0.265		

\\ivan11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-1 Ajax_LOM_WQM_Base Case Summary Tables.xlsx]TC1 JL BC SUMM STATS

NOTES:
1. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - 30 DAY AVERAGE (BCWQG-30 D) - FRESHWATER AQUATIC LIFE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
3. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - WILDLIFE (WILDLIFE).
4. WATER QUALITY BENCHMARKS (WQB) AND SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
5. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS AN AQUATIC LIFE GUIDELINE.
6. GREEN HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG-WILDLIFE.
7. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS A WATER QUALITY BENCHMARK (WQB) OR SCIENCE BASED ENVIRONMENTAL BENCHARK (WQB).
8. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
9. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELCIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
10. SULPHATE SBEB IS 429 mg/L FOR WATER HARDNESS UP TO 800 mg/L CaCO3 AND IS INTENDED FOR LAKES AND CREEKS WHERE EARLY LIFESTAGES OF TROUT ARE PRESENT; SBEB OF 730 mg/L FOR HARDNESS UP TO 1377 mg/L CaCO3 FOR CREEKS WHERE FISH ARE ABSENT OR PERIODS OF THE YEAR WHEN EARLY LIFESTAGES OF TROUT ARE ABSENT.
11. SULPHATE GUIDELINE EXCEEDANCE HIGHLIGHTING IN THIS TABLE DOES NOT ACCOUNT FOR THE TIMING OF THE OCCURANCE OF THE PREDICTED CONCENTRATIONS; THEREFORE IT MAY NOT BE A TRUE EXCEEDANCE.
12. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
13. SELENIUM WQB IS 0.0025 mg/L FOR LENTIC SYSTEMS AND 0.005 mg/L FOR LOTIC SYSTEMS.

TABLE C4-2

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PC02 - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO CANADIAN ENVIRONMENTAL QUALITY GUIDELINES FOR THE PROTECTION OF AQUATIC LIFE (CEQG-PAL)

Print Jul/17/15 21:15:41

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								CEQG - PAL
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	
Conventional Parameters and Major Ions																																
Baseline Hardness	mg/L $CaCO_3$	486	486	543	715	663	740	761	761	486	486	658	728	674	740	761	761	486	486	658	728	674	740	761	761	486	486	658	728	674	740	761	761	-
Hardness - Dissolved	mg/L $CaCO_3$	531	533	620	979	883	1,047	1,102	1,144	549	569	692	908	840	977	1,032	1,056	585	587	789	921	852	954	1,027	1,027	586	589	757	902	836	946	1,007	1,029	-
Bromide (Br^-)	mg/L	0.20	0.21	0.29	0.76	0.59	0.77	0.82	0.82	0.17	0.17	0.40	0.71	0.58	0.75	0.80	0.82	0.20	0.20	0.47	0.69	0.59	0.77	0.80	0.80	0.20	0.20	0.45	0.63	0.57	0.77	0.79	0.79	1.5
Chloride (Cl^-)	mg/L	74	74	89	161	136	168	172	174	75	75	117	160	141	170	177	182	75	75	112	151	137	174	176	176	74	74	110	137	133	172	175	175	120
Fluoride (F^-)	mg/L	0.19	0.19	0.21	0.22	0.22	0.24	0.25	0.25	0.17	0.17	0.19	0.21	0.21	0.25	0.26	0.27	0.17	0.17	0.19	0.21	0.21	0.24	0.27	0.27	0.17	0.17	0.20	0.22	0.22	0.24	0.26	0.27	0.12
Sulphate (SO_4^{2-})	mg/L	229	230	292	690	570	712	782	823	210	212	336	596	495	612	671	696	227	228	437	595	506	616	666	667	227	229	398	547	490	627	642	658	-
Calcium (Ca)	mg/L	85	85	99	134	124	141	147	148	95	105	121	140	135	150	156	159	108	108	132	142	137	150	155	156	108	109	128	142	136	146	155	158	-
Magnesium (Mg)	mg/L	77	78	91	157	140	169	182	189	74	74	94	137	123	147	157	161	77	77	110	138	124	142	156	156	77	77	106	131	121	142	151	155	-
Potassium (K)	mg/L	18	18	20	27	26	31	34	35	17	17	19	24	23	25	29	30	18	18	21	24	23	25	29	29	18	18	21	23	23	25	28	29	-
Sodium (Na)	mg/L	66	67	82	158	138	173	185	194	64	64	89	137	120	142	162	166	66	66	97	136	119	142	160	161	66	66	93	125	116	145	155	159	-
Nutrients																																		
Ammonia	mg/L N	0.028	0.029	0.101	0.133	0.130	0.142	0.224	0.275	0.036	0.037	0.038	0.059	0.057	0.070	0.081	0.093	0.034	0.034	0.035	0.057	0.058	0.071	0.100	0.108	0.034	0.034	0.039	0.056	0.056	0.068	0.093	0.121	0.65
Nitrate	mg/L N	0.113	0.113	0.124	0.256	0.474	0.842	1.114	1.118	0.087	0.093	0.138	0.366	0.536	1.046	1.159	1.160	0.088	0.088	0.138	0.350	0.519	0.950	1.163	1.173	0.084	0.085	0.125	0.309	0.487	0.872	1.167	1.174	3
Nitrite	mg/L	0.0041	0.0041	0.0058	0.0063	0.0111	0.0215	0.0233	0.0234	0.0032	0.0034	0.0041	0.0057	0.0094	0.0106	0.0233	0.0240	0.0031	0.0033	0.0048	0.0063	0.0098	0.0131	0.0230	0.0231	0.0032	0.0033	0.0050	0.0056	0.0094	0.0125	0.0228	0.0239	0.06
Phosphorus	mg/L	0.053	0.053	0.070	0.089	0.106	0.153	0.161	0.162	0.031	0.035	0.041	0.066	0.083	0.121	0.156	0.158	0.033	0.034	0.035	0.069	0.083	0.122	0.158	0.159	0.033	0.033	0.034	0.073	0.081	0.117	0.155	0.156	-
Dissolved Metals																																		
Aluminum (Al)	mg/L	0.0017	0.0019	0.0032	0.0037	0.0036	0.0040	0.0050	0.0054	0.0019	0.0022	0.0041	0.0045	0.0050	0.0062	0.0081	0.0084	0.0024	0.0024	0.0037	0.0046	0.0050	0.0063	0.0079	0.0080	0.0006	0.0006	0.0008	0.0016	0.0017	0.0028	0.0029	0.0063	0.1
Antimony (Sb)	mg/L	0.00011	0.00011	0.00011	0.00012	0.00013	0.00014	0.00019	0.00022	0.00008	0.00008	0.00010	0.00012	0.00014	0.00015	0.00026	0.00033	0.00008	0.00008	0.00008	0.00013	0.00016	0.00023	0.00039	0.00044	0.00008	0.00008	0.00009	0.00013	0.00019	0.00026	0.00045	0.00094	-
Arsenic (As)	mg/L	0.0016	0.0016	0.0018	0.0020	0.0022	0.0027	0.0029	0.0033	0.0011	0.0011	0.0013	0.0016	0.0019	0.0028	0.0030	0.0031	0.0012	0.0012	0.0013	0.0019	0.0022	0.0030	0.0038	0.0039	0.0012	0.0013	0.0014	0.0025	0.0023	0.0031	0.0037	0.0045	0.005
Barium (Ba)	mg/L	0.042	0.042	0.046	0.049	0.051	0.056	0.060	0.061	0.042	0.043	0.047	0.051	0.056	0.071	0.072	0.073	0.042	0.043	0.048	0.056	0.059	0.072	0.080	0.080	0.043	0.043	0.049	0.059	0.059	0.072	0.079	0.079	-
Boron (B)	mg/L	0.041	0.042	0.045	0.119	0.096	0.134	0.147	0.147	0.040	0.041	0.047	0.115	0.096	0.128	0.153	0.158	0.044	0.045	0.056	0.113	0.098	0.129	0.152	0.152	0.044	0.045	0.054	0.106	0.095	0.128	0.148	0.150	-
Cadmium (Cd)	mg/L	0.000006	0.000006	0.000007	0.000007	0.000008	0.000008	0.000016	0.000016	0.000006	0.000006	0.000007	0.000007	0.000009	0.000009	0.000018	0.000019	0.000006	0.000006	0.000007	0.000008	0.000009	0.000009	0.000017	0.000018	0.000005	0.000005	0.000006	0.000006	0.000007	0.000007	0.000015	0.000016	0.000036
Chromium (Cr)	mg/L	0.00017	0.00018	0.00029	0.00030	0.00030	0.00031	0.00037	0.00045	0.00018	0.00020	0.00032	0.00036	0.00040	0.00049	0.00065	0.00067	0.00022	0.00022	0.00030	0.00041	0.00041	0.00050	0.00066	0.00067	0.00009	0.00009	0.00010	0.00017	0.00016	0.00020	0.00028	0.00048	0.001/0.089
Cobalt (Co)	mg/L	0.00014	0.00015	0.00018	0.00024	0.00023	0.00027	0.00030	0.00030	0.00015	0.00017	0.00025	0.00027	0.00027	0.00031	0.00031	0.00032	0.00019	0.00020	0.00027	0.00030	0.00029	0.00031	0.00032	0.00032	0.00016	0.00016	0.00024	0.00026	0.00028	0.00030	0.00042	0.00045	-
Copper (Cu)	mg/L	0.0023	0.0023	0.0026	0.0028	0.0028	0.0029	0.0035	0.0036	0.0026	0.0028	0.0031	0.0032	0.0034	0.0037	0.0045	0.0046	0.0028	0.0028	0.0030	0.0035	0.0035	0.0038	0.0046	0.0046	0.0024	0.0025	0.0025	0.0029	0.0029	0.0032	0.0036	0.0039	0.004
Iron (Fe)	mg/L	0.009	0.011	0.016	0.018	0.019	0.025	0.029	0.030	0.013	0.014	0.021	0.027	0.033	0.050	0.056	0.057	0.017	0.017	0.020	0.032	0.037	0.057	0.062	0.062	0.029	0.030	0.033	0.053	0.062	0.059	0.133	0.164	0.3
Lead (Pb)	mg/L	0.000040	0.000041	0.000047	0.000052	0.000051	0.000056	0.000064	0.000068	0.000039	0.000041	0.000053	0.000057	0.000060	0.000068	0.000087	0.000090	0.000042	0.000042	0.000051	0.000058	0.000061	0.000071	0.000087	0.000087	0.000026	0.000026	0.000028	0.000029	0.000030	0.000033	0.000037	0.000070	0.001
Lithium (Li)	mg/L	0.0080	0.0080	0.0083	0.0107	0.0103	0.0120	0.0125	0.0126	0.0079	0.0079	0.0087	0.0106	0.0103	0.0113	0.0129	0.0131	0.0080	0.0080	0.0092	0.0106	0.0104	0.0112	0.0128	0.0128	0.0080	0.0080	0.0089	0.0104	0.0102	0.0115	0.0128	0.0131	-
Manganese (Mn)	mg/L	0.018	0.020	0.029	0.030	0.035	0.044	0.049	0.051	0.014	0.017	0.024	0.032	0.037	0.052	0.062	0.063	0.019	0.019	0.021	0.037	0.047	0.077	0.086	0.088	0.036	0.040	0.042	0.079	0.085	0.110	0.169	0.207	-
Molybdenum (Mo)	mg/L	0.006	0.007	0.008	0.011	0.010	0.012	0.013	0.013	0.006	0.007	0.008	0.011	0.011	0.012	0.013	0.014	0.009	0.010	0.012	0.013	0.016	0.018	0.029	0.035	0.010	0.010	0.013	0.014	0.016	0.018	0.028	0.035	0.073
Nickel (Ni)	mg/L	0.0025	0.0026	0.0028	0.0057	0.0046	0.0059	0.0063	0.0063	0.0026	0.0029	0.0031	0.0056	0.0048	0.0060	0.0066	0.0068	0.0029	0.0029	0.0034	0.0056	0.0049	0.0061	0.0066	0.0066	0.0024	0.0025	0.0030	0.0051	0.0046	0.0060	0.0064	0.0066	0.15
Selenium (Se)	mg/L	0.00030	0.00031	0.00033	0.00035	0.00083	0.00127	0.00221	0.00278	0.00030	0.00033	0.00038	0.00087	0.00113	0.00138	0.00340	0.00360	0.00033	0.00033	0.00043	0.00100	0.00114	0.00139	0.00311	0.00327	0.00033	0.00034	0.00046	0.00103	0.00113	0.00142	0.00281	0.00322	0.001
Silicon (Si)		5.5	5.5	6.2	6.8	6.9	7.7	8.6	9.2	5.5	5.7	6.3	7.3	8.2	10.5	10.9	11.2	5.6	5.7	6.5	7.8	8.2	10.5	10.6	10.6	5.7	5.7	6.9	8.3	8.4	10.4	10.6	10.6	-
Silver (Ag)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000007	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.0001
Strontium (Sr)	mg/L	0.75	0.75	0.86	1.42	1.26	1.51	1.60	1.65	0.74	0.74	0.93	1.31	1.18	1.41	1.49	1.53	0.76	0.77	1.05	1.34	1.20	1.36	1.48	1.48	0.76	0.77	1.01	1.28	1.17	1.36	1.45	1.48	-
Thallium (Tl)	mg/L	0.000006	0.000006	0.000007	0.000007	0.000007	0.000007	0.000007	0.000008	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000008	0.000008	0.000006	0.000006	0.000006	0.000007	0.000008	0.000009	0.000010	0.000011	0.000005	0.000005	0.000006	0.000006	0.000007	0.000008	0.000010	0.000012	0.0008
Tin (Sn)		0.00006	0.00006	0.00006	0.00007	0.00007	0.00007	0.00007	0.00008	0.00006	0.00006	0.00006	0.00006	0.00007	0.00007	0.00008	0.00008	0.00006	0.00006	0.00006	0.00007	0.00007	0.00007	0.00008	0.00008	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00006	0.00007	-
Uranium (U)	mg/L	0.0018	0.0018	0.0023	0.0044	0.0038	0.0047	0.0049	0.0049	0.0018	0.0018	0.0031	0.0045	0.0039	0.0049	0.0050	0.0050	0.0018	0.0018	0.0036	0.0044	0.0039	0.0049	0.0050	0.0050	0.0018	0.0018	0.0033	0.0042	0.0039	0.0050	0.0054	0.0055	0.015
Vanadium (V)	mg/L	0.0031	0.0031	0.0032	0.0034	0.0035	0.0036	0.0040	0.0042	0.0031	0.0032	0.0035	0.0038	0.0038	0.0040	0.0049	0.0050	0.0032	0.0032	0.0037	0.0039	0.0041	0.0042	0.0057	0.0058	0.0031	0.0031	0.0036	0.0036	0.0039	0.0041	0.0054	0.0063	-
Zinc (Zn)	mg/L	0.0007	0.0007	0.0011	0.0013	0.0020	0.0035	0.0040	0.0041	0.0004	0.0004	0.0007	0.0009	0.0015	0.0025	0.0029	0.0035	0.0004	0.0004	0.0007	0.0011	0.0015	0.0027	0.0028	0.0029	0.0004	0.0004	0.0007	0.0014	0.0016	0.0026	0.0027	0.0029	0.03

M:\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-2 Ajax_LOM_WQM_Base Case Appendix Tables_CEQ PAL GL.xlsx]TC4 PCO2 BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE.
2. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - PROTECTION OF AQUATIC LIFE (PAL).
3. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE CEQG PAL.
4. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
5. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELSIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
7. MERCURY AND BERYLLIUM MODELLED DATA HAVE BEEN EXCLUDED FROM THE RESULTS TABLES; THESE PARAMETERS ARE UNDERSTOOD TO BE MODELLED BASED ON DETECTION LIMITS THAT ARE NEAR TO THE GUIDELINES, RESULTING IN PREDICTED EXCEEDANCES THAT ARE NOT EXPECTED.

TABLE C4-3

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PC02 - BASE CASE MODEL SUMMARY STATISTICS COMPARED TOLIVESTOCK WATER QUALITY GUIDELINES

Print Jul/21/15 8:38:44

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - LIVESTOCK	CEQG - LIVESTOCK
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	486	486	543	715	663	740	761	761	486	486	658	728	674	740	761	761	486	486	658	728	674	740	761	761	486	486	658	728	674	740	761	761	-	-
Hardness - Dissolved	mg/L $CaCO_3$	531	533	620	979	883	1,047	1,102	1,144	549	569	692	908	840	977	1,032	1,056	585	587	789	921	852	954	1,027	1,027	586	589	757	902	836	946	1,007	1,029	-	-
Bromide (Br^-)	mg/L	0.20	0.21	0.29	0.76	0.59	0.77	0.82	0.82	0.17	0.17	0.40	0.71	0.58	0.75	0.80	0.82	0.20	0.20	0.47	0.69	0.59	0.77	0.80	0.80	0.20	0.20	0.45	0.63	0.57	0.77	0.79	0.79	-	-
Chloride (Cl^-)	mg/L	74	74	89	161	136	168	172	174	75	75	117	160	141	170	177	182	75	75	112	151	137	174	176	176	74	74	110	137	133	172	175	175	600	-
Fluoride (F^-)	mg/L	0.19	0.19	0.21	0.22	0.22	0.24	0.25	0.25	0.17	0.17	0.19	0.21	0.21	0.25	0.26	0.27	0.17	0.17	0.19	0.21	0.21	0.24	0.27	0.27	0.17	0.17	0.20	0.22	0.22	0.24	0.26	0.27	1	1
Sulphate (SO_4^{2-})	mg/L	229	230	292	690	570	712	782	823	210	212	336	596	495	612	671	696	227	228	437	595	506	616	666	667	227	229	398	547	490	627	642	658	1,000	1,000
Calcium (Ca)	mg/L	85	85	99	134	124	141	147	148	95	105	121	140	135	150	156	159	108	108	132	142	137	150	155	156	108	109	128	142	136	146	155	158	1,000	1,000
Magnesium (Mg)	mg/L	77	78	91	157	140	169	182	189	74	74	94	137	123	147	157	161	77	77	110	138	124	142	156	156	77	77	106	131	121	142	151	155	-	-
Potassium (K)	mg/L	18	18	20	27	26	31	34	35	17	17	19	24	23	25	29	30	18	18	21	24	23	25	29	29	18	18	21	23	23	25	28	29	-	-
Sodium (Na)	mg/L	66	67	82	158	138	173	185	194	64	64	89	137	120	142	162	166	66	66	97	136	119	142	160	161	66	66	93	125	116	145	155	159	-	-
Nutrients																																	
Ammonia	mg/L N	0.03	0.03	0.10	0.13	0.13	0.14	0.22	0.28	0.04	0.04	0.04	0.06	0.06	0.07	0.08	0.09	0.03	0.03	0.03	0.06	0.06	0.07	0.10	0.11	0.03	0.03	0.04	0.06	0.06	0.07	0.09	0.12	-	-
Nitrate	mg/L N	0.11	0.11	0.12	0.26	0.47	0.84	1.11	1.12	0.09	0.09	0.14	0.37	0.54	1.05	1.16	1.16	0.09	0.09	0.14	0.35	0.52	0.95	1.16	1.17	0.08	0.08	0.13	0.31	0.49	0.87	1.17	1.17	100	-
Nitrite	mg/L	0.0041	0.0041	0.0058	0.0063	0.0111	0.0215	0.0233	0.0234	0.0032	0.0034	0.0041	0.0057	0.0094	0.0106	0.0233	0.0240	0.0031	0.0033	0.0048	0.0063	0.0098	0.0131	0.0230	0.0231	0.0032	0.0033	0.0050	0.0056	0.0094	0.0125	0.0228	0.0239	1	-
Phosphorus	mg/L	0.053	0.053	0.070	0.089	0.106	0.153	0.161	0.162	0.031	0.035	0.041	0.066	0.083	0.121	0.156	0.158	0.033	0.034	0.035	0.069	0.083	0.122	0.158	0.159	0.033	0.033	0.034	0.073	0.081	0.117	0.155	0.156	-	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0017	0.0019	0.0032	0.0037	0.0036	0.0040	0.0050	0.0054	0.0019	0.0022	0.0041	0.0045	0.0050	0.0062	0.0081	0.0084	0.0024	0.0024	0.0037	0.0046	0.0050	0.0063	0.0079	0.0080	0.0006	0.0006	0.0008	0.0016	0.0017	0.0028	0.0029	0.0063	5	5
Antimony (Sb)	mg/L	0.000107	0.000109	0.000110	0.000116	0.000131	0.000140	0.000186	0.000216	0.000077	0.000085	0.000104	0.000116	0.000136	0.000145	0.000257	0.000326	0.000081	0.000082	0.000084	0.000129	0.000163	0.000228	0.000388	0.000437	0.000077	0.000078	0.000094	0.000135	0.000194	0.000257	0.000452	0.000939	-	-
Arsenic (As)	mg/L	0.0016	0.0016	0.0018	0.0020	0.0022	0.0027	0.0029	0.0033	0.0011	0.0011	0.0013	0.0016	0.0019	0.0028	0.0030	0.0031	0.0012	0.0012	0.0013	0.0019	0.0022	0.0030	0.0038	0.0039	0.0012	0.0013	0.0014	0.0025	0.0023	0.0031	0.0037	0.0045	0.025	0.025
Barium (Ba)	mg/L	0.042	0.042	0.046	0.049	0.051	0.056	0.060	0.061	0.042	0.043	0.047	0.051	0.056	0.071	0.072	0.073	0.042	0.043	0.048	0.056	0.059	0.072	0.080	0.080	0.043	0.043	0.049	0.059	0.059	0.072	0.079	0.079	-	-
Boron (B)	mg/L	0.041	0.042	0.045	0.119	0.096	0.134	0.147	0.147	0.040	0.041	0.047	0.115	0.096	0.128	0.153	0.158	0.044	0.045	0.056	0.113	0.098	0.129	0.152	0.152	0.044	0.045	0.054	0.106	0.095	0.128	0.148	0.150	5.0	5.0
Cadmium (Cd)	mg/L	0.0000062	0.0000062	0.0000068	0.0000072	0.0000081	0.0000076	0.0000156	0.0000157	0.0000060	0.0000062	0.0000069	0.0000075	0.0000091	0.0000086	0.0000179	0.0000185	0.0000063	0.0000063	0.0000067	0.0000081	0.0000092	0.0000089	0.0000172	0.0000175	0.0000053	0.0000053	0.0000058	0.0000059	0.0000073	0.0000068	0.0000147	0.0000156	0.0800	0.0800
Chromium (Cr)	mg/L	0.00017	0.00018	0.00029	0.00030	0.00030	0.00031	0.00037	0.00045	0.00018	0.00020	0.00032	0.00036	0.00040	0.00049	0.00065	0.00067	0.00022	0.00022	0.00030	0.00041	0.00041	0.00050	0.00066	0.00067	0.00009	0.00009	0.00010	0.00017	0.00016	0.00020	0.00028	0.00048	0.050/0.050	0.050/0.050
Cobalt (Co)	mg/L	0.00014	0.00015	0.00018	0.00024	0.00023	0.00027	0.00030	0.00030	0.00015	0.00017	0.00025	0.00027	0.00027	0.00031	0.00031	0.00032	0.00019	0.00020	0.00027	0.00030	0.00029	0.00031	0.00032	0.00032	0.00016	0.00016	0.00024	0.00026	0.00028	0.00030	0.00042	0.00045	1	1
Copper (Cu)	mg/L	0.0023	0.0023	0.0026	0.0028	0.0028	0.0029	0.0035	0.0036	0.0026	0.0028	0.0031	0.0032	0.0034	0.0037	0.0045	0.0046	0.0028	0.0028	0.0030	0.0035	0.0035	0.0038	0.0046	0.0046	0.0024	0.0025	0.0025	0.0029	0.0029	0.0032	0.0036	0.0039	0.3	1.0
Iron (Fe)	mg/L	0.009	0.011	0.016	0.018	0.019	0.025	0.029	0.030	0.013	0.014	0.021	0.027	0.033	0.050	0.056	0.057	0.017	0.017	0.020	0.032	0.037	0.057	0.062	0.062	0.029	0.030	0.033	0.053	0.062	0.059	0.133	0.164	-	-
Lead (Pb)	mg/L	0.000040	0.000041	0.000047	0.000052	0.000051	0.000056	0.000064	0.000068	0.000039	0.000041	0.000053	0.000057	0.000060	0.000068	0.000087	0.000090	0.000042	0.000042	0.000051	0.000058	0.000061	0.000071	0.000087	0.000087	0.000026	0.000026	0.000028	0.000029	0.000030	0.000033	0.000037	0.000070	0.1	0.1
Lithium (Li)	mg/L	0.0080	0.0080	0.0083	0.0107	0.0103	0.0120	0.0125	0.0126	0.0079	0.0079	0.0087	0.0106	0.0103	0.0113	0.0129	0.0131	0.0080	0.0080	0.0092	0.0106	0.0104	0.0112	0.0128	0.0128	0.0080	0.0080	0.0089	0.0104	0.0102	0.0115	0.0128	0.0131	-	-
Manganese (Mn)	mg/L	0.018	0.020	0.029	0.030	0.035	0.044	0.049	0.051	0.014	0.017	0.024	0.032	0.037	0.052	0.062	0.063	0.019	0.019	0.021	0.037	0.047	0.077	0.086	0.088	0.036	0.040	0.042	0.079	0.085	0.110	0.169	0.207	-	-
Molybdenum (Mo)	mg/L	0.0060	0.0072	0.0077	0.0115	0.0104	0.0123	0.0127	0.0128	0.0059	0.0066	0.0078	0.0115	0.0105	0.0123	0.0129	0.0138	0.0090	0.0099	0.0122	0.0130	0.0156	0.0176	0.0293	0.0349	0.0097	0.0104	0.0130	0.0143	0.0165	0.0181	0.0279	0.0346	0.05	0.50
Nickel (Ni)	mg/L	0.00250	0.00260	0.00278	0.00567	0.00463	0.00592	0.00627	0.00632	0.00263	0.00287	0.00315	0.00563	0.00485	0.00604	0.00662	0.00680	0.00287	0.00291	0.00336	0.00558	0.00488	0.00605	0.00658	0.00659	0.00241	0.00251	0.00303	0.00510	0.00461	0.00604	0.00637	0.00661	1	1
Selenium (Se)	mg/L	0.00030	0.00031	0.00033	0.00035	0.00083	0.00127	0.00221	0.00278	0.00030	0.00033	0.00038	0.00087	0.00113	0.00138	0.00340	0.00360	0.00033	0.00033	0.00043	0.00100	0.00114	0.00139	0.00311	0.00327	0.00033	0.00034	0.00046	0.00103	0.00113	0.00142	0.00281	0.00322	0.03	0.05
Silicon (Si)		5.5	5.5	6.2	6.8	6.9	7.7	8.6	9.2	5.5	5.7	6.3	7.3	8.2	10.5	10.9	11.2	5.6	5.7	6.5	7.8	8.2	10.5	10.6	10.6	5.7	5.7	6.9	8.3	8.4	10.4	10.6	10.6	-	-
Silver (Ag)	mg/L	0.0000053	0.0000054	0.0000058	0.0000059	0.0000060	0.0000062	0.0000067	0.0000070	0.0000052	0.0000053	0.0000053	0.0000055	0.0000056	0.0000058	0.0000061	0.0000061	0.0000052	0.0000052	0.0000053	0.0000057	0.0000057	0.0000061	0.0000064	0.0000065	0.0000051	0.0000051	0.0000054	0.0000055	0.0000056	0.0000059	0.0000061	0.0000063	-	-
Strontium (Sr)	mg/L	0.75	0.75	0.86	1.42	1.26	1.51	1.60	1.65	0.74	0.74	0.93	1.31	1.18	1.41	1.49	1.53	0.76	0.77	1.05	1.34	1.20	1.36	1.48	1.48	0.76	0.77	1.01	1.28	1.17	1.36	1.45	1.48	-	-
Thallium (Tl)	mg/L	0.0000058	0.0000058	0.0000065	0.0000067	0.0000067	0.0000070	0.0000074	0.0000080	0.0000057	0.0000058	0.0000063	0.0000067	0.0000068	0.0000072	0.0000080	0.0000083	0.0000059	0.0000059	0.0000062	0.0000074	0.0000076	0.0000086	0.0000102	0.0000107	0.0000054	0.0000054	0.0000059	0.0000063	0.0000069	0.0000075	0.0000100	0.0000119	-	-
Tin (Sn)		0.000058	0.000058	0.000064	0.000066	0.000066	0.000069	0.000073	0.000079	0.000056	0.000057	0.000061	0.000065	0.000065	0.000069	0.000077	0.000077	0.000058	0.000058	0.000060	0.000067	0.000066	0.000071	0.000079	0.000079	0.000052	0.000052	0.000055	0.000056	0.000057	0.000060	0.000062	0.000072	-	-
Uranium (U)	mg/L	0.0018	0.0018	0.0023	0.0044	0.0038	0.0047	0.0049	0.0049	0.0018	0.0018	0.0031	0.0045	0.0039	0.0049	0.0050	0.0050	0.0018	0.0018	0.0036	0.0044	0.0039	0.0049	0.0050	0.0050	0.0018	0.0018	0.0033	0.0042	0.0039	0.0050	0.0054	0.0055	0.2	0.2
Vanadium (V)	mg/L	0.0031	0.0031	0.0032	0.0034	0.0035	0.0036	0.0040	0.0042	0.0031	0.0032	0.0035	0.0038	0.0038	0.0040	0.0049	0.0050	0.0032	0.0032	0.0037	0.0039	0.0041	0.0042	0.0057	0.0058	0.0031	0.0031	0.0036	0.0036	0.0039	0.0041	0.0054	0.0063	0.1	0.1
Zinc (Zn)	mg/L	0.0007	0.0007	0.0011	0.0013	0.0020	0.0035	0.0040	0.0041	0.0004	0.0004	0.0007	0.0009	0.0015	0.0025	0.0029	0.0035	0.0004	0.0004	0.0007	0.0011	0.0015	0.0027	0.0028	0.0029	0.0004	0.0004	0.0007	0.0014	0.0016	0.0026	0.0027	0.0029	2	50

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-3 Ajax_LOM_WQM_Base Case Appendix Tables_Livestock GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUE SELECTED) - LIVESTOCK WATERING.
3. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - WATER QUALITY GUIDELINES FOR THE PROTECTION OF AGRICULTURE - LIVESTOCK.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR LIVESTOCK.
5. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
6. WHEN APPLICABLE, THE GUIDELINE SELECTED FOR LIVESTOCK WATERING USE WAS THAT CORRESPONDING TO CATTLE.

TABLE C4-4

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PC02 - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO IRRIGATION GUIDELINES

Print Jul/21/15 8:41:14

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - IRRIGATION	CEQG - IRRIGATION
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	486	486	543	715	663	740	761	761	486	486	658	728	674	740	761	761	486	486	658	728	674	740	761	761	486	486	658	728	674	740	761	761	-	-
Hardness - Dissolved	mg/L $CaCO_3$	531	533	620	979	883	1,047	1,102	1,144	549	569	692	908	840	977	1,032	1,056	585	587	789	921	852	954	1,027	1,027	586	589	757	902	836	946	1,007	1,029	-	-
Bromide (Br^-)	mg/L	0.20	0.21	0.29	0.76	0.59	0.77	0.82	0.82	0.17	0.17	0.40	0.71	0.58	0.75	0.80	0.82	0.20	0.20	0.47	0.69	0.59	0.77	0.80	0.80	0.20	0.20	0.45	0.63	0.57	0.77	0.79	0.79	-	-
Chloride (Cl^-)	mg/L	74	74	89	161	136	168	172	174	75	75	117	160	141	170	177	182	75	75	112	151	137	174	176	176	74	74	110	137	133	172	175	175	100	250
Fluoride (F^-)	mg/L	0.19	0.19	0.21	0.22	0.22	0.24	0.25	0.25	0.17	0.17	0.19	0.21	0.21	0.25	0.26	0.27	0.17	0.17	0.19	0.21	0.21	0.24	0.27	0.27	0.17	0.17	0.20	0.22	0.22	0.24	0.26	0.27	1	1
Sulphate (SO_4^{2-})	mg/L	229	230	292	690	570	712	782	823	210	212	336	596	495	612	671	696	227	228	437	595	506	616	666	667	227	229	398	547	490	627	642	658	-	-
Calcium (Ca)	mg/L	85	85	99	134	124	141	147	148	95	105	121	140	135	150	156	159	108	108	132	142	137	150	155	156	108	109	128	142	136	146	155	158	-	-
Magnesium (Mg)	mg/L	77	78	91	157	140	169	182	189	74	74	94	137	123	147	157	161	77	77	110	138	124	142	156	156	77	77	106	131	121	142	151	155	-	-
Potassium (K)	mg/L	18	18	20	27	26	31	34	35	17	17	19	24	23	25	29	30	18	18	21	24	23	25	29	29	18	18	21	23	23	25	28	29	-	-
Sodium (Na)	mg/L	66	67	82	158	138	173	185	194	64	64	89	137	120	142	162	166	66	66	97	136	119	142	160	161	66	66	93	125	116	145	155	159	-	-
Nutrients																																	
Ammonia	mg/L N	0.03	0.03	0.10	0.13	0.13	0.14	0.22	0.28	0.04	0.04	0.04	0.06	0.06	0.07	0.08	0.09	0.03	0.03	0.03	0.06	0.06	0.07	0.10	0.11	0.03	0.03	0.04	0.06	0.06	0.07	0.09	0.12	-	-
Nitrate	mg/L N	0.11	0.11	0.12	0.26	0.47	0.84	1.11	1.12	0.09	0.09	0.14	0.37	0.54	1.05	1.16	1.16	0.09	0.09	0.14	0.35	0.52	0.95	1.16	1.17	0.08	0.08	0.13	0.31	0.49	0.87	1.17	1.17	-	-
Nitrite	mg/L	0.0041	0.0041	0.0058	0.0063	0.0111	0.0215	0.0233	0.0234	0.0032	0.0034	0.0041	0.0057	0.0094	0.0106	0.0233	0.0240	0.0031	0.0033	0.0048	0.0063	0.0098	0.0131	0.0230	0.0231	0.0032	0.0033	0.0050	0.0056	0.0094	0.0125	0.0228	0.0239	-	10
Phosphorus	mg/L	0.053	0.053	0.070	0.089	0.106	0.153	0.161	0.162	0.031	0.035	0.041	0.066	0.083	0.121	0.156	0.158	0.033	0.034	0.035	0.069	0.083	0.122	0.158	0.159	0.033	0.033	0.034	0.073	0.081	0.117	0.155	0.156	-	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0017	0.0019	0.0032	0.0037	0.0036	0.0040	0.0050	0.0054	0.0019	0.0022	0.0041	0.0045	0.0050	0.0062	0.0081	0.0084	0.0024	0.0024	0.0037	0.0046	0.0050	0.0063	0.0079	0.0080	0.0006	0.0006	0.0008	0.0016	0.0017	0.0028	0.0029	0.0063	5	5
Antimony (Sb)	mg/L	0.000107	0.000109	0.000110	0.000116	0.000131	0.000140	0.000186	0.000216	0.000077	0.000085	0.000104	0.000116	0.000136	0.000145	0.000257	0.000326	0.000081	0.000082	0.000084	0.000129	0.000163	0.000228	0.000388	0.000437	0.000077	0.000078	0.000094	0.000135	0.000194	0.000257	0.000452	0.000939	-	-
Arsenic (As)	mg/L	0.0016	0.0016	0.0018	0.0020	0.0022	0.0027	0.0029	0.0033	0.0011	0.0011	0.0013	0.0016	0.0019	0.0028	0.0030	0.0031	0.0012	0.0012	0.0013	0.0019	0.0022	0.0030	0.0038	0.0039	0.0012	0.0013	0.0014	0.0025	0.0023	0.0031	0.0037	0.0045	0.100	0.100
Barium (Ba)	mg/L	0.042	0.042	0.046	0.049	0.051	0.056	0.060	0.061	0.042	0.043	0.047	0.051	0.056	0.071	0.072	0.073	0.042	0.043	0.048	0.056	0.059	0.072	0.080	0.080	0.043	0.043	0.049	0.059	0.059	0.072	0.079	0.079	-	-
Boron (B)	mg/L	0.041	0.042	0.045	0.119	0.096	0.134	0.147	0.147	0.040	0.041	0.047	0.115	0.096	0.128	0.153	0.158	0.044	0.045	0.056	0.113	0.098	0.129	0.152	0.152	0.044	0.045	0.054	0.106	0.095	0.128	0.148	0.150	0.5	0.5
Cadmium (Cd)	mg/L	0.0000062	0.0000062	0.0000068	0.0000072	0.0000081	0.0000076	0.0000156	0.0000157	0.0000060	0.0000062	0.0000069	0.0000075	0.0000091	0.0000086	0.0000179	0.0000185	0.0000063	0.0000063	0.0000067	0.0000081	0.0000092	0.0000089	0.0000172	0.0000175	0.0000053	0.0000053	0.0000058	0.0000059	0.0000073	0.0000068	0.0000147	0.0000156	0.0051	0.0051
Chromium (Cr)	mg/L	0.00017	0.00018	0.00029	0.00030	0.00030	0.00031	0.00037	0.00045	0.00018	0.00020	0.00032	0.00036	0.00040	0.00049	0.00065	0.00067	0.00022	0.00022	0.00030	0.00041	0.00041	0.00050	0.00066	0.00067	0.00009	0.00009	0.00010	0.00017	0.00016	0.00020	0.00028	0.00048	0.008/0.0049	0.008/0.0049
Cobalt (Co)	mg/L	0.00014	0.00015	0.00018	0.00024	0.00023	0.00027	0.00030	0.00030	0.00015	0.00017	0.00025	0.00027	0.00027	0.00031	0.00031	0.00032	0.00019	0.00020	0.00027	0.00030	0.00029	0.00031	0.00032	0.00032	0.00016	0.00016	0.00024	0.00026	0.00028	0.00030	0.00042	0.00045	0.05	0.05
Copper (Cu)	mg/L	0.0023	0.0023	0.0026	0.0028	0.0028	0.0029	0.0035	0.0036	0.0026	0.0028	0.0031	0.0032	0.0034	0.0037	0.0045	0.0046	0.0028	0.0028	0.0030	0.0035	0.0035	0.0038	0.0046	0.0046	0.0024	0.0025	0.0025	0.0029	0.0029	0.0032	0.0036	0.0039	0.2	1.0
Iron (Fe)	mg/L	0.009	0.011	0.016	0.018	0.019	0.025	0.029	0.030	0.013	0.014	0.021	0.027	0.033	0.050	0.056	0.057	0.017	0.017	0.020	0.032	0.037	0.057	0.062	0.062	0.029	0.030	0.033	0.053	0.062	0.059	0.133	0.164	-	5.0
Lead (Pb)	mg/L	0.000040	0.000041	0.000047	0.000052	0.000051	0.000056	0.000064	0.000068	0.000039	0.000041	0.000053	0.000057	0.000060	0.000068	0.000087	0.000090	0.000042	0.000042	0.000051	0.000058	0.000061	0.000071	0.000087	0.000087	0.000026	0.000026	0.000028	0.000029	0.000030	0.000033	0.000037	0.000070	0.2	0.2
Lithium (Li)	mg/L	0.0080	0.0080	0.0083	0.0107	0.0103	0.0120	0.0125	0.0126	0.0079	0.0079	0.0087	0.0106	0.0103	0.0113	0.0129	0.0131	0.0080	0.0080	0.0092	0.0106	0.0104	0.0112	0.0128	0.0128	0.0080	0.0080	0.0089	0.0104	0.0102	0.0115	0.0128	0.0131	0.75	2.50
Manganese (Mn)	mg/L	0.018	0.020	0.029	0.030	0.035	0.044	0.049	0.051	0.014	0.017	0.024	0.032	0.037	0.052	0.062	0.063	0.019	0.019	0.021	0.037	0.047	0.077	0.086	0.088	0.036	0.040	0.042	0.079	0.085	0.110	0.169	**0.207**	0.2	0.2
Molybdenum (Mo)	mg/L	0.0060	0.0072	0.0077	0.0115	0.0104	0.0123	0.0127	0.0128	0.0059	0.0066	0.0078	0.0115	0.0105	0.0123	0.0129	0.0138	0.0090	0.0099	0.0122	0.0130	0.0156	0.0176	0.0293	0.0349	0.0097	0.0104	0.0130	0.0143	0.0165	0.0181	0.0279	0.0346	0.05	0.05
Nickel (Ni)	mg/L	0.00250	0.00260	0.00278	0.00567	0.00463	0.00592	0.00627	0.00632	0.00263	0.00287	0.00315	0.00563	0.00485	0.00604	0.00662	0.00680	0.00287	0.00291	0.00336	0.00558	0.00488	0.00605	0.00658	0.00659	0.00241	0.00251	0.00303	0.00510	0.00461	0.00604	0.00637	0.00661	0.2	0.2
Selenium (Se)	mg/L	0.00030	0.00031	0.00033	0.00035	0.00083	0.00127	0.00221	0.00278	0.00030	0.00033	0.00038	0.00087	0.00113	0.00138	0.00340	0.00360	0.00033	0.00033	0.00043	0.00100	0.00114	0.00139	0.00311	0.00327	0.00033	0.00034	0.00046	0.00103	0.00113	0.00142	0.00281	0.00322	0.01	0.05
Silicon (Si)		5.5	5.5	6.2	6.8	6.9	7.7	8.6	9.2	5.5	5.7	6.3	7.3	8.2	10.5	10.9	11.2	5.6	5.7	6.5	7.8	8.2	10.5	10.6	10.6	5.7	5.7	6.9	8.3	8.4	10.4	10.6	10.6	-	-
Silver (Ag)	mg/L	0.0000053	0.0000054	0.0000058	0.0000059	0.0000060	0.0000062	0.0000067	0.0000070	0.0000052	0.0000053	0.0000053	0.0000055	0.0000056	0.0000058	0.0000061	0.0000061	0.0000052	0.0000052	0.0000053	0.0000057	0.0000057	0.0000061	0.0000064	0.0000065	0.0000051	0.0000051	0.0000054	0.0000055	0.0000056	0.0000059	0.0000061	0.0000063	-	-
Strontium (Sr)	mg/L	0.75	0.75	0.86	1.42	1.26	1.51	1.60	1.65	0.74	0.74	0.93	1.31	1.18	1.41	1.49	1.53	0.76	0.77	1.05	1.34	1.20	1.36	1.48	1.48	0.76	0.77	1.01	1.28	1.17	1.36	1.45	1.48	-	-
Thallium (Tl)	mg/L	0.0000058	0.0000058	0.0000065	0.0000067	0.0000067	0.0000070	0.0000074	0.0000080	0.0000057	0.0000058	0.0000063	0.0000067	0.0000068	0.0000072	0.0000080	0.0000083	0.0000059	0.0000059	0.0000062	0.0000074	0.0000076	0.0000086	0.0000102	0.0000107	0.0000054	0.0000054	0.0000059	0.0000063	0.0000069	0.0000075	0.0000100	0.0000119	-	-
Tin (Sn)		0.000058	0.000058	0.000064	0.000066	0.000066	0.000069	0.000073	0.000079	0.000056	0.000057	0.000061	0.000065	0.000065	0.000069	0.000077	0.000077	0.000058	0.000058	0.000060	0.000067	0.000066	0.000071	0.000079	0.000079	0.000052	0.000052	0.000055	0.000056	0.000057	0.000060	0.000062	0.000072	-	-
Uranium (U)	mg/L	0.0018	0.0018	0.0023	0.0044	0.0038	0.0047	0.0049	0.0049	0.0018	0.0018	0.0031	0.0045	0.0039	0.0049	0.0050	0.0050	0.0018	0.0018	0.0036	0.0044	0.0039	0.0049	0.0050	0.0050	0.0018	0.0018	0.0033	0.0042	0.0039	0.0050	0.0054	0.0055	0.01	0.01
Vanadium (V)	mg/L	0.0031	0.0031	0.0032	0.0034	0.0035	0.0036	0.0040	0.0042	0.0031	0.0032	0.0035	0.0038	0.0038	0.0040	0.0049	0.0050	0.0032	0.0032	0.0037	0.0039	0.0041	0.0042	0.0057	0.0058	0.0031	0.0031	0.0036	0.0036	0.0039	0.0041	0.0054	0.0063	0.1	0.1
Zinc (Zn)	mg/L	0.0007	0.0007	0.0011	0.0013	0.0020	0.0035	0.0040	0.0041	0.0004	0.0004	0.0007	0.0009	0.0015	0.0025	0.0029	0.0035	0.0004	0.0004	0.0007	0.0011	0.0015	0.0027	0.0028	0.0029	0.0004	0.0004	0.0007	0.0014	0.0016	0.0026	0.0027	0.0029	1	1

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-4 Ajax_LOM_WQM_Base Case Appendix Tables_Irrigation GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUES SELECTED) - IRRIGATION.
3. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - WATER QUALITY GUIDELINES FOR THE PROTECTION OF AGRICULTURE - IRRIGATION.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR IRRIGATION.
5. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS THE CEQG FOR IRRIGATION.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
7. WHEN APPLICABLE, THE GUIDELINE SELECTED FOR IRRIGATION USE WAS THAT CORRESPONDING TO THE MOST SENSITIVE CROP OR SOIL TYPE LISTED.

TABLE C4-5

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PC02 - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO DRINKING WATER GUIDELINES

Print Jul/21/15 8:43:37

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - DRINKING WATER	HC - DRINKING WATER
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	486	486	543	715	663	740	761	761	486	486	658	728	674	740	761	761	486	486	658	728	674	740	761	761	486	486	658	728	674	740	761	761	-	-
Hardness - Dissolved	mg/L $CaCO_3$	531	533	620	979	883	1,047	1,102	1,144	549	569	692	908	840	977	1,032	1,056	585	587	789	921	852	954	1,027	1,027	586	589	757	902	836	946	1,007	1,029	-	-
Bromide (Br^-)	mg/L	0.20	0.21	0.29	0.76	0.59	0.77	0.82	0.82	0.17	0.17	0.40	0.71	0.58	0.75	0.80	0.82	0.20	0.20	0.47	0.69	0.59	0.77	0.80	0.80	0.20	0.20	0.45	0.63	0.57	0.77	0.79	0.79	-	-
Chloride (Cl^-)	mg/L	74	74	89	161	136	168	172	174	75	75	117	160	141	170	177	182	75	75	112	151	137	174	176	176	74	74	110	137	133	172	175	175	250	250
Fluoride (F^-)	mg/L	0.19	0.19	0.21	0.22	0.22	0.24	0.25	0.25	0.17	0.17	0.19	0.21	0.21	0.25	0.26	0.27	0.17	0.17	0.19	0.21	0.21	0.24	0.27	0.27	0.17	0.17	0.20	0.22	0.22	0.24	0.26	0.27	2	2
Sulphate (SO_4^{2-})	mg/L	229	230	292	**690**	**570**	**712**	**782**	**823**	210	212	336	**596**	495	**612**	**671**	**696**	227	228	437	**595**	**506**	**616**	**666**	**667**	227	229	398	**547**	490	**627**	**642**	**658**	500	500
Calcium (Ca)	mg/L	85	85	99	134	124	141	147	148	95	105	121	140	135	150	156	159	108	108	132	142	137	150	155	156	108	109	128	142	136	146	155	158	-	-
Magnesium (Mg)	mg/L	77	78	91	157	140	169	182	189	74	74	94	137	123	147	157	161	77	77	110	138	124	142	156	156	77	77	106	131	121	142	151	155	-	-
Potassium (K)	mg/L	18	18	20	27	26	31	34	35	17	17	19	24	23	25	29	30	18	18	21	24	23	25	29	29	18	18	21	23	23	25	28	29	-	-
Sodium (Na)	mg/L	66	67	82	158	138	173	185	194	64	64	89	137	120	142	162	166	66	66	97	136	119	142	160	161	66	66	93	125	116	145	155	159	-	200
Nutrients																																	
Ammonia	mg/L N	0.03	0.03	0.10	0.13	0.13	0.14	0.22	0.28	0.04	0.04	0.04	0.06	0.06	0.07	0.08	0.09	0.03	0.03	0.03	0.06	0.06	0.07	0.10	0.11	0.03	0.03	0.04	0.06	0.06	0.07	0.09	0.12	-	-
Nitrate	mg/L N	0.11	0.11	0.12	0.26	0.47	0.84	1.11	1.12	0.09	0.09	0.14	0.37	0.54	1.05	1.16	1.16	0.09	0.09	0.14	0.35	0.52	0.95	1.16	1.17	0.08	0.08	0.13	0.31	0.49	0.87	1.17	1.17	10	10
Nitrite	mg/L	0.004	0.004	0.006	0.006	0.011	0.022	0.023	0.023	0.003	0.003	0.004	0.006	0.009	0.011	0.023	0.024	0.003	0.003	0.005	0.006	0.010	0.013	0.023	0.023	0.003	0.003	0.005	0.006	0.009	0.013	0.023	0.024	1	1
Phosphorus	mg/L	0.05	0.05	0.07	0.09	0.11	0.15	0.16	0.16	0.03	0.04	0.04	0.07	0.08	0.12	0.16	0.16	0.03	0.03	0.03	0.07	0.08	0.12	0.16	0.16	0.03	0.03	0.03	0.07	0.08	0.12	0.15	0.16	-	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0017	0.0019	0.0032	0.0037	0.0036	0.0040	0.0050	0.0054	0.0019	0.0022	0.0041	0.0045	0.0050	0.0062	0.0081	0.0084	0.0024	0.0024	0.0037	0.0046	0.0050	0.0063	0.0079	0.0080	0.0006	0.0006	0.0008	0.0016	0.0017	0.0028	0.0029	0.0063	0.2	0.2
Antimony (Sb)	mg/L	0.00011	0.00011	0.00011	0.00012	0.00013	0.00014	0.00019	0.00022	0.00008	0.00008	0.00010	0.00012	0.00014	0.00015	0.00026	0.00033	0.00008	0.00008	0.00008	0.00013	0.00016	0.00023	0.00039	0.00044	0.00008	0.00008	0.00009	0.00013	0.00019	0.00026	0.00045	0.00094	-	0.006
Arsenic (As)	mg/L	0.0016	0.0016	0.0018	0.0020	0.0022	0.0027	0.0029	0.0033	0.0011	0.0011	0.0013	0.0016	0.0019	0.0028	0.0030	0.0031	0.0012	0.0012	0.0013	0.0019	0.0022	0.0030	0.0038	0.0039	0.0012	0.0013	0.0014	0.0025	0.0023	0.0031	0.0037	0.0045	0.025	0.010
Barium (Ba)	mg/L	0.042	0.042	0.046	0.049	0.051	0.056	0.060	0.061	0.042	0.043	0.047	0.051	0.056	0.071	0.072	0.073	0.042	0.043	0.048	0.056	0.059	0.072	0.080	0.080	0.043	0.043	0.049	0.059	0.059	0.072	0.079	0.079	-	1
Boron (B)	mg/L	0.041	0.042	0.045	0.119	0.096	0.134	0.147	0.147	0.040	0.041	0.047	0.115	0.096	0.128	0.153	0.158	0.044	0.045	0.056	0.113	0.098	0.129	0.152	0.152	0.044	0.045	0.054	0.106	0.095	0.128	0.148	0.150	-	5
Cadmium (Cd)	mg/L	0.0000062	0.0000062	0.0000068	0.0000072	0.0000081	0.0000076	0.0000156	0.0000157	0.0000060	0.0000062	0.0000069	0.0000075	0.0000091	0.0000086	0.0000179	0.0000185	0.0000063	0.0000063	0.0000067	0.0000081	0.0000092	0.0000089	0.0000172	0.0000175	0.0000053	0.0000053	0.0000058	0.0000059	0.0000073	0.0000068	0.0000147	0.0000156	-	0.005000
Chromium (Cr)	mg/L	0.00017	0.00018	0.00029	0.00030	0.00030	0.00031	0.00037	0.00045	0.00018	0.00020	0.00032	0.00036	0.00040	0.00049	0.00065	0.00067	0.00022	0.00022	0.00030	0.00041	0.00041	0.00050	0.00066	0.00067	0.00009	0.00009	0.00010	0.00017	0.00016	0.00020	0.00028	0.00048	-	0.050
Cobalt (Co)	mg/L	0.00014	0.00015	0.00018	0.00024	0.00023	0.00027	0.00030	0.00030	0.00015	0.00017	0.00025	0.00027	0.00027	0.00031	0.00031	0.00032	0.00019	0.00020	0.00027	0.00030	0.00029	0.00031	0.00032	0.00032	0.00016	0.00016	0.00024	0.00026	0.00028	0.00030	0.00042	0.00045	-	-
Copper (Cu)	mg/L	0.0023	0.0023	0.0026	0.0028	0.0028	0.0029	0.0035	0.0036	0.0026	0.0028	0.0031	0.0032	0.0034	0.0037	0.0045	0.0046	0.0028	0.0028	0.0030	0.0035	0.0035	0.0038	0.0046	0.0046	0.0024	0.0025	0.0025	0.0029	0.0029	0.0032	0.0036	0.0039	0.5	1.0
Iron (Fe)	mg/L	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.01	0.01	0.02	0.03	0.03	0.05	0.06	0.06	0.02	0.02	0.02	0.03	0.04	0.06	0.06	0.06	0.03	0.03	0.03	0.05	0.06	0.06	0.13	0.16	-	0.3
Lead (Pb)	mg/L	0.000040	0.000041	0.000047	0.000052	0.000051	0.000056	0.000064	0.000068	0.000039	0.000041	0.000053	0.000057	0.000060	0.000068	0.000087	0.000090	0.000042	0.000042	0.000051	0.000058	0.000061	0.000071	0.000087	0.000087	0.000026	0.000026	0.000028	0.000029	0.000030	0.000033	0.000037	0.000070	0.05	0.01
Lithium (Li)	mg/L	0.0080	0.0080	0.0083	0.0107	0.0103	0.0120	0.0125	0.0126	0.0079	0.0079	0.0087	0.0106	0.0103	0.0113	0.0129	0.0131	0.0080	0.0080	0.0092	0.0106	0.0104	0.0112	0.0128	0.0128	0.0080	0.0080	0.0089	0.0104	0.0102	0.0115	0.0128	0.0131	-	-
Manganese (Mn)	mg/L	0.018	0.020	0.029	0.030	0.035	0.044	0.049	**0.051**	0.014	0.017	0.024	0.032	0.037	**0.052**	**0.062**	**0.063**	0.019	0.019	0.021	0.037	0.047	**0.077**	**0.086**	**0.088**	0.036	0.040	0.042	**0.079**	**0.085**	**0.110**	**0.169**	**0.207**	-	0.05
Molybdenum (Mo)	mg/L	0.006	0.007	0.008	0.011	0.010	0.012	0.013	0.013	0.006	0.007	0.008	0.011	0.011	0.012	0.013	0.014	0.009	0.010	0.012	0.013	0.016	0.018	0.029	0.035	0.010	0.010	0.013	0.014	0.016	0.018	0.028	0.035	0.25	-
Nickel (Ni)	mg/L	0.0025	0.0026	0.0028	0.0057	0.0046	0.0059	0.0063	0.0063	0.0026	0.0029	0.0031	0.0056	0.0048	0.0060	0.0066	0.0068	0.0029	0.0029	0.0034	0.0056	0.0049	0.0061	0.0066	0.0066	0.0024	0.0025	0.0030	0.0051	0.0046	0.0060	0.0064	0.0066	-	-
Selenium (Se)	mg/L	0.00030	0.00031	0.00033	0.00035	0.00083	0.00127	0.00221	0.00278	0.00030	0.00033	0.00038	0.00087	0.00113	0.00138	0.00340	0.00360	0.00033	0.00033	0.00043	0.00100	0.00114	0.00139	0.00311	0.00327	0.00033	0.00034	0.00046	0.00103	0.00113	0.00142	0.00281	0.00322	0.01	0.05
Silicon (Si)		5.5	5.5	6.2	6.8	6.9	7.7	8.6	9.2	5.5	5.7	6.3	7.3	8.2	10.5	10.9	11.2	5.6	5.7	6.5	7.8	8.2	10.5	10.6	10.6	5.7	5.7	6.9	8.3	8.4	10.4	10.6	10.6	-	-
Silver (Ag)	mg/L	0.0000053	0.0000054	0.0000058	0.0000059	0.0000060	0.0000062	0.0000067	0.0000070	0.0000052	0.0000053	0.0000053	0.0000055	0.0000056	0.0000058	0.0000061	0.0000061	0.0000052	0.0000052	0.0000053	0.0000057	0.0000057	0.0000061	0.0000064	0.0000065	0.0000051	0.0000051	0.0000054	0.0000055	0.0000056	0.0000059	0.0000061	0.0000063	-	-
Strontium (Sr)	mg/L	0.75	0.75	0.86	1.42	1.26	1.51	1.60	1.65	0.74	0.74	0.93	1.31	1.18	1.41	1.49	1.53	0.76	0.77	1.05	1.34	1.20	1.36	1.48	1.48	0.76	0.77	1.01	1.28	1.17	1.36	1.45	1.48	-	-
Thallium (Tl)	mg/L	0.0000058	0.0000058	0.0000065	0.0000067	0.0000067	0.0000070	0.0000074	0.0000080	0.0000057	0.0000058	0.0000063	0.0000067	0.0000068	0.0000072	0.0000080	0.0000083	0.0000059	0.0000059	0.0000062	0.0000074	0.0000076	0.0000086	0.0000102	0.0000107	0.0000054	0.0000054	0.0000059	0.0000063	0.0000069	0.0000075	0.0000100	0.0000119	-	-
Tin (Sn)		0.000058	0.000058	0.000064	0.000066	0.000066	0.000069	0.000073	0.000079	0.000056	0.000057	0.000061	0.000065	0.000065	0.000069	0.000077	0.000077	0.000058	0.000058	0.000060	0.000067	0.000066	0.000071	0.000079	0.000079	0.000052	0.000052	0.000055	0.000056	0.000057	0.000060	0.000062	0.000072	-	-
Uranium (U)	mg/L	0.0018	0.0018	0.0023	0.0044	0.0038	0.0047	0.0049	0.0049	0.0018	0.0018	0.0031	0.0045	0.0039	0.0049	0.0050	0.0050	0.0018	0.0018	0.0036	0.0044	0.0039	0.0049	0.0050	0.0050	0.0018	0.0018	0.0033	0.0042	0.0039	0.0050	0.0054	0.0055	-	0.02
Vanadium (V)	mg/L	0.0031	0.0031	0.0032	0.0034	0.0035	0.0036	0.0040	0.0042	0.0031	0.0032	0.0035	0.0038	0.0038	0.0040	0.0049	0.0050	0.0032	0.0032	0.0037	0.0039	0.0041	0.0042	0.0057	0.0058	0.0031	0.0031	0.0036	0.0036	0.0039	0.0041	0.0054	0.0063	-	-
Zinc (Zn)	mg/L	0.0007	0.0007	0.0011	0.0013	0.0020	0.0035	0.0040	0.0041	0.0004	0.0004	0.0007	0.0009	0.0015	0.0025	0.0029	0.0035	0.0004	0.0004	0.0007	0.0011	0.0015	0.0027	0.0028	0.0029	0.0004	0.0004	0.0007	0.0014	0.0016	0.0026	0.0027	0.0029	5	5

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-5 Ajax_LOM_WQM_Base Case Appendix Tables_DW GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUE SELECTED) - RAW DRINKING WATER.
3. HEALTH CANADA (HC) - GUIDELINES FOR CANADIAN DRINKING WATER QUALITY.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR RAW DRINKING WATER.
5. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS THE HC GUIDELINE FOR CANADIAN DRINKING WATER QUALITY.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.

TABLE C4-6

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
PC02 - BASE CASE MODEL SUMMARY STATISTICS COMPARED TO RECREATION AND AESTHETIC WATER QUALITY GUIDELINES

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		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - REC &AES
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	486	486	543	715	663	740	761	761	486	486	658	728	674	740	761	761	486	486	658	728	674	740	761	761	486	486	658	728	674	740	761	761	-
Hardness - Dissolved	mg/L $CaCO_3$	531	533	620	979	883	1,047	1,102	1,144	549	569	692	908	840	977	1,032	1,056	585	587	789	921	852	954	1,027	1,027	586	589	757	902	836	946	1,007	1,029	-
Bromide (Br^-)	mg/L	0.20	0.21	0.29	0.76	0.59	0.77	0.82	0.82	0.17	0.17	0.40	0.71	0.58	0.75	0.80	0.82	0.20	0.20	0.47	0.69	0.59	0.77	0.80	0.80	0.20	0.20	0.45	0.63	0.57	0.77	0.79	0.79	-
Chloride (Cl^-)	mg/L	74	74	89	161	136	168	172	174	75	75	117	160	141	170	177	182	75	75	112	151	137	174	176	176	74	74	110	137	133	172	175	175	-
Fluoride (F^-)	mg/L	0.19	0.19	0.21	0.22	0.22	0.24	0.25	0.25	0.17	0.17	0.19	0.21	0.21	0.25	0.26	0.27	0.17	0.17	0.19	0.21	0.21	0.24	0.27	0.27	0.17	0.17	0.20	0.22	0.22	0.24	0.26	0.27	-
Sulphate (SO_4^{2-})	mg/L	229	230	292	690	570	712	782	823	210	212	336	596	495	612	671	696	227	228	437	595	506	616	666	667	227	229	398	547	490	627	642	658	-
Calcium (Ca)	mg/L	85	85	99	134	124	141	147	148	95	105	121	140	135	150	156	159	108	108	132	142	137	150	155	156	108	109	128	142	136	146	155	158	-
Magnesium (Mg)	mg/L	77	78	91	157	140	169	182	189	74	74	94	137	123	147	157	161	77	77	110	138	124	142	156	156	77	77	106	131	121	142	151	155	-
Potassium (K)	mg/L	18	18	20	27	26	31	34	35	17	17	19	24	23	25	29	30	18	18	21	24	23	25	29	29	18	18	21	23	23	25	28	29	-
Sodium (Na)	mg/L	66	67	82	158	138	173	185	194	64	64	89	137	120	142	162	166	66	66	97	136	119	142	160	161	66	66	93	125	116	145	155	159	-
Nutrients																																	
Ammonia	mg/L N	0.028	0.029	0.101	0.133	0.130	0.142	0.224	0.275	0.036	0.037	0.038	0.059	0.057	0.070	0.081	0.093	0.034	0.034	0.035	0.057	0.058	0.071	0.100	0.108	0.034	0.034	0.039	0.056	0.056	0.068	0.093	0.121	-
Nitrate	mg/L N	0.113	0.113	0.124	0.256	0.474	0.842	1.114	1.118	0.087	0.093	0.138	0.366	0.536	1.046	1.159	1.160	0.088	0.088	0.138	0.350	0.519	0.950	1.163	1.173	0.084	0.085	0.125	0.309	0.487	0.872	1.167	1.174	10
Nitrite	mg/L	0.0041	0.0041	0.0058	0.0063	0.0111	0.0215	0.0233	0.0234	0.0032	0.0034	0.0041	0.0057	0.0094	0.0106	0.0233	0.0240	0.0031	0.0033	0.0048	0.0063	0.0098	0.0131	0.0230	0.0231	0.0032	0.0033	0.0050	0.0056	0.0094	0.0125	0.0228	0.0239	1
Phosphorus	mg/L	0.053	0.053	0.070	0.089	0.106	0.153	0.161	0.162	0.031	0.035	0.041	0.066	0.083	0.121	0.156	0.158	0.033	0.034	0.035	0.069	0.083	0.122	0.158	0.159	0.033	0.033	0.034	0.073	0.081	0.117	0.155	0.156	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0017	0.0019	0.0032	0.0037	0.0036	0.0040	0.0050	0.0054	0.0019	0.0022	0.0041	0.0045	0.0050	0.0062	0.0081	0.0084	0.0024	0.0024	0.0037	0.0046	0.0050	0.0063	0.0079	0.0080	0.0006	0.0006	0.0008	0.0016	0.0017	0.0028	0.0029	0.0063	0.2
Antimony (Sb)	mg/L	0.00011	0.00011	0.00011	0.00012	0.00013	0.00014	0.00019	0.00022	0.00008	0.00008	0.00010	0.00012	0.00014	0.00015	0.00026	0.00033	0.00008	0.00008	0.00008	0.00013	0.00016	0.00023	0.00039	0.00044	0.00008	0.00008	0.00009	0.00013	0.00019	0.00026	0.00045	0.00094	-
Arsenic (As)	mg/L	0.0016	0.0016	0.0018	0.0020	0.0022	0.0027	0.0029	0.0033	0.0011	0.0011	0.0013	0.0016	0.0019	0.0028	0.0030	0.0031	0.0012	0.0012	0.0013	0.0019	0.0022	0.0030	0.0038	0.0039	0.0012	0.0013	0.0014	0.0025	0.0023	0.0031	0.0037	0.0045	-
Barium (Ba)	mg/L	0.042	0.042	0.046	0.049	0.051	0.056	0.060	0.061	0.042	0.043	0.047	0.051	0.056	0.071	0.072	0.073	0.042	0.043	0.048	0.056	0.059	0.072	0.080	0.080	0.043	0.043	0.049	0.059	0.059	0.072	0.079	0.079	-
Boron (B)	mg/L	0.041	0.042	0.045	0.119	0.096	0.134	0.147	0.147	0.040	0.041	0.047	0.115	0.096	0.128	0.153	0.158	0.044	0.045	0.056	0.113	0.098	0.129	0.152	0.152	0.044	0.045	0.054	0.106	0.095	0.128	0.148	0.150	-
Cadmium (Cd)	mg/L	0.000006	0.000006	0.000007	0.000007	0.000008	0.000008	0.000016	0.000016	0.000006	0.000006	0.000007	0.000007	0.000009	0.000009	0.000018	0.000019	0.000006	0.000006	0.000007	0.000008	0.000009	0.000009	0.000017	0.000018	0.000005	0.000005	0.000006	0.000006	0.000007	0.000007	0.000015	0.000016	-
Chromium (Cr)	mg/L	0.00017	0.00018	0.00029	0.00030	0.00030	0.00031	0.00037	0.00045	0.00018	0.00020	0.00032	0.00036	0.00040	0.00049	0.00065	0.00067	0.00022	0.00022	0.00030	0.00041	0.00041	0.00050	0.00066	0.00067	0.00009	0.00009	0.00010	0.00017	0.00016	0.00020	0.00028	0.00048	-
Cobalt (Co)	mg/L	0.00014	0.00015	0.00018	0.00024	0.00023	0.00027	0.00030	0.00030	0.00015	0.00017	0.00025	0.00027	0.00027	0.00031	0.00031	0.00032	0.00019	0.00020	0.00027	0.00030	0.00029	0.00031	0.00032	0.00032	0.00016	0.00016	0.00024	0.00026	0.00028	0.00030	0.00042	0.00045	-
Copper (Cu)	mg/L	0.0023	0.0023	0.0026	0.0028	0.0028	0.0029	0.0035	0.0036	0.0026	0.0028	0.0031	0.0032	0.0034	0.0037	0.0045	0.0046	0.0028	0.0028	0.0030	0.0035	0.0035	0.0038	0.0046	0.0046	0.0024	0.0025	0.0025	0.0029	0.0029	0.0032	0.0036	0.0039	1
Iron (Fe)	mg/L	0.009	0.011	0.016	0.018	0.019	0.025	0.029	0.030	0.013	0.014	0.021	0.027	0.033	0.050	0.056	0.057	0.017	0.017	0.020	0.032	0.037	0.057	0.062	0.062	0.029	0.030	0.033	0.053	0.062	0.059	0.133	0.164	-
Lead (Pb)	mg/L	0.000040	0.000041	0.000047	0.000052	0.000051	0.000056	0.000064	0.000068	0.000039	0.000041	0.000053	0.000057	0.000060	0.000068	0.000087	0.000090	0.000042	0.000042	0.000051	0.000058	0.000061	0.000071	0.000087	0.000087	0.000026	0.000026	0.000028	0.000029	0.000030	0.000033	0.000037	0.000070	0.05
Lithium (Li)	mg/L	0.0080	0.0080	0.0083	0.0107	0.0103	0.0120	0.0125	0.0126	0.0079	0.0079	0.0087	0.0106	0.0103	0.0113	0.0129	0.0131	0.0080	0.0080	0.0092	0.0106	0.0104	0.0112	0.0128	0.0128	0.0080	0.0080	0.0089	0.0104	0.0102	0.0115	0.0128	0.0131	-
Manganese (Mn)	mg/L	0.018	0.020	0.029	0.030	0.035	0.044	0.049	0.051	0.014	0.017	0.024	0.032	0.037	0.052	0.062	0.063	0.019	0.019	0.021	0.037	0.047	0.077	0.086	0.088	0.036	0.040	0.042	0.079	0.085	0.110	0.169	0.207	-
Molybdenum (Mo)	mg/L	0.006	0.007	0.008	0.011	0.010	0.012	0.013	0.013	0.006	0.007	0.008	0.011	0.011	0.012	0.013	0.014	0.009	0.010	0.012	0.013	0.016	0.018	0.029	0.035	0.010	0.010	0.013	0.014	0.016	0.018	0.028	0.035	-
Nickel (Ni)	mg/L	0.0025	0.0026	0.0028	0.0057	0.0046	0.0059	0.0063	0.0063	0.0026	0.0029	0.0031	0.0056	0.0048	0.0060	0.0066	0.0068	0.0029	0.0029	0.0034	0.0056	0.0049	0.0061	0.0066	0.0066	0.0024	0.0025	0.0030	0.0051	0.0046	0.0060	0.0064	0.0066	-
Selenium (Se)	mg/L	0.00030	0.00031	0.00033	0.00035	0.00083	0.00127	0.00221	0.00278	0.00030	0.00033	0.00038	0.00087	0.00113	0.00138	0.00340	0.00360	0.00033	0.00033	0.00043	0.00100	0.00114	0.00139	0.00311	0.00327	0.00033	0.00034	0.00046	0.00103	0.00113	0.00142	0.00281	0.00322	-
Silicon (Si)		5.5	5.5	6.2	6.8	6.9	7.7	8.6	9.2	5.5	5.7	6.3	7.3	8.2	10.5	10.9	11.2	5.6	5.7	6.5	7.8	8.2	10.5	10.6	10.6	5.7	5.7	6.9	8.3	8.4	10.4	10.6	10.6	-
Silver (Ag)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000007	0.000007	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000007	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	-
Strontium (Sr)	mg/L	0.75	0.75	0.86	1.42	1.26	1.51	1.60	1.65	0.74	0.74	0.93	1.31	1.18	1.41	1.49	1.53	0.76	0.77	1.05	1.34	1.20	1.36	1.48	1.48	0.76	0.77	1.01	1.28	1.17	1.36	1.45	1.48	-
Thallium (Tl)	mg/L	0.000006	0.000006	0.000007	0.000007	0.000007	0.000007	0.000007	0.000008	0.000006	0.000006	0.000006	0.000007	0.000007	0.000007	0.000008	0.000008	0.000006	0.000006	0.000006	0.000007	0.000008	0.000009	0.000010	0.000011	0.000005	0.000005	0.000006	0.000006	0.000007	0.000008	0.000010	0.000012	-
Tin (Sn)		0.00006	0.00006	0.00006	0.00007	0.00007	0.00007	0.00007	0.00008	0.00006	0.00006	0.00006	0.00006	0.00007	0.00007	0.00008	0.00008	0.00006	0.00006	0.00006	0.00007	0.00007	0.00007	0.00008	0.00008	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00006	0.00007	-
Uranium (U)	mg/L	0.0018	0.0018	0.0023	0.0044	0.0038	0.0047	0.0049	0.0049	0.0018	0.0018	0.0031	0.0045	0.0039	0.0049	0.0050	0.0050	0.0018	0.0018	0.0036	0.0044	0.0039	0.0049	0.0050	0.0050	0.0018	0.0018	0.0033	0.0042	0.0039	0.0050	0.0054	0.0055	-
Vanadium (V)	mg/L	0.0031	0.0031	0.0032	0.0034	0.0035	0.0036	0.0040	0.0042	0.0031	0.0032	0.0035	0.0038	0.0038	0.0040	0.0049	0.0050	0.0032	0.0032	0.0037	0.0039	0.0041	0.0042	0.0057	0.0058	0.0031	0.0031	0.0036	0.0036	0.0039	0.0041	0.0054	0.0063	-
Zinc (Zn)	mg/L	0.0007	0.0007	0.0011	0.0013	0.0020	0.0035	0.0040	0.0041	0.0004	0.0004	0.0007	0.0009	0.0015	0.0025	0.0029	0.0035	0.0004	0.0004	0.0007	0.0011	0.0015	0.0027	0.0028	0.0029	0.0004	0.0004	0.0007	0.0014	0.0016	0.0026	0.0027	0.0029	5

\\van11\prj_file\1\011\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-6 Ajax_LOM_WQM_Base Case Appendix Tables_Rec&Aes GL.xlsx]TC1 JL BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - RECREATION AND AESTHETIC (REC & AES) USES.

APPENDIX C5

HUMPHREY CREEK

(Tables C5-1 to C5-6)

TABLE C5-1

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
HUMPHREY CREEK- BASE CASE MODEL SUMMARY STATISTICS COMPARED TO PRIMARY EFFECTS ASSESSMENT WATER QUALITY GUIDELINES

Print Jul/21/15 8:25:58

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG-30 D	BCWQG-MAX	BCWQG-WILDLIFE	WQB/SBEB
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX				
Conventional Parameters and Major Ions																																			
Baseline Hardness	mg/L $CaCO_3$	573	573	589	639	664	755	782	782	573	573	622	657	676	782	782	782	573	573	622	657	676	782	782	782	573	573	622	657	676	782	782	782				
Hardness - Dissolved	mg/L $CaCO_3$	499	505	532	575	591	655	681	767	529	542	564	635	644	729	765	770	538	538	575	633	641	705	772	774	401	407	475	516	567	724	812	851				
Bromide (Br^-)	mg/L	0.20	0.20	0.21	0.23	0.22	0.23	0.25	0.25	0.22	0.23	0.23	0.24	0.24	0.24	0.25	0.25	0.23	0.23	0.23	0.24	0.24	0.25	0.27	0.29	0.15	0.15	0.18	0.22	0.22	0.25	0.30	0.30				
Chloride (Cl^-)	mg/L	23	24	29	34	33	38	41	43	25	26	27	33	34	39	43	43	26	26	28	37	35	40	46	47	26	28	35	37	36	39	43	43	150	600	600	388
Fluoride (F^-)	mg/L	0.20	0.20	0.21	0.23	0.23	0.26	0.27	0.28	0.22	0.23	0.23	0.24	0.25	0.26	0.28	0.28	0.23	0.23	0.23	0.24	0.25	0.27	0.28	0.29	0.19	0.19	0.22	0.23	0.23	0.25	0.28	0.29	1.57		1	
Sulphate (SO_4^{2-})	mg/L	156	160	176	205	238	309	332	378	166	170	195	262	269	360	377	380	169	169	205	260	271	348	381	382	109	114	159	191	242	360	475	529	429			429 / 730
Calcium (Ca)	mg/L	78	80	83	91	92	101	107	119	82	84	89	100	101	113	118	119	84	84	91	102	102	110	120	124	71	74	87	95	99	117	137	141				
Magnesium (Mg)	mg/L	74	75	79	85	88	98	101	115	79	81	84	94	96	109	114	115	80	80	84	90	94	105	115	116	53	53	59	69	78	102	115	121				
Potassium (K)	mg/L	12	12	12	14	13	14	15	15	13	13	14	14	14	15	15	15	13	13	14	14	14	15	15	16	10	10	12	13	13	14	17	19				
Sodium (Na)	mg/L	49	51	54	55	56	56	62	64	55	56	57	59	60	61	64	65	55	55	57	59	59	59	65	65	39	40	44	47	52	61	72	79				
Nutrients																																			
Ammonia	mg/L N	0.008	0.008	0.009	0.010	0.011	0.014	0.015	0.018	0.007	0.008	0.010	0.011	0.012	0.017	0.018	0.018	0.008	0.009	0.010	0.016	0.024	0.018	0.081	0.129	0.011	0.012	0.014	0.023	0.067	0.059	0.330	0.478	0.66			
Nitrate	mg/L N	0.020	0.021	0.023	0.023	0.047	0.083	0.111	0.126	0.022	0.023	0.024	0.024	0.057	0.120	0.126	0.127	0.023	0.023	0.024	0.116	0.115	0.127	0.384	0.584	0.022	0.026	0.044	0.125	0.199	0.278	0.664	0.766	3.0	32.800		
Nitrite	mg/L	0.0040	0.0040	0.0042	0.0045	0.0045	0.0046	0.0049	0.0049	0.0044	0.0047	0.0047	0.0048	0.0048	0.0049	0.0049	0.0049	0.0045	0.0045	0.0045	0.0047	0.0068	0.0049	0.0176	0.0264	0.0031	0.0034	0.0044	0.0053	0.0136	0.0115	0.0618	0.0885	0.2	0.60		
Phosphorus	mg/L	0.071	0.074	0.088	0.096	0.099	0.117	0.124	0.124	0.079	0.083	0.086	0.097	0.101	0.109	0.132	0.133	0.075	0.077	0.081	0.091	0.098	0.109	0.130	0.130	0.061	0.061	0.079	0.083	0.084	0.090	0.116	0.117				
Dissolved Metals																																			
Aluminum (Al)	mg/L	0.0005	0.0010	0.0012	0.0197	0.0178	0.0280	0.0417	0.0437	0.0005	0.0005	0.0013	0.0147	0.0158	0.0230	0.0485	0.0487	0.0005	0.0011	0.0013	0.0136	0.0155	0.0231	0.0469	0.0470	0.0012	0.0013	0.0016	0.0017	0.0017	0.0019	0.0020	0.0023	0.050	0.100	5	
Antimony (Sb)	mg/L	0.00017	0.00017	0.00018	0.00021	0.00021	0.00022	0.00026	0.00026	0.00018	0.00018	0.00020	0.00021	0.00022	0.00024	0.00028	0.00028	0.00018	0.00018	0.00019	0.00021	0.00031	0.00027	0.00082	0.00100	0.00014	0.00015	0.00029	0.00045	0.00047	0.00063	0.00091	0.00102	0.009			
Arsenic (As)	mg/L	0.0026	0.0026	0.0028	0.0029	0.0030	0.0032	0.0034	0.0035	0.0029	0.0030	0.0031	0.0032	0.0032	0.0033	0.0035	0.0035	0.0030	0.0030	0.0030	0.0032	0.0034	0.0033	0.0046	0.0047	0.0022	0.0024	0.0028	0.0032	0.0032	0.0035	0.0041	0.0043		0.0050	0.0250	0.0320
Barium (Ba)	mg/L	0.050	0.053	0.054	0.059	0.058	0.061	0.063	0.065	0.054	0.054	0.059	0.062	0.061	0.064	0.065	0.065	0.055	0.055	0.057	0.062	0.060	0.063	0.064	0.066	0.054	0.054	0.056	0.059	0.059	0.062	0.063	0.065	1.0			
Boron (B)	mg/L	0.023	0.024	0.027	0.029	0.028	0.030	0.032	0.032	0.026	0.026	0.027	0.029	0.030	0.032	0.033	0.033	0.026	0.026	0.027	0.031	0.032	0.033	0.044	0.052	0.018	0.020	0.024	0.028	0.032	0.037	0.061	0.075		1.2	5.0	
Cadmium (Cd)	mg/L	0.000004	0.000004	0.000005	0.000012	0.000012	0.000017	0.000021	0.000022	0.000004	0.000005	0.000005	0.000010	0.000011	0.000018	0.000024	0.000024	0.000005	0.000005	0.000005	0.000010	0.000012	0.000018	0.000023	0.000023	0.000004	0.000005	0.000005	0.000006	0.000006	0.000007	0.000008	0.000010	0.00046	0.00280		
Chromium (Cr)	mg/L	0.00010	0.00011	0.00014	0.00116	0.00115	0.00190	0.00256	0.00268	0.00012	0.00012	0.00013	0.00093	0.00103	0.00159	0.00298	0.00299	0.00012	0.00012	0.00013	0.00104	0.00106	0.00179	0.00289	0.00289	0.00009	0.00009	0.00014	0.00020	0.00023	0.00026	0.00055	0.00067	0.001/0.0089			
Cobalt (Co)	mg/L	0.00004	0.00004	0.00005	0.00024	0.00023	0.00037	0.00048	0.00050	0.00004	0.00005	0.00005	0.00020	0.00021	0.00031	0.00056	0.00056	0.00005	0.00005	0.00005	0.00024	0.00023	0.00039	0.00054	0.00054	0.00007	0.00007	0.00010	0.00012	0.00017	0.00020	0.00043	0.00051	0.004	0.110		
Copper (Cu)	mg/L	0.0048	0.0050	0.0062	0.0083	0.0080	0.0096	0.0108	0.0109	0.0054	0.0057	0.0059	0.0081	0.0081	0.0098	0.0120	0.0120	0.0055	0.0055	0.0059	0.0080	0.0080	0.0097	0.0116	0.0116	0.0035	0.0037	0.0042	0.0044	0.0048	0.0057	0.0064	0.0069	0.010	0.026	0.3	0.0256
Iron (Fe)	mg/L	0.004	0.004	0.005	0.043	0.041	0.067	0.095	0.099	0.004	0.005	0.005	0.034	0.037	0.056	0.110	0.110	0.005	0.005	0.005	0.036	0.038	0.056	0.106	0.107	0.008	0.009	0.016	0.019	0.021	0.024	0.038	0.283		0.350		
Lead (Pb)	mg/L	0.000020	0.000021	0.000025	0.000143	0.000142	0.000233	0.000301	0.000315	0.000022	0.000023	0.000024	0.000115	0.000131	0.000206	0.000350	0.000351	0.000023	0.000023	0.000024	0.000117	0.000128	0.000208	0.000339	0.000339	0.000021	0.000023	0.000024	0.000025	0.000026	0.000028	0.000030	0.000033	0.016	0.330	0.10	
Lithium (Li)	mg/L	0.0057	0.0059	0.0062	0.0068	0.0066	0.0070	0.0072	0.0074	0.0063	0.0063	0.0067	0.0070	0.0070	0.0074	0.0074	0.0075	0.0064	0.0064	0.0066	0.0072	0.0071	0.0073	0.0080	0.0084	0.0048	0.0049	0.0055	0.0064	0.0068	0.0078	0.0102	0.0120				
Manganese (Mn)	mg/L	0.008	0.010	0.011	0.013	0.015	0.023	0.024	0.024	0.008	0.008	0.011	0.014	0.015	0.017	0.026	0.026	0.008	0.011	0.014	0.015	0.017	0.020	0.026	0.026	0.014	0.015	0.017	0.022	0.027	0.039	0.047	0.354	1.90	3.80		
Molybdenum (Mo)	mg/L	0.014	0.014	0.016	0.019	0.019	0.021	0.023	0.024	0.015	0.016	0.018	0.021	0.020	0.023	0.024	0.024	0.016	0.016	0.018	0.022	0.028	0.024	0.070	0.097	0.013	0.015	0.021	0.028	0.035	0.037	0.088	0.105	1.00	2.00	0.05	0.180
Nickel (Ni)	mg/L	0.0011	0.0011	0.0012	0.0023	0.0023	0.0031	0.0036	0.0038	0.0012	0.0012	0.0013	0.0022	0.0022	0.0027	0.0042	0.0042	0.0012	0.0012	0.0012	0.0025	0.0024	0.0032	0.0040	0.0040	0.0012	0.0013	0.0015	0.0018	0.0018	0.0020	0.0024	0.0027		0.1500		
Selenium (Se)	mg/L	0.00063	0.00066	0.00070	0.00072	0.00208	0.00407	0.00449	0.00476	0.00071	0.00073	0.00075	0.00254	0.00264	0.00453	0.00475	0.00478	0.00072	0.00072	0.00074	0.00287	0.00267	0.00440	0.00480	**0.00524**	0.00053	0.00057	0.00078	0.00243	0.00247	0.00362	**0.00625**	**0.00703**	0.0020		0.0020	0.0025 / 0.005
Silicon (Si)		7.0	7.3	8.0	8.3	8.3	8.8	9.4	9.6	7.8	8.2	8.2	8.6	8.8	9.0	9.9	10.0	7.9	7.9	8.3	8.7	8.8	9.2	9.9	9.9	7.3	7.3	7.9	8.5	8.6	9.3	10.0	12.7				
Silver (Ag)	mg/L	0.000004	0.000004	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000004	0.000005	0.000005	0.000005	0.000005	0.000006	0.000007	0.000007	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000007	0.000004	0.000004	0.000005	0.000005	0.000005	0.000005	0.000006	0.000006	0.001500			
Strontium (Sr)	mg/L	0.71	0.73	0.76	0.82	0.82	0.85	0.95	0.99	0.75	0.77	0.81	0.89	0.89	0.94	0.99	0.99	0.77	0.77	0.83	0.90	0.89	0.94	1.02	1.11	0.54	0.56	0.64	0.70	0.80	0.96	1.23	1.35				
Thallium (Tl)	mg/L	0.000004	0.000004	0.000005	0.000009	0.000009	0.000013	0.000015	0.000016	0.000004	0.000005	0.000005	0.000009	0.000009	0.000011	0.000017	0.000017	0.000005	0.000005	0.000005	0.000010	0.000010	0.000013	0.000017	0.000018	0.000004	0.000005	0.000006	0.000007	0.000008	0.000009	0.000012	0.000012	0.0008			
Tin (Sn)		0.00004	0.00004	0.00005	0.00009	0.00009	0.00012	0.00014	0.00015	0.00004	0.00005	0.00005	0.00008	0.00009	0.00011	0.00016	0.00016	0.00005	0.00005	0.00005	0.00009	0.00009	0.00011	0.00016	0.00016	0.00004	0.00004	0.00005	0.00005	0.00005	0.00005	0.00007	0.00008				
Uranium (U)	mg/L	0.0020	0.0021	0.0023	0.0025	0.0029	0.0038	0.0040	0.0045	0.0022	0.0024	0.0025	0.0033	0.0033	0.0042	0.0044	0.0045	0.0023	0.0023	0.0025	0.0033	0.0033	0.0041	0.0045	0.0045	0.0017	0.0017	0.0020	0.0025	0.0029	0.0037	0.0050	0.0054	0.0085			
Vanadium (V)	mg/L	0.0039	0.0041	0.0042	0.0050	0.0051	0.0056	0.0064	0.0065	0.0043	0.0044	0.0046	0.0051	0.0053	0.0060	0.0069	0.0069	0.0044	0.0044	0.0044	0.0051	0.0053	0.0059	0.0069	0.0069	0.0026	0.0027	0.0035	0.0040	0.0039	0.0045	0.0049	0.0049				
Zinc (Zn)	mg/L	0.0004	0.0004	0.0005	0.0007	0.0008	0.0012	0.0013	0.0014	0.0004	0.0005	0.0005	0.0006	0.0008	0.0009	0.0015	0.0015	0.0005	0.0005	0.0005	0.0008	0.0011	0.0014	0.0027	0.0035	0.0007	0.0007	0.0012	0.0014	0.0018	0.0020	0.0043	0.0055	0.240	0.265		

\\ivan11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-1 Ajax_LOM_WQM_Base Case Summary Tables.xlsx]TC1 JL BC SUMM STATS

NOTES:
1. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - 30 DAY AVERAGE (BCWQG-30 D) - FRESHWATER AQUATIC LIFE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
3. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - WILDLIFE (WILDLIFE).
4. WATER QUALITY BENCHMARKS (WQB) AND SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
5. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS AN AQUATIC LIFE GUIDELINE.
6. GREEN HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG-WILDLIFE.
7. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS A WATER QUALITY BENCHMARK (WQB) OR SCIENCE BASED ENVIRONMENTAL BENCHARK (WQB).
8. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
9. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELCIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
10. SULPHATE SBEB IS 429 mg/L FOR WATER HARDNESS UP TO 800 mg/L CaCO3 AND IS INTENDED FOR LAKES AND CREEKS WHERE EARLY LIFESTAGES OF TROUT ARE PRESENT; SBEB OF 730 mg/L FOR HARDNESS UP TO 1377 mg/L CaCO3 FOR CREEKS WHERE FISH ARE ABSENT OR PERIODS OF THE YEAR WHEN EARLY LIFESTAGES OF TROUT ARE ABSENT.
11. SULPHATE GUIDELINE EXCEEDANCE HIGHLIGHTING IN THIS TABLE DOES NOT ACCOUNT FOR THE TIMING OF THE OCCURANCE OF THE PREDICTED CONCENTRATIONS; THEREFORE IT MAY NOT BE A TRUE EXCEEDANCE.
12. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
13. SELENIUM WQB IS 0.0025 mg/L FOR LENTIC SYSTEMS AND 0.005 mg/L FOR LOTIC SYSTEMS.

TABLE C5-2

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
HUMPHREY CREEK- BASE CASE MODEL SUMMARY STATISTICS COMPARED TO CANADIAN ENVIRONMENTAL QUALITY GUIDELINES FOR THE PROTECTION OF AQUATIC LIFE (CEQG-PAL)

Print Jul/17/15 21:18:58

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								CEQG - PAL
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	
Conventional Parameters and Major Ions																																
Baseline Hardness	mg/L $CaCO_3$	573	573	589	639	664	755	782	782	573	573	622	657	676	782	782	782	573	573	622	657	676	782	782	782	573	573	622	657	676	782	782	782	-
Hardness - Dissolved	mg/L $CaCO_3$	499	505	532	575	591	655	681	767	529	542	564	635	644	729	765	770	538	538	575	633	641	705	772	774	401	407	475	516	567	724	812	851	-
Bromide (Br^-)	mg/L	0.20	0.20	0.21	0.23	0.22	0.23	0.25	0.25	0.22	0.23	0.23	0.24	0.24	0.24	0.25	0.25	0.23	0.23	0.23	0.24	0.24	0.25	0.27	0.29	0.15	0.15	0.18	0.22	0.22	0.25	0.30	0.30	1.5
Chloride (Cl^-)	mg/L	23	24	29	34	33	38	41	43	25	26	27	33	34	39	43	43	26	26	28	37	35	40	46	47	26	28	35	37	36	39	43	43	120
Fluoride (F^-)	mg/L	0.20	0.20	0.21	0.23	0.23	0.26	0.27	0.28	0.22	0.23	0.23	0.24	0.25	0.26	0.28	0.28	0.23	0.23	0.23	0.24	0.25	0.27	0.28	0.29	0.19	0.19	0.22	0.23	0.23	0.25	0.28	0.29	0.12
Sulphate (SO_4^{2-})	mg/L	156	160	176	205	238	309	332	378	166	170	195	262	269	360	377	380	169	169	205	260	271	348	381	382	109	114	159	191	242	360	475	529	-
Calcium (Ca)	mg/L	78	80	83	91	92	101	107	119	82	84	89	100	101	113	118	119	84	84	91	102	102	110	120	124	71	74	87	95	99	117	137	141	-
Magnesium (Mg)	mg/L	74	75	79	85	88	98	101	115	79	81	84	94	96	109	114	115	80	80	84	90	94	105	115	116	53	53	59	69	78	102	115	121	-
Potassium (K)	mg/L	12	12	12	14	13	14	15	15	13	13	14	14	14	15	15	15	13	13	14	14	14	15	15	16	10	10	12	13	13	14	17	19	-
Sodium (Na)	mg/L	49	51	54	55	56	56	62	64	55	56	57	59	60	61	64	65	55	55	57	59	59	59	65	65	39	40	44	47	52	61	72	79	-
Nutrients																																		
Ammonia	mg/L N	0.008	0.008	0.009	0.010	0.011	0.014	0.015	0.018	0.007	0.008	0.010	0.011	0.012	0.017	0.018	0.018	0.008	0.009	0.010	0.016	0.024	0.018	0.081	0.129	0.011	0.012	0.014	0.023	0.067	0.059	0.330	0.478	0.65
Nitrate	mg/L N	0.020	0.021	0.023	0.023	0.047	0.083	0.111	0.126	0.022	0.023	0.024	0.024	0.057	0.120	0.126	0.127	0.023	0.023	0.023	0.024	0.116	0.115	0.127	0.384	0.584	0.022	0.026	0.044	0.125	0.199	0.278	0.664	0.766	3
Nitrite	mg/L	0.0040	0.0040	0.0042	0.0045	0.0045	0.0046	0.0049	0.0049	0.0044	0.0047	0.0047	0.0048	0.0048	0.0049	0.0049	0.0049	0.0045	0.0045	0.0045	0.0047	0.0068	0.0049	0.0176	0.0264	0.0031	0.0034	0.0044	0.0053	0.0136	0.0115	0.0618	0.0885	0.06
Phosphorus	mg/L	0.071	0.074	0.088	0.096	0.099	0.117	0.124	0.124	0.079	0.083	0.086	0.097	0.101	0.109	0.132	0.133	0.075	0.077	0.081	0.091	0.098	0.109	0.130	0.130	0.061	0.061	0.079	0.083	0.084	0.090	0.116	0.117	-
Dissolved Metals																																		
Aluminum (Al)	mg/L	0.0005	0.0010	0.0012	0.0197	0.0178	0.0280	0.0417	0.0437	0.0005	0.0005	0.0013	0.0147	0.0158	0.0230	0.0485	0.0487	0.0005	0.0011	0.0013	0.0136	0.0155	0.0231	0.0469	0.0470	0.0012	0.0013	0.0016	0.0017	0.0017	0.0019	0.0020	0.0023	0.1
Antimony (Sb)	mg/L	0.00017	0.00017	0.00018	0.00021	0.00021	0.00022	0.00026	0.00026	0.00018	0.00018	0.00020	0.00021	0.00022	0.00024	0.00028	0.00028	0.00018	0.00018	0.00019	0.00021	0.00031	0.00027	0.00082	0.00100	0.00014	0.00015	0.00029	0.00045	0.00047	0.00063	0.00091	0.00102	-
Arsenic (As)	mg/L	0.0026	0.0026	0.0028	0.0029	0.0030	0.0032	0.0034	0.0035	0.0029	0.0030	0.0031	0.0032	0.0032	0.0033	0.0035	0.0035	0.0030	0.0030	0.0030	0.0032	0.0034	0.0033	0.0046	0.0047	0.0022	0.0024	0.0028	0.0032	0.0032	0.0035	0.0041	0.0043	0.005
Barium (Ba)	mg/L	0.050	0.053	0.054	0.059	0.058	0.061	0.063	0.065	0.054	0.054	0.059	0.062	0.061	0.064	0.065	0.065	0.055	0.055	0.057	0.062	0.060	0.063	0.064	0.066	0.054	0.054	0.056	0.059	0.059	0.062	0.063	0.065	-
Boron (B)	mg/L	0.023	0.024	0.027	0.029	0.028	0.030	0.032	0.032	0.026	0.026	0.027	0.029	0.030	0.032	0.033	0.033	0.026	0.026	0.027	0.031	0.032	0.033	0.044	0.052	0.018	0.020	0.024	0.028	0.032	0.037	0.061	0.075	-
Cadmium (Cd)	mg/L	0.000004	0.000004	0.000005	0.000012	0.000012	0.000017	0.000021	0.000022	0.000004	0.000005	0.000005	0.000010	0.000011	0.000018	0.000024	0.000024	0.000005	0.000005	0.000005	0.000010	0.000012	0.000018	0.000023	0.000023	0.000004	0.000005	0.000005	0.000006	0.000006	0.000007	0.000008	0.000010	0.000036
Chromium (Cr)	mg/L	0.00010	0.00011	0.00014	0.00116	0.00115	0.00190	0.00256	0.00268	0.00012	0.00012	0.00013	0.00093	0.00103	0.00159	0.00298	0.00299	0.00012	0.00012	0.00013	0.00104	0.00106	0.00179	0.00289	0.00289	0.00009	0.00009	0.00014	0.00020	0.00023	0.00026	0.00055	0.00067	0.001/0.089
Cobalt (Co)	mg/L	0.00004	0.00004	0.00005	0.00024	0.00023	0.00037	0.00048	0.00050	0.00004	0.00005	0.00005	0.00020	0.00021	0.00031	0.00056	0.00056	0.00005	0.00005	0.00005	0.00024	0.00023	0.00039	0.00054	0.00054	0.00007	0.00007	0.00010	0.00012	0.00017	0.00020	0.00043	0.00051	-
Copper (Cu)	mg/L	0.0048	0.0050	0.0062	0.0083	0.0080	0.0096	0.0108	0.0109	0.0054	0.0057	0.0059	0.0081	0.0081	0.0098	0.0120	0.0120	0.0055	0.0055	0.0059	0.0080	0.0080	0.0097	0.0116	0.0116	0.0035	0.0037	0.0042	0.0044	0.0048	0.0057	0.0064	0.0069	0.004
Iron (Fe)	mg/L	0.004	0.004	0.005	0.043	0.041	0.067	0.095	0.099	0.004	0.005	0.005	0.034	0.037	0.056	0.110	0.110	0.005	0.005	0.005	0.036	0.038	0.056	0.106	0.107	0.008	0.009	0.016	0.019	0.021	0.024	0.038	0.283	0.3
Lead (Pb)	mg/L	0.000020	0.000021	0.000025	0.000143	0.000142	0.000233	0.000301	0.000315	0.000022	0.000023	0.000024	0.000115	0.000131	0.000206	0.000350	0.000351	0.000023	0.000023	0.000024	0.000117	0.000128	0.000208	0.000339	0.000339	0.000021	0.000023	0.000024	0.000025	0.000026	0.000028	0.000030	0.000033	0.001
Lithium (Li)	mg/L	0.0057	0.0059	0.0062	0.0068	0.0066	0.0070	0.0072	0.0074	0.0063	0.0063	0.0067	0.0070	0.0070	0.0074	0.0074	0.0075	0.0064	0.0064	0.0066	0.0072	0.0071	0.0073	0.0080	0.0084	0.0048	0.0049	0.0055	0.0064	0.0068	0.0078	0.0102	0.0120	-
Manganese (Mn)	mg/L	0.008	0.010	0.011	0.013	0.015	0.023	0.024	0.024	0.008	0.008	0.011	0.014	0.015	0.017	0.026	0.026	0.008	0.011	0.014	0.015	0.017	0.020	0.026	0.026	0.014	0.015	0.017	0.022	0.027	0.039	0.047	0.354	-
Molybdenum (Mo)	mg/L	0.014	0.014	0.016	0.019	0.019	0.021	0.023	0.024	0.015	0.016	0.018	0.021	0.020	0.023	0.024	0.024	0.016	0.016	0.018	0.022	0.028	0.024	0.070	0.097	0.013	0.015	0.021	0.028	0.035	0.037	0.088	0.105	0.073
Nickel (Ni)	mg/L	0.0011	0.0011	0.0012	0.0023	0.0023	0.0031	0.0036	0.0038	0.0012	0.0012	0.0013	0.0022	0.0022	0.0027	0.0042	0.0042	0.0012	0.0012	0.0012	0.0025	0.0024	0.0032	0.0040	0.0040	0.0012	0.0013	0.0015	0.0018	0.0018	0.0020	0.0024	0.0027	0.15
Selenium (Se)	mg/L	0.00063	0.00066	0.00070	0.00072	0.00208	0.00407	0.00449	0.00476	0.00071	0.00073	0.00075	0.00254	0.00264	0.00453	0.00475	0.00478	0.00072	0.00072	0.00074	0.00287	0.00267	0.00440	0.00480	0.00524	0.00053	0.00057	0.00078	0.00243	0.00247	0.00362	0.00625	0.00703	0.001
Silicon (Si)		7.0	7.3	8.0	8.3	8.3	8.8	9.4	9.6	7.8	8.2	8.2	8.6	8.8	9.0	9.9	10.0	7.9	7.9	8.3	8.7	8.8	9.2	9.9	9.9	7.3	7.3	7.9	8.5	8.6	9.3	10.0	12.7	-
Silver (Ag)	mg/L	0.000004	0.000004	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000004	0.000005	0.000005	0.000005	0.000005	0.000006	0.000007	0.000007	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000007	0.000004	0.000004	0.000005	0.000005	0.000005	0.000005	0.000006	0.000006	0.0001
Strontium (Sr)	mg/L	0.71	0.73	0.76	0.82	0.82	0.85	0.95	0.99	0.75	0.77	0.81	0.89	0.89	0.94	0.99	0.99	0.77	0.77	0.83	0.90	0.89	0.94	1.02	1.11	0.54	0.56	0.64	0.70	0.80	0.96	1.23	1.35	-
Thallium (Tl)	mg/L	0.000004	0.000004	0.000005	0.000009	0.000009	0.000013	0.000015	0.000016	0.000004	0.000005	0.000005	0.000009	0.000009	0.000011	0.000017	0.000017	0.000005	0.000005	0.000005	0.000010	0.000010	0.000013	0.000017	0.000018	0.000004	0.000005	0.000006	0.000007	0.000008	0.000009	0.000012	0.000012	0.0008
Tin (Sn)		0.00004	0.00004	0.00005	0.00009	0.00009	0.00012	0.00014	0.00015	0.00004	0.00005	0.00005	0.00008	0.00009	0.00011	0.00016	0.00016	0.00005	0.00005	0.00005	0.00009	0.00009	0.00011	0.00016	0.00016	0.00004	0.00004	0.00005	0.00005	0.00005	0.00005	0.00007	0.00008	-
Uranium (U)	mg/L	0.0020	0.0021	0.0023	0.0025	0.0029	0.0038	0.0040	0.0045	0.0022	0.0024	0.0025	0.0033	0.0033	0.0042	0.0044	0.0045	0.0023	0.0023	0.0025	0.0033	0.0033	0.0041	0.0045	0.0045	0.0017	0.0017	0.0020	0.0025	0.0029	0.0037	0.0050	0.0054	0.015
Vanadium (V)	mg/L	0.0039	0.0041	0.0042	0.0050	0.0051	0.0056	0.0064	0.0065	0.0043	0.0044	0.0046	0.0051	0.0053	0.0060	0.0069	0.0069	0.0044	0.0044	0.0044	0.0051	0.0053	0.0059	0.0069	0.0069	0.0026	0.0027	0.0035	0.0040	0.0039	0.0045	0.0049	0.0049	-
Zinc (Zn)	mg/L	0.0004	0.0004	0.0005	0.0007	0.0008	0.0012	0.0013	0.0014	0.0004	0.0005	0.0005	0.0006	0.0008	0.0009	0.0015	0.0015	0.0005	0.0005	0.0005	0.0008	0.0011	0.0014	0.0027	0.0035	0.0007	0.0007	0.0012	0.0014	0.0018	0.0020	0.0043	0.0055	0.03

M:\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-2 Ajax_LOM_WQM_Base Case Appendix Tables_CEQ PAL GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:

1. - = VALUE NOT EXISTING OR APPLICABLE.
2. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - PROTECTION OF AQUATIC LIFE (PAL).
3. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE CEQG PAL.
4. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
5. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELSIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
7. MERCURY AND BERYLLIUM MODELLED DATA HAVE BEEN EXCLUDED FROM THE RESULTS TABLES; THESE PARAMETERS ARE UNDERSTOOD TO BE MODELLED BASED ON DETECTION LIMITS THAT ARE NEAR TO THE GUIDELINES, RESULTING IN PREDICTED EXCEEDANCES THAT ARE NOT EXPECTED.

TABLE C5-3

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
HUMPHREY CREEK- BASE CASE MODEL SUMMARY STATISTICS COMPARED TOLIVESTOCK WATER QUALITY GUIDELINES

Print Jul/21/15 8:38:44

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - LIVESTOCK	CEQG - LIVESTOCK
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	573	573	589	639	664	755	782	782	573	573	622	657	676	782	782	782	573	573	622	657	676	782	782	782	573	573	622	657	676	782	782	782	-	-
Hardness - Dissolved	mg/L $CaCO_3$	499	505	532	575	591	655	681	767	529	542	564	635	644	729	765	770	538	538	575	633	641	705	772	774	401	407	475	516	567	724	812	851	-	-
Bromide (Br^-)	mg/L	0.20	0.20	0.21	0.23	0.22	0.23	0.25	0.25	0.22	0.23	0.23	0.24	0.24	0.24	0.25	0.25	0.23	0.23	0.23	0.24	0.24	0.25	0.27	0.29	0.15	0.15	0.18	0.22	0.22	0.25	0.30	0.30	-	-
Chloride (Cl^-)	mg/L	23	24	29	34	33	38	41	43	25	26	27	33	34	39	43	43	26	26	28	37	35	40	46	47	26	28	35	37	36	39	43	43	600	-
Fluoride (F^-)	mg/L	0.20	0.20	0.21	0.23	0.23	0.26	0.27	0.28	0.22	0.23	0.23	0.24	0.25	0.26	0.28	0.28	0.23	0.23	0.23	0.24	0.25	0.27	0.28	0.29	0.19	0.19	0.22	0.23	0.23	0.25	0.28	0.29	1	1
Sulphate (SO_4^{2-})	mg/L	156	160	176	205	238	309	332	378	166	170	195	262	269	360	377	380	169	169	205	260	271	348	381	382	109	114	159	191	242	360	475	529	1,000	1,000
Calcium (Ca)	mg/L	78	80	83	91	92	101	107	119	82	84	89	100	101	113	118	119	84	84	91	102	102	110	120	124	71	74	87	95	99	117	137	141	1,000	1,000
Magnesium (Mg)	mg/L	74	75	79	85	88	98	101	115	79	81	84	94	96	109	114	115	80	80	84	90	94	105	115	116	53	53	59	69	78	102	115	121	-	-
Potassium (K)	mg/L	12	12	12	14	13	14	15	15	13	13	14	14	14	15	15	15	13	13	14	14	14	15	15	16	10	10	12	13	13	14	17	19	-	-
Sodium (Na)	mg/L	49	51	54	55	56	56	62	64	55	56	57	59	60	61	64	65	55	55	57	59	59	59	65	65	39	40	44	47	52	61	72	79	-	-
Nutrients																																	
Ammonia	mg/L N	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.08	0.13	0.01	0.01	0.01	0.02	0.07	0.06	0.33	0.48	-	-
Nitrate	mg/L N	0.02	0.02	0.02	0.02	0.05	0.08	0.11	0.13	0.02	0.02	0.02	0.02	0.06	0.12	0.13	0.13	0.02	0.02	0.02	0.12	0.11	0.13	0.38	0.58	0.02	0.03	0.04	0.12	0.20	0.28	0.66	0.77	100	-
Nitrite	mg/L	0.0040	0.0040	0.0042	0.0045	0.0045	0.0046	0.0049	0.0049	0.0044	0.0047	0.0047	0.0048	0.0048	0.0049	0.0049	0.0049	0.0045	0.0045	0.0045	0.0047	0.0068	0.0049	0.0176	0.0264	0.0031	0.0034	0.0044	0.0053	0.0136	0.0115	0.0618	0.0885	1	-
Phosphorus	mg/L	0.071	0.074	0.088	0.096	0.099	0.117	0.124	0.124	0.079	0.083	0.086	0.097	0.101	0.109	0.132	0.133	0.075	0.077	0.081	0.091	0.098	0.109	0.130	0.130	0.061	0.061	0.079	0.083	0.084	0.090	0.116	0.117	-	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0005	0.0010	0.0012	0.0197	0.0178	0.0280	0.0417	0.0437	0.0005	0.0005	0.0013	0.0147	0.0158	0.0230	0.0485	0.0487	0.0005	0.0011	0.0013	0.0136	0.0155	0.0231	0.0469	0.0470	0.0012	0.0013	0.0016	0.0017	0.0017	0.0019	0.0020	0.0023	5	5
Antimony (Sb)	mg/L	0.000167	0.000168	0.000176	0.000207	0.000207	0.000222	0.000260	0.000262	0.000176	0.000179	0.000196	0.000207	0.000219	0.000236	0.000276	0.000277	0.000178	0.000178	0.000190	0.000209	0.000314	0.000274	0.000825	0.001002	0.000137	0.000152	0.000289	0.000447	0.000470	0.000635	0.000907	0.001023	-	-
Arsenic (As)	mg/L	0.0026	0.0026	0.0028	0.0029	0.0030	0.0032	0.0034	0.0035	0.0029	0.0030	0.0031	0.0032	0.0032	0.0033	0.0035	0.0035	0.0030	0.0030	0.0030	0.0032	0.0034	0.0033	0.0046	0.0047	0.0022	0.0024	0.0028	0.0032	0.0032	0.0035	0.0041	0.0043	0.025	0.025
Barium (Ba)	mg/L	0.050	0.053	0.054	0.059	0.058	0.061	0.063	0.065	0.054	0.054	0.059	0.062	0.061	0.064	0.065	0.065	0.055	0.055	0.057	0.062	0.060	0.063	0.064	0.066	0.054	0.054	0.056	0.059	0.059	0.062	0.063	0.065	-	-
Boron (B)	mg/L	0.023	0.024	0.027	0.029	0.028	0.030	0.032	0.032	0.026	0.026	0.027	0.029	0.030	0.032	0.033	0.033	0.026	0.026	0.027	0.031	0.032	0.033	0.044	0.052	0.018	0.020	0.024	0.028	0.032	0.037	0.061	0.075	5.0	5.0
Cadmium (Cd)	mg/L	0.0000040	0.0000042	0.0000049	0.0000117	0.0000117	0.0000173	0.0000208	0.0000217	0.0000044	0.0000047	0.0000048	0.0000099	0.0000114	0.0000177	0.0000241	0.0000242	0.0000045	0.0000045	0.0000049	0.0000105	0.0000116	0.0000178	0.0000234	0.0000234	0.0000044	0.0000047	0.0000053	0.0000058	0.0000061	0.0000071	0.0000076	0.0000104	0.0800	0.0800
Chromium (Cr)	mg/L	0.00010	0.00011	0.00014	0.00116	0.00115	0.00190	0.00256	0.00268	0.00012	0.00012	0.00013	0.00093	0.00103	0.00159	0.00298	0.00299	0.00012	0.00012	0.00013	0.00104	0.00106	0.00179	0.00289	0.00289	0.00009	0.00009	0.00014	0.00020	0.00023	0.00026	0.00055	0.00067	0.050/0.050	0.050/0.050
Cobalt (Co)	mg/L	0.00004	0.00004	0.00005	0.00024	0.00023	0.00037	0.00048	0.00050	0.00004	0.00005	0.00005	0.00020	0.00021	0.00031	0.00056	0.00056	0.00005	0.00005	0.00005	0.00024	0.00023	0.00039	0.00054	0.00054	0.00007	0.00007	0.00010	0.00012	0.00017	0.00020	0.00043	0.00051	1	1
Copper (Cu)	mg/L	0.0048	0.0050	0.0062	0.0083	0.0080	0.0096	0.0108	0.0109	0.0054	0.0057	0.0059	0.0081	0.0081	0.0098	0.0120	0.0120	0.0055	0.0055	0.0059	0.0080	0.0080	0.0097	0.0116	0.0116	0.0035	0.0037	0.0042	0.0044	0.0048	0.0057	0.0064	0.0069	0.3	1.0
Iron (Fe)	mg/L	0.004	0.004	0.005	0.043	0.041	0.067	0.095	0.099	0.004	0.005	0.005	0.034	0.037	0.056	0.110	0.110	0.005	0.005	0.005	0.036	0.038	0.056	0.106	0.107	0.008	0.009	0.016	0.019	0.021	0.024	0.038	0.283	-	-
Lead (Pb)	mg/L	0.000020	0.000021	0.000025	0.000143	0.000142	0.000233	0.000301	0.000315	0.000022	0.000023	0.000024	0.000115	0.000131	0.000206	0.000350	0.000351	0.000023	0.000023	0.000024	0.000117	0.000128	0.000208	0.000339	0.000339	0.000021	0.000023	0.000024	0.000025	0.000026	0.000028	0.000030	0.000033	0.1	0.1
Lithium (Li)	mg/L	0.0057	0.0059	0.0062	0.0068	0.0066	0.0070	0.0072	0.0074	0.0063	0.0063	0.0067	0.0070	0.0070	0.0074	0.0074	0.0075	0.0064	0.0064	0.0066	0.0072	0.0071	0.0073	0.0080	0.0084	0.0048	0.0049	0.0055	0.0064	0.0068	0.0078	0.0102	0.0120	-	-
Manganese (Mn)	mg/L	0.008	0.010	0.011	0.013	0.015	0.023	0.024	0.024	0.008	0.008	0.011	0.014	0.015	0.017	0.026	0.026	0.008	0.011	0.014	0.015	0.017	0.020	0.026	0.026	0.014	0.015	0.017	0.022	0.027	0.039	0.047	0.354	-	-
Molybdenum (Mo)	mg/L	0.0137	0.0144	0.0156	0.0186	0.0186	0.0205	0.0234	0.0240	0.0153	0.0161	0.0182	0.0208	0.0205	0.0229	0.0240	0.0241	0.0156	0.0156	0.0184	0.0221	0.0282	0.0242	0.0704	0.0970	0.0131	0.0145	0.0207	0.0278	0.0347	0.0365	0.0879	0.1049	0.05	0.50
Nickel (Ni)	mg/L	0.00106	0.00111	0.00123	0.00235	0.00226	0.00307	0.00358	0.00375	0.00118	0.00119	0.00125	0.00219	0.00220	0.00269	0.00416	0.00418	0.00120	0.00121	0.00125	0.00247	0.00237	0.00323	0.00403	0.00404	0.00121	0.00131	0.00155	0.00178	0.00179	0.00199	0.00238	0.00272	1	1
Selenium (Se)	mg/L	0.00063	0.00066	0.00070	0.00072	0.00208	0.00407	0.00449	0.00476	0.00071	0.00073	0.00075	0.00254	0.00264	0.00453	0.00475	0.00478	0.00072	0.00072	0.00074	0.00287	0.00267	0.00440	0.00480	0.00524	0.00053	0.00057	0.00078	0.00243	0.00247	0.00362	0.00625	0.00703	0.03	0.05
Silicon (Si)		7.0	7.3	8.0	8.3	8.3	8.8	9.4	9.6	7.8	8.2	8.2	8.6	8.8	9.0	9.9	10.0	7.9	7.9	8.3	8.7	8.8	9.2	9.9	9.9	7.3	7.3	7.9	8.5	8.6	9.3	10.0	12.7	-	-
Silver (Ag)	mg/L	0.0000040	0.0000042	0.0000049	0.0000053	0.0000052	0.0000056	0.0000058	0.0000059	0.0000044	0.0000047	0.0000048	0.0000054	0.0000054	0.0000058	0.0000066	0.0000066	0.0000045	0.0000045	0.0000049	0.0000056	0.0000055	0.0000061	0.0000064	0.0000070	0.0000042	0.0000043	0.0000046	0.0000048	0.0000050	0.0000052	0.0000063	0.0000064	-	-
Strontium (Sr)	mg/L	0.71	0.73	0.76	0.82	0.82	0.85	0.95	0.99	0.75	0.77	0.81	0.89	0.89	0.94	0.99	0.99	0.77	0.77	0.83	0.90	0.89	0.94	1.02	1.11	0.54	0.56	0.64	0.70	0.80	0.96	1.23	1.35	-	-
Thallium (Tl)	mg/L	0.0000040	0.0000042	0.0000049	0.0000093	0.0000091	0.0000127	0.0000150	0.0000157	0.0000044	0.0000047	0.0000048	0.0000085	0.0000089	0.0000114	0.0000174	0.0000175	0.0000045	0.0000045	0.0000049	0.0000101	0.0000098	0.0000133	0.0000169	0.0000175	0.0000044	0.0000049	0.0000061	0.0000074	0.0000075	0.0000087	0.0000119	0.0000125	-	-
Tin (Sn)		0.000040	0.000042	0.000049	0.000089	0.000087	0.000120	0.000141	0.000147	0.000044	0.000047	0.000048	0.000082	0.000085	0.000108	0.000163	0.000164	0.000045	0.000045	0.000049	0.000086	0.000086	0.000113	0.000158	0.000158	0.000042	0.000043	0.000046	0.000048	0.000051	0.000055	0.000069	0.000075	-	-
Uranium (U)	mg/L	0.0020	0.0021	0.0023	0.0025	0.0029	0.0038	0.0040	0.0045	0.0022	0.0024	0.0025	0.0033	0.0033	0.0042	0.0044	0.0045	0.0023	0.0023	0.0025	0.0033	0.0033	0.0041	0.0045	0.0045	0.0017	0.0017	0.0020	0.0025	0.0029	0.0037	0.0050	0.0054	0.2	0.2
Vanadium (V)	mg/L	0.0039	0.0041	0.0042	0.0050	0.0051	0.0056	0.0064	0.0065	0.0043	0.0044	0.0046	0.0051	0.0053	0.0060	0.0069	0.0069	0.0044	0.0044	0.0044	0.0051	0.0053	0.0059	0.0069	0.0069	0.0026	0.0027	0.0035	0.0040	0.0039	0.0045	0.0049	0.0049	0.1	0.1
Zinc (Zn)	mg/L	0.0004	0.0004	0.0005	0.0007	0.0008	0.0012	0.0013	0.0014	0.0004	0.0005	0.0005	0.0006	0.0008	0.0009	0.0015	0.0015	0.0005	0.0005	0.0005	0.0008	0.0011	0.0014	0.0027	0.0035	0.0007	0.0007	0.0012	0.0014	0.0018	0.0020	0.0043	0.0055	2	50

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-3 Ajax_LOM_WQM_Base Case Appendix Tables_Livestock GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUE SELECTED) - LIVESTOCK WATERING.
3. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - WATER QUALITY GUIDELINES FOR THE PROTECTION OF AGRICULTURE - LIVESTOCK.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR LIVESTOCK.
5. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
6. WHEN APPLICABLE, THE GUIDELINE SELECTED FOR LIVESTOCK WATERING USE WAS THAT CORRESPONDING TO CATTLE.

TABLE C5-4

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
HUMPHREY CREEK- BASE CASE MODEL SUMMARY STATISTICS COMPARED TO IRRIGATION GUIDELINES

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		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - IRRIGATION	CEQG - IRRIGATION
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	573	573	589	639	664	755	782	782	573	573	622	657	676	782	782	782	573	573	622	657	676	782	782	782	573	573	622	657	676	782	782	782	-	-
Hardness - Dissolved	mg/L $CaCO_3$	499	505	532	575	591	655	681	767	529	542	564	635	644	729	765	770	538	538	575	633	641	705	772	774	401	407	475	516	567	724	812	851	-	-
Bromide (Br^-)	mg/L	0.20	0.20	0.21	0.23	0.22	0.23	0.25	0.25	0.22	0.23	0.23	0.24	0.24	0.24	0.25	0.25	0.23	0.23	0.23	0.24	0.24	0.25	0.27	0.29	0.15	0.15	0.18	0.22	0.22	0.25	0.30	0.30	-	-
Chloride (Cl^-)	mg/L	23	24	29	34	33	38	41	43	25	26	27	33	34	39	43	43	26	26	28	37	35	40	46	47	26	28	35	37	36	39	43	43	100	250
Fluoride (F^-)	mg/L	0.20	0.20	0.21	0.23	0.23	0.26	0.27	0.28	0.22	0.23	0.23	0.24	0.25	0.26	0.28	0.28	0.23	0.23	0.23	0.24	0.25	0.27	0.28	0.29	0.19	0.19	0.22	0.23	0.23	0.25	0.28	0.29	1	1
Sulphate (SO_4^{2-})	mg/L	156	160	176	205	238	309	332	378	166	170	195	262	269	360	377	380	169	169	205	260	271	348	381	382	109	114	159	191	242	360	475	529	-	-
Calcium (Ca)	mg/L	78	80	83	91	92	101	107	119	82	84	89	100	101	113	118	119	84	84	91	102	102	110	120	124	71	74	87	95	99	117	137	141	-	-
Magnesium (Mg)	mg/L	74	75	79	85	88	98	101	115	79	81	84	94	96	109	114	115	80	80	84	90	94	105	115	116	53	53	59	69	78	102	115	121	-	-
Potassium (K)	mg/L	12	12	12	14	13	14	15	15	13	13	14	14	14	15	15	15	13	13	14	14	14	15	15	16	10	10	12	13	13	14	17	19	-	-
Sodium (Na)	mg/L	49	51	54	55	56	56	62	64	55	56	57	59	60	61	64	65	55	55	57	59	59	59	65	65	39	40	44	47	52	61	72	79	-	-
Nutrients																																	
Ammonia	mg/L N	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.08	0.13	0.01	0.01	0.01	0.02	0.07	0.06	0.33	0.48	-	-
Nitrate	mg/L N	0.02	0.02	0.02	0.02	0.05	0.08	0.11	0.13	0.02	0.02	0.02	0.02	0.06	0.12	0.13	0.13	0.02	0.02	0.02	0.12	0.11	0.13	0.38	0.58	0.02	0.03	0.04	0.12	0.20	0.28	0.66	0.77	-	-
Nitrite	mg/L	0.0040	0.0040	0.0042	0.0045	0.0045	0.0046	0.0049	0.0049	0.0044	0.0047	0.0047	0.0048	0.0048	0.0049	0.0049	0.0049	0.0045	0.0045	0.0045	0.0047	0.0068	0.0049	0.0176	0.0264	0.0031	0.0034	0.0044	0.0053	0.0136	0.0115	0.0618	0.0885	-	10
Phosphorus	mg/L	0.071	0.074	0.088	0.096	0.099	0.117	0.124	0.124	0.079	0.083	0.086	0.097	0.101	0.109	0.132	0.133	0.075	0.077	0.081	0.091	0.098	0.109	0.130	0.130	0.061	0.061	0.079	0.083	0.084	0.090	0.116	0.117	-	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0005	0.0010	0.0012	0.0197	0.0178	0.0280	0.0417	0.0437	0.0005	0.0005	0.0013	0.0147	0.0158	0.0230	0.0485	0.0487	0.0005	0.0011	0.0013	0.0136	0.0155	0.0231	0.0469	0.0470	0.0012	0.0013	0.0016	0.0017	0.0017	0.0019	0.0020	0.0023	5	5
Antimony (Sb)	mg/L	0.000167	0.000168	0.000176	0.000207	0.000207	0.000222	0.000260	0.000262	0.000176	0.000179	0.000196	0.000207	0.000219	0.000236	0.000276	0.000277	0.000178	0.000178	0.000190	0.000209	0.000314	0.000274	0.000825	0.001002	0.000137	0.000152	0.000289	0.000447	0.000470	0.000635	0.000907	0.001023	-	-
Arsenic (As)	mg/L	0.0026	0.0026	0.0028	0.0029	0.0030	0.0032	0.0034	0.0035	0.0029	0.0030	0.0031	0.0032	0.0032	0.0033	0.0035	0.0035	0.0030	0.0030	0.0030	0.0032	0.0034	0.0033	0.0046	0.0047	0.0022	0.0024	0.0028	0.0032	0.0032	0.0035	0.0041	0.0043	0.100	0.100
Barium (Ba)	mg/L	0.050	0.053	0.054	0.059	0.058	0.061	0.063	0.065	0.054	0.054	0.059	0.062	0.061	0.064	0.065	0.065	0.055	0.055	0.057	0.062	0.060	0.063	0.064	0.066	0.054	0.054	0.056	0.059	0.059	0.062	0.063	0.065	-	-
Boron (B)	mg/L	0.023	0.024	0.027	0.029	0.028	0.030	0.032	0.032	0.026	0.026	0.027	0.029	0.030	0.032	0.033	0.033	0.026	0.026	0.027	0.031	0.032	0.033	0.044	0.052	0.018	0.020	0.024	0.028	0.032	0.037	0.061	0.075	0.5	0.5
Cadmium (Cd)	mg/L	0.0000040	0.0000042	0.0000049	0.0000117	0.0000117	0.0000173	0.0000208	0.0000217	0.0000044	0.0000047	0.0000048	0.0000099	0.0000114	0.0000177	0.0000241	0.0000242	0.0000045	0.0000045	0.0000049	0.0000105	0.0000116	0.0000178	0.0000234	0.0000234	0.0000044	0.0000047	0.0000053	0.0000058	0.0000061	0.0000071	0.0000076	0.0000104	0.0051	0.0051
Chromium (Cr)	mg/L	0.00010	0.00011	0.00014	0.00116	0.00115	0.00190	0.00256	0.00268	0.00012	0.00012	0.00013	0.00093	0.00103	0.00159	0.00298	0.00299	0.00012	0.00012	0.00013	0.00104	0.00106	0.00179	0.00289	0.00289	0.00009	0.00009	0.00014	0.00020	0.00023	0.00026	0.00055	0.00067	0.008/0.0049	0.008/0.0049
Cobalt (Co)	mg/L	0.00004	0.00004	0.00005	0.00024	0.00023	0.00037	0.00048	0.00050	0.00004	0.00005	0.00005	0.00020	0.00021	0.00031	0.00056	0.00056	0.00005	0.00005	0.00005	0.00024	0.00023	0.00039	0.00054	0.00054	0.00007	0.00007	0.00010	0.00012	0.00017	0.00020	0.00043	0.00051	0.05	0.05
Copper (Cu)	mg/L	0.0048	0.0050	0.0062	0.0083	0.0080	0.0096	0.0108	0.0109	0.0054	0.0057	0.0059	0.0081	0.0081	0.0098	0.0120	0.0120	0.0055	0.0055	0.0059	0.0080	0.0080	0.0097	0.0116	0.0116	0.0035	0.0037	0.0042	0.0044	0.0048	0.0057	0.0064	0.0069	0.2	1.0
Iron (Fe)	mg/L	0.004	0.004	0.005	0.043	0.041	0.067	0.095	0.099	0.004	0.005	0.005	0.034	0.037	0.056	0.110	0.110	0.005	0.005	0.005	0.036	0.038	0.056	0.106	0.107	0.008	0.009	0.016	0.019	0.021	0.024	0.038	0.283	-	5.0
Lead (Pb)	mg/L	0.000020	0.000021	0.000025	0.000143	0.000142	0.000233	0.000301	0.000315	0.000022	0.000023	0.000024	0.000115	0.000131	0.000206	0.000350	0.000351	0.000023	0.000023	0.000024	0.000117	0.000128	0.000208	0.000339	0.000339	0.000021	0.000023	0.000024	0.000025	0.000026	0.000028	0.000030	0.000033	0.2	0.2
Lithium (Li)	mg/L	0.0057	0.0059	0.0062	0.0068	0.0066	0.0070	0.0072	0.0074	0.0063	0.0063	0.0067	0.0070	0.0070	0.0074	0.0074	0.0075	0.0064	0.0064	0.0066	0.0072	0.0071	0.0073	0.0080	0.0084	0.0048	0.0049	0.0055	0.0064	0.0068	0.0078	0.0102	0.0120	0.75	2.50
Manganese (Mn)	mg/L	0.008	0.010	0.011	0.013	0.015	0.023	0.024	0.024	0.008	0.008	0.011	0.014	0.015	0.017	0.026	0.026	0.008	0.011	0.014	0.015	0.017	0.020	0.026	0.026	0.014	0.015	0.017	0.022	0.027	0.039	0.047	**0.354**	0.2	0.2
Molybdenum (Mo)	mg/L	0.0137	0.0144	0.0156	0.0186	0.0186	0.0205	0.0234	0.0240	0.0153	0.0161	0.0182	0.0208	0.0205	0.0229	0.0240	0.0241	0.0156	0.0156	0.0184	0.0221	0.0282	0.0242	**0.0704**	**0.0970**	0.0131	0.0145	0.0207	0.0278	0.0347	0.0365	**0.0879**	**0.1049**	0.05	0.05
Nickel (Ni)	mg/L	0.00106	0.00111	0.00123	0.00235	0.00226	0.00307	0.00358	0.00375	0.00118	0.00119	0.00125	0.00219	0.00220	0.00269	0.00416	0.00418	0.00120	0.00121	0.00125	0.00247	0.00237	0.00323	0.00403	0.00404	0.00121	0.00131	0.00155	0.00178	0.00179	0.00199	0.00238	0.00272	0.2	0.2
Selenium (Se)	mg/L	0.00063	0.00066	0.00070	0.00072	0.00208	0.00407	0.00449	0.00476	0.00071	0.00073	0.00075	0.00254	0.00264	0.00453	0.00475	0.00478	0.00072	0.00072	0.00074	0.00287	0.00267	0.00440	0.00480	0.00524	0.00053	0.00057	0.00078	0.00243	0.00247	0.00362	0.00625	0.00703	0.01	0.05
Silicon (Si)		7.0	7.3	8.0	8.3	8.3	8.8	9.4	9.6	7.8	8.2	8.2	8.6	8.8	9.0	9.9	10.0	7.9	7.9	8.3	8.7	8.8	9.2	9.9	9.9	7.3	7.3	7.9	8.5	8.6	9.3	10.0	12.7	-	-
Silver (Ag)	mg/L	0.0000040	0.0000042	0.0000049	0.0000053	0.0000052	0.0000056	0.0000058	0.0000059	0.0000044	0.0000047	0.0000048	0.0000054	0.0000054	0.0000058	0.0000066	0.0000066	0.0000045	0.0000045	0.0000049	0.0000056	0.0000055	0.0000061	0.0000064	0.0000070	0.0000042	0.0000043	0.0000046	0.0000048	0.0000050	0.0000052	0.0000063	0.0000064	-	-
Strontium (Sr)	mg/L	0.71	0.73	0.76	0.82	0.82	0.85	0.95	0.99	0.75	0.77	0.81	0.89	0.89	0.94	0.99	0.99	0.77	0.77	0.83	0.90	0.89	0.94	1.02	1.11	0.54	0.56	0.64	0.70	0.80	0.96	1.23	1.35	-	-
Thallium (Tl)	mg/L	0.0000040	0.0000042	0.0000049	0.0000093	0.0000091	0.0000127	0.0000150	0.0000157	0.0000044	0.0000047	0.0000048	0.0000085	0.0000089	0.0000114	0.0000174	0.0000175	0.0000045	0.0000045	0.0000049	0.0000101	0.0000098	0.0000133	0.0000169	0.0000175	0.0000044	0.0000049	0.0000061	0.0000074	0.0000075	0.0000087	0.0000119	0.0000125	-	-
Tin (Sn)		0.000040	0.000042	0.000049	0.000089	0.000087	0.000120	0.000141	0.000147	0.000044	0.000047	0.000048	0.000082	0.000085	0.000108	0.000163	0.000164	0.000045	0.000045	0.000049	0.000086	0.000086	0.000113	0.000158	0.000158	0.000042	0.000043	0.000046	0.000048	0.000051	0.000055	0.000069	0.000075	-	-
Uranium (U)	mg/L	0.0020	0.0021	0.0023	0.0025	0.0029	0.0038	0.0040	0.0045	0.0022	0.0024	0.0025	0.0033	0.0033	0.0042	0.0044	0.0045	0.0023	0.0023	0.0025	0.0033	0.0033	0.0041	0.0045	0.0045	0.0017	0.0017	0.0020	0.0025	0.0029	0.0037	0.0050	0.0054	0.01	0.01
Vanadium (V)	mg/L	0.0039	0.0041	0.0042	0.0050	0.0051	0.0056	0.0064	0.0065	0.0043	0.0044	0.0046	0.0051	0.0053	0.0060	0.0069	0.0069	0.0044	0.0044	0.0044	0.0051	0.0053	0.0059	0.0069	0.0069	0.0026	0.0027	0.0035	0.0040	0.0039	0.0045	0.0049	0.0049	0.1	0.1
Zinc (Zn)	mg/L	0.0004	0.0004	0.0005	0.0007	0.0008	0.0012	0.0013	0.0014	0.0004	0.0005	0.0005	0.0006	0.0008	0.0009	0.0015	0.0015	0.0005	0.0005	0.0005	0.0008	0.0011	0.0014	0.0027	0.0035	0.0007	0.0007	0.0012	0.0014	0.0018	0.0020	0.0043	0.0055	1	1

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-4 Ajax_LOM_WQM_Base Case Appendix Tables_Irrigation GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUES SELECTED) - IRRIGATION.
3. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES (CEQG) - WATER QUALITY GUIDELINES FOR THE PROTECTION OF AGRICULTURE - IRRIGATION.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR IRRIGATION.
5. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS THE CEQG FOR IRRIGATION.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
7. WHEN APPLICABLE, THE GUIDELINE SELECTED FOR IRRIGATION USE WAS THAT CORRESPONDING TO THE MOST SENSITIVE CROP OR SOIL TYPE LISTED.

TABLE C5-5

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
HUMPHREY CREEK- BASE CASE MODEL SUMMARY STATISTICS COMPARED TO DRINKING WATER GUIDELINES

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		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - DRINKING WATER	HC - DRINKING WATER
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX		
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	573	573	589	639	664	755	782	782	573	573	622	657	676	782	782	782	573	573	622	657	676	782	782	782	573	573	622	657	676	782	782	782	-	-
Hardness - Dissolved	mg/L $CaCO_3$	499	505	532	575	591	655	681	767	529	542	564	635	644	729	765	770	538	538	575	633	641	705	772	774	401	407	475	516	567	724	812	851	-	-
Bromide (Br^-)	mg/L	0.20	0.20	0.21	0.23	0.22	0.23	0.25	0.25	0.22	0.23	0.23	0.24	0.24	0.24	0.25	0.25	0.23	0.23	0.23	0.24	0.24	0.25	0.27	0.29	0.15	0.15	0.18	0.22	0.22	0.25	0.30	0.30	-	-
Chloride (Cl^-)	mg/L	23	24	29	34	33	38	41	43	25	26	27	33	34	39	43	43	26	26	28	37	35	40	46	47	26	28	35	37	36	39	43	43	250	250
Fluoride (F^-)	mg/L	0.20	0.20	0.21	0.23	0.23	0.26	0.27	0.28	0.22	0.23	0.23	0.24	0.25	0.26	0.28	0.28	0.23	0.23	0.23	0.24	0.25	0.27	0.28	0.29	0.19	0.19	0.22	0.23	0.23	0.25	0.28	0.29	2	2
Sulphate (SO_4^{2-})	mg/L	156	160	176	205	238	309	332	378	166	170	195	262	269	360	377	380	169	169	205	260	271	348	381	382	109	114	159	191	242	360	475	**529**	500	500
Calcium (Ca)	mg/L	78	80	83	91	92	101	107	119	82	84	89	100	101	113	118	119	84	84	91	102	102	110	120	124	71	74	87	95	99	117	137	141	-	-
Magnesium (Mg)	mg/L	74	75	79	85	88	98	101	115	79	81	84	94	96	109	114	115	80	80	84	90	94	105	115	116	53	53	59	69	78	102	115	121	-	-
Potassium (K)	mg/L	12	12	12	14	13	14	15	15	13	13	14	14	14	15	15	15	13	13	14	14	14	15	15	16	10	10	12	13	13	14	17	19	-	-
Sodium (Na)	mg/L	49	51	54	55	56	56	62	64	55	56	57	59	60	61	64	65	55	55	57	59	59	59	65	65	39	40	44	47	52	61	72	79	-	200
Nutrients																																	
Ammonia	mg/L N	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.08	0.13	0.01	0.01	0.01	0.02	0.07	0.06	0.33	0.48	-	-
Nitrate	mg/L N	0.02	0.02	0.02	0.02	0.05	0.08	0.11	0.13	0.02	0.02	0.02	0.02	0.06	0.12	0.13	0.13	0.02	0.02	0.02	0.12	0.11	0.13	0.38	0.58	0.02	0.03	0.04	0.12	0.20	0.28	0.66	0.77	10	10
Nitrite	mg/L	0.004	0.004	0.004	0.005	0.004	0.005	0.005	0.005	0.004	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.007	0.005	0.018	0.026	0.003	0.003	0.004	0.005	0.014	0.012	0.062	0.089	1	1
Phosphorus	mg/L	0.07	0.07	0.09	0.10	0.10	0.12	0.12	0.12	0.08	0.08	0.09	0.10	0.10	0.11	0.13	0.13	0.08	0.08	0.08	0.09	0.10	0.11	0.13	0.13	0.06	0.06	0.08	0.08	0.08	0.09	0.12	0.12	-	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0005	0.0010	0.0012	0.0197	0.0178	0.0280	0.0417	0.0437	0.0005	0.0005	0.0013	0.0147	0.0158	0.0230	0.0485	0.0487	0.0005	0.0011	0.0013	0.0136	0.0155	0.0231	0.0469	0.0470	0.0012	0.0013	0.0016	0.0017	0.0017	0.0019	0.0020	0.0023	0.2	0.2
Antimony (Sb)	mg/L	0.00017	0.00017	0.00018	0.00021	0.00021	0.00022	0.00026	0.00026	0.00018	0.00018	0.00020	0.00021	0.00022	0.00024	0.00028	0.00028	0.00018	0.00018	0.00019	0.00021	0.00031	0.00027	0.00082	0.00100	0.00014	0.00015	0.00029	0.00045	0.00047	0.00063	0.00091	0.00102	-	0.006
Arsenic (As)	mg/L	0.0026	0.0026	0.0028	0.0029	0.0030	0.0032	0.0034	0.0035	0.0029	0.0030	0.0031	0.0032	0.0032	0.0033	0.0035	0.0035	0.0030	0.0030	0.0030	0.0032	0.0034	0.0033	0.0046	0.0047	0.0022	0.0024	0.0028	0.0032	0.0032	0.0035	0.0041	0.0043	0.025	0.010
Barium (Ba)	mg/L	0.050	0.053	0.054	0.059	0.058	0.061	0.063	0.065	0.054	0.054	0.059	0.062	0.061	0.064	0.065	0.065	0.055	0.055	0.057	0.062	0.060	0.063	0.064	0.066	0.054	0.054	0.056	0.059	0.059	0.062	0.063	0.065	-	1
Boron (B)	mg/L	0.023	0.024	0.027	0.029	0.028	0.030	0.032	0.032	0.026	0.026	0.027	0.029	0.030	0.032	0.033	0.033	0.026	0.026	0.027	0.031	0.032	0.033	0.044	0.052	0.018	0.020	0.024	0.028	0.032	0.037	0.061	0.075	-	5
Cadmium (Cd)	mg/L	0.0000040	0.0000042	0.0000049	0.0000117	0.0000117	0.0000173	0.0000208	0.0000217	0.0000044	0.0000047	0.0000048	0.0000099	0.0000114	0.0000177	0.0000241	0.0000242	0.0000045	0.0000045	0.0000049	0.0000105	0.0000116	0.0000178	0.0000234	0.0000234	0.0000044	0.0000047	0.0000053	0.0000058	0.0000061	0.0000071	0.0000076	0.0000104	-	0.005000
Chromium (Cr)	mg/L	0.00010	0.00011	0.00014	0.00116	0.00115	0.00190	0.00256	0.00268	0.00012	0.00012	0.00013	0.00093	0.00103	0.00159	0.00298	0.00299	0.00012	0.00012	0.00013	0.00104	0.00106	0.00179	0.00289	0.00289	0.00009	0.00009	0.00014	0.00020	0.00023	0.00026	0.00055	0.00067	-	0.050
Cobalt (Co)	mg/L	0.00004	0.00004	0.00005	0.00024	0.00023	0.00037	0.00048	0.00050	0.00004	0.00005	0.00005	0.00020	0.00021	0.00031	0.00056	0.00056	0.00005	0.00005	0.00005	0.00024	0.00023	0.00039	0.00054	0.00054	0.00007	0.00007	0.00010	0.00012	0.00017	0.00020	0.00043	0.00051	-	-
Copper (Cu)	mg/L	0.0048	0.0050	0.0062	0.0083	0.0080	0.0096	0.0108	0.0109	0.0054	0.0057	0.0059	0.0081	0.0081	0.0098	0.0120	0.0120	0.0055	0.0055	0.0059	0.0080	0.0080	0.0097	0.0116	0.0116	0.0035	0.0037	0.0042	0.0044	0.0048	0.0057	0.0064	0.0069	0.5	1.0
Iron (Fe)	mg/L	0.00	0.00	0.00	0.04	0.04	0.07	0.09	0.10	0.00	0.00	0.00	0.03	0.04	0.06	0.11	0.11	0.00	0.00	0.00	0.04	0.04	0.06	0.11	0.11	0.01	0.01	0.02	0.02	0.02	0.02	0.04	0.28	-	0.3
Lead (Pb)	mg/L	0.000020	0.000021	0.000025	0.000143	0.000142	0.000233	0.000301	0.000315	0.000022	0.000023	0.000024	0.000115	0.000131	0.000206	0.000350	0.000351	0.000023	0.000023	0.000024	0.000117	0.000128	0.000208	0.000339	0.000339	0.000021	0.000023	0.000024	0.000025	0.000026	0.000028	0.000030	0.000033	0.05	0.01
Lithium (Li)	mg/L	0.0057	0.0059	0.0062	0.0068	0.0066	0.0070	0.0072	0.0074	0.0063	0.0063	0.0067	0.0070	0.0070	0.0074	0.0074	0.0075	0.0064	0.0064	0.0066	0.0072	0.0071	0.0073	0.0080	0.0084	0.0048	0.0049	0.0055	0.0064	0.0068	0.0078	0.0102	0.0120	-	-
Manganese (Mn)	mg/L	0.008	0.010	0.011	0.013	0.015	0.023	0.024	0.024	0.008	0.008	0.011	0.014	0.015	0.017	0.026	0.026	0.008	0.011	0.014	0.015	0.017	0.020	0.026	0.026	0.014	0.015	0.017	0.022	0.027	0.039	0.047	**0.354**	-	0.05
Molybdenum (Mo)	mg/L	0.014	0.014	0.016	0.019	0.019	0.021	0.023	0.024	0.015	0.016	0.018	0.021	0.020	0.023	0.024	0.024	0.016	0.016	0.018	0.022	0.028	0.024	0.070	0.097	0.013	0.015	0.021	0.028	0.035	0.037	0.088	0.105	0.25	-
Nickel (Ni)	mg/L	0.0011	0.0011	0.0012	0.0023	0.0023	0.0031	0.0036	0.0038	0.0012	0.0012	0.0013	0.0022	0.0022	0.0027	0.0042	0.0042	0.0012	0.0012	0.0012	0.0025	0.0024	0.0032	0.0040	0.0040	0.0012	0.0013	0.0015	0.0018	0.0018	0.0020	0.0024	0.0027	-	-
Selenium (Se)	mg/L	0.00063	0.00066	0.00070	0.00072	0.00208	0.00407	0.00449	0.00476	0.00071	0.00073	0.00075	0.00254	0.00264	0.00453	0.00475	0.00478	0.00072	0.00072	0.00074	0.00287	0.00267	0.00440	0.00480	0.00524	0.00053	0.00057	0.00078	0.00243	0.00247	0.00362	0.00625	0.00703	0.01	0.05
Silicon (Si)		7.0	7.3	8.0	8.3	8.3	8.8	9.4	9.6	7.8	8.2	8.2	8.6	8.8	9.0	9.9	10.0	7.9	7.9	8.3	8.7	8.8	9.2	9.9	9.9	7.3	7.3	7.9	8.5	8.6	9.3	10.0	12.7	-	-
Silver (Ag)	mg/L	0.0000040	0.0000042	0.0000049	0.0000053	0.0000052	0.0000056	0.0000058	0.0000059	0.0000044	0.0000047	0.0000048	0.0000054	0.0000054	0.0000058	0.0000066	0.0000066	0.0000045	0.0000045	0.0000049	0.0000056	0.0000055	0.0000061	0.0000064	0.0000070	0.0000042	0.0000043	0.0000046	0.0000048	0.0000050	0.0000052	0.0000063	0.0000064	-	-
Strontium (Sr)	mg/L	0.71	0.73	0.76	0.82	0.82	0.85	0.95	0.99	0.75	0.77	0.81	0.89	0.89	0.94	0.99	0.99	0.77	0.77	0.83	0.90	0.89	0.94	1.02	1.11	0.54	0.56	0.64	0.70	0.80	0.96	1.23	1.35	-	-
Thallium (Tl)	mg/L	0.0000040	0.0000042	0.0000049	0.0000093	0.0000091	0.0000127	0.0000150	0.0000157	0.0000044	0.0000047	0.0000048	0.0000085	0.0000089	0.0000114	0.0000174	0.0000175	0.0000045	0.0000045	0.0000049	0.0000101	0.0000098	0.0000133	0.0000169	0.0000175	0.0000044	0.0000049	0.0000061	0.0000074	0.0000075	0.0000087	0.0000119	0.0000125	-	-
Tin (Sn)		0.000040	0.000042	0.000049	0.000089	0.000087	0.000120	0.000141	0.000147	0.000044	0.000047	0.000048	0.000082	0.000085	0.000108	0.000163	0.000164	0.000045	0.000045	0.000049	0.000086	0.000086	0.000113	0.000158	0.000158	0.000042	0.000043	0.000046	0.000048	0.000051	0.000055	0.000069	0.000075	-	-
Uranium (U)	mg/L	0.0020	0.0021	0.0023	0.0025	0.0029	0.0038	0.0040	0.0045	0.0022	0.0024	0.0025	0.0033	0.0033	0.0042	0.0044	0.0045	0.0023	0.0023	0.0025	0.0033	0.0033	0.0041	0.0045	0.0045	0.0017	0.0017	0.0020	0.0025	0.0029	0.0037	0.0050	0.0054	-	0.02
Vanadium (V)	mg/L	0.0039	0.0041	0.0042	0.0050	0.0051	0.0056	0.0064	0.0065	0.0043	0.0044	0.0046	0.0051	0.0053	0.0060	0.0069	0.0069	0.0044	0.0044	0.0044	0.0051	0.0053	0.0059	0.0069	0.0069	0.0026	0.0027	0.0035	0.0040	0.0039	0.0045	0.0049	0.0049	-	-
Zinc (Zn)	mg/L	0.0004	0.0004	0.0005	0.0007	0.0008	0.0012	0.0013	0.0014	0.0004	0.0005	0.0005	0.0006	0.0008	0.0009	0.0015	0.0015	0.0005	0.0005	0.0005	0.0008	0.0011	0.0014	0.0027	0.0035	0.0007	0.0007	0.0012	0.0014	0.0018	0.0020	0.0043	0.0055	5	5

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-5 Ajax_LOM_WQM_Base Case Appendix Tables_DW GL.xlsx]TC5 HUMPHREY CR BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - MAXIMUM OR 30-DAY AVERAGE (LOWEST VALUE SELECTED) - RAW DRINKING WATER.
3. HEALTH CANADA (HC) - GUIDELINES FOR CANADIAN DRINKING WATER QUALITY.
4. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG FOR RAW DRINKING WATER.
5. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS THE HC GUIDELINE FOR CANADIAN DRINKING WATER QUALITY.
6. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.

TABLE C5-6

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
HUMPHREY CREEK- BASE CASE MODEL SUMMARY STATISTICS COMPARED TO RECREATION AND AESTHETIC WATER QUALITY GUIDELINES

Print Jul/21/15 8:45:51

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG - REC &AES
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	
Conventional Parameters and Major Ions																																	
Baseline Hardness	mg/L $CaCO_3$	573	573	589	639	664	755	782	782	573	573	622	657	676	782	782	782	573	573	622	657	676	782	782	782	573	573	622	657	676	782	782	782	-
Hardness - Dissolved	mg/L $CaCO_3$	499	505	532	575	591	655	681	767	529	542	564	635	644	729	765	770	538	538	575	633	641	705	772	774	401	407	475	516	567	724	812	851	-
Bromide (Br^-)	mg/L	0.20	0.20	0.21	0.23	0.22	0.23	0.25	0.25	0.22	0.23	0.23	0.24	0.24	0.24	0.25	0.25	0.23	0.23	0.23	0.24	0.24	0.25	0.27	0.29	0.15	0.15	0.18	0.22	0.22	0.25	0.30	0.30	-
Chloride (Cl^-)	mg/L	23	24	29	34	33	38	41	43	25	26	27	33	34	39	43	43	26	26	28	37	35	40	46	47	26	28	35	37	36	39	43	43	-
Fluoride (F^-)	mg/L	0.20	0.20	0.21	0.23	0.23	0.26	0.27	0.28	0.22	0.23	0.23	0.24	0.25	0.26	0.28	0.28	0.23	0.23	0.23	0.24	0.25	0.27	0.28	0.29	0.19	0.19	0.22	0.23	0.23	0.25	0.28	0.29	-
Sulphate (SO_4^{2-})	mg/L	156	160	176	205	238	309	332	378	166	170	195	262	269	360	377	380	169	169	205	260	271	348	381	382	109	114	159	191	242	360	475	529	-
Calcium (Ca)	mg/L	78	80	83	91	92	101	107	119	82	84	89	100	101	113	118	119	84	84	91	102	102	110	120	124	71	74	87	95	99	117	137	141	-
Magnesium (Mg)	mg/L	74	75	79	85	88	98	101	115	79	81	84	94	96	109	114	115	80	80	84	90	94	105	115	116	53	53	59	69	78	102	115	121	-
Potassium (K)	mg/L	12	12	12	14	13	14	15	15	13	13	14	14	14	15	15	15	13	13	14	14	14	15	15	16	10	10	12	13	13	14	17	19	-
Sodium (Na)	mg/L	49	51	54	55	56	56	62	64	55	56	57	59	60	61	64	65	55	55	57	59	59	59	65	65	39	40	44	47	52	61	72	79	-
Nutrients																																	
Ammonia	mg/L N	0.008	0.008	0.009	0.010	0.011	0.014	0.015	0.018	0.007	0.008	0.010	0.011	0.012	0.017	0.018	0.018	0.008	0.009	0.010	0.016	0.024	0.018	0.081	0.129	0.011	0.012	0.014	0.023	0.067	0.059	0.330	0.478	-
Nitrate	mg/L N	0.020	0.021	0.023	0.023	0.047	0.083	0.111	0.126	0.022	0.023	0.024	0.024	0.057	0.120	0.126	0.127	0.023	0.023	0.024	0.116	0.115	0.127	0.384	0.584	0.022	0.026	0.044	0.125	0.199	0.278	0.664	0.766	10
Nitrite	mg/L	0.0040	0.0040	0.0042	0.0045	0.0045	0.0046	0.0049	0.0049	0.0044	0.0047	0.0047	0.0048	0.0048	0.0049	0.0049	0.0049	0.0045	0.0045	0.0045	0.0047	0.0068	0.0049	0.0176	0.0264	0.0031	0.0034	0.0044	0.0053	0.0136	0.0115	0.0618	0.0885	1
Phosphorus	mg/L	0.071	0.074	0.088	0.096	0.099	0.117	0.124	0.124	0.079	0.083	0.086	0.097	0.101	0.109	0.132	0.133	0.075	0.077	0.081	0.091	0.098	0.109	0.130	0.130	0.061	0.061	0.079	0.083	0.084	0.090	0.116	0.117	-
Dissolved Metals																																	
Aluminum (Al)	mg/L	0.0005	0.0010	0.0012	0.0197	0.0178	0.0280	0.0417	0.0437	0.0005	0.0005	0.0013	0.0147	0.0158	0.0230	0.0485	0.0487	0.0005	0.0011	0.0013	0.0136	0.0155	0.0231	0.0469	0.0470	0.0012	0.0013	0.0016	0.0017	0.0017	0.0019	0.0020	0.0023	0.2
Antimony (Sb)	mg/L	0.00017	0.00017	0.00018	0.00021	0.00021	0.00022	0.00026	0.00026	0.00018	0.00018	0.00020	0.00021	0.00022	0.00024	0.00028	0.00028	0.00018	0.00018	0.00019	0.00021	0.00031	0.00027	0.00082	0.00100	0.00014	0.00015	0.00029	0.00045	0.00047	0.00063	0.00091	0.00102	-
Arsenic (As)	mg/L	0.0026	0.0026	0.0028	0.0029	0.0030	0.0032	0.0034	0.0035	0.0029	0.0030	0.0031	0.0032	0.0032	0.0033	0.0035	0.0035	0.0030	0.0030	0.0030	0.0032	0.0034	0.0033	0.0046	0.0047	0.0022	0.0024	0.0028	0.0032	0.0032	0.0035	0.0041	0.0043	-
Barium (Ba)	mg/L	0.050	0.053	0.054	0.059	0.058	0.061	0.063	0.065	0.054	0.054	0.059	0.062	0.061	0.064	0.065	0.065	0.055	0.055	0.057	0.062	0.060	0.063	0.064	0.066	0.054	0.054	0.056	0.059	0.059	0.062	0.063	0.065	-
Boron (B)	mg/L	0.023	0.024	0.027	0.029	0.028	0.030	0.032	0.032	0.026	0.026	0.027	0.029	0.030	0.032	0.033	0.033	0.026	0.026	0.027	0.031	0.032	0.033	0.044	0.052	0.018	0.020	0.024	0.028	0.032	0.037	0.061	0.075	-
Cadmium (Cd)	mg/L	0.000004	0.000004	0.000005	0.000012	0.000012	0.000017	0.000021	0.000022	0.000004	0.000005	0.000005	0.000010	0.000011	0.000018	0.000024	0.000024	0.000005	0.000005	0.000005	0.000010	0.000012	0.000018	0.000023	0.000023	0.000004	0.000005	0.000005	0.000006	0.000006	0.000007	0.000008	0.000010	-
Chromium (Cr)	mg/L	0.00010	0.00011	0.00014	0.00116	0.00115	0.00190	0.00256	0.00268	0.00012	0.00012	0.00013	0.00093	0.00103	0.00159	0.00298	0.00299	0.00012	0.00012	0.00013	0.00104	0.00106	0.00179	0.00289	0.00289	0.00009	0.00009	0.00014	0.00020	0.00023	0.00026	0.00055	0.00067	-
Cobalt (Co)	mg/L	0.00004	0.00004	0.00005	0.00024	0.00023	0.00037	0.00048	0.00050	0.00004	0.00005	0.00005	0.00020	0.00021	0.00031	0.00056	0.00056	0.00005	0.00005	0.00005	0.00024	0.00023	0.00039	0.00054	0.00054	0.00007	0.00007	0.00010	0.00012	0.00017	0.00020	0.00043	0.00051	-
Copper (Cu)	mg/L	0.0048	0.0050	0.0062	0.0083	0.0080	0.0096	0.0108	0.0109	0.0054	0.0057	0.0059	0.0081	0.0081	0.0098	0.0120	0.0120	0.0055	0.0055	0.0059	0.0080	0.0080	0.0097	0.0116	0.0116	0.0035	0.0037	0.0042	0.0044	0.0048	0.0057	0.0064	0.0069	1
Iron (Fe)	mg/L	0.004	0.004	0.005	0.043	0.041	0.067	0.095	0.099	0.004	0.005	0.005	0.034	0.037	0.056	0.110	0.110	0.005	0.005	0.005	0.036	0.038	0.056	0.106	0.107	0.008	0.009	0.016	0.019	0.021	0.024	0.038	0.283	-
Lead (Pb)	mg/L	0.000020	0.000021	0.000025	0.000143	0.000142	0.000233	0.000301	0.000315	0.000022	0.000023	0.000024	0.000115	0.000131	0.000206	0.000350	0.000351	0.000023	0.000023	0.000024	0.000117	0.000128	0.000208	0.000339	0.000339	0.000021	0.000023	0.000024	0.000025	0.000026	0.000028	0.000030	0.000033	0.05
Lithium (Li)	mg/L	0.0057	0.0059	0.0062	0.0068	0.0066	0.0070	0.0072	0.0074	0.0063	0.0063	0.0067	0.0070	0.0070	0.0074	0.0074	0.0075	0.0064	0.0064	0.0066	0.0072	0.0071	0.0073	0.0080	0.0084	0.0048	0.0049	0.0055	0.0064	0.0068	0.0078	0.0102	0.0120	-
Manganese (Mn)	mg/L	0.008	0.010	0.011	0.013	0.015	0.023	0.024	0.024	0.008	0.008	0.011	0.014	0.015	0.017	0.026	0.026	0.008	0.011	0.014	0.015	0.017	0.020	0.026	0.026	0.014	0.015	0.017	0.022	0.027	0.039	0.047	0.354	-
Molybdenum (Mo)	mg/L	0.014	0.014	0.016	0.019	0.019	0.021	0.023	0.024	0.015	0.016	0.018	0.021	0.020	0.023	0.024	0.024	0.016	0.016	0.018	0.022	0.028	0.024	0.070	0.097	0.013	0.015	0.021	0.028	0.035	0.037	0.088	0.105	-
Nickel (Ni)	mg/L	0.0011	0.0011	0.0012	0.0023	0.0023	0.0031	0.0036	0.0038	0.0012	0.0012	0.0013	0.0022	0.0022	0.0027	0.0042	0.0042	0.0012	0.0012	0.0012	0.0025	0.0024	0.0032	0.0040	0.0040	0.0012	0.0013	0.0015	0.0018	0.0018	0.0020	0.0024	0.0027	-
Selenium (Se)	mg/L	0.00063	0.00066	0.00070	0.00072	0.00208	0.00407	0.00449	0.00476	0.00071	0.00073	0.00075	0.00254	0.00264	0.00453	0.00475	0.00478	0.00072	0.00072	0.00074	0.00287	0.00267	0.00440	0.00480	0.00524	0.00053	0.00057	0.00078	0.00243	0.00247	0.00362	0.00625	0.00703	-
Silicon (Si)		7.0	7.3	8.0	8.3	8.3	8.8	9.4	9.6	7.8	8.2	8.2	8.6	8.8	9.0	9.9	10.0	7.9	7.9	8.3	8.7	8.8	9.2	9.9	9.9	7.3	7.3	7.9	8.5	8.6	9.3	10.0	12.7	-
Silver (Ag)	mg/L	0.000004	0.000004	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000004	0.000005	0.000005	0.000005	0.000005	0.000006	0.000007	0.000007	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000007	0.000004	0.000004	0.000005	0.000005	0.000005	0.000005	0.000006	0.000006	-
Strontium (Sr)	mg/L	0.71	0.73	0.76	0.82	0.82	0.85	0.95	0.99	0.75	0.77	0.81	0.89	0.89	0.94	0.99	0.99	0.77	0.77	0.83	0.90	0.89	0.94	1.02	1.11	0.54	0.56	0.64	0.70	0.80	0.96	1.23	1.35	-
Thallium (Tl)	mg/L	0.000004	0.000004	0.000005	0.000009	0.000009	0.000013	0.000015	0.000016	0.000004	0.000005	0.000005	0.000009	0.000009	0.000011	0.000017	0.000017	0.000005	0.000005	0.000005	0.000010	0.000010	0.000013	0.000017	0.000018	0.000004	0.000005	0.000006	0.000007	0.000008	0.000009	0.000012	0.000012	-
Tin (Sn)		0.00004	0.00004	0.00005	0.00009	0.00009	0.00012	0.00014	0.00015	0.00004	0.00005	0.00005	0.00008	0.00009	0.00011	0.00016	0.00016	0.00005	0.00005	0.00005	0.00009	0.00009	0.00011	0.00016	0.00016	0.00004	0.00004	0.00005	0.00005	0.00005	0.00005	0.00007	0.00008	-
Uranium (U)	mg/L	0.0020	0.0021	0.0023	0.0025	0.0029	0.0038	0.0040	0.0045	0.0022	0.0024	0.0025	0.0033	0.0033	0.0042	0.0044	0.0045	0.0023	0.0023	0.0025	0.0033	0.0033	0.0041	0.0045	0.0045	0.0017	0.0017	0.0020	0.0025	0.0029	0.0037	0.0050	0.0054	-
Vanadium (V)	mg/L	0.0039	0.0041	0.0042	0.0050	0.0051	0.0056	0.0064	0.0065	0.0043	0.0044	0.0046	0.0051	0.0053	0.0060	0.0069	0.0069	0.0044	0.0044	0.0044	0.0051	0.0053	0.0059	0.0069	0.0069	0.0026	0.0027	0.0035	0.0040	0.0039	0.0045	0.0049	0.0049	-
Zinc (Zn)	mg/L	0.0004	0.0004	0.0005	0.0007	0.0008	0.0012	0.0013	0.0014	0.0004	0.0005	0.0005	0.0006	0.0008	0.0009	0.0015	0.0015	0.0005	0.0005	0.0005	0.0008	0.0011	0.0014	0.0027	0.0035	0.0007	0.0007	0.0012	0.0014	0.0018	0.0020	0.0043	0.0055	5

\\van11\prj_file\1\011\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Appendix CX-6 Ajax_LOM_WQM_Base Case Appendix Tables_Rec&Aes GL.xlsx]TC1 JL BC SUMM STATS

NOTES:
1. - = VALUE NOT EXISTING OR APPLICABLE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (BCWQG - APPROVED AND WORKING) - RECREATION AND AESTHETIC (REC & AES) USES.

APPENDIX D

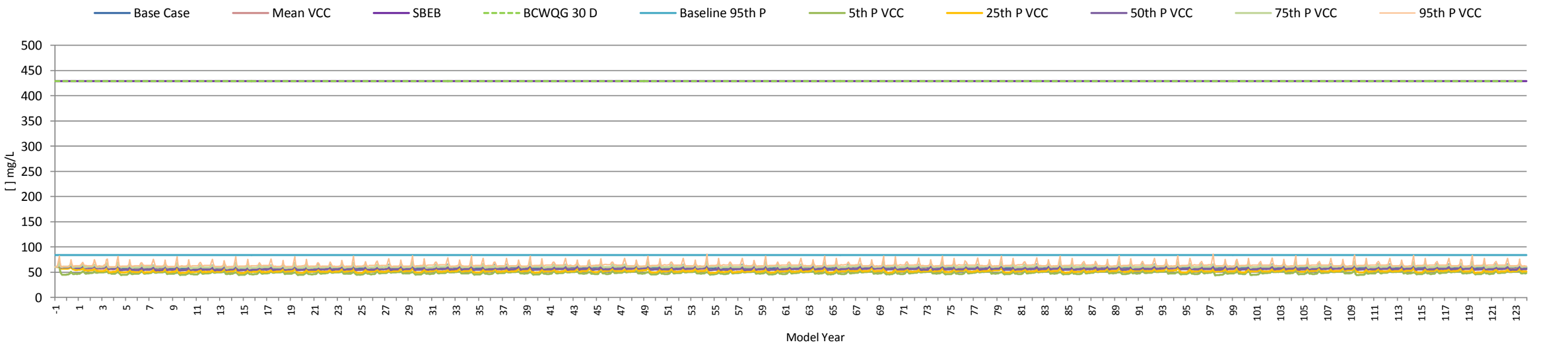
JACKO LAKE

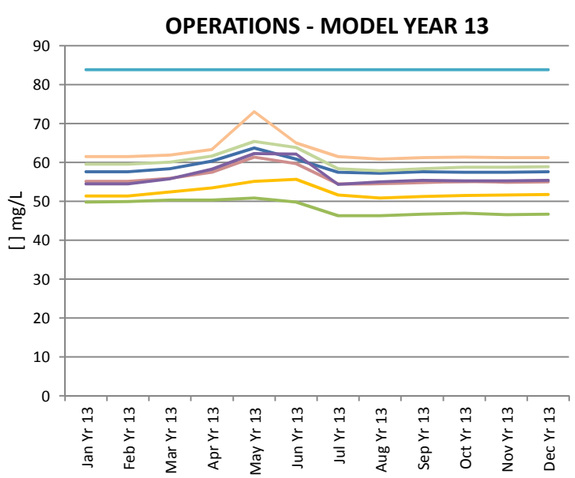
Appendix D1 Sulphate
Appendix D2 Chloride
Appendix D3 Copper
Appendix D4 Molybdenum
Appendix D5 Selenium

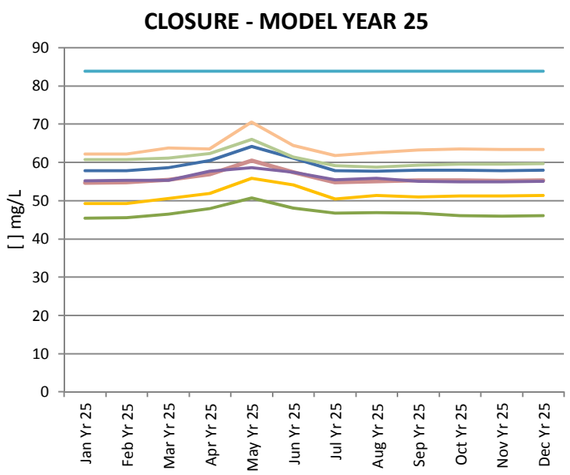
APPENDIX D1

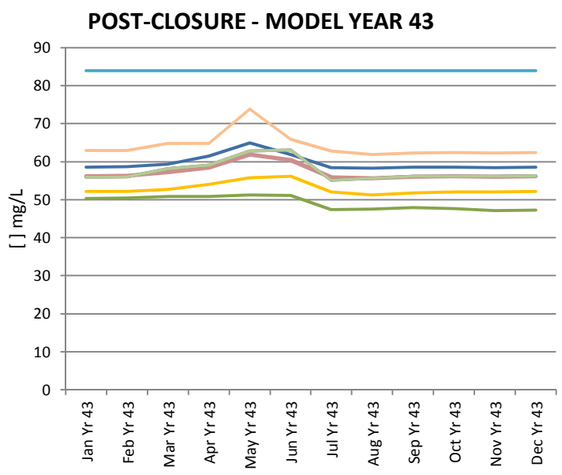
SULPHATE

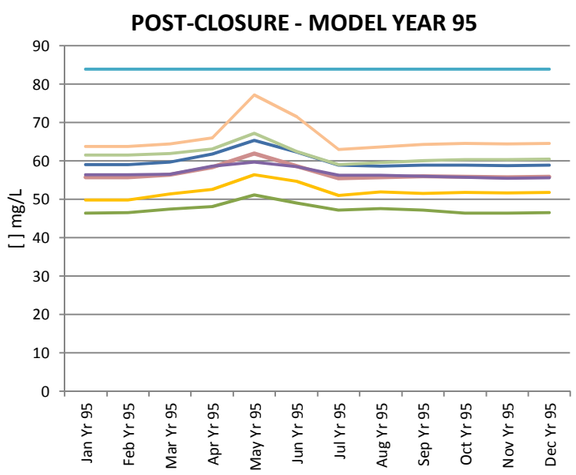
(Figures D1.1 to D1.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE VARIABLE CLIMATE CASE (VCC) - SULPHATE PREDICTIONS

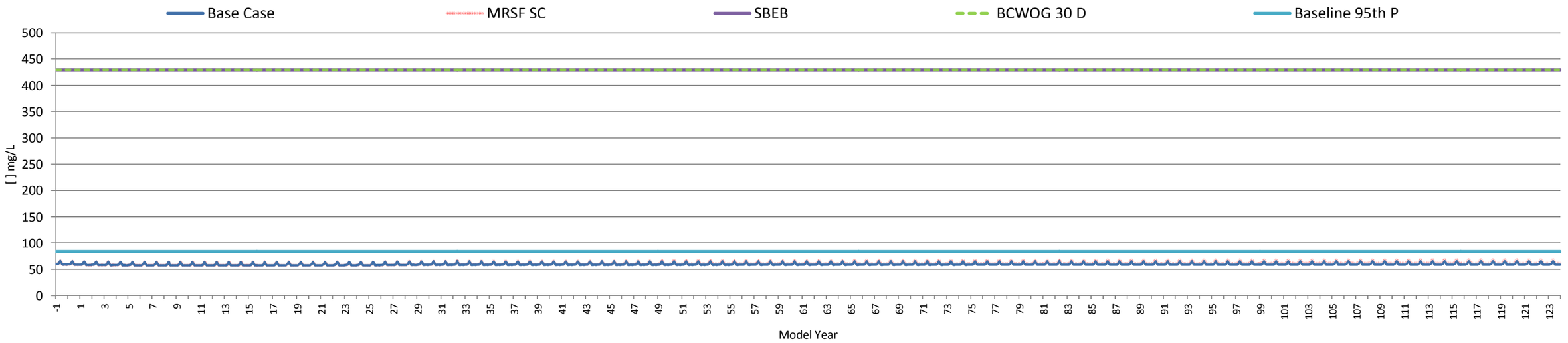
Knight Piésold CONSULTING

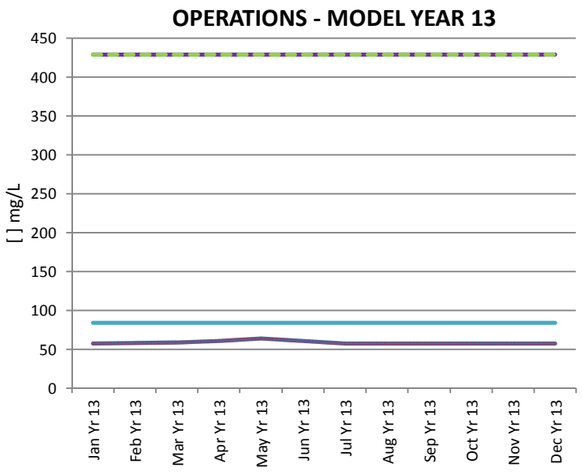
P/A NO. VA101-246/31

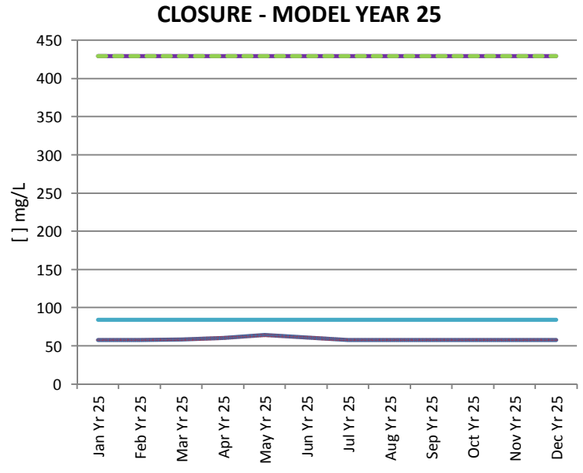
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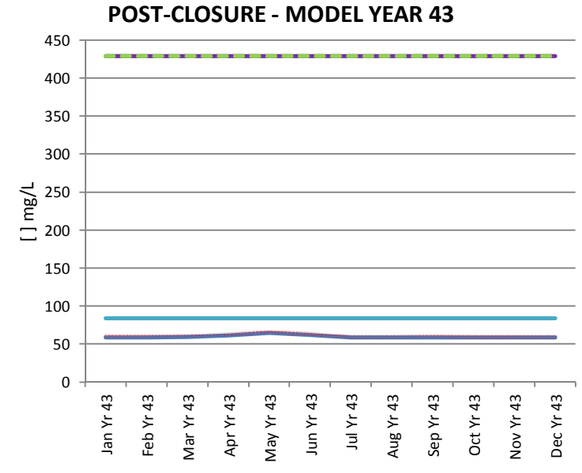
FIGURE D1.1

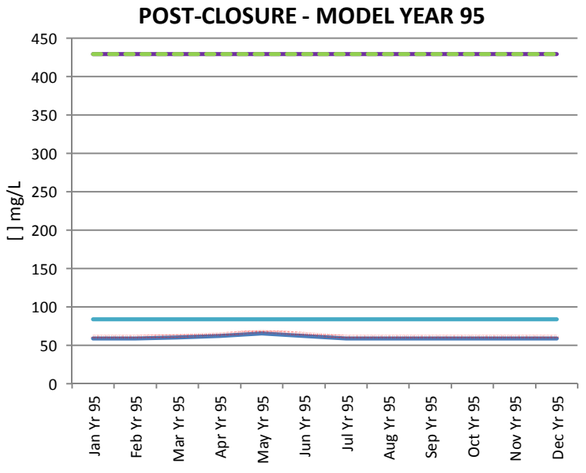
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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JACKO LAKE MRSF RECHARGE ASSUMPTIONS - SULPHATE PREDICTIONS

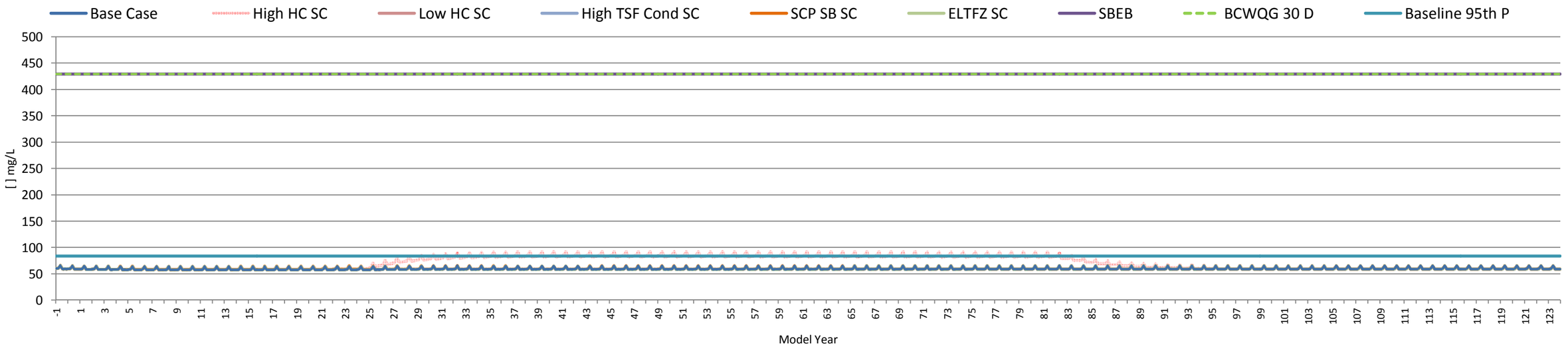
Knight Piésold CONSULTING

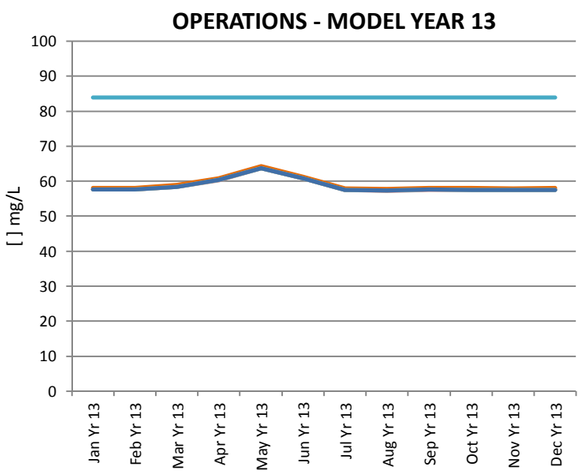
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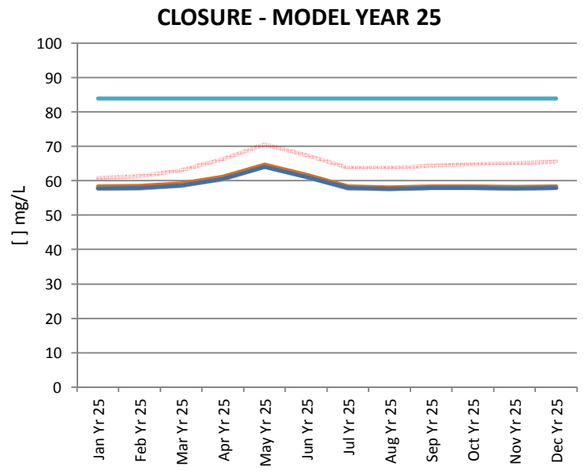
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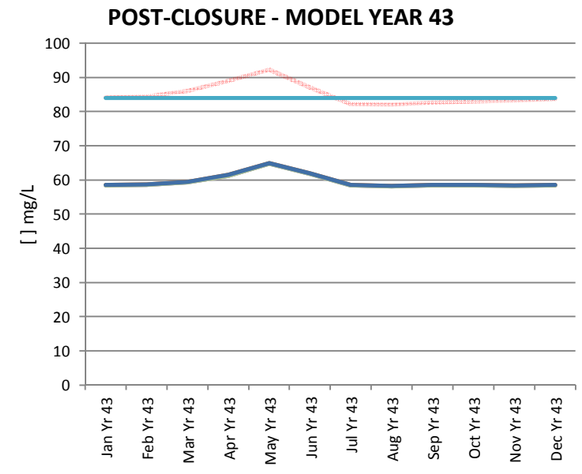
FIGURE D1.2

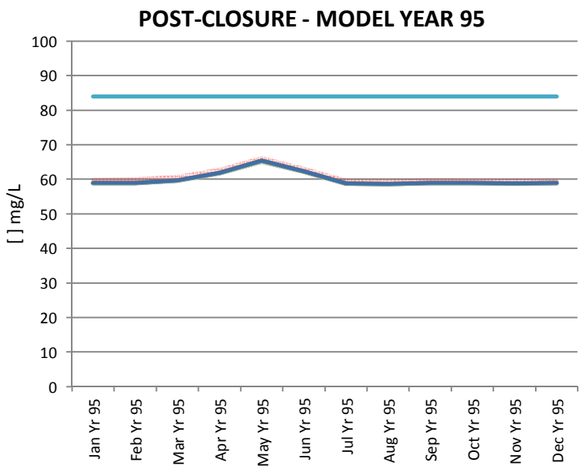
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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JACKO LAKE GROUNDWATER ASSUMPTIONS (GW) - SULPHATE PREDICTIONS

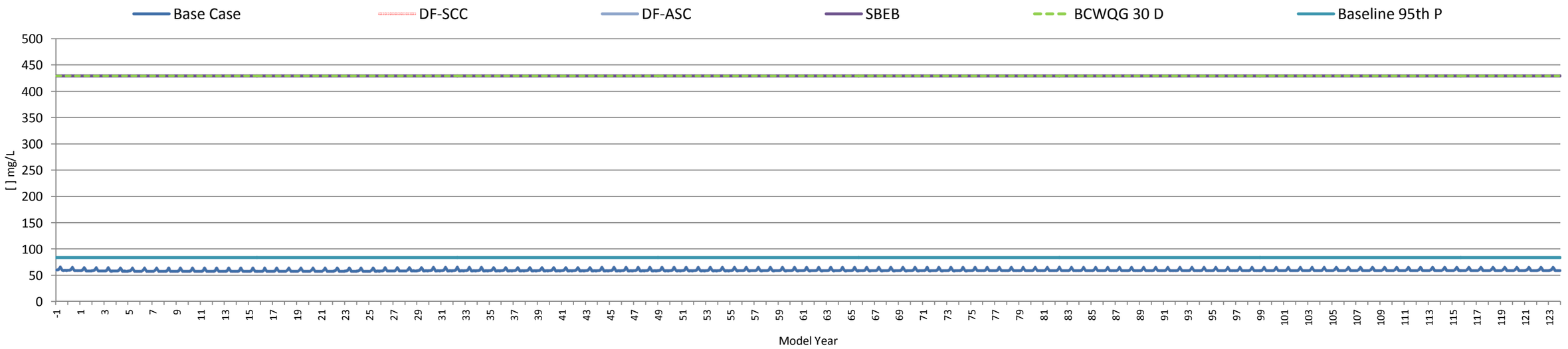
Knight Piésold CONSULTING

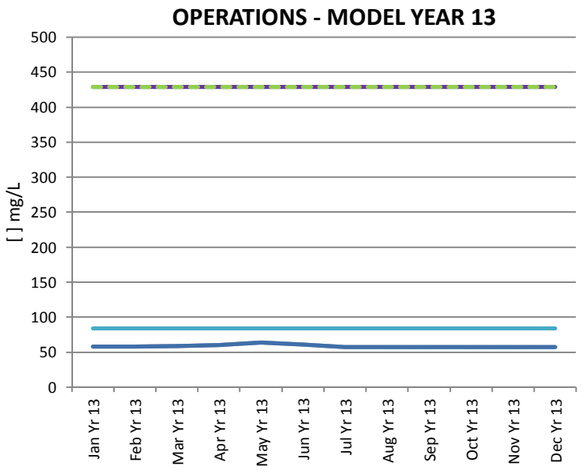
P/A NO. VA101-246/31

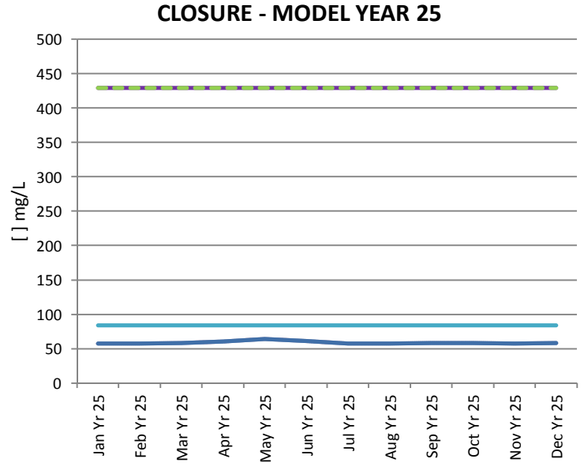
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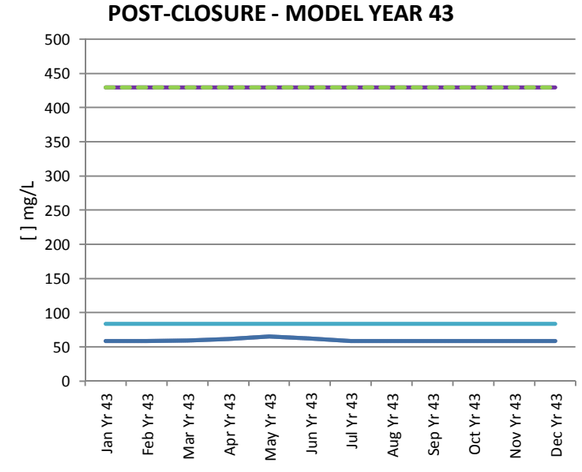
FIGURE D1.3

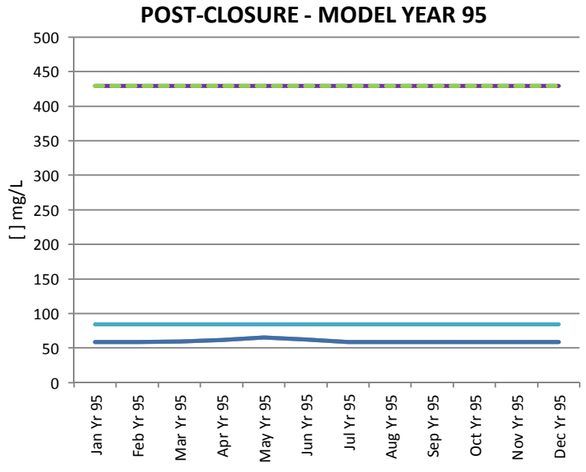
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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JACKO LAKE DUSTFALL ASSUMPTIONS (DFA) - SULPHATE PREDICTIONS

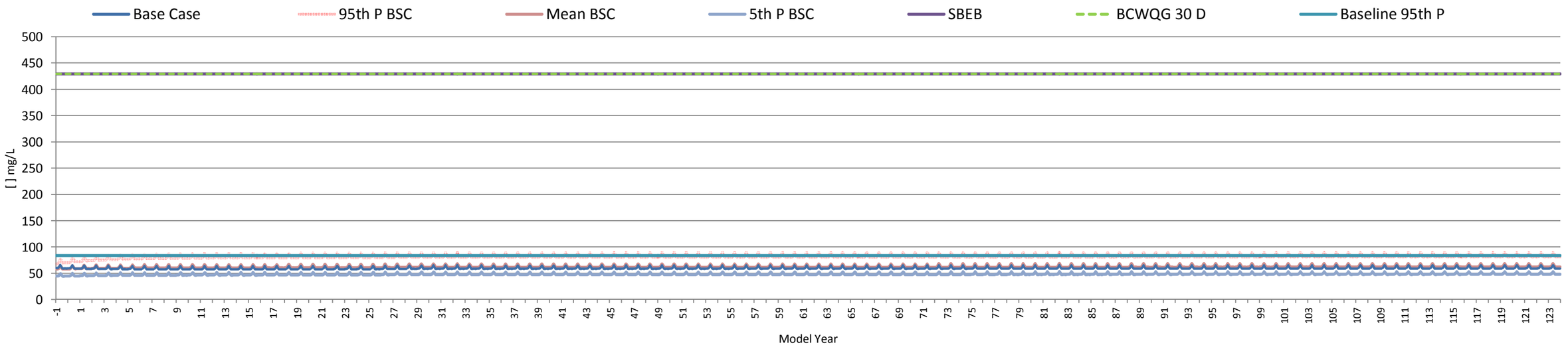
Knight Piésold CONSULTING

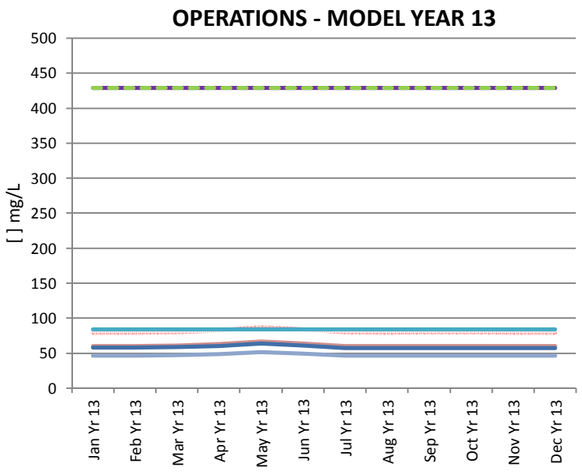
P/A NO. VA101-246/31

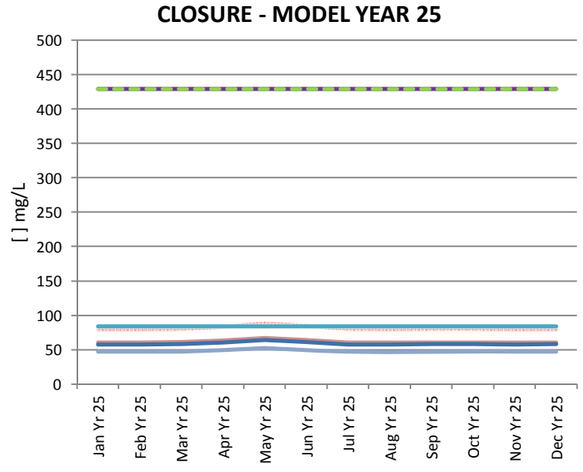
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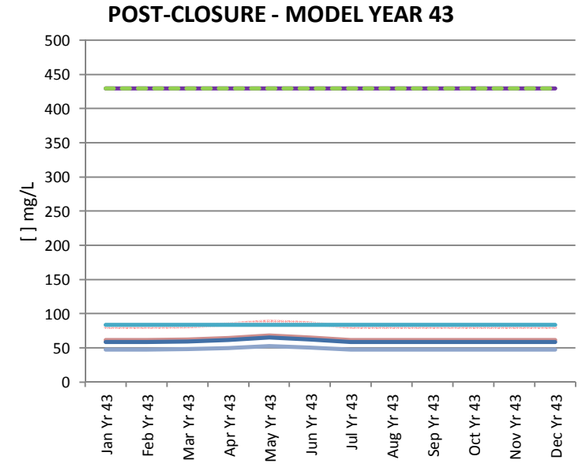
FIGURE D1.4

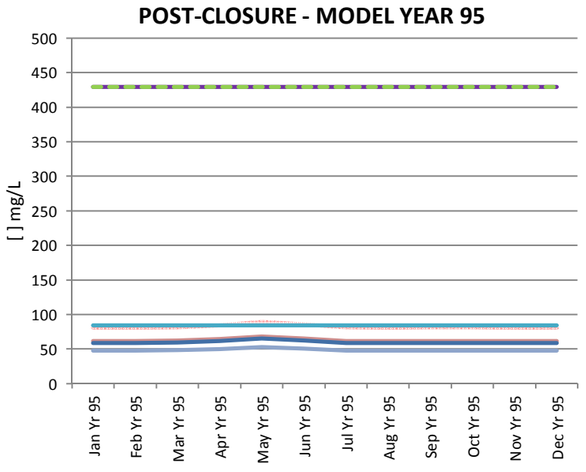
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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JACKO LAKE BASELINE SENSITIVITY CASE (BSC) - SULPHATE PREDICTIONS

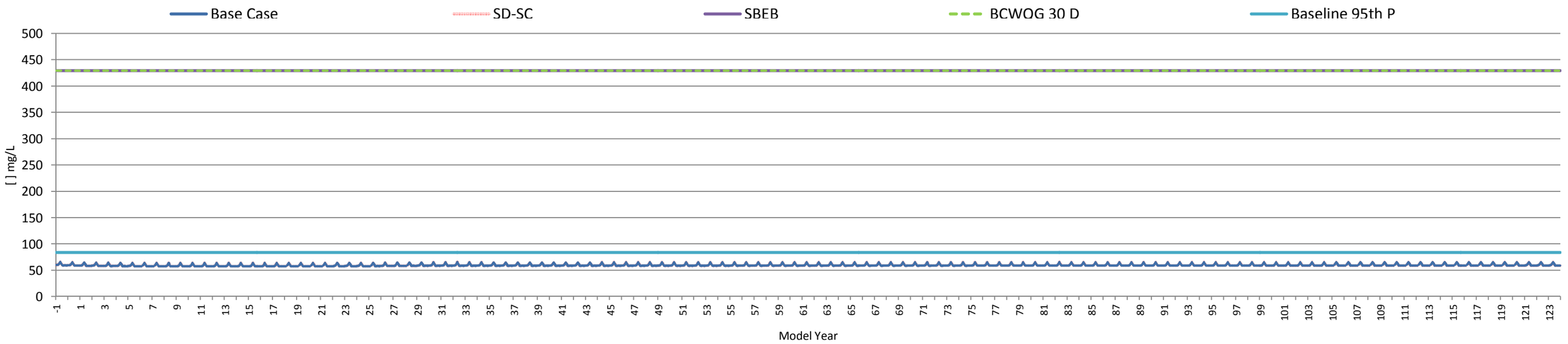
Knight Piésold CONSULTING

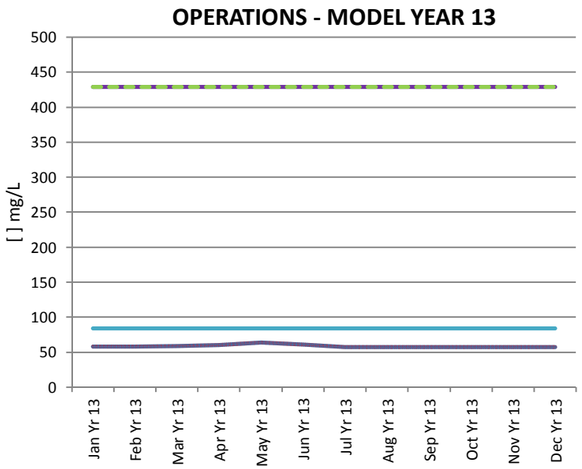
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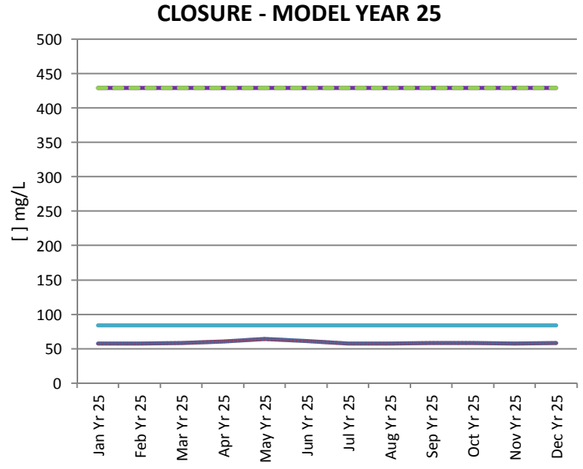
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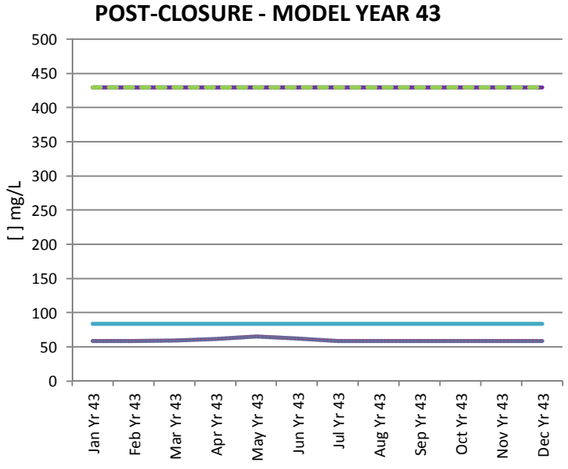
FIGURE D1.5

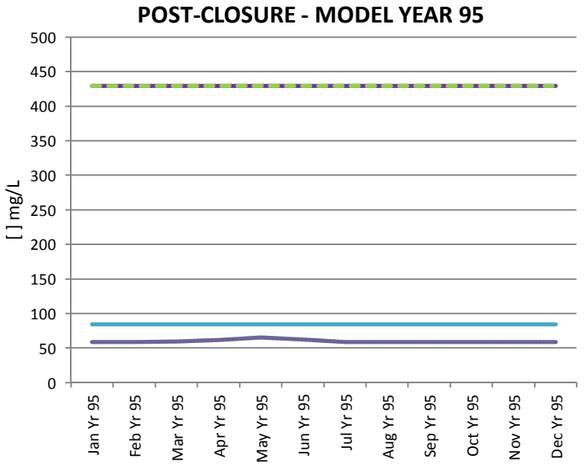
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE TIMING OF SEEPAGE ASSUMPTIONS (SD) - SULPHATE PREDICTIONS

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 3

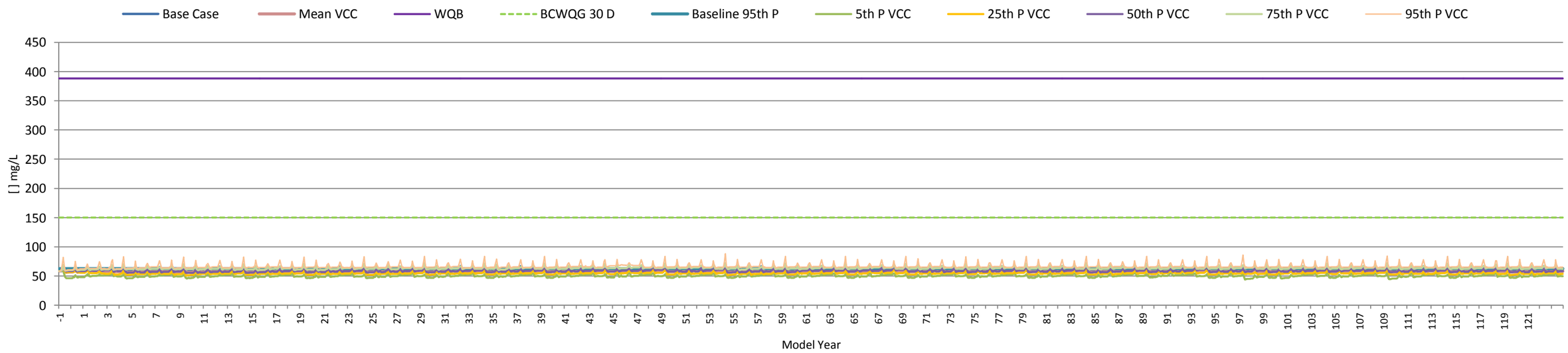
FIGURE D1.6

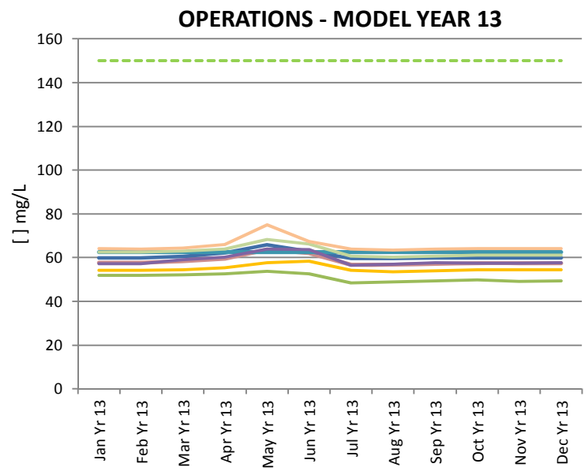
REV 0

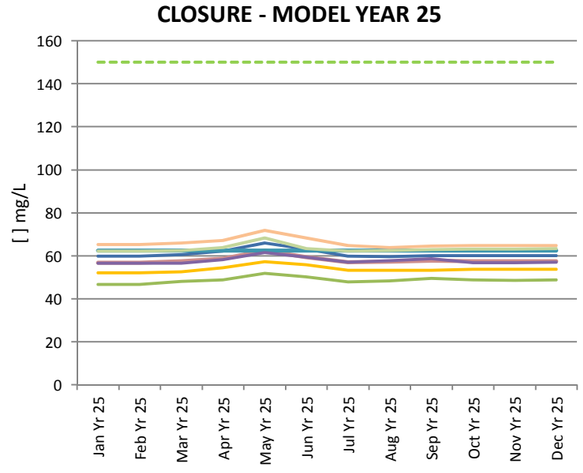
APPENDIX D2

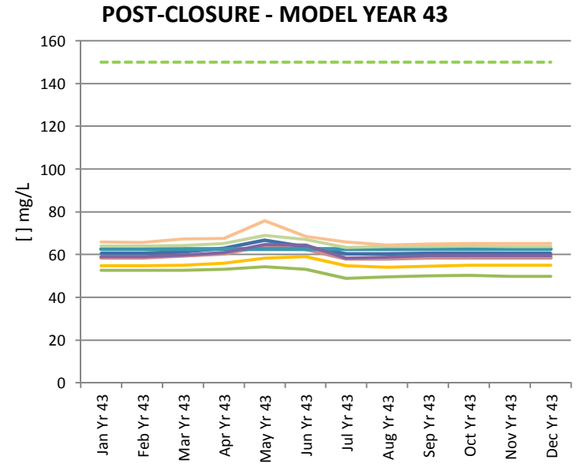
CHLORIDE

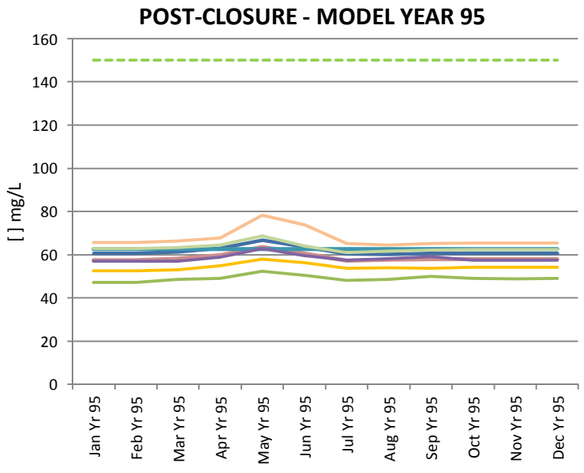
(Figures D2.1 to D2.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE VARIABLE CLIMATE CASE (VCC) - CHLORIDE PREDICTIONS

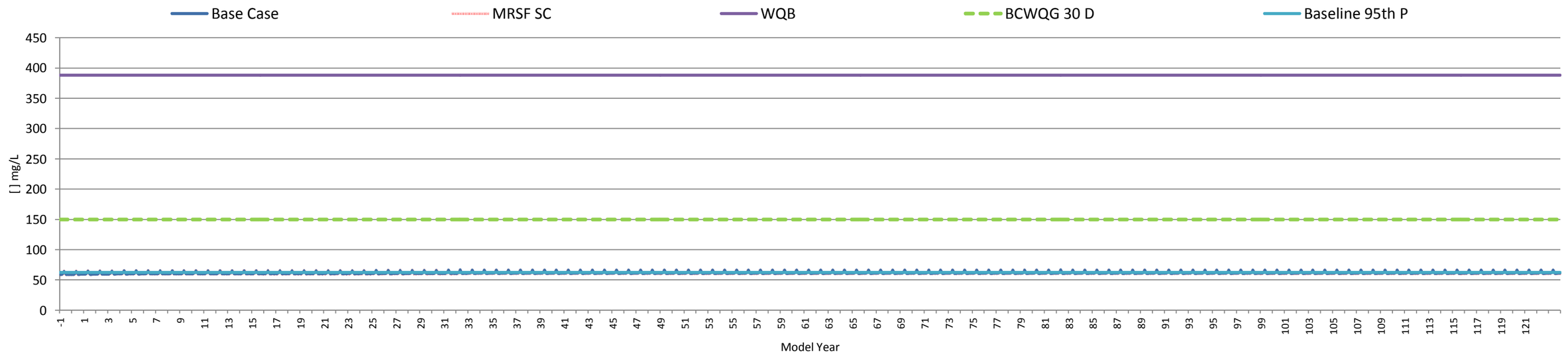
Knight Piésold CONSULTING

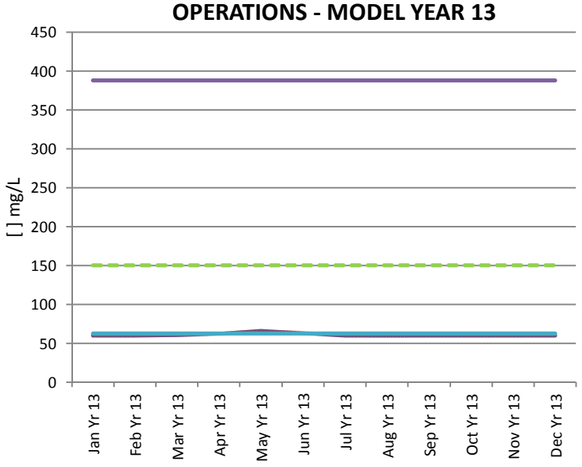
P/A NO. VA101-246/31

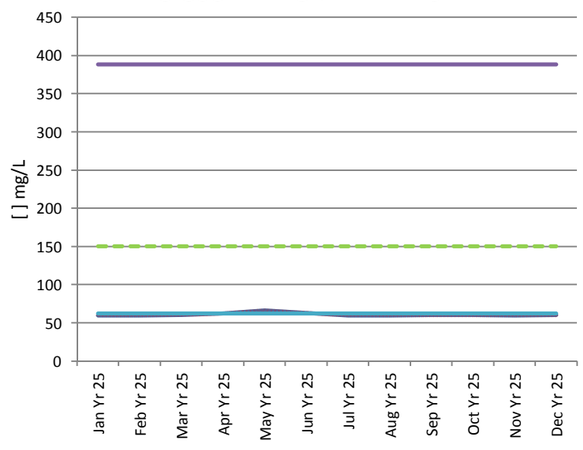
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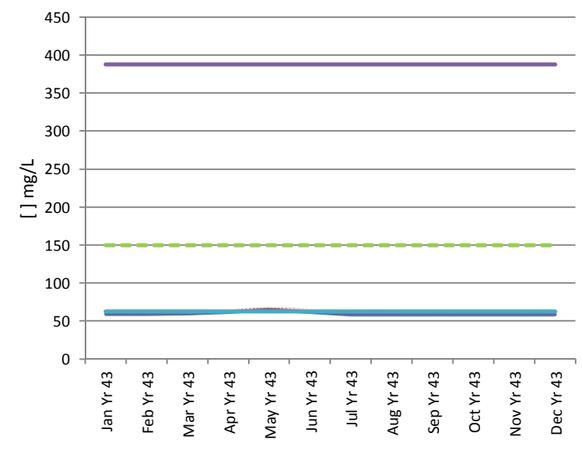
FIGURE D2.1

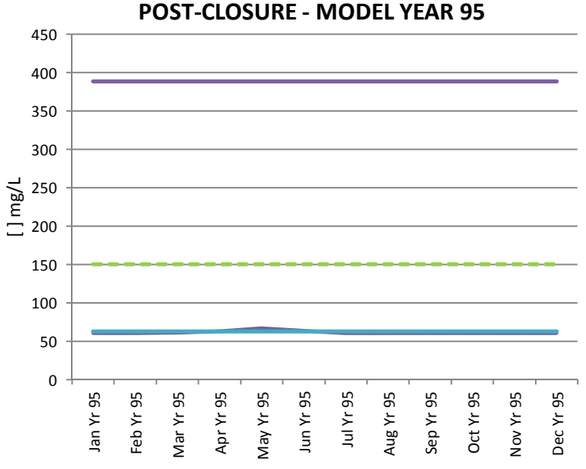
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE MRSF RECHARGE ASSUMPTIONS - CHLORIDE PREDICTIONS

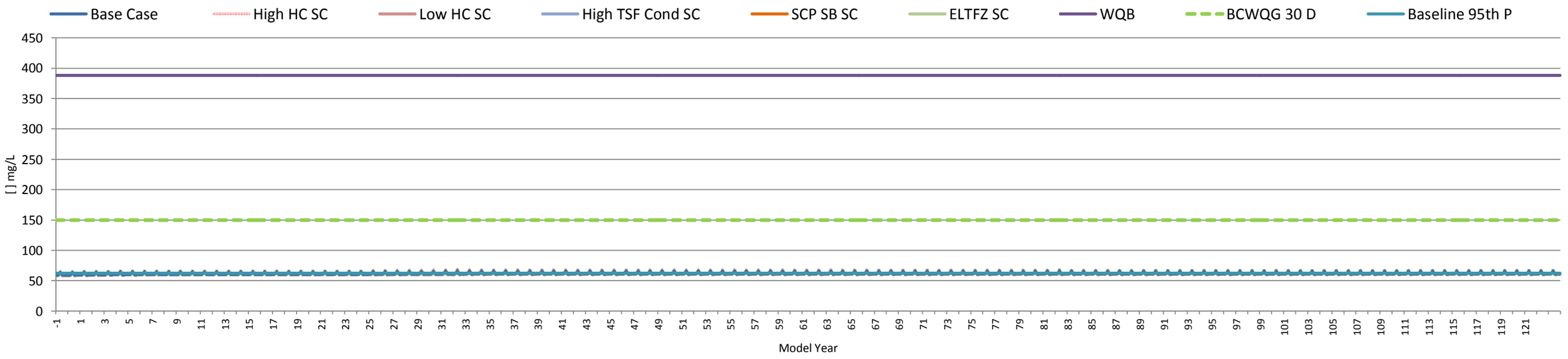
Knight Piésold CONSULTING

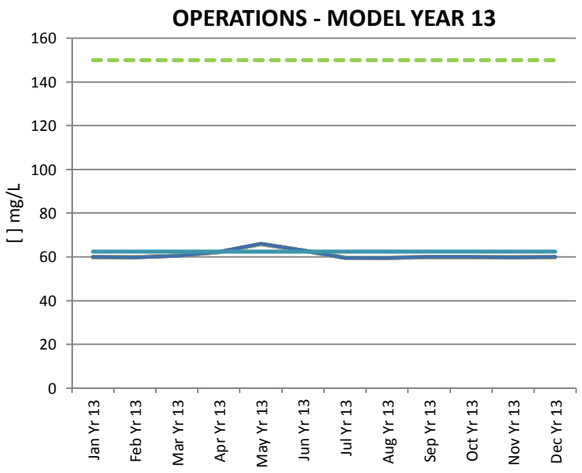
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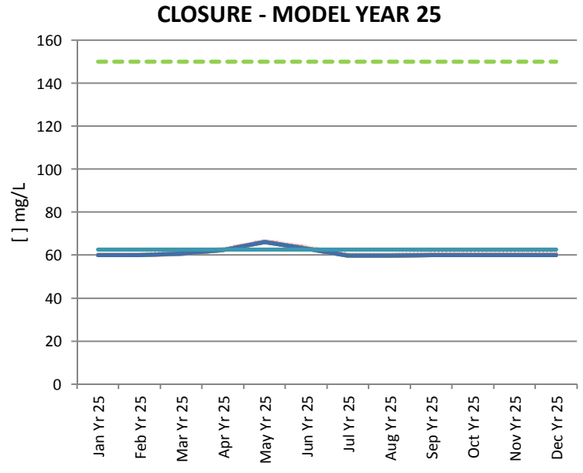
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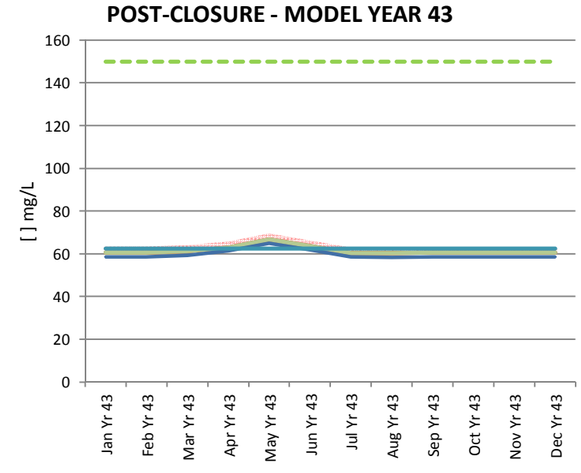
FIGURE D2.2

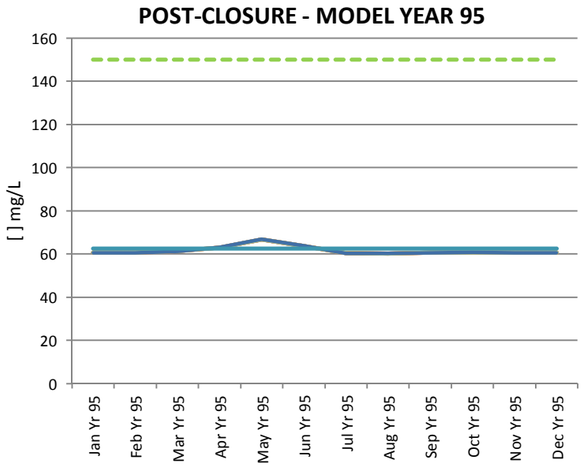
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE GROUNDWATER ASSUMPTIONS (GW) - CHLORIDE PREDICTIONS

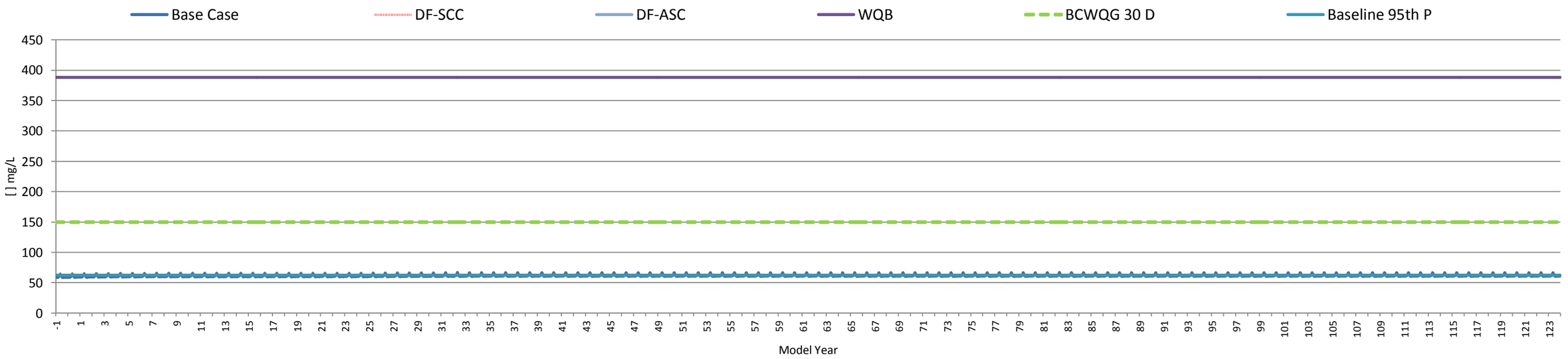
Knight Piésold CONSULTING

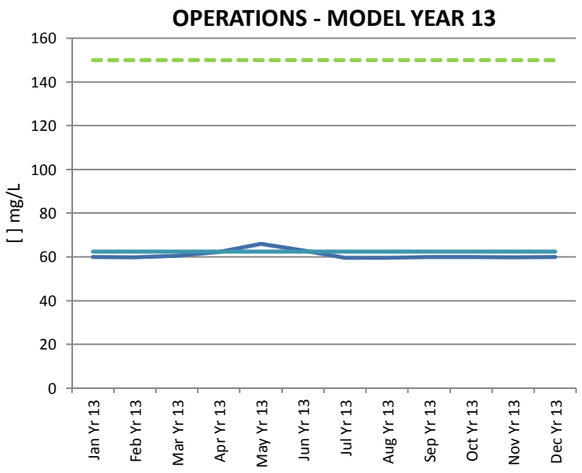
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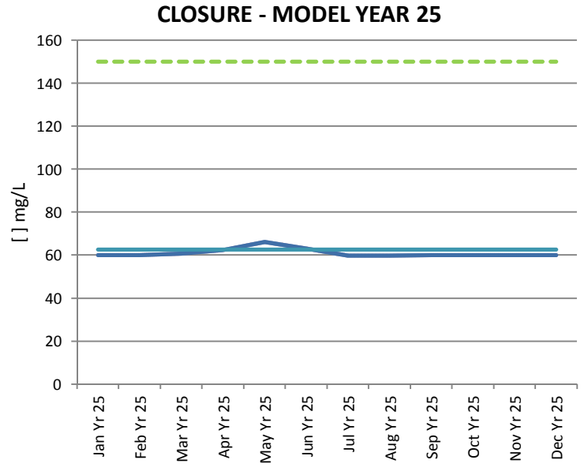
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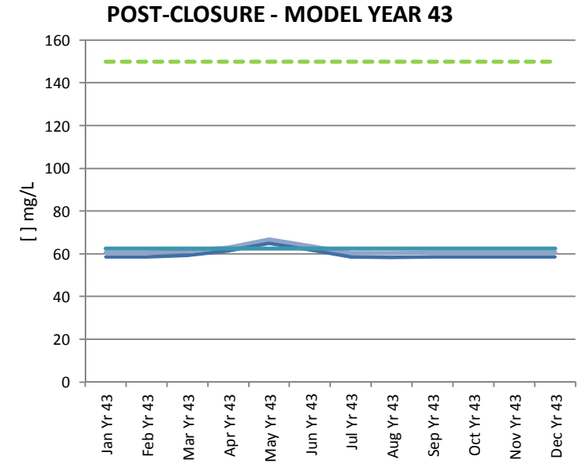
FIGURE D2.3

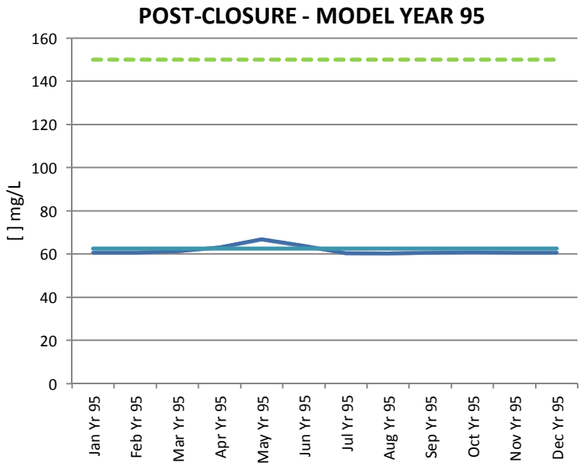
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE DUSTFALL ASSUMPTIONS (DFA) - CHLORIDE PREDICTIONS

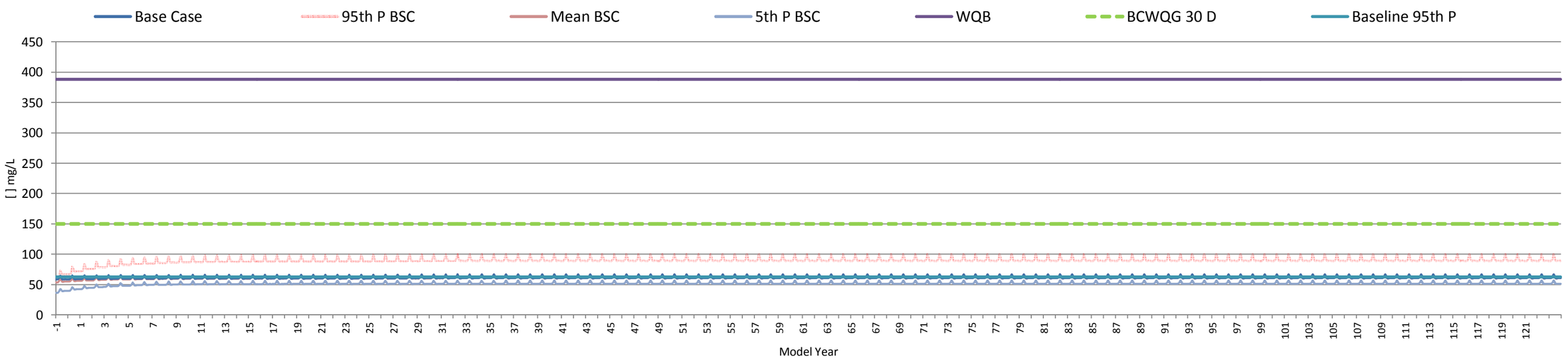
Knight Piésold CONSULTING

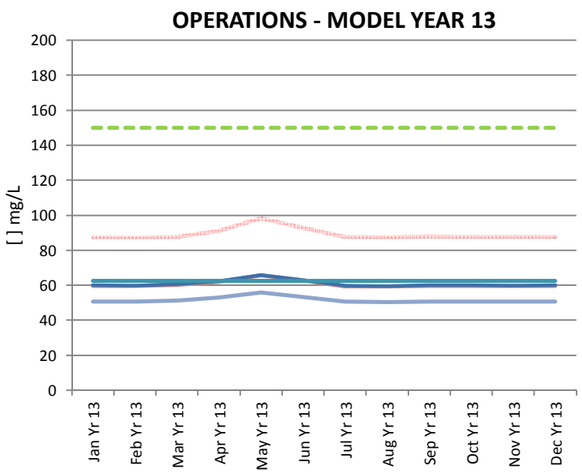
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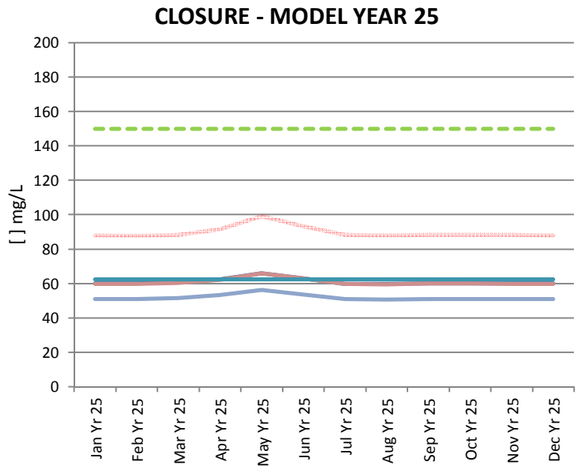
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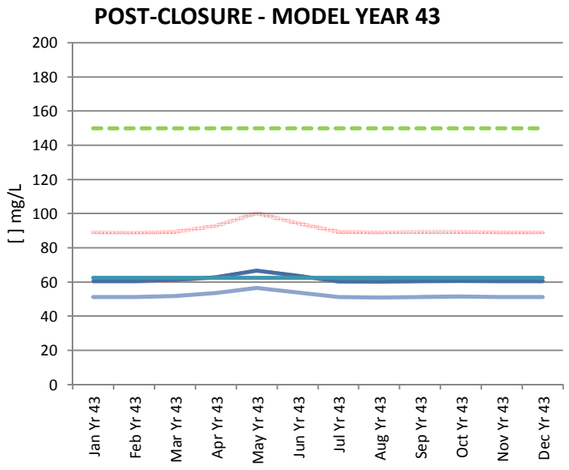
FIGURE D2.4

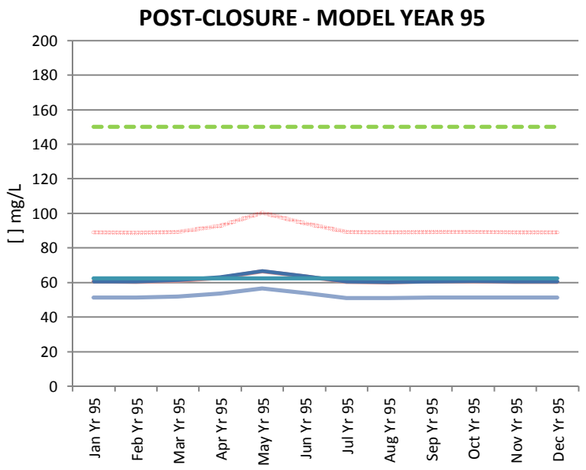
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE BASELINE SENSITIVITY CASE (BSC) - CHLORIDE PREDICTIONS

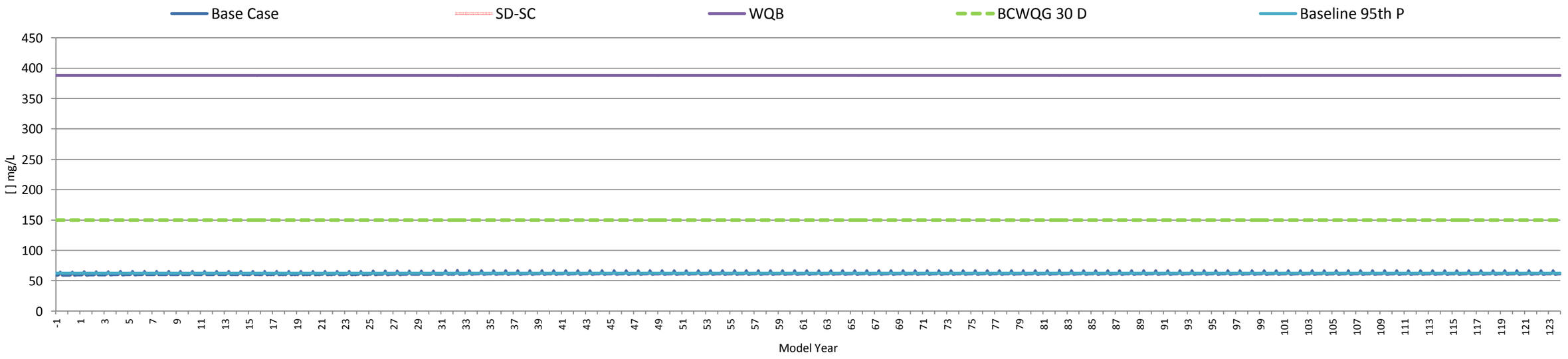
Knight Piésold CONSULTING

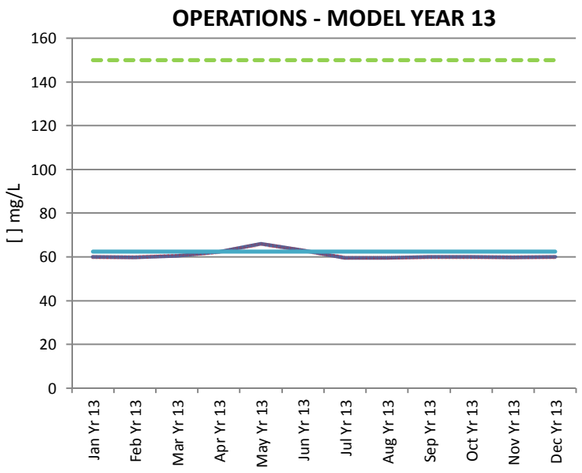
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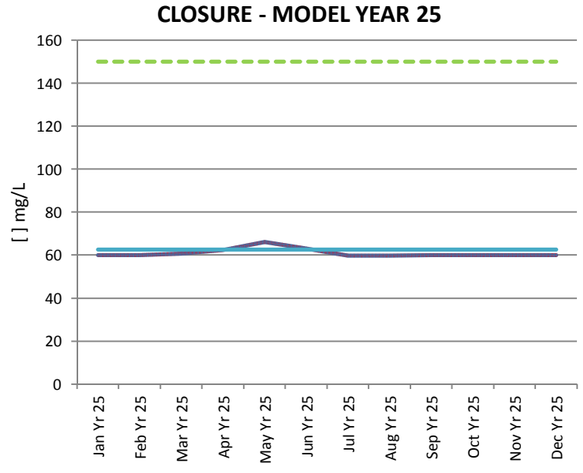
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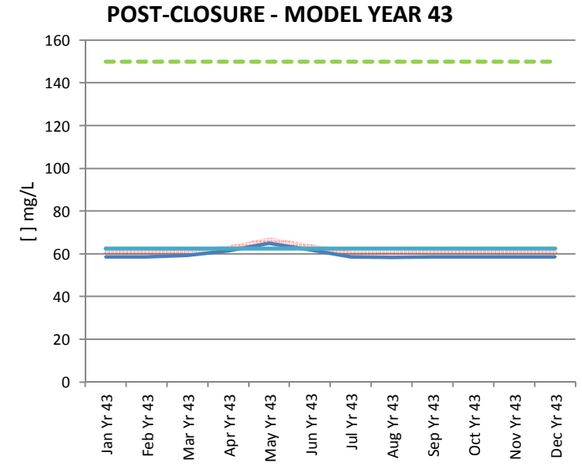
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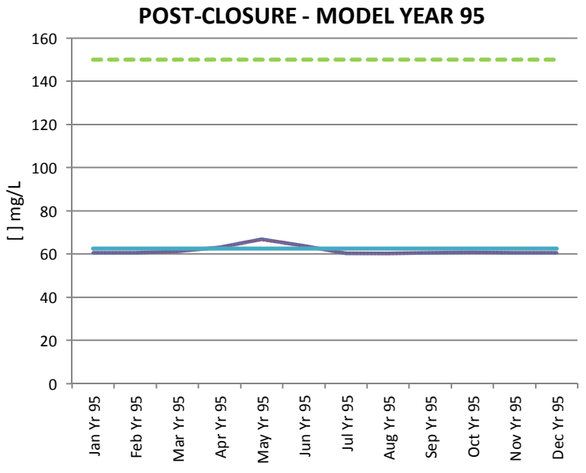
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE TIMING OF SEEPAGE ASSUMPTIONS (SD) - CHLORIDE PREDICTIONS

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 3

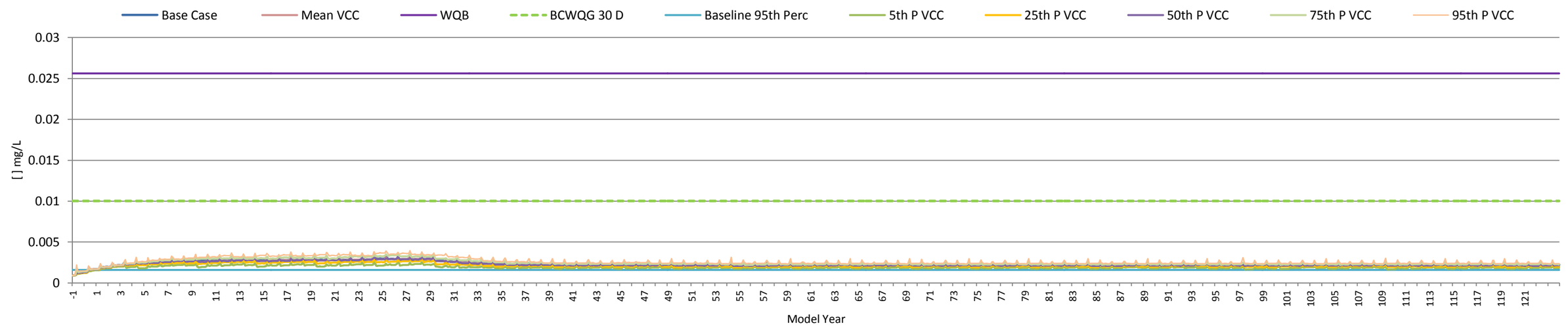
FIGURE D2.6

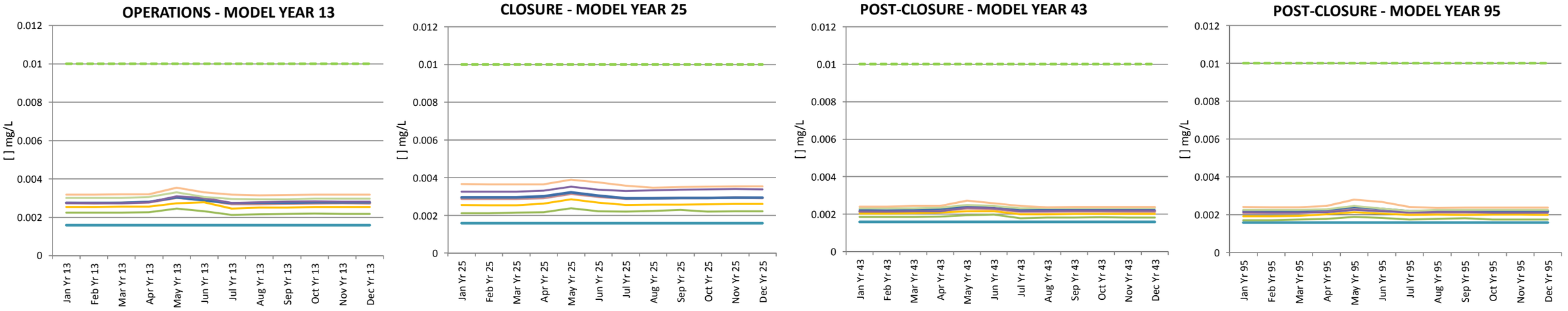
REV 0

APPENDIX D3

COPPER

(Figures D3.1 to D3.6)





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

REV	DATE	DESCRIPTION	PREP'D	APP'D
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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE VARIABLE CLIMATE CASE (VCC) - COPPER PREDICTIONS

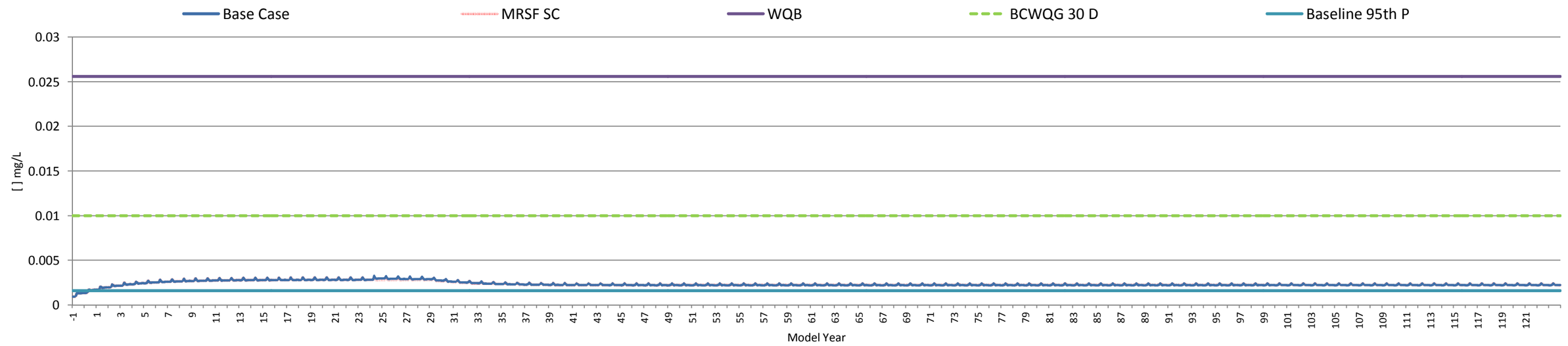
Knight Piésold CONSULTING

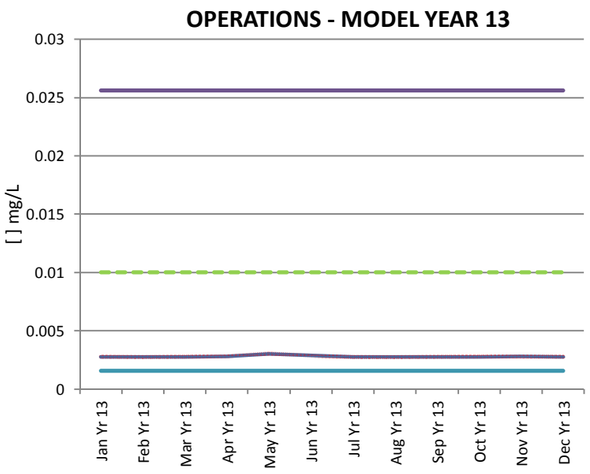
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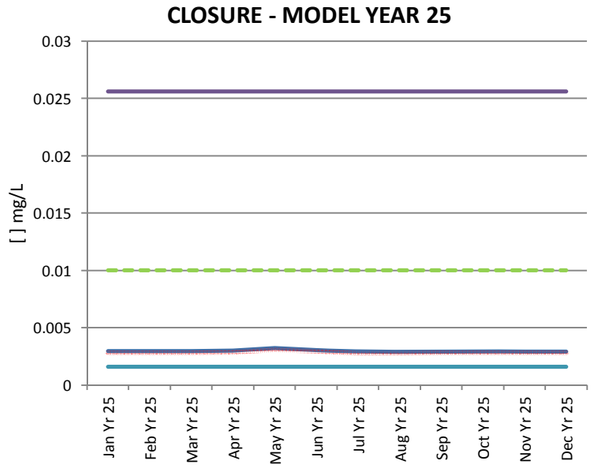
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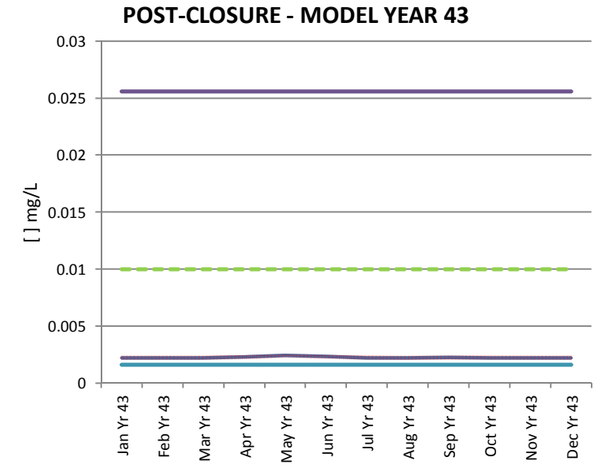
FIGURE D3.1

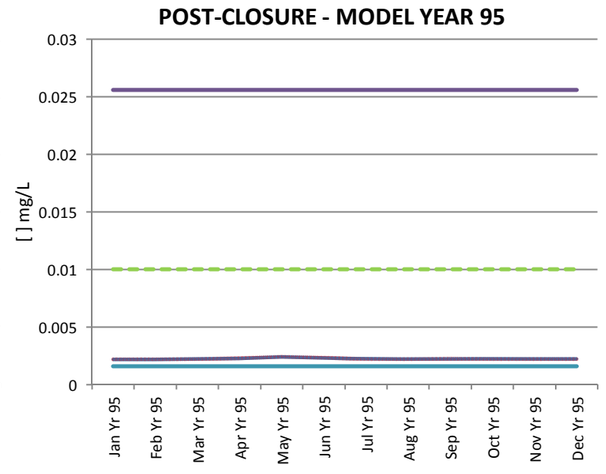
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

JACKO LAKE MRSF RECHARGE ASSUMPTIONS - COPPER PREDICTIONS

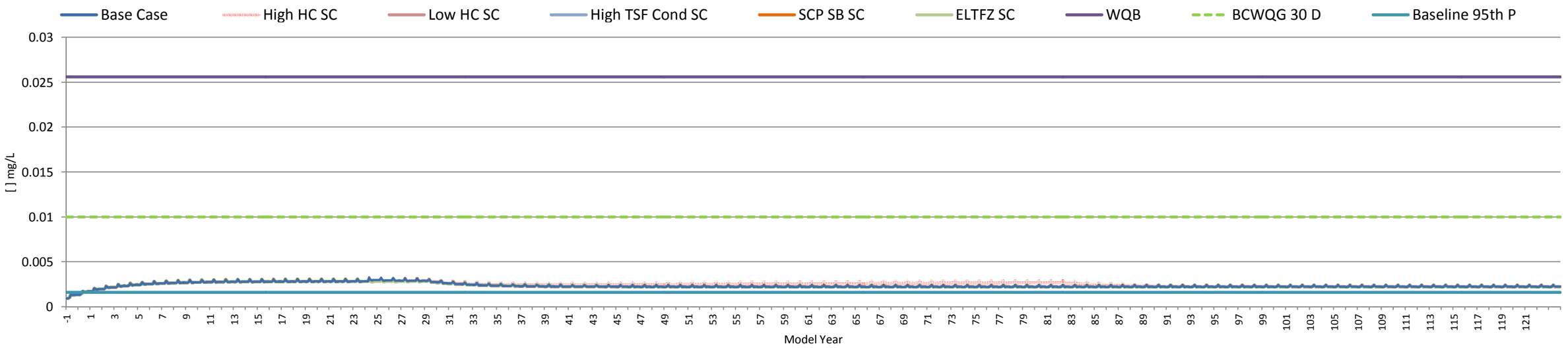
Knight Piésold CONSULTING

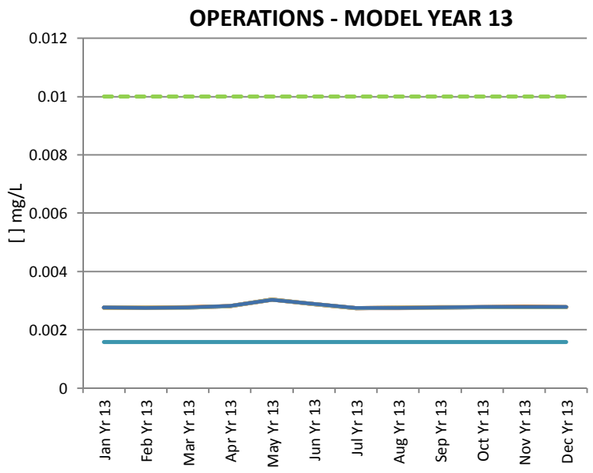
P/A NO. VA101-246/31

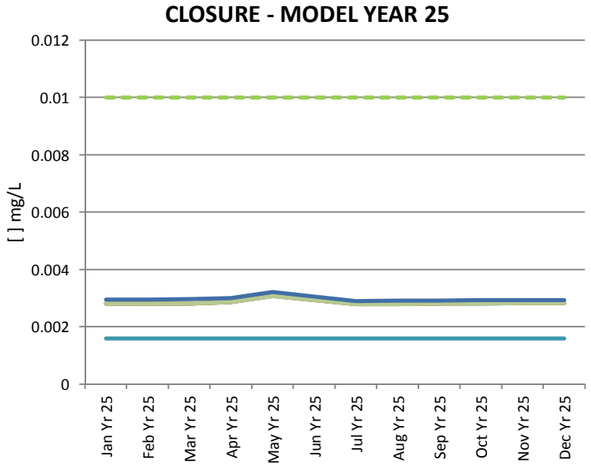
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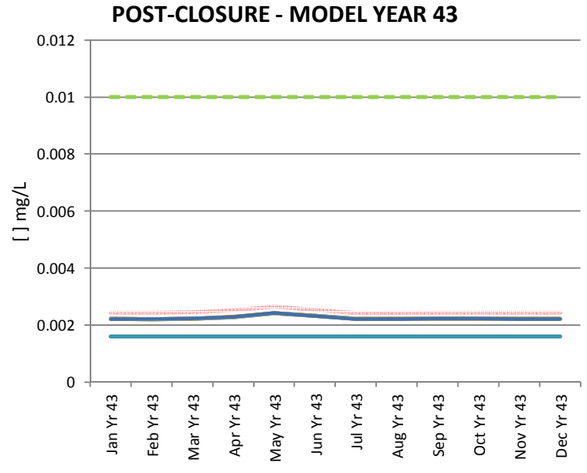
FIGURE D3.2

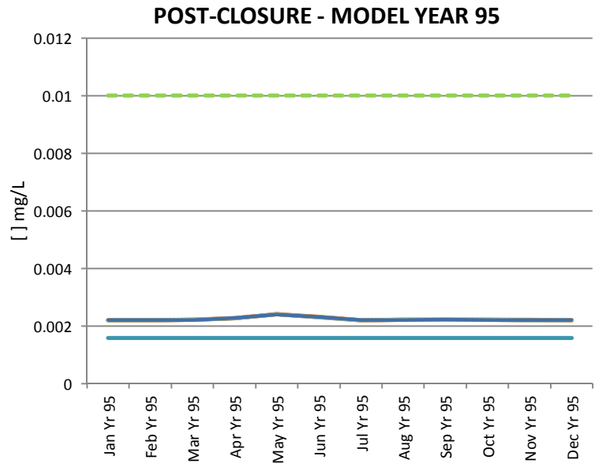
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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JACKO LAKE GROUNDWATER ASSUMPTIONS (GW) - COPPER PREDICTIONS

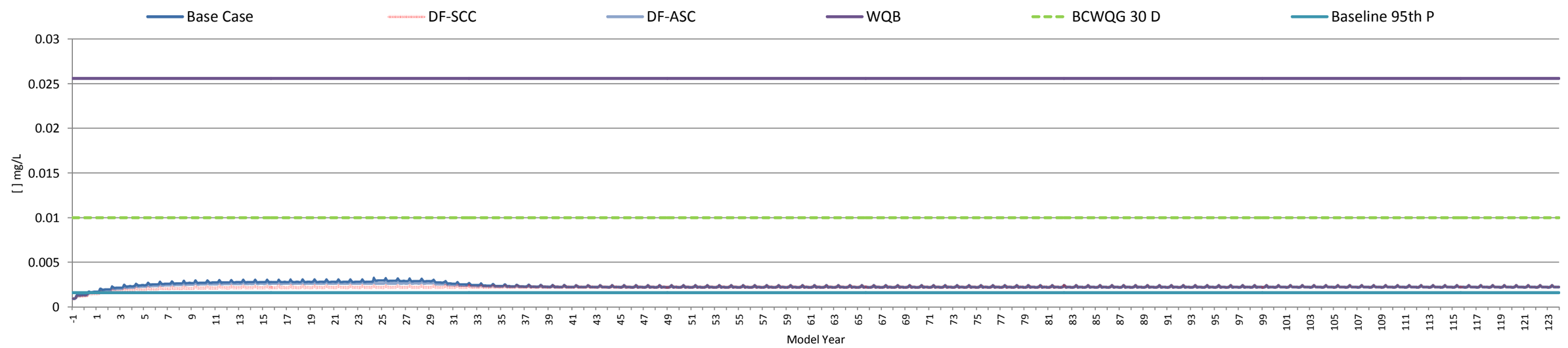
Knight Piésold CONSULTING

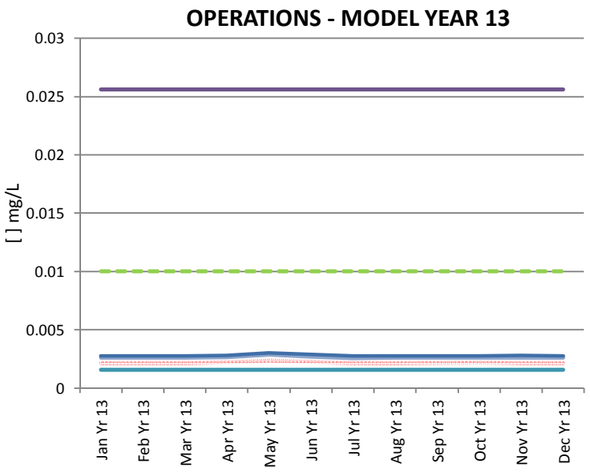
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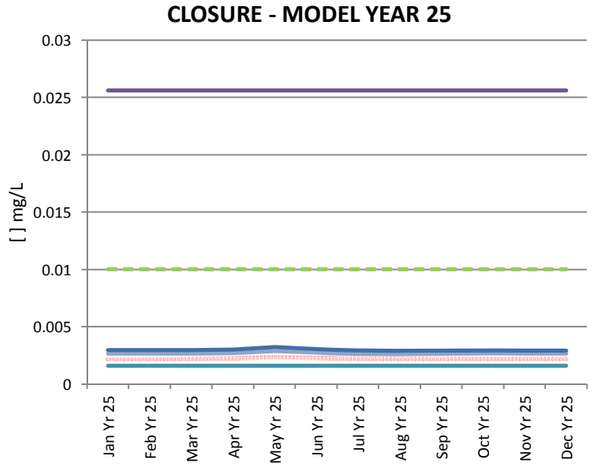
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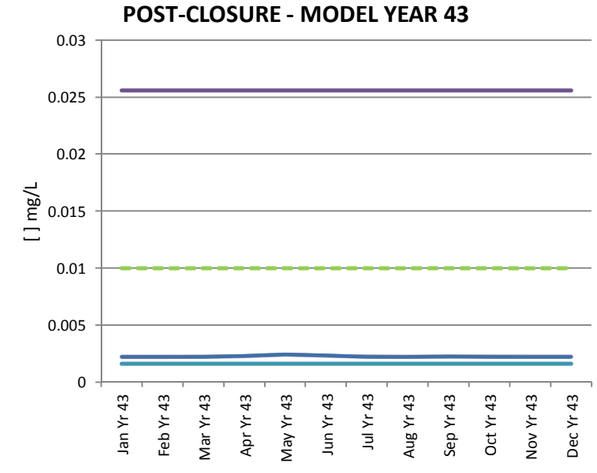
FIGURE D3.3

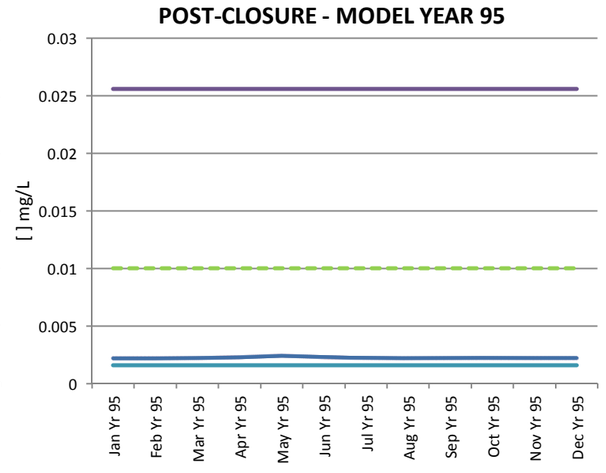
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

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JACKO LAKE DUSTFALL ASSUMPTIONS (DFA) - COPPER PREDICTIONS

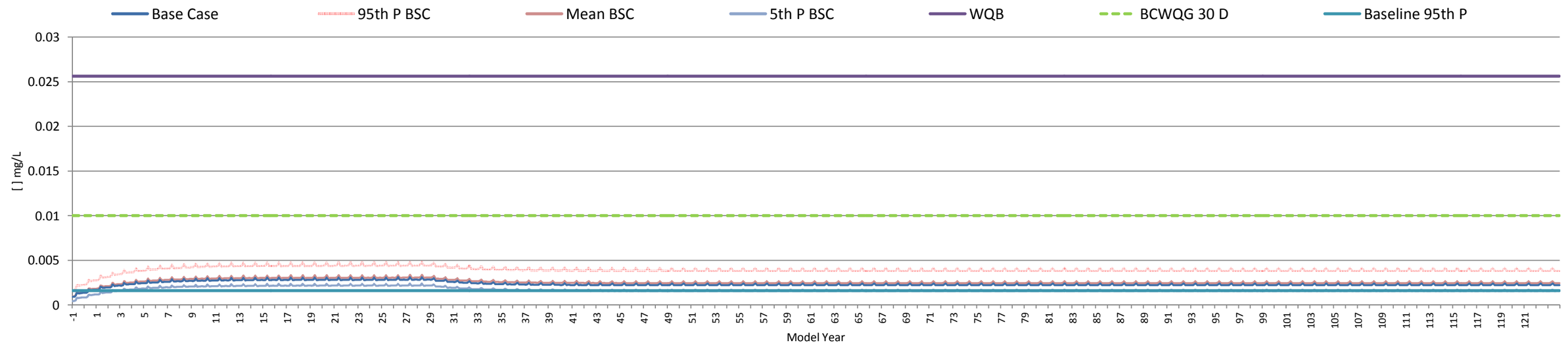
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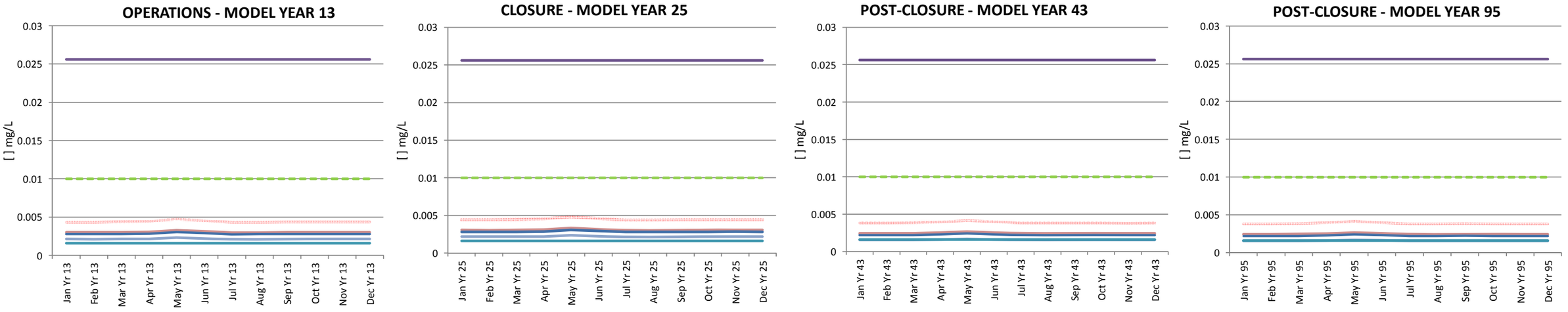
P/A NO. VA101-246/31

REF. NO. 3

FIGURE D3.4

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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

JACKO LAKE BASELINE SENSITIVITY CASE (BSC) - COPPER PREDICTIONS

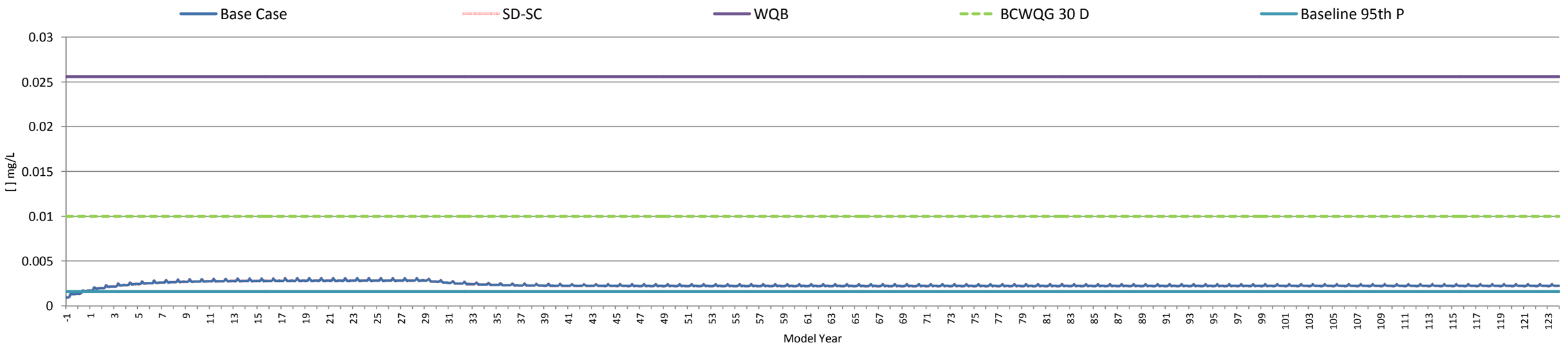
Knight Piésold CONSULTING

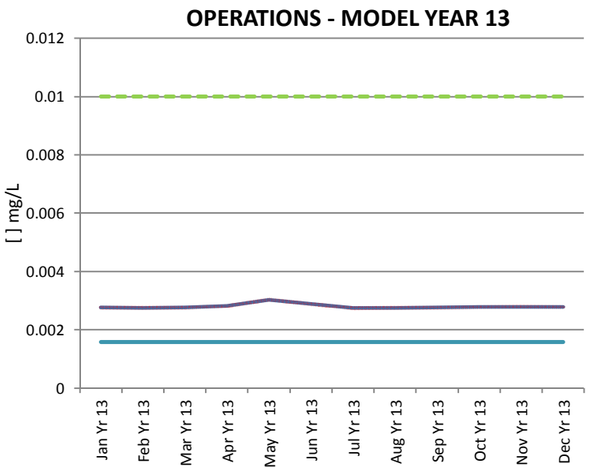
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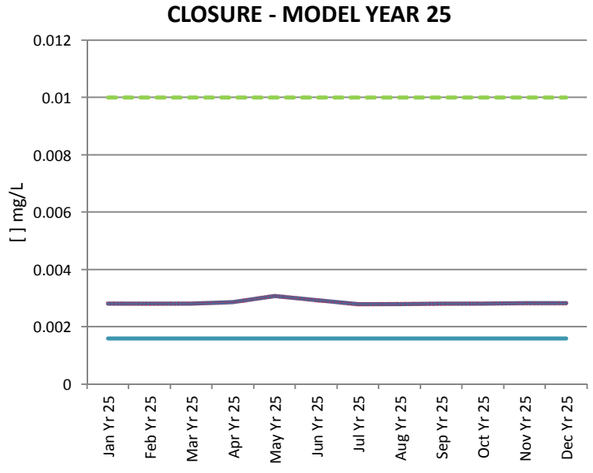
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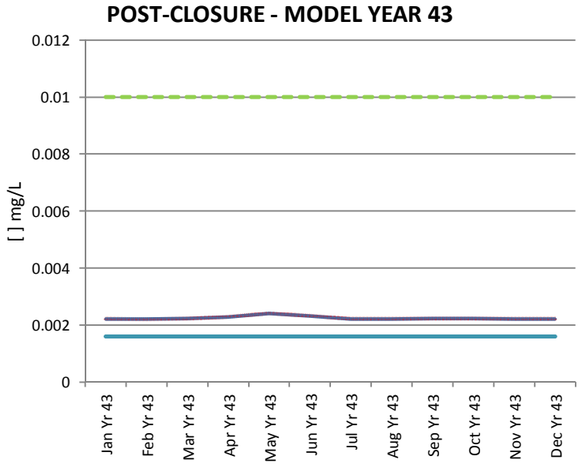
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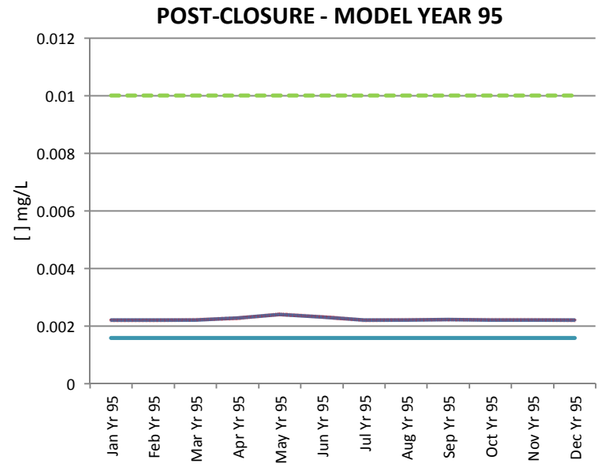
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

REV	DATE	DESCRIPTION	PREP'D	APP'D
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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE TIMING OF SEEPAGE ASSUMPTIONS (SD) - COPPER PREDICTIONS

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 3

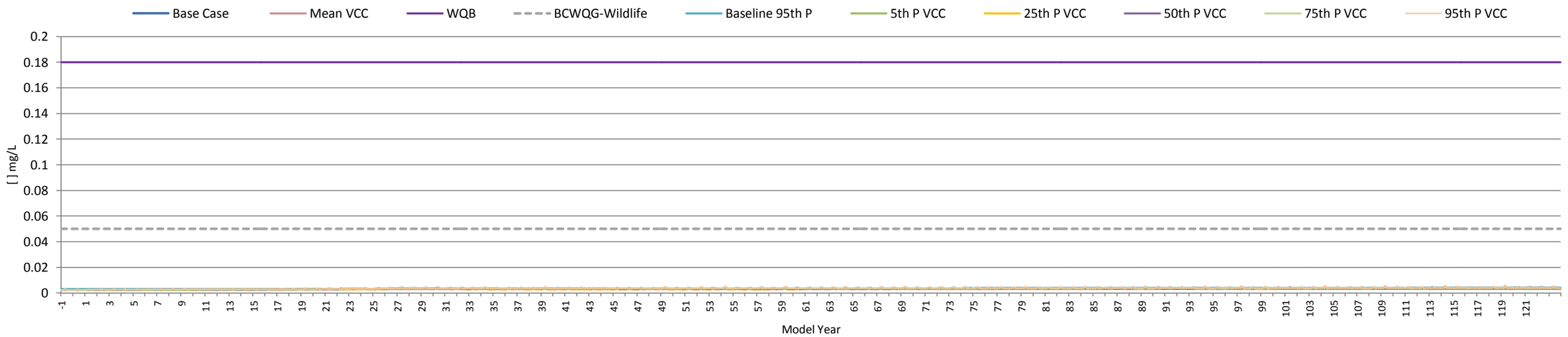
FIGURE D3.6

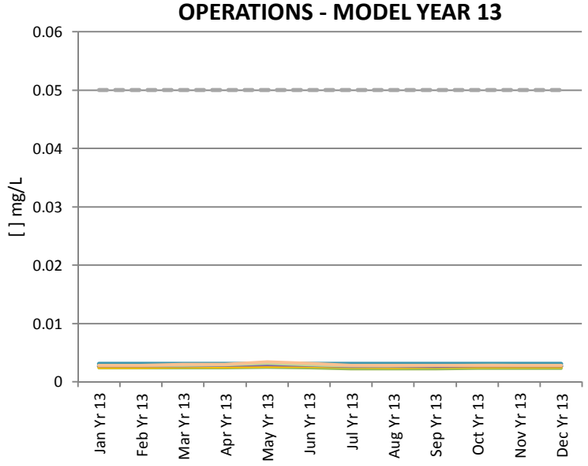
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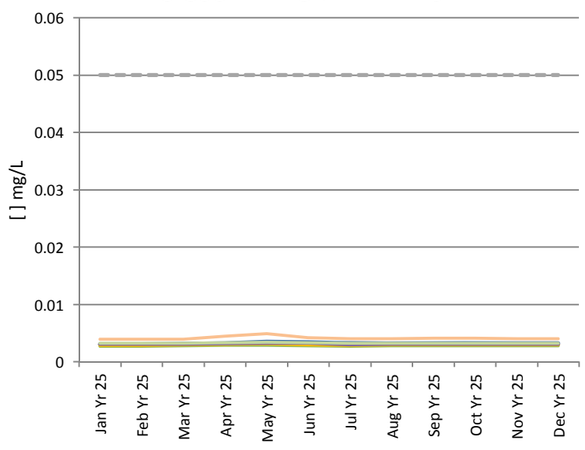
APPENDIX D4

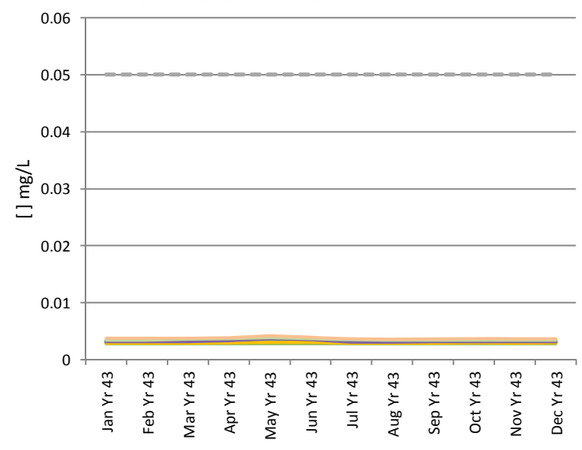
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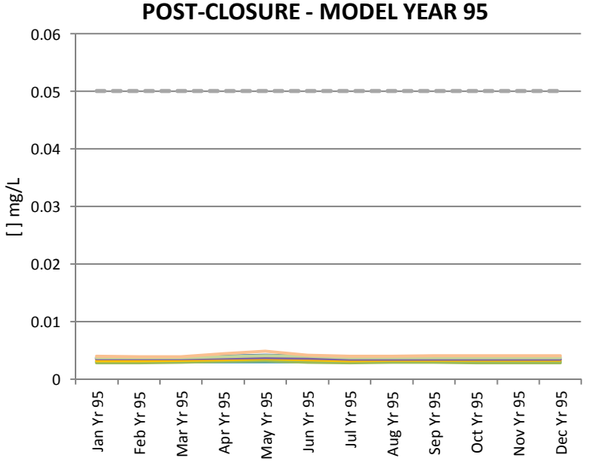
(Figures D4.1 to D4.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE VARIABLE CLIMATE CASE (VCC) - MOLYBDENUM PREDICTIONS

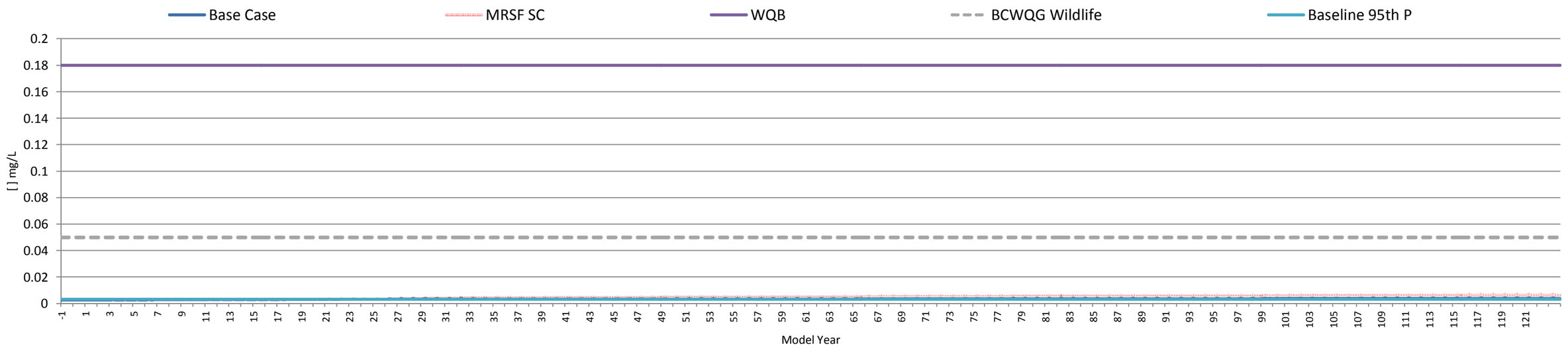
Knight Piésold CONSULTING

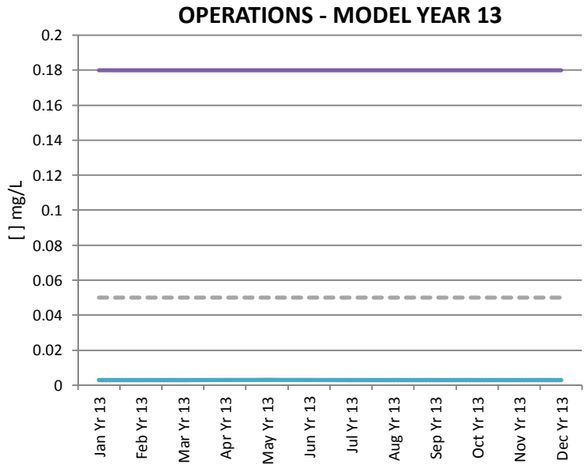
P/A NO. VA101-246/31

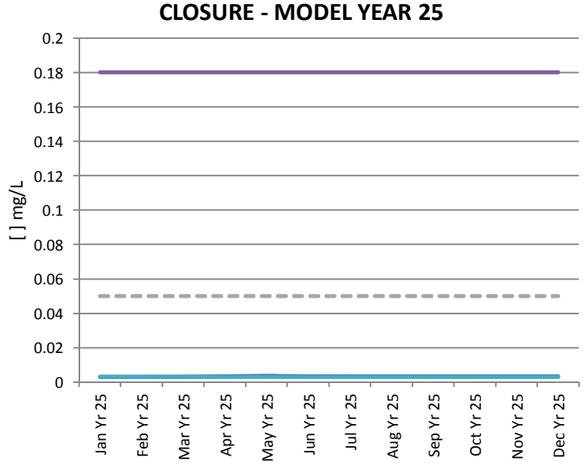
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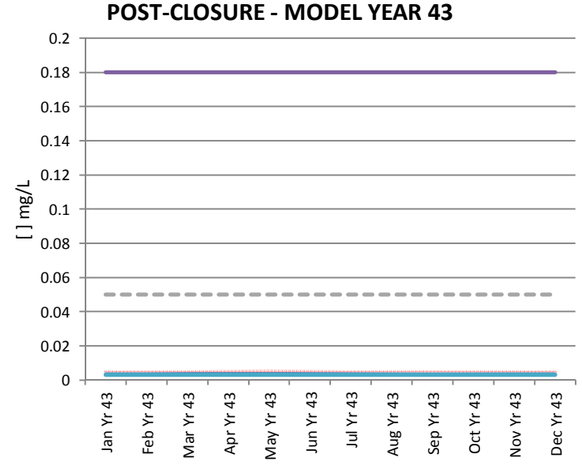
FIGURE D4.1

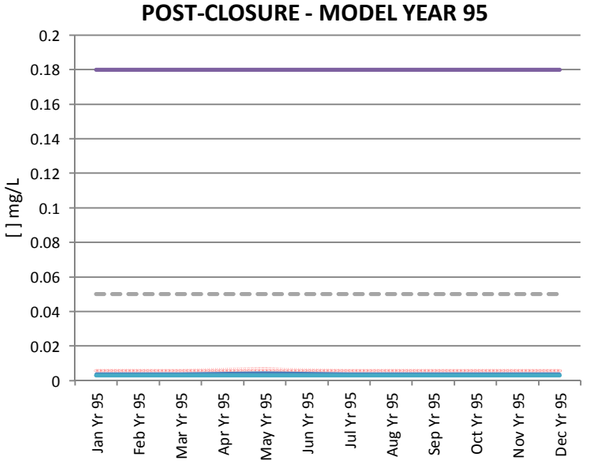
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

JACKO LAKE MRSF RECHARGE ASSUMPTIONS - MOLYBDENUM PREDICTIONS

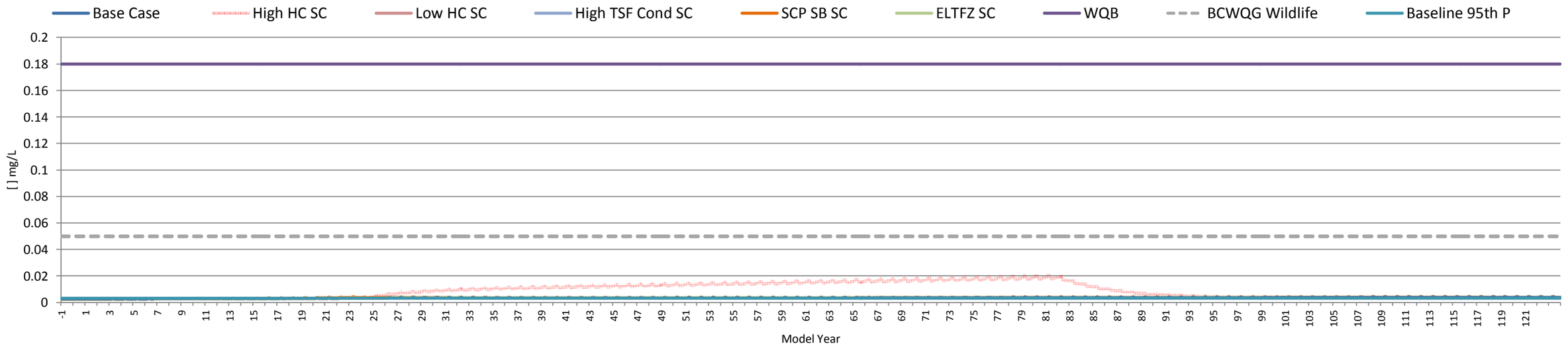
Knight Piésold CONSULTING

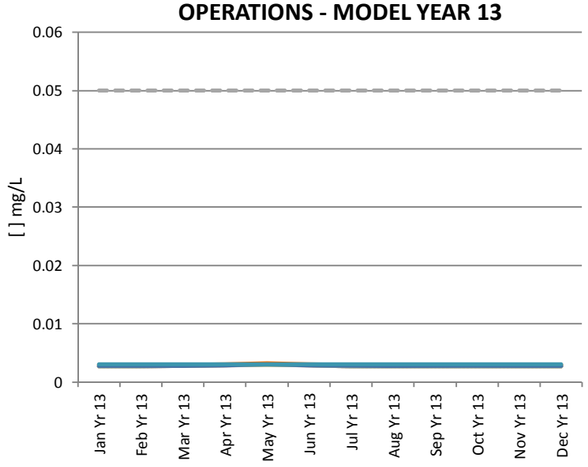
P/A NO. VA101-246/31

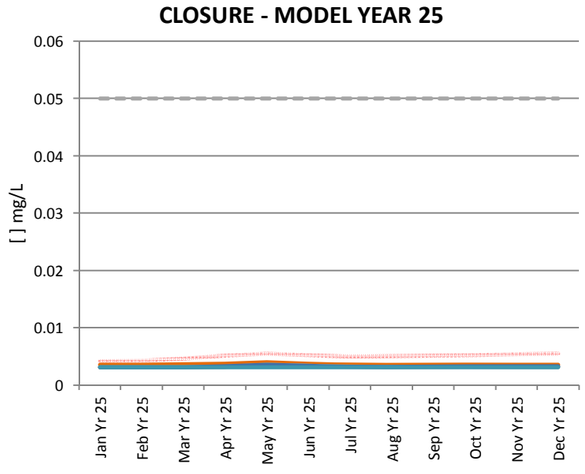
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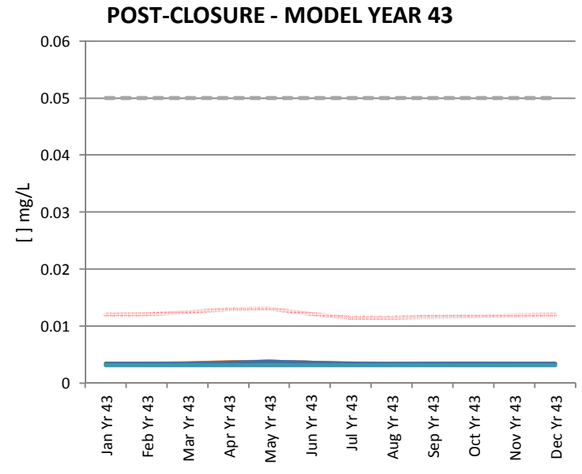
FIGURE D4.2

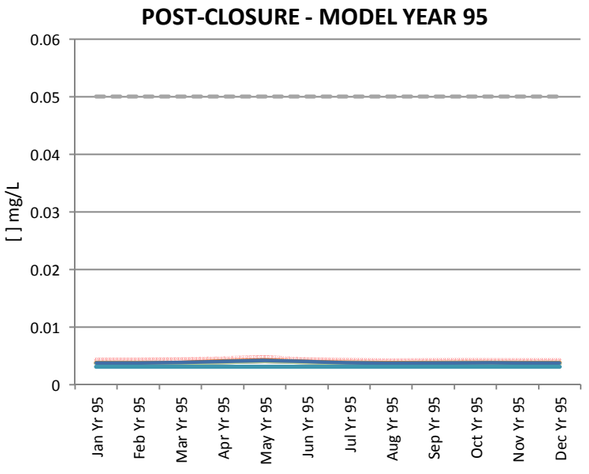
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

JACKO LAKE GROUNDWATER ASSUMPTIONS (GW) - MOLYBDENUM PREDICTIONS

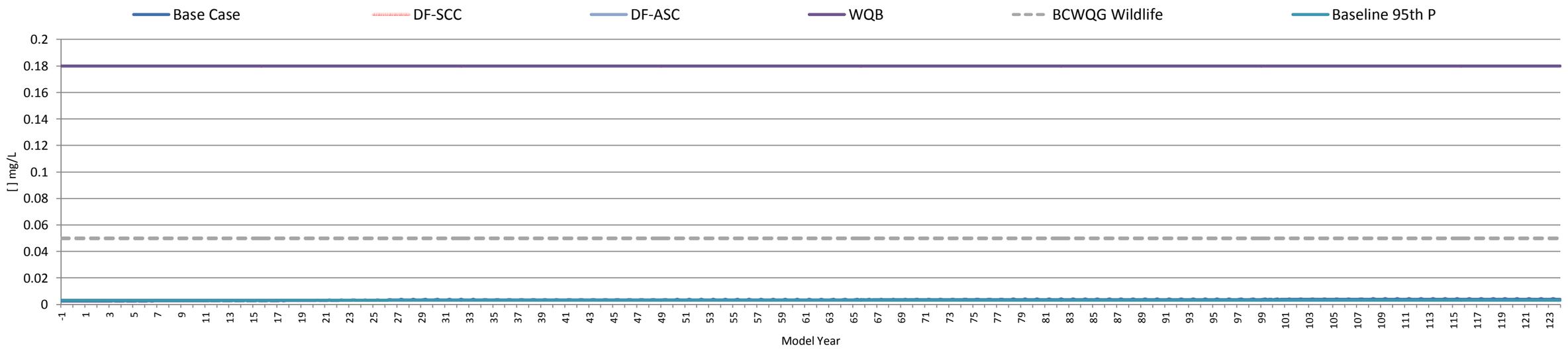
Knight Piésold CONSULTING

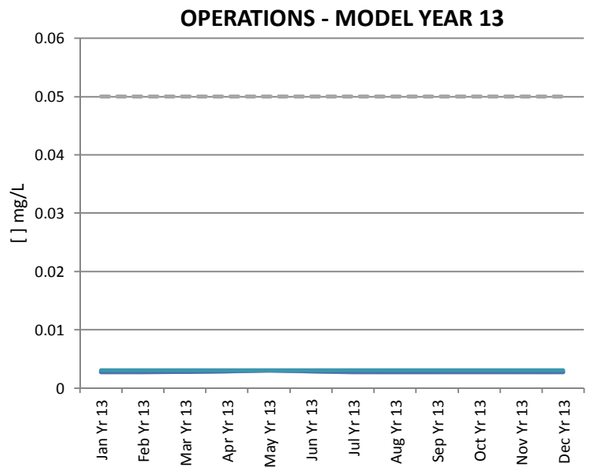
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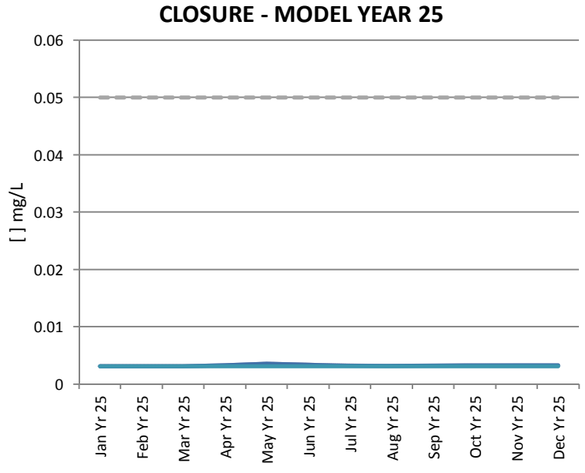
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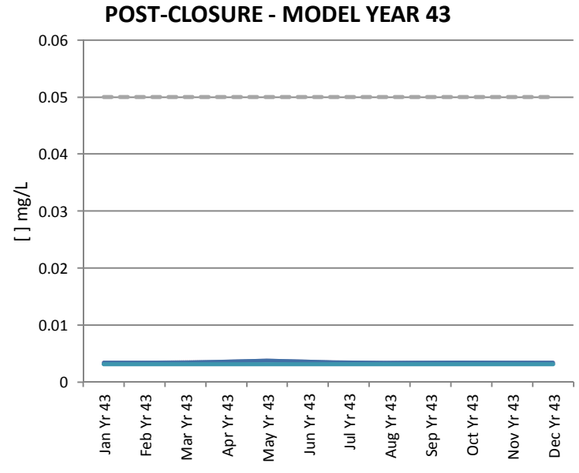
FIGURE D4.3

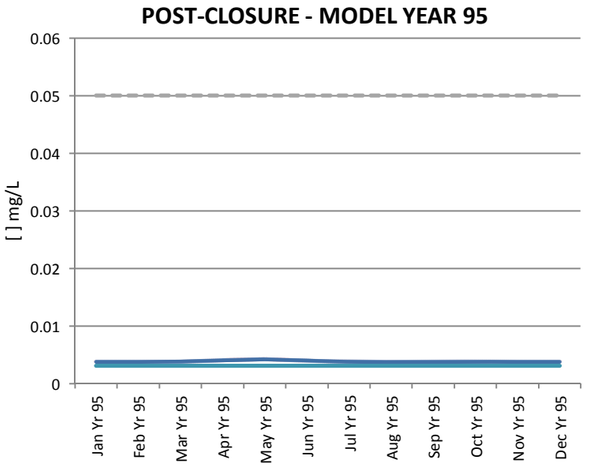
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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JACKO LAKE DUSTFALL ASSUMPTIONS (DFA) - MOLYBDENUM PREDICTIONS

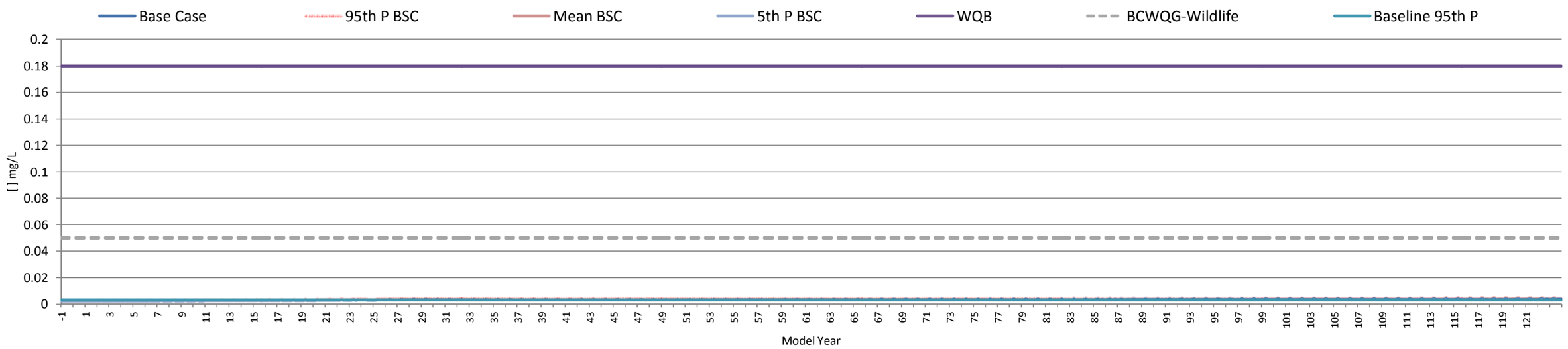
Knight Piésold CONSULTING

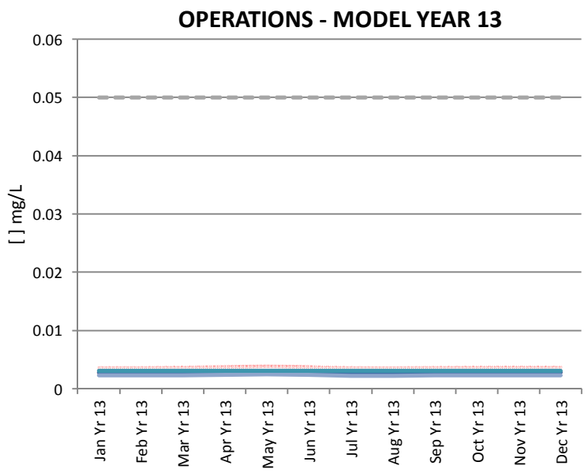
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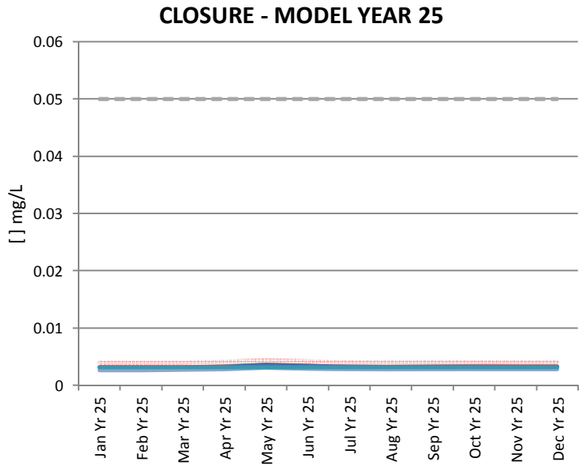
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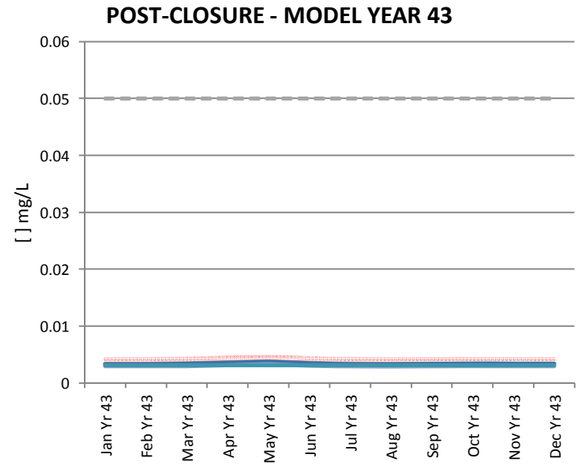
FIGURE D4.4

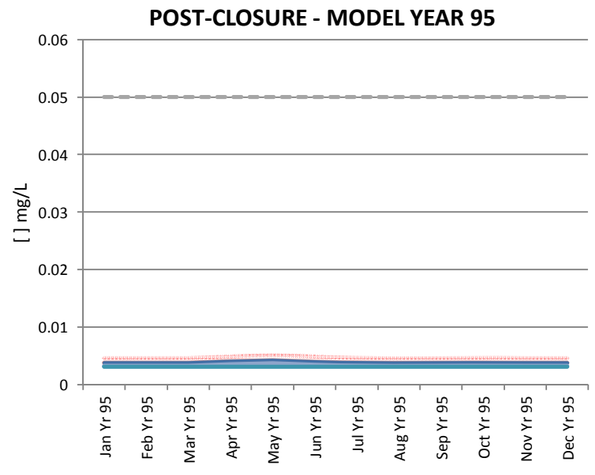
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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JACKO LAKE BASELINE SENSITIVITY CASE (BSC) - MOLYBDENUM PREDICTIONS

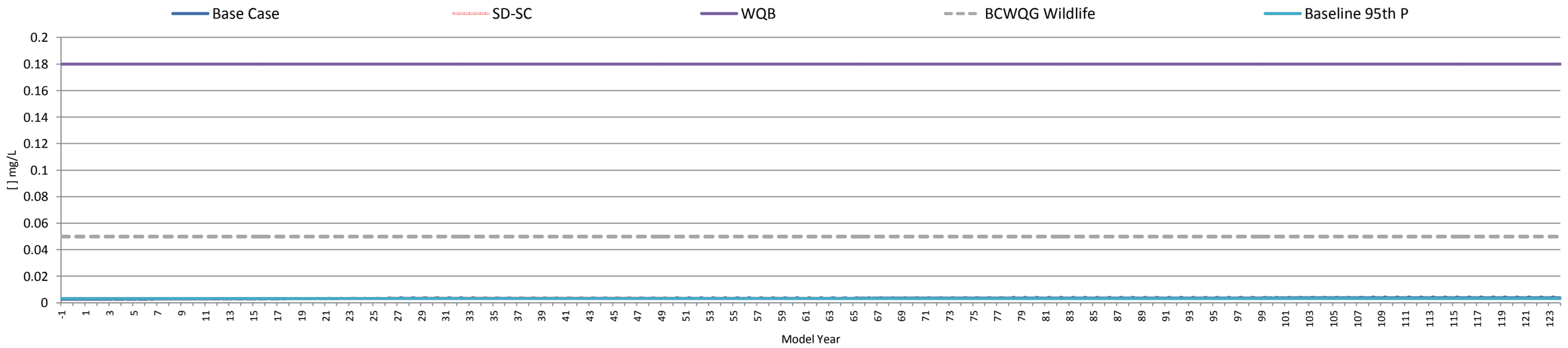
Knight Piésold CONSULTING

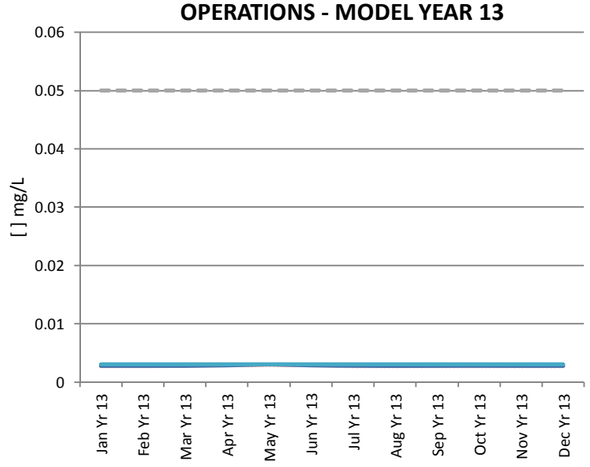
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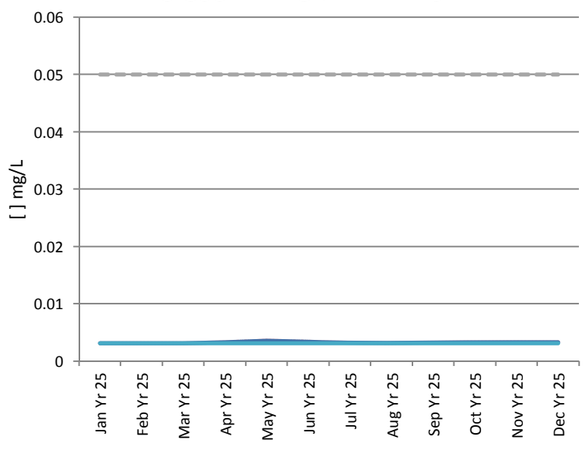
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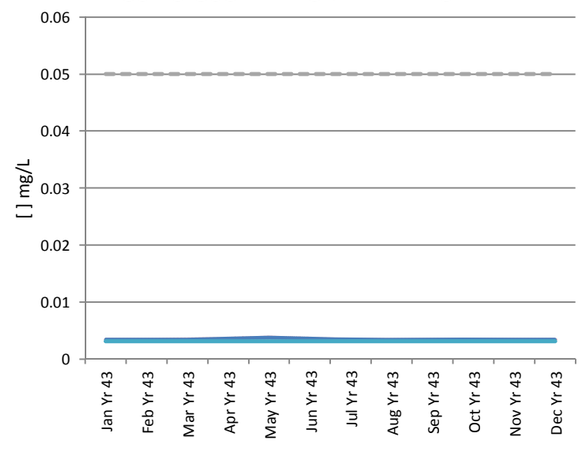
FIGURE D4.5

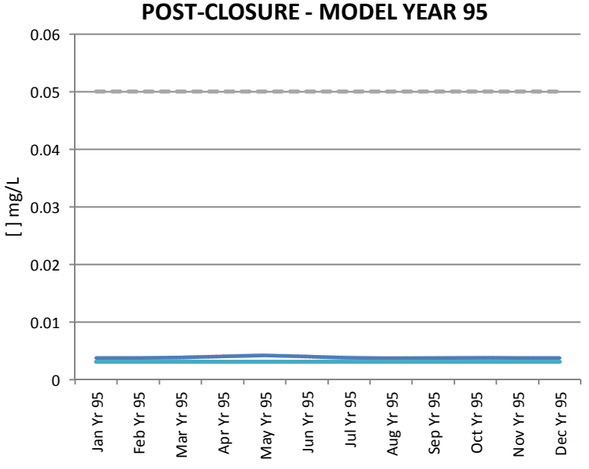
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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JACKO LAKE TIMING OF SEEPAGE ASSUMPTIONS (SD) - MOLYBDENUM PREDICTIONS

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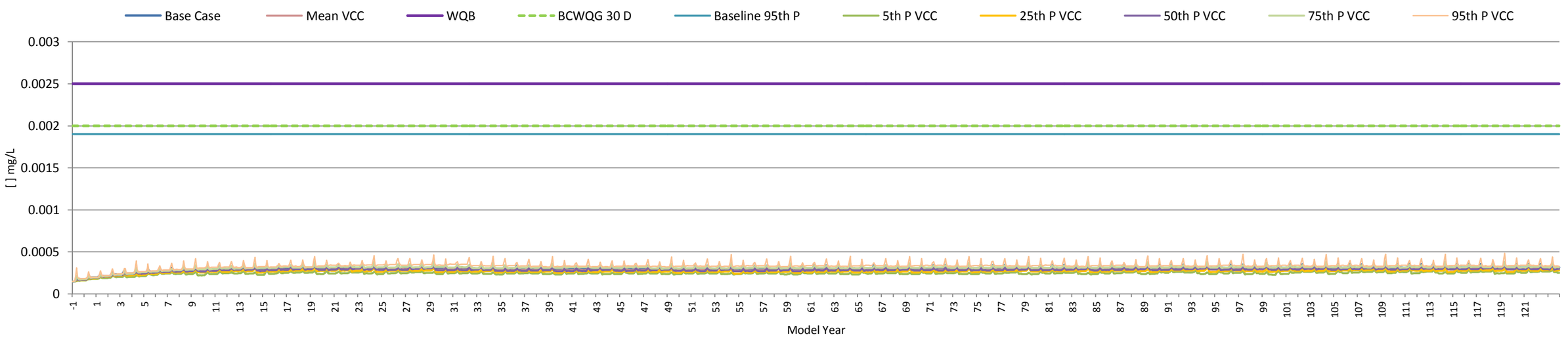
FIGURE D4.6

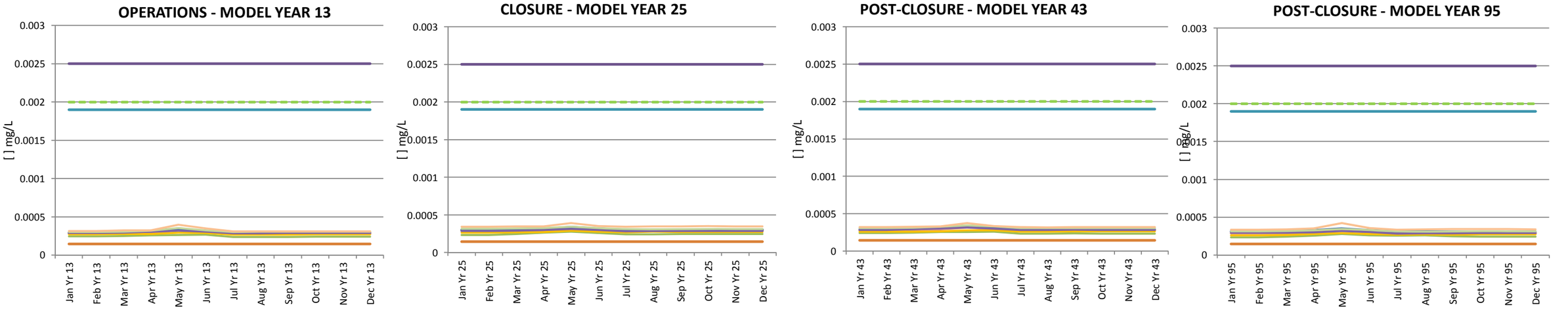
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APPENDIX D5

SELENIUM

(Figures D5.1 to D5.6)





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE VARIABLE CLIMATE CASE (VCC) - SELENIUM PREDICTIONS

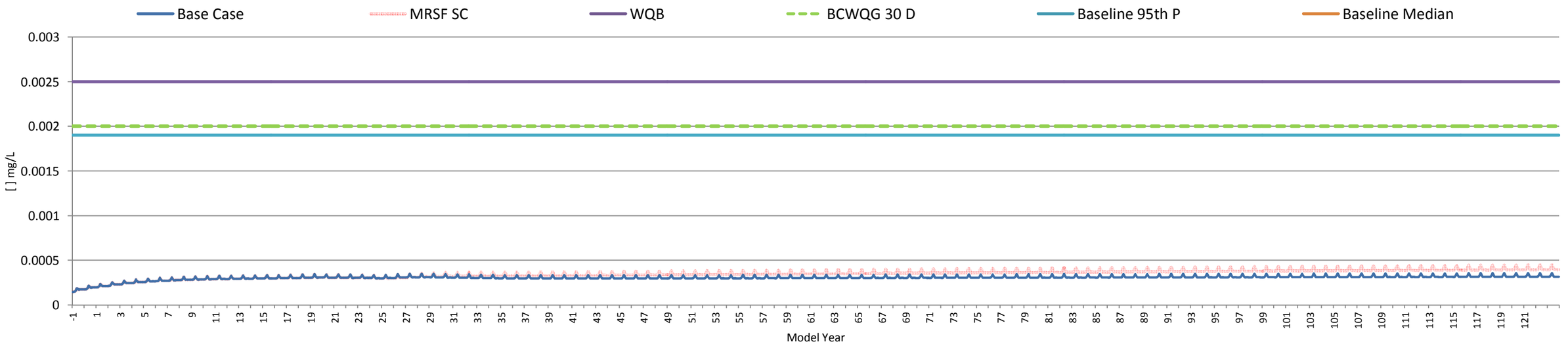
Knight Piésold CONSULTING

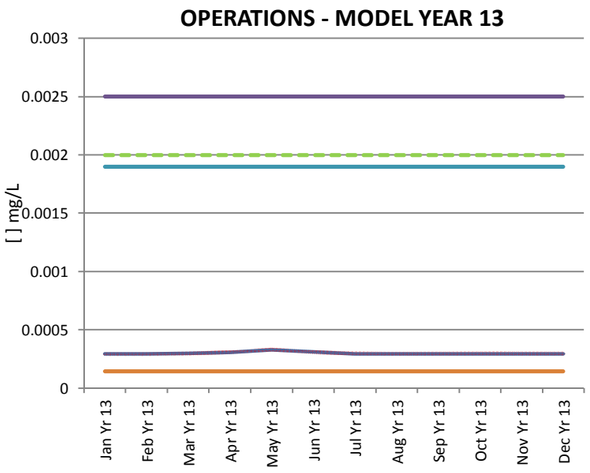
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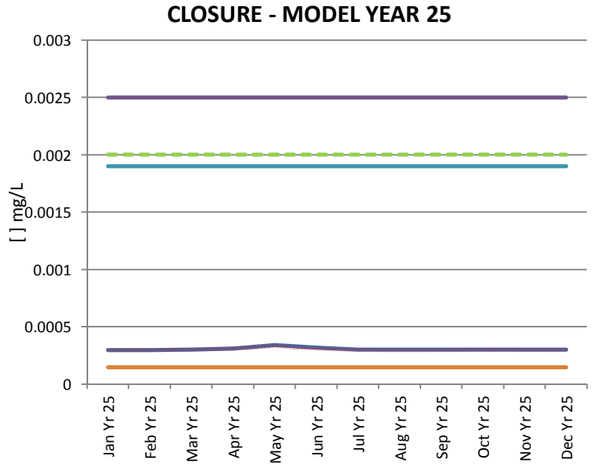
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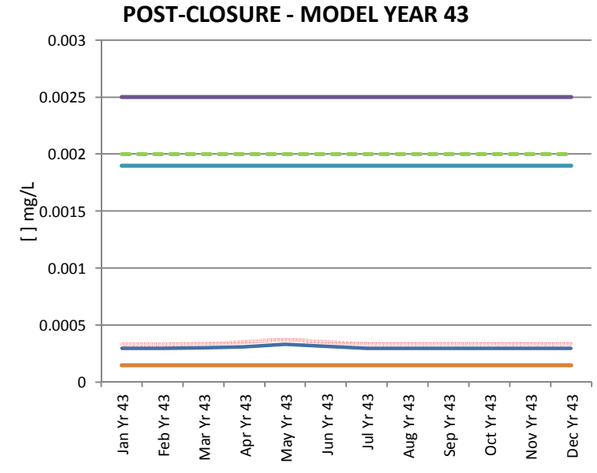
FIGURE D5.1

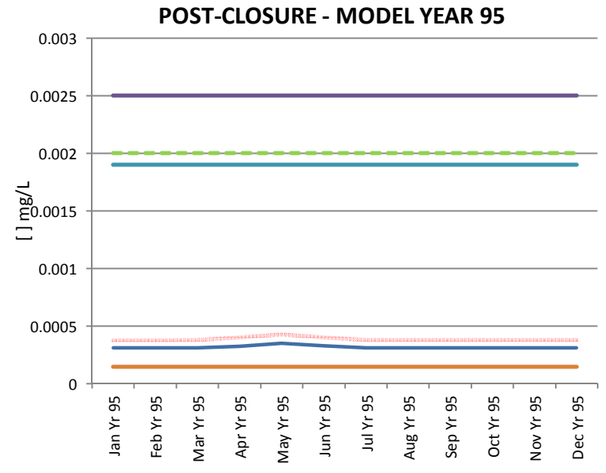
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE MRSF RECHARGE ASSUMPTIONS - SELENIUM PREDICTIONS

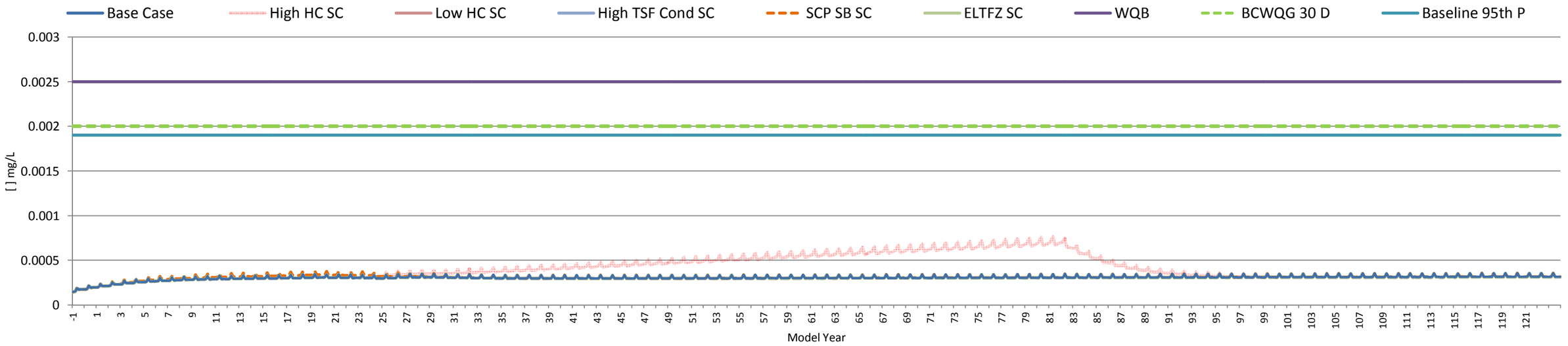
Knight Piésold CONSULTING

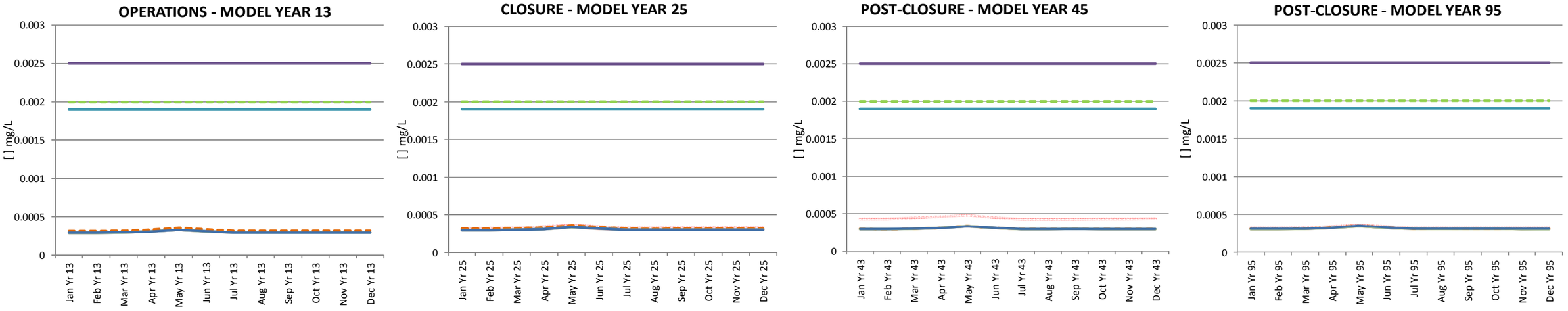
P/A NO. VA101-246/31

REF. NO. 3

FIGURE D5.2

REV 0





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

REV	DATE	DESCRIPTION	PREP'D	APP'D
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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE GROUNDWATER ASSUMPTIONS (GW) - SELENIUM PREDICTIONS

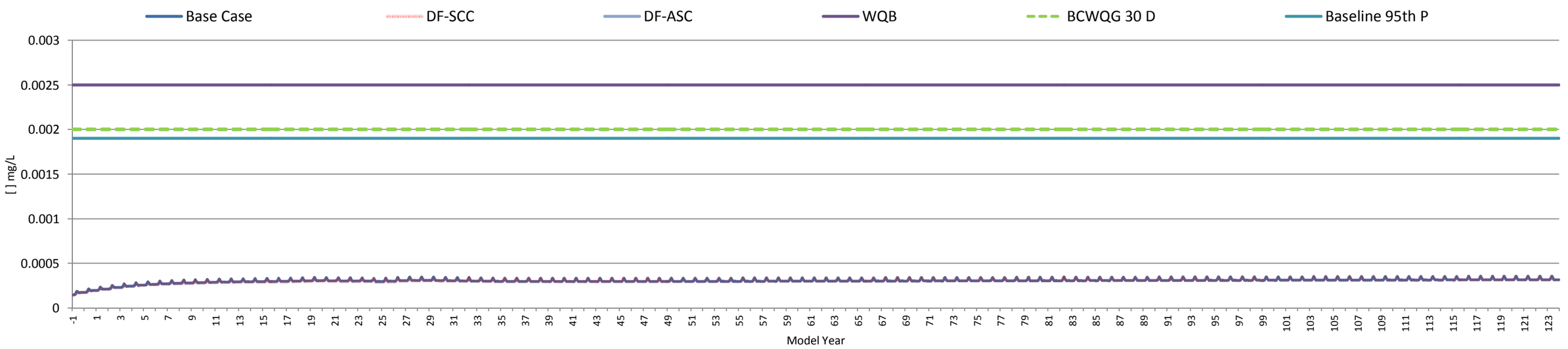
Knight Piésold CONSULTING

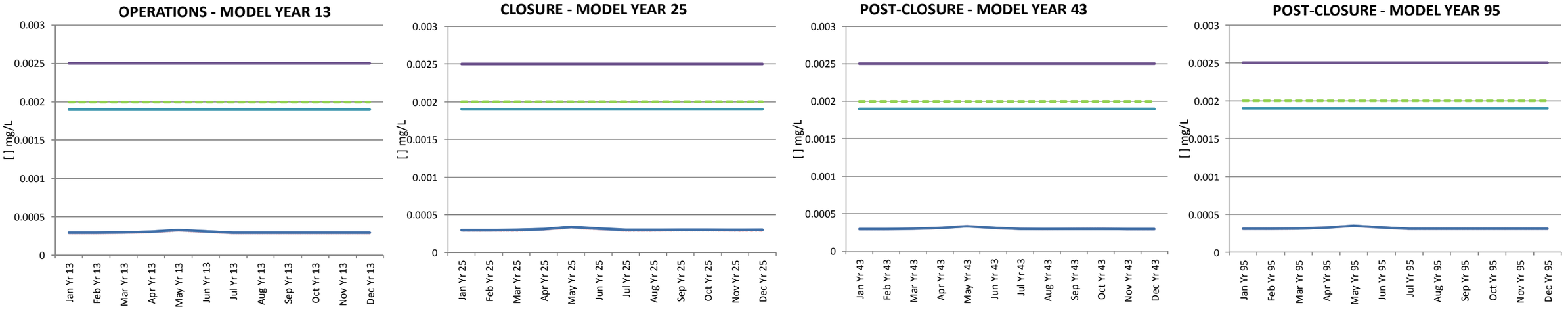
P/A NO. VA101-246/31

REF. NO. 3

FIGURE D5.3

REV 0





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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JACKO LAKE DUSTFALL ASSUMPTIONS (DFA) - SELENIUM PREDICTIONS

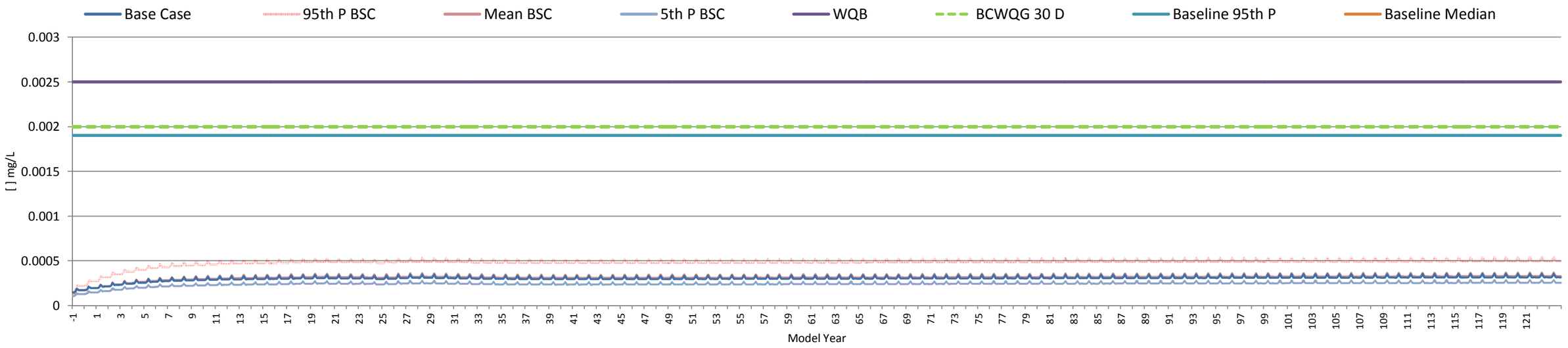
Knight Piésold CONSULTING

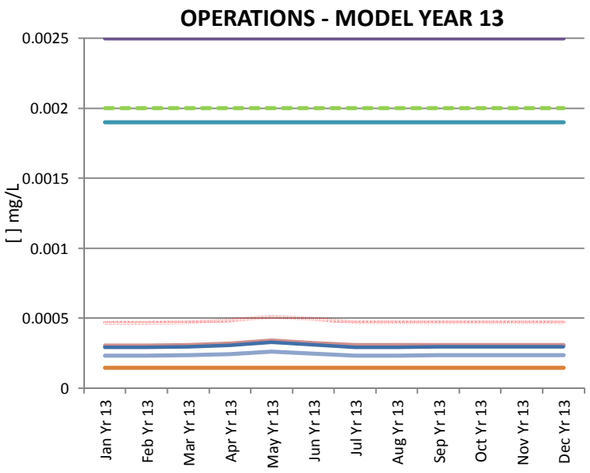
P/A NO. VA101-246/31

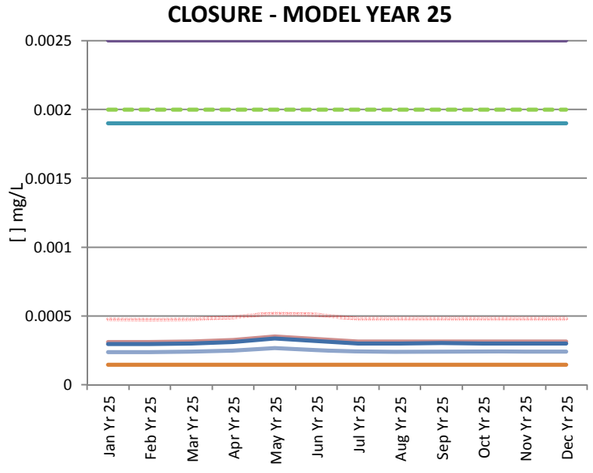
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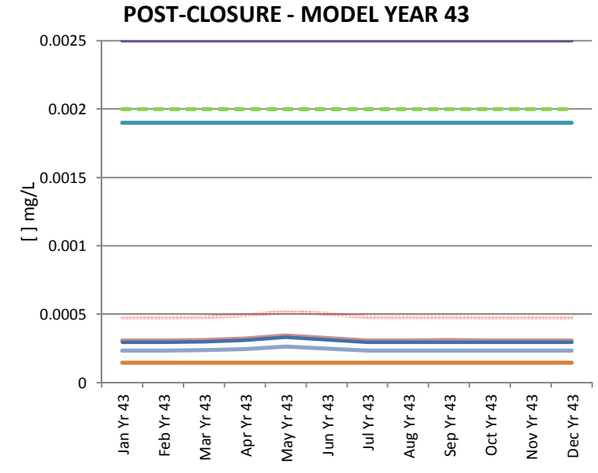
FIGURE D5.4

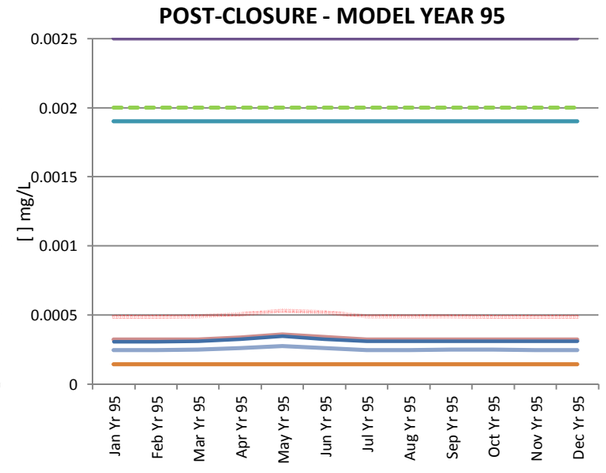
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

JACKO LAKE BASELINE SENSITIVITY CASE (BSC) - SELENIUM PREDICTIONS

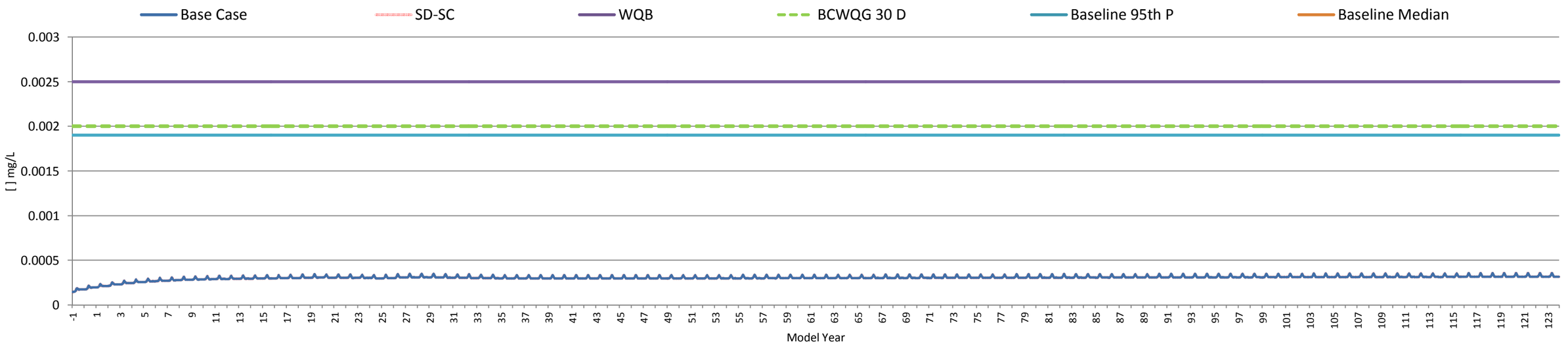
Knight Piésold CONSULTING

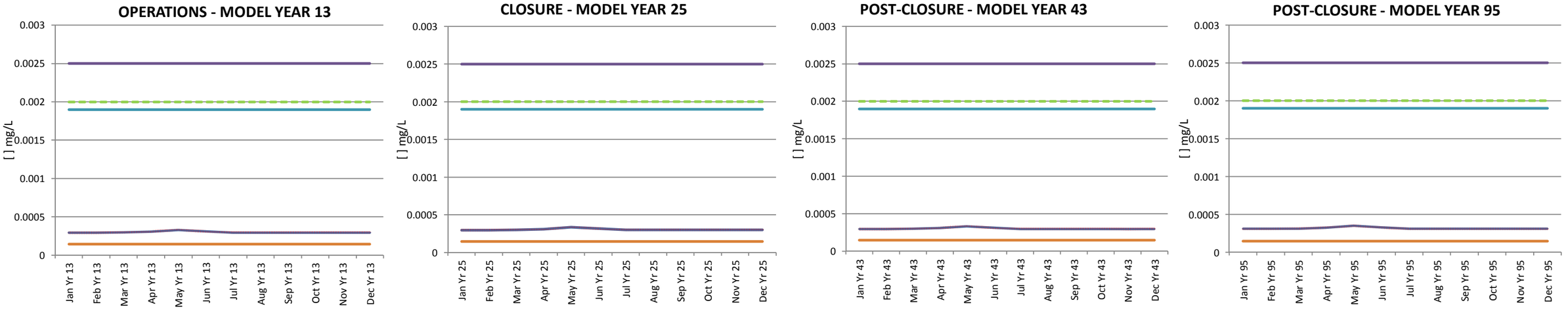
P/A NO. VA101-246/31

REF. NO. 3

FIGURE D5.5

REV 0





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

JACKO LAKE TIMING OF SEEPAGE ASSUMPTIONS (SD) - SELENIUM PREDICTIONS

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P/A NO. VA101-246/31

REF. NO. 3

FIGURE D5.6

REV 0

APPENDIX E

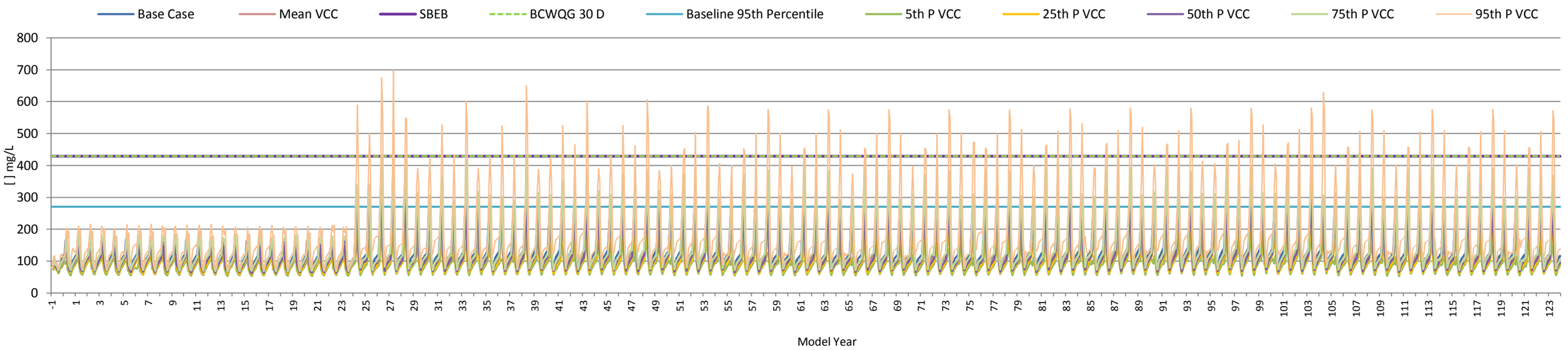
PETERSON CREEK DOWNSTREAM POND (PCDP)

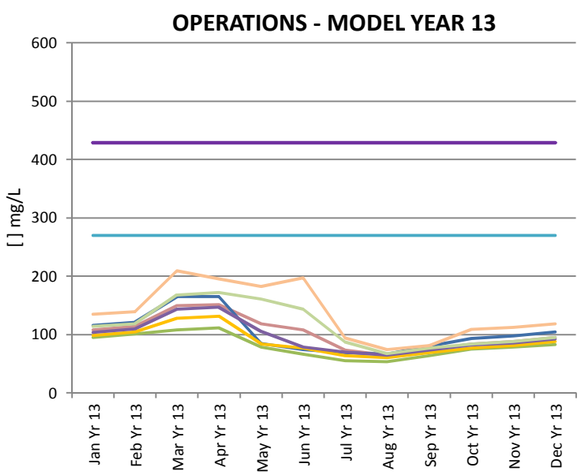
Appendix E1 Sulphate
Appendix E2 Chloride
Appendix E3 Copper
Appendix E4 Molybdenum
Appendix E5 Selenium

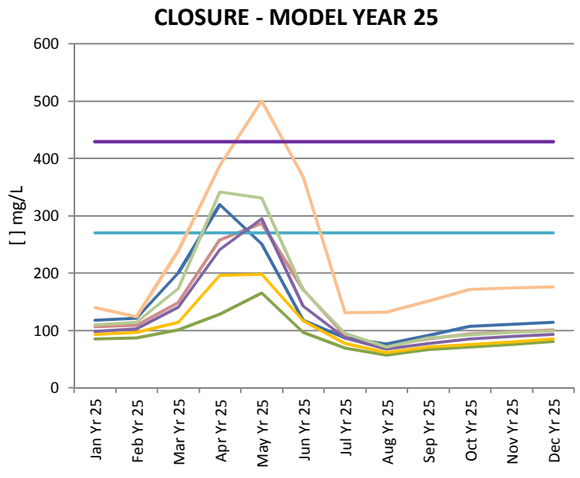
APPENDIX E1

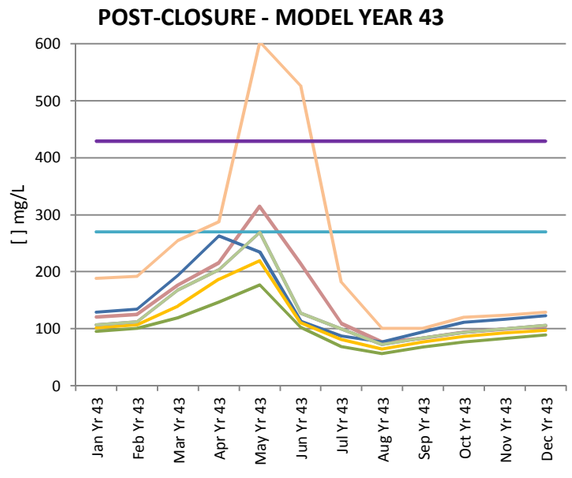
SULPHATE

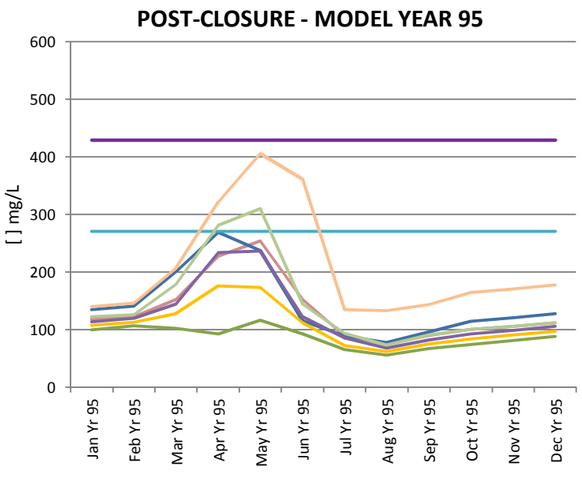
(Figures E1.1 to E1.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP VARIABLE CLIMATE CASE (VCC) - SULPHATE PREDICTIONS

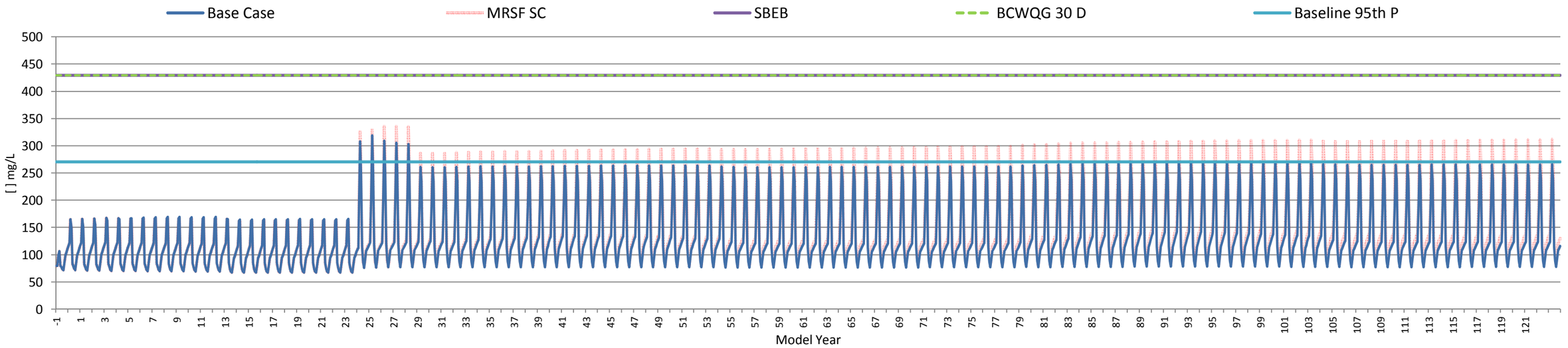
Knight Piésold CONSULTING

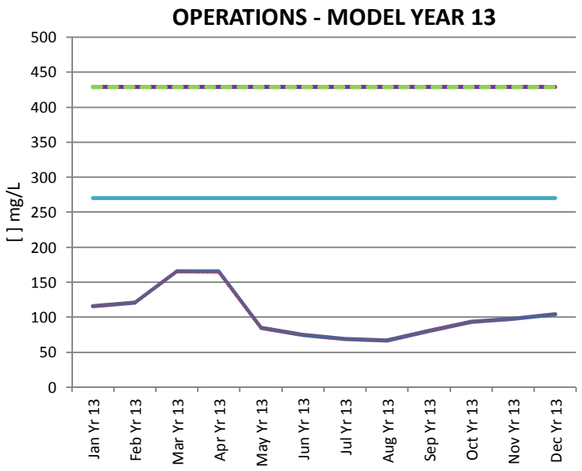
P/A NO. VA101-246/31

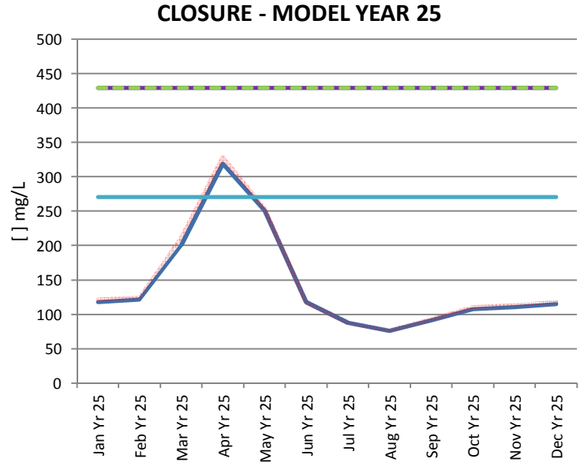
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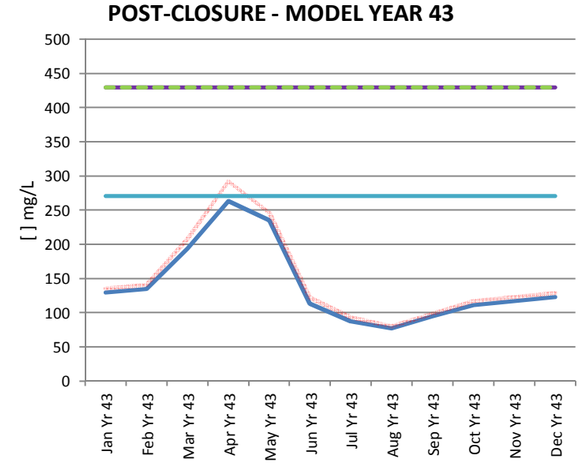
FIGURE E1.1

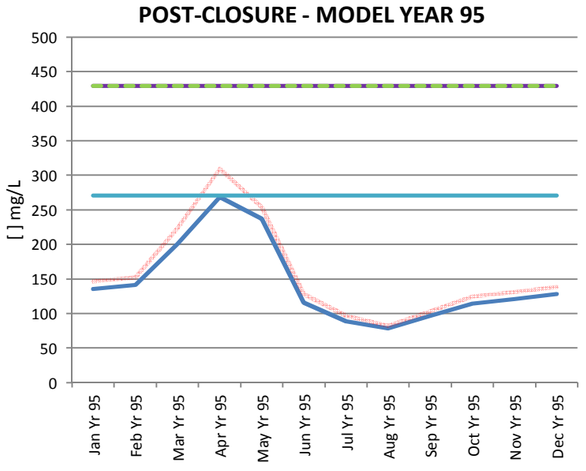
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP MRSF RECHARGE ASSUMPTIONS - SULPHATE PREDICTIONS

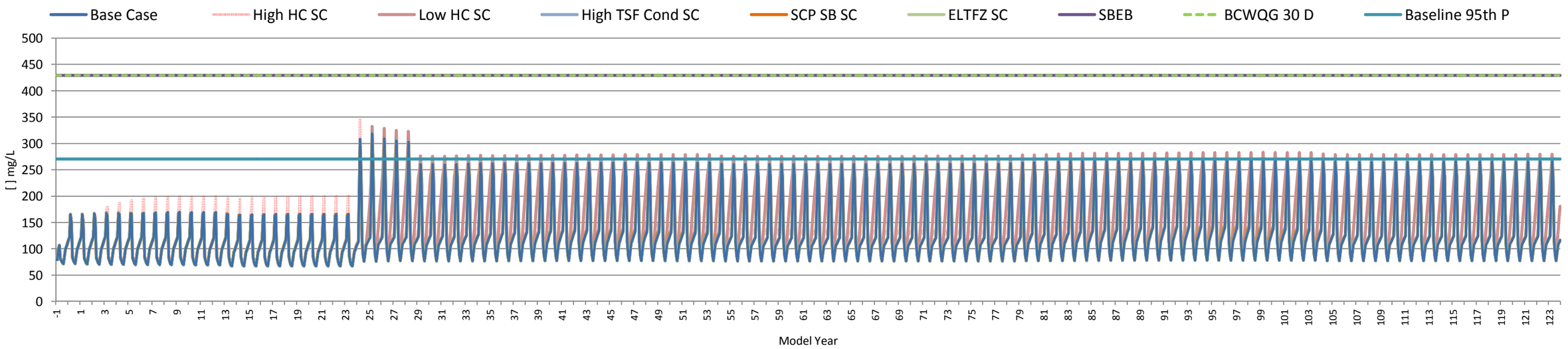
Knight Piésold CONSULTING

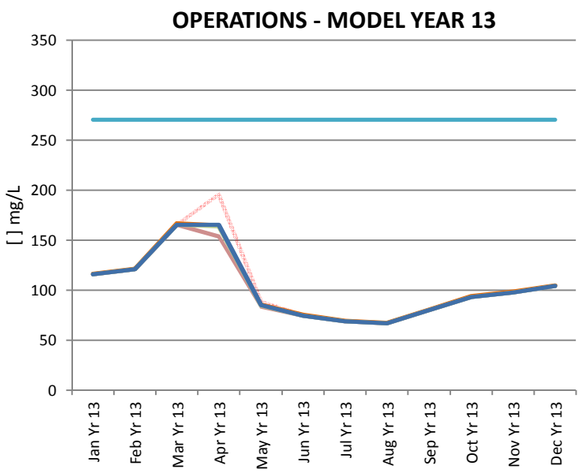
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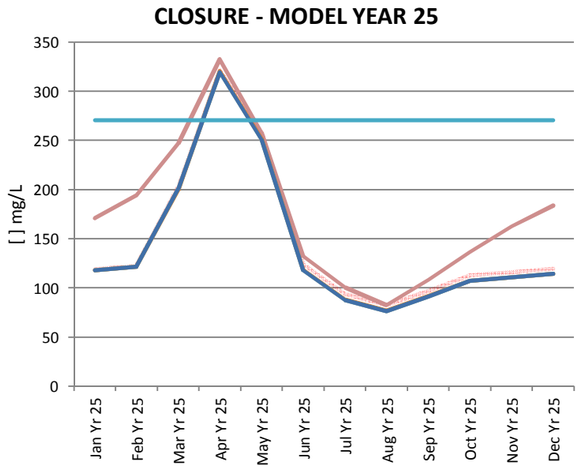
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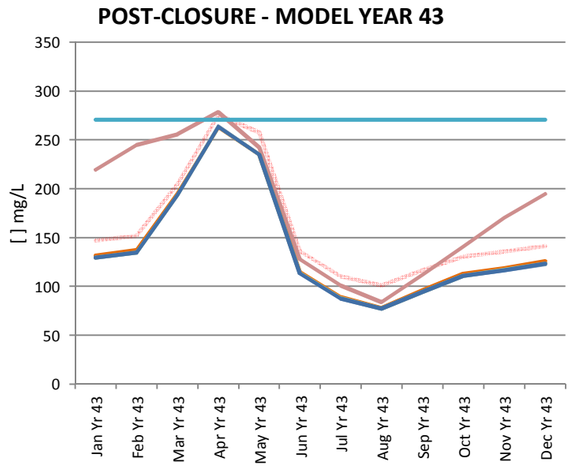
FIGURE E1.2

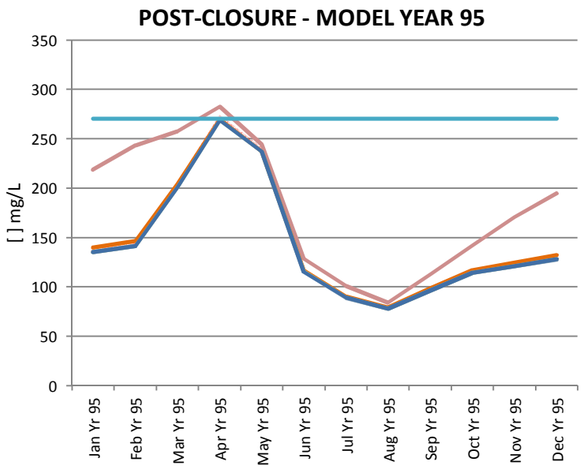
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

PCDP GROUNDWATER ASSUMPTIONS (GW) - SULPHATE PREDICTIONS

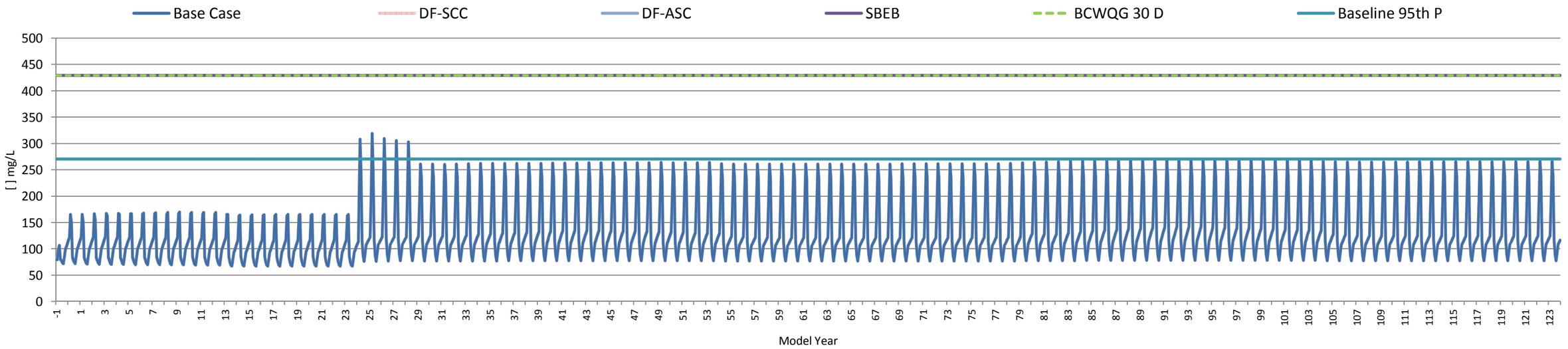
Knight Piésold CONSULTING

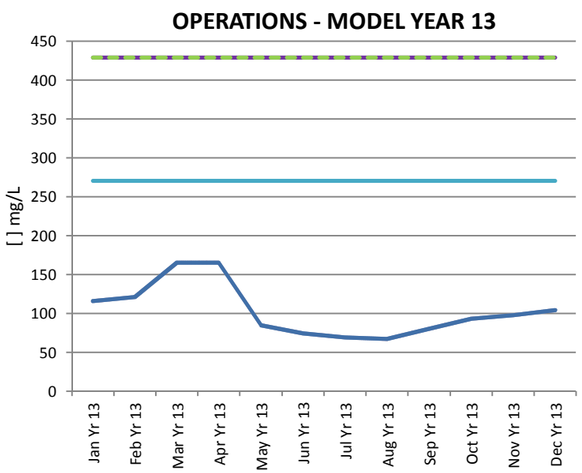
P/A NO. VA101-246/31

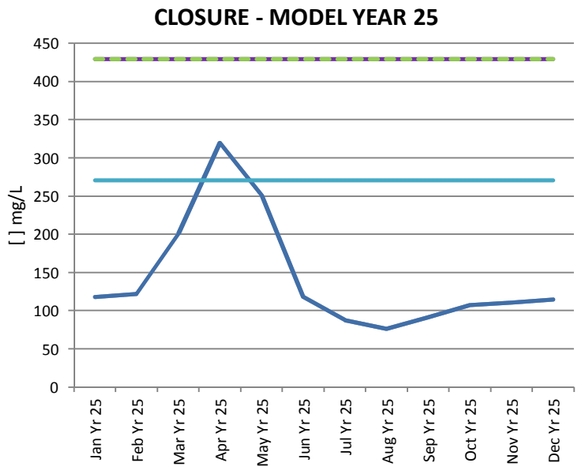
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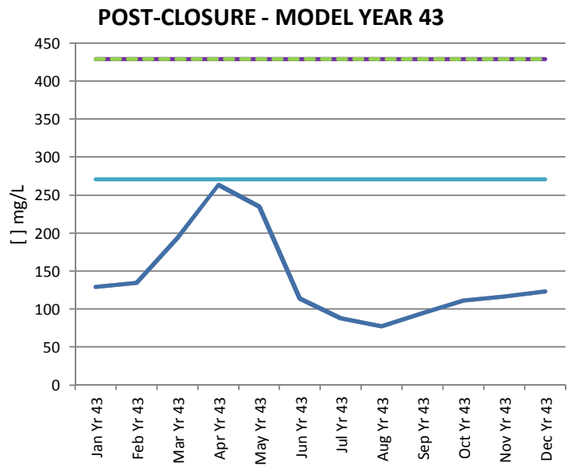
FIGURE E1.3

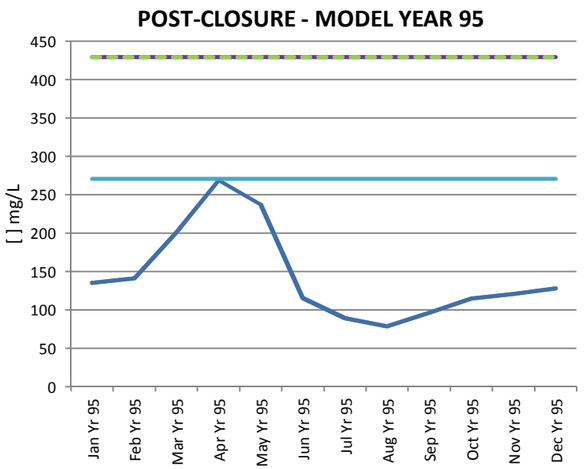
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP DUSTFALL ASSUMPTIONS (DFA) - SULPHATE PREDICTIONS

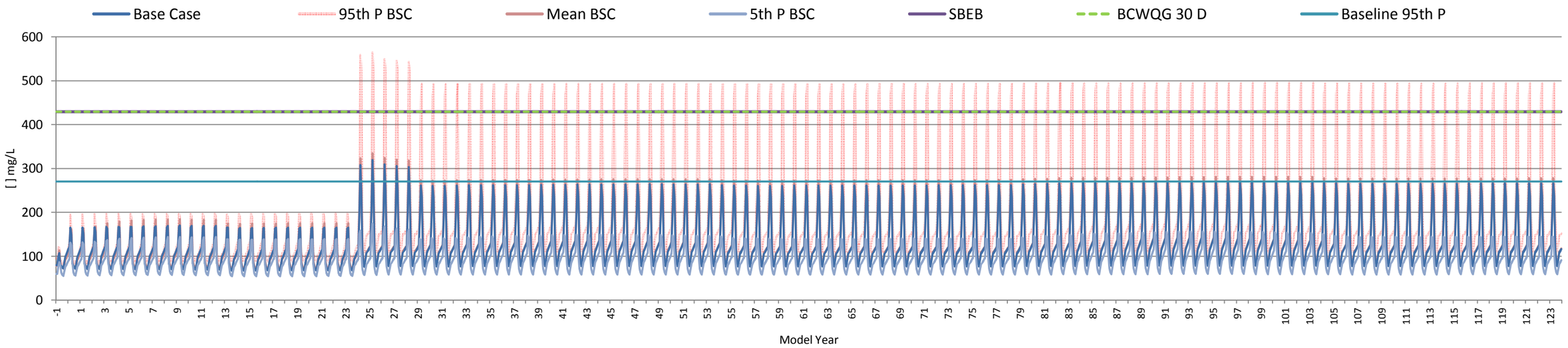
Knight Piésold CONSULTING

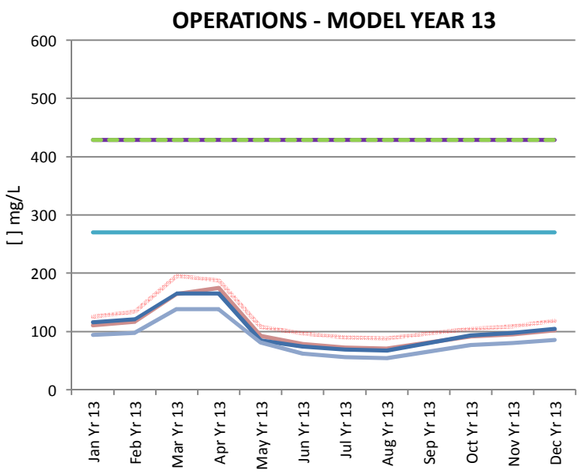
P/A NO. VA101-246/31

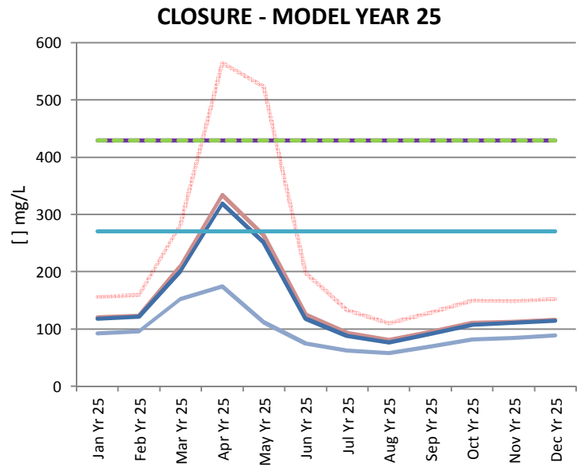
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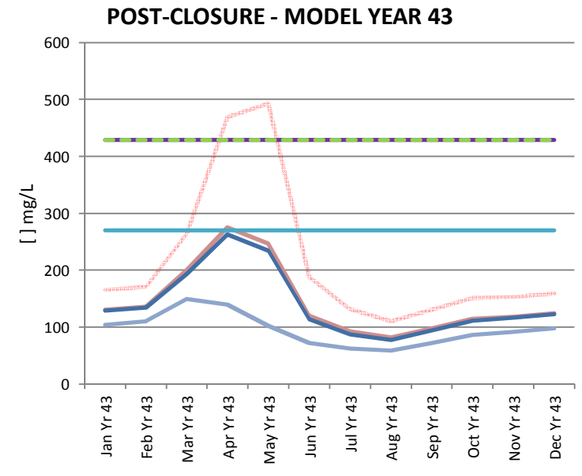
FIGURE E1.4

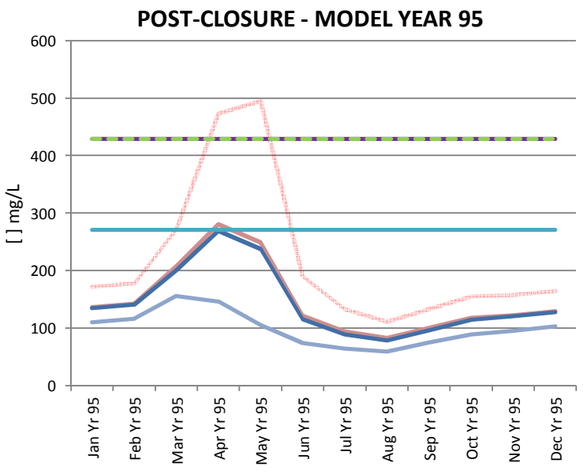
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP BASELINE SENSITIVITY CASE (BSC) - SULPHATE PREDICTIONS

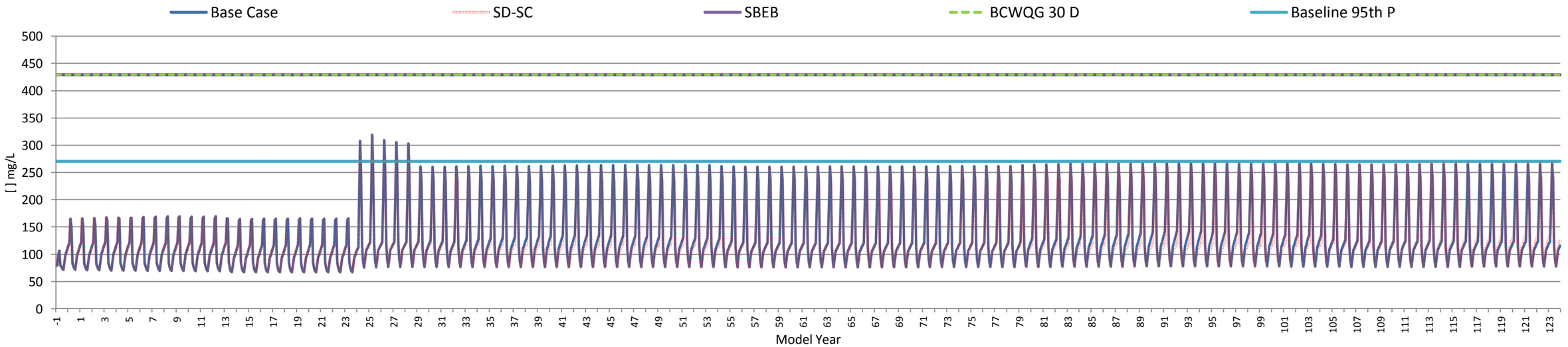
Knight Piésold CONSULTING

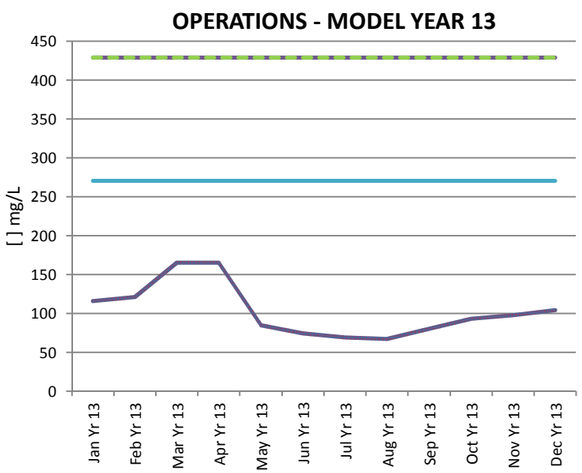
P/A NO. VA101-246/31

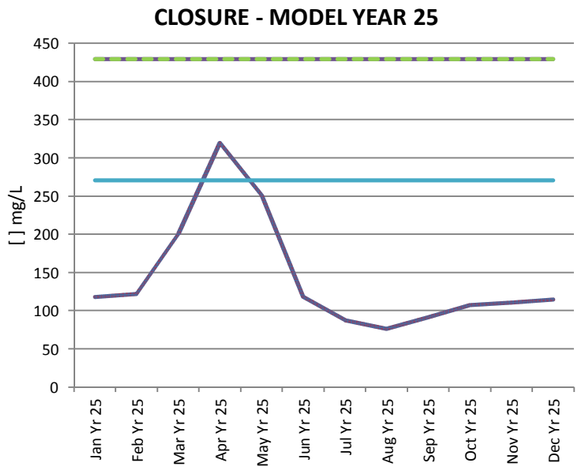
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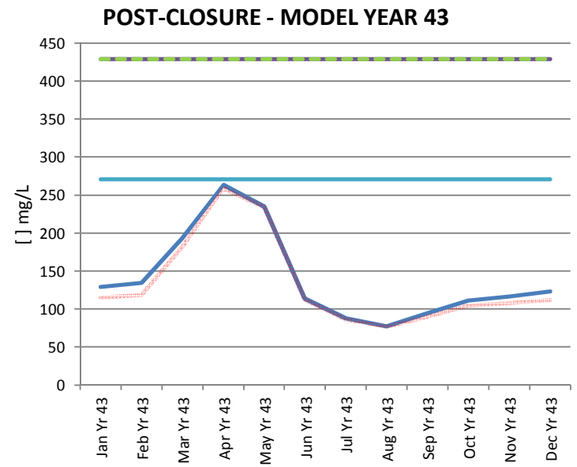
FIGURE E1.5

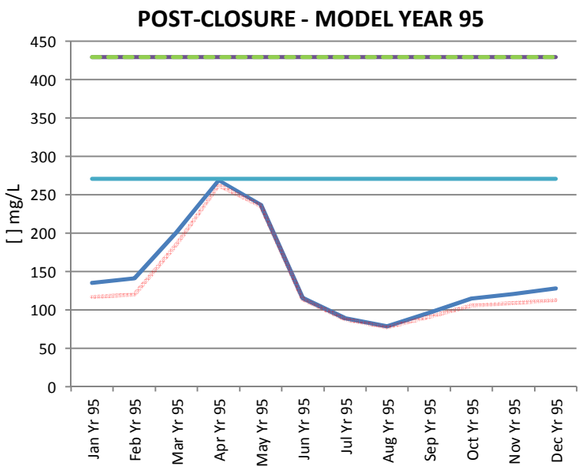
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP TIMING OF SEEPAGE ASSUMPTIONS (SD) - SULPHATE PREDICTIONS

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 3

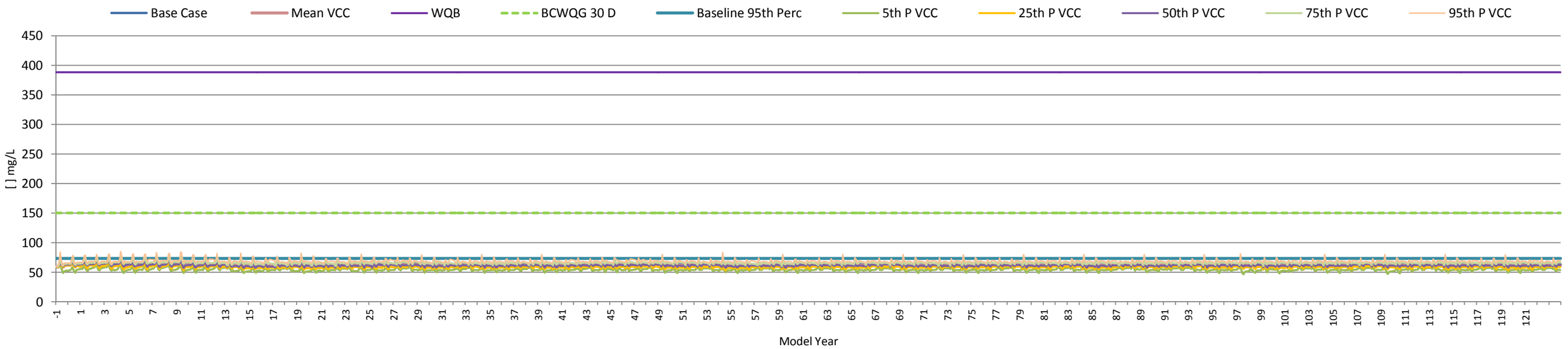
FIGURE E1.6

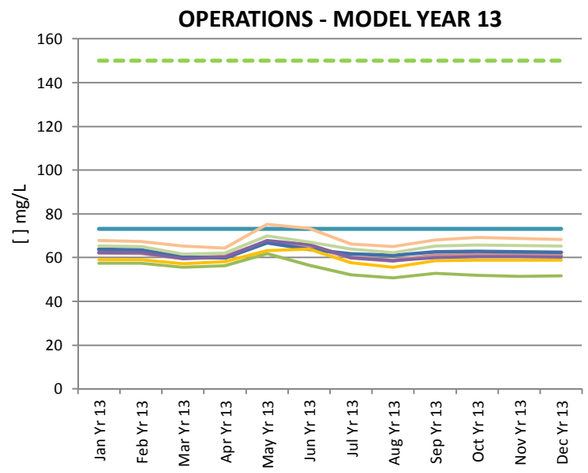
REV 0

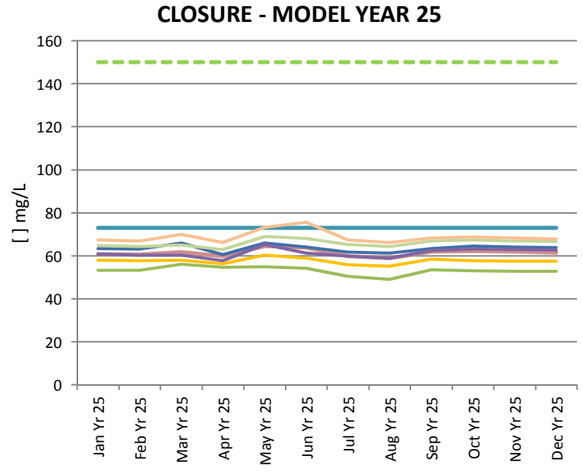
APPENDIX E2

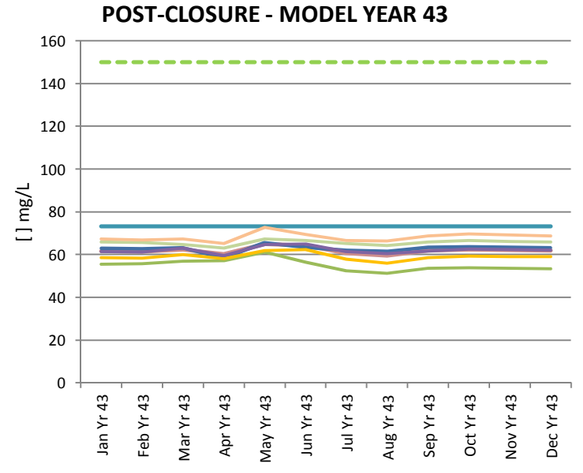
CHLORIDE

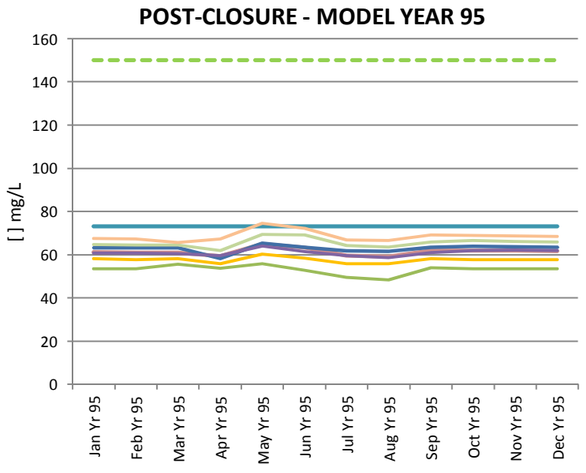
(Figures E2.1 to E2.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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0	15JUL'15	ISSUED WITH REPORT	JMQ	JEM

KGHM AJAX INC.

AJAX PROJECT

PCDP VARIABLE CLIMATE CASE (VCC) - CHLORIDE PREDICTIONS

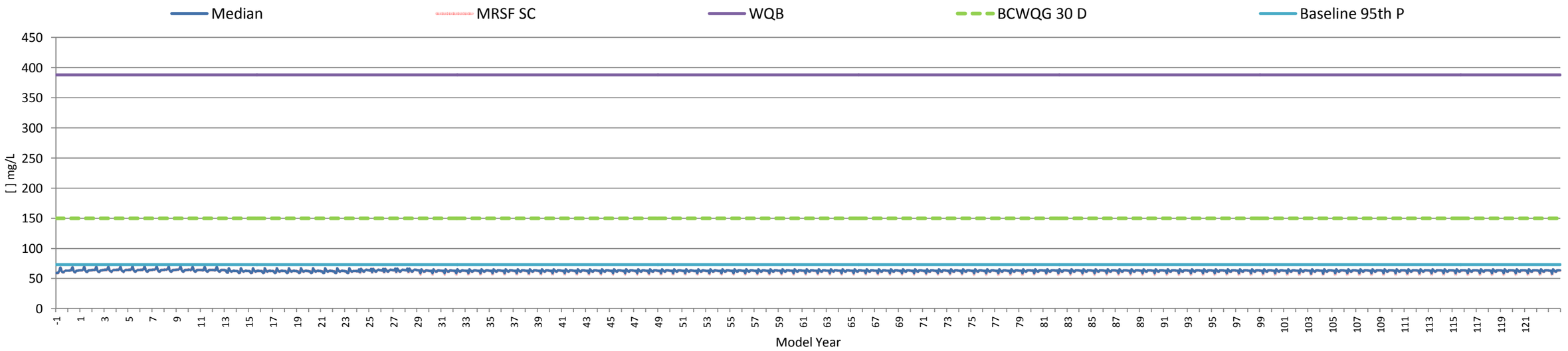
Knight Piésold CONSULTING

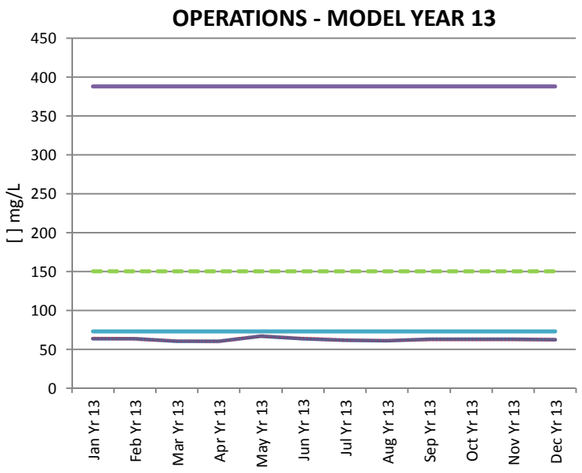
P/A NO. VA101-246/31

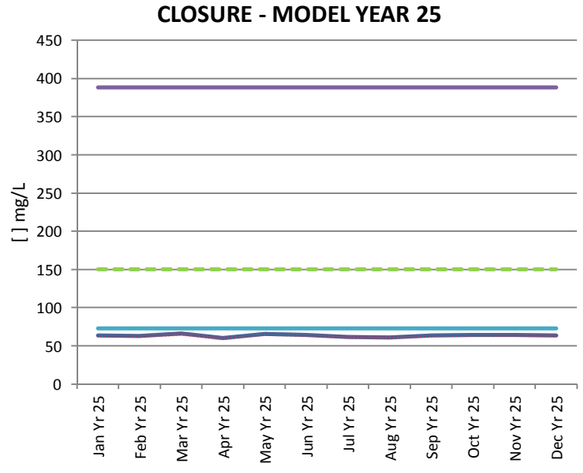
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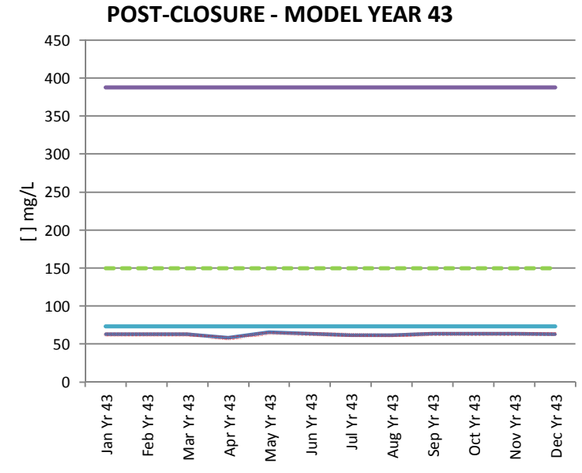
FIGURE E2.1

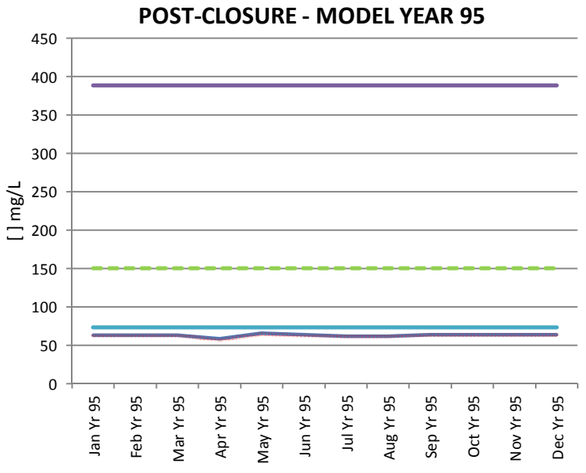
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP MRSF RECHARGE ASSUMPTIONS - CHLORIDE PREDICTIONS

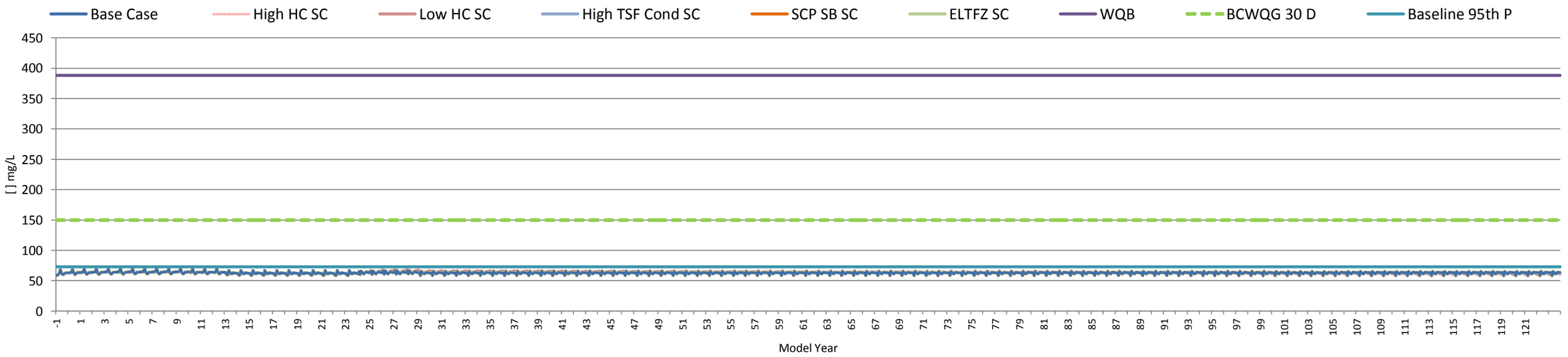
Knight Piésold CONSULTING

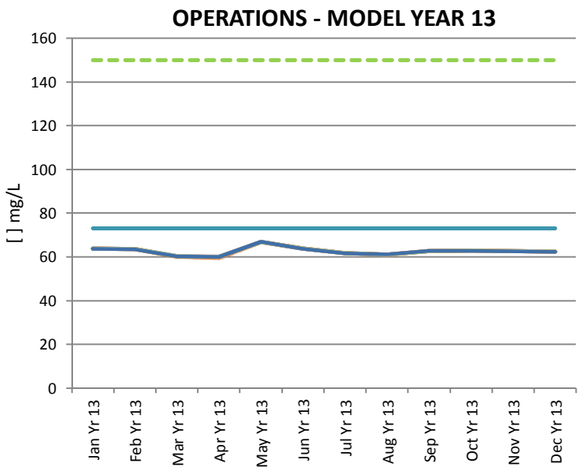
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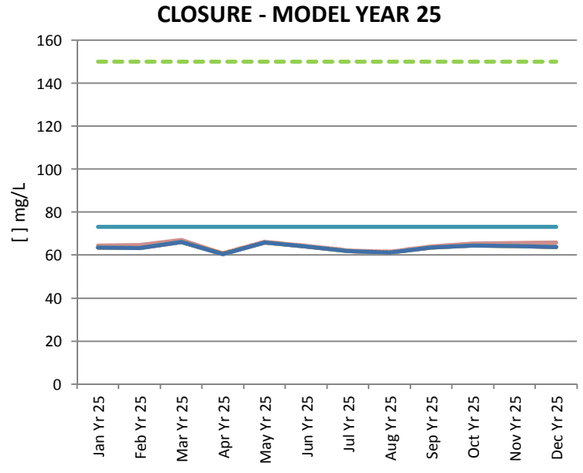
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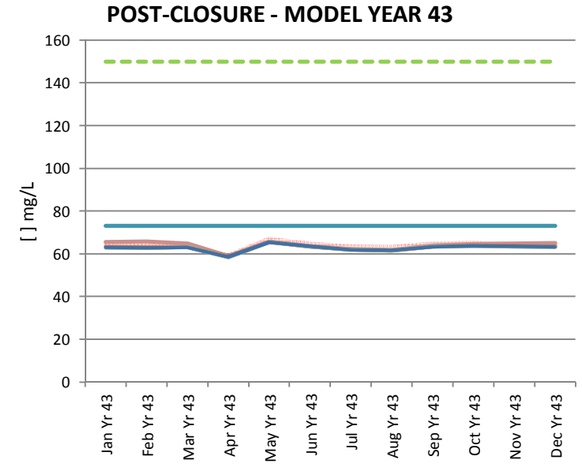
FIGURE E2.2

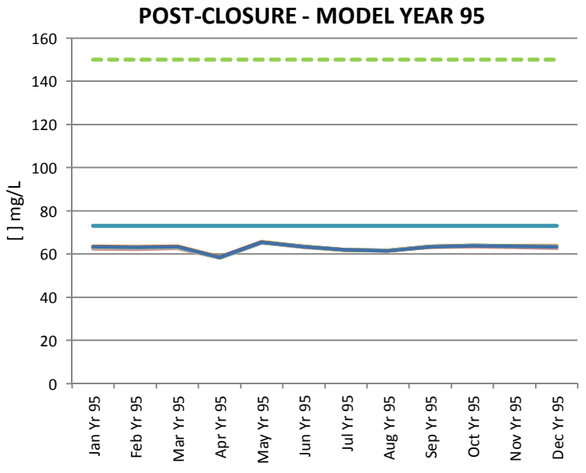
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

PCDP GROUNDWATER ASSUMPTIONS (GW) - CHLORIDE PREDICTIONS

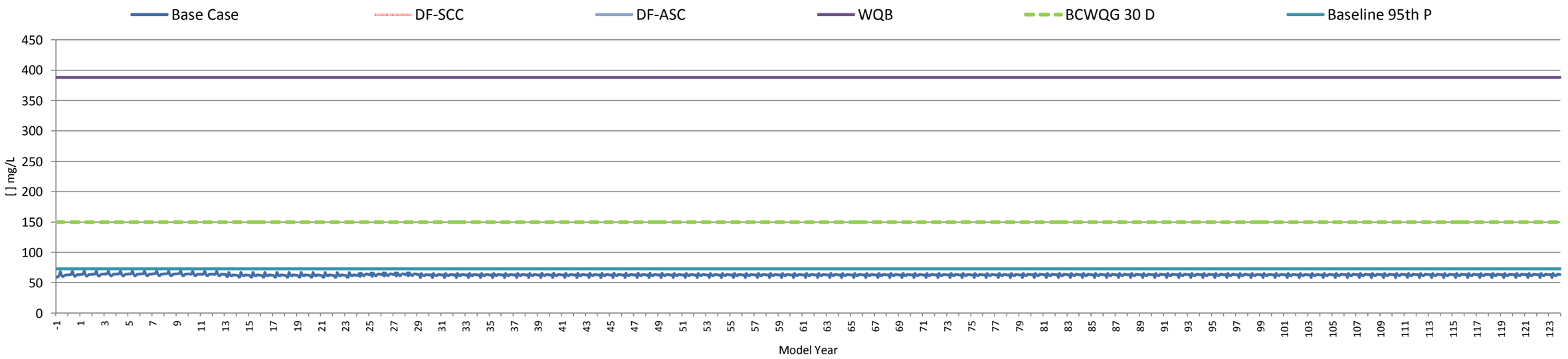
Knight Piésold CONSULTING

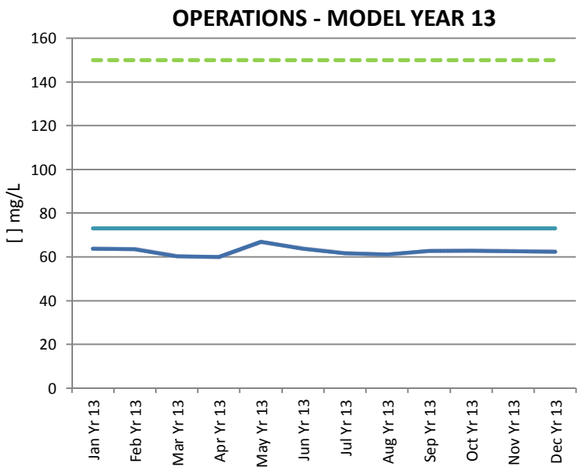
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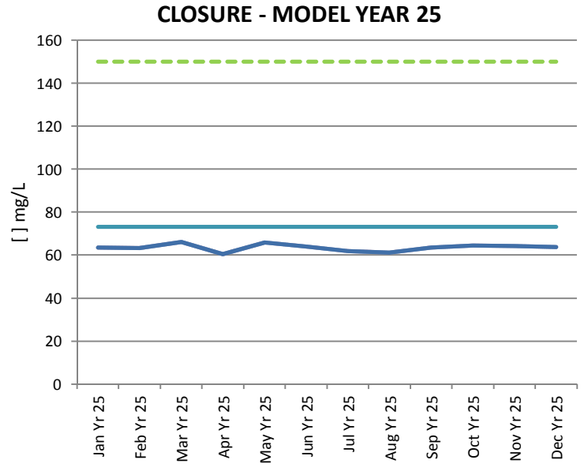
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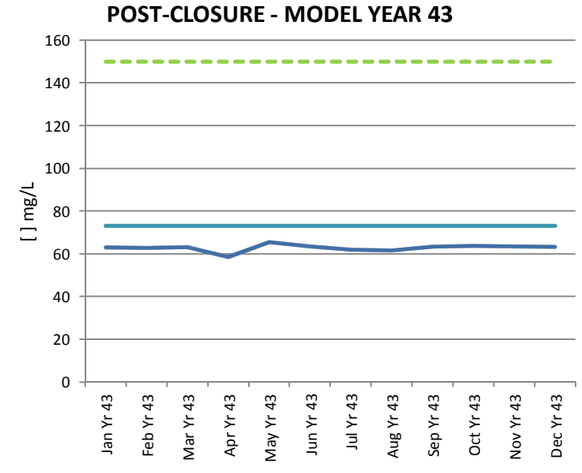
FIGURE E2.3

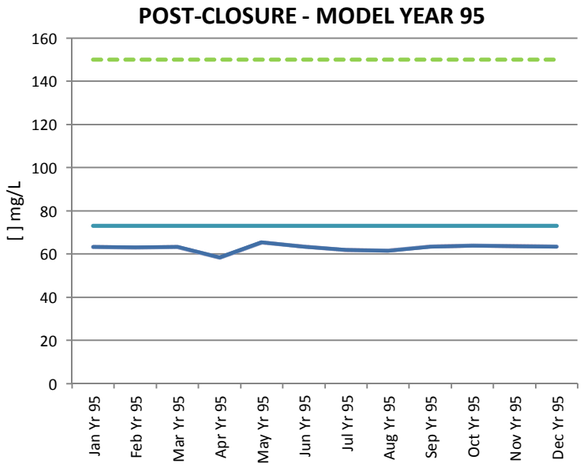
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP DUSTFALL ASSUMPTIONS (DFA) - CHLORIDE PREDICTIONS

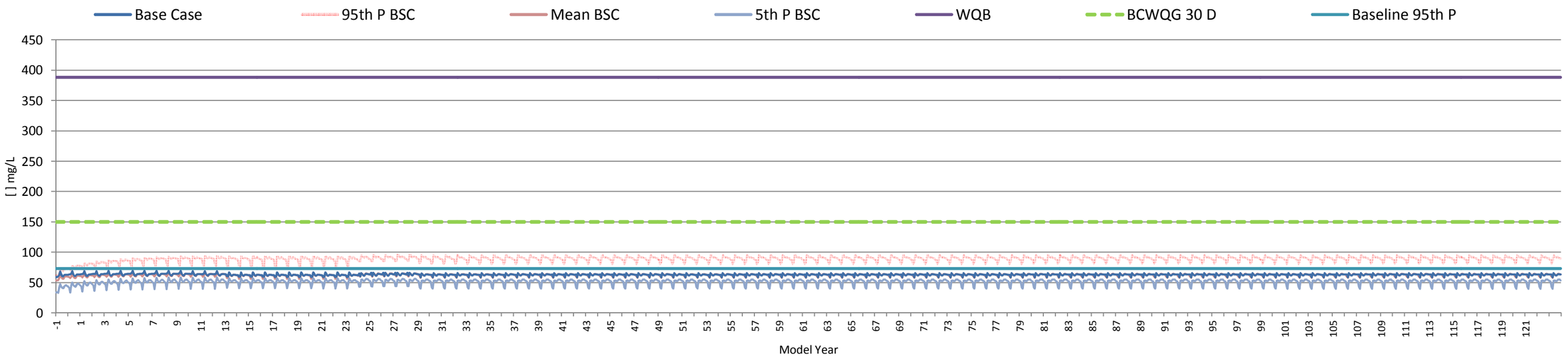
Knight Piésold CONSULTING

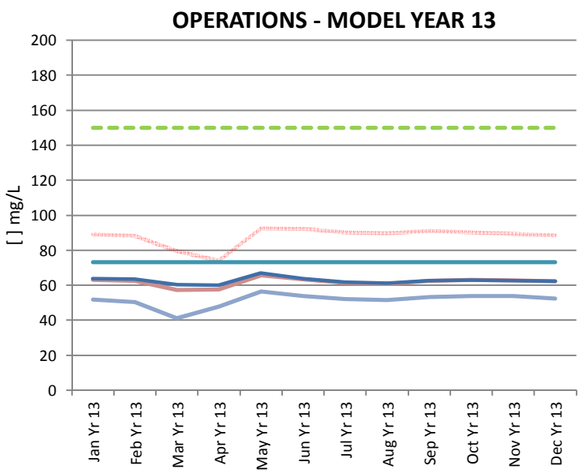
P/A NO. VA101-246/31

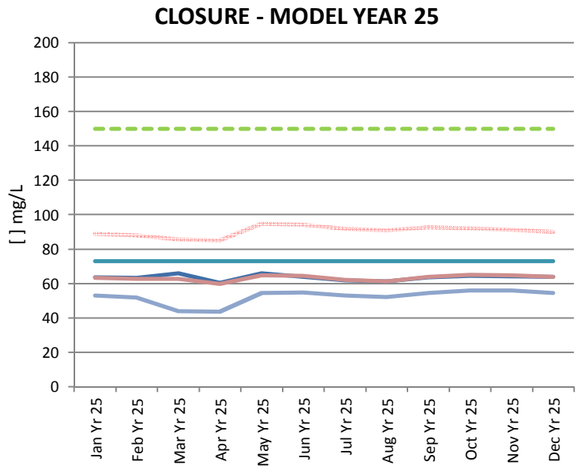
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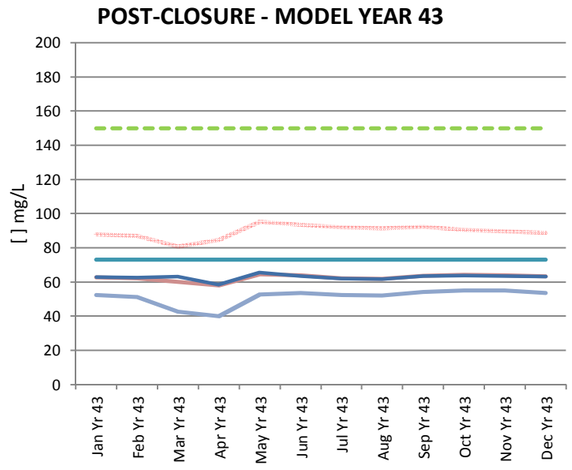
FIGURE E2.4

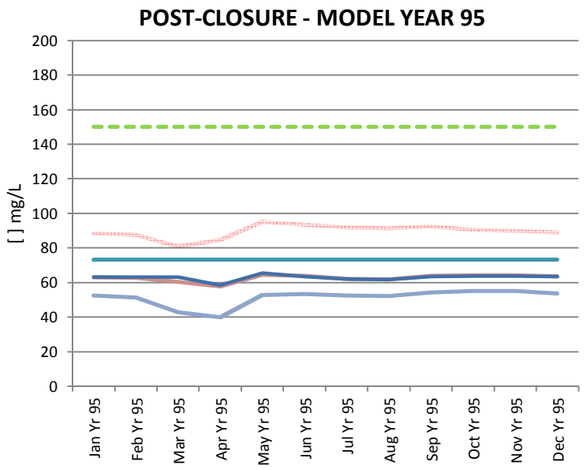
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PCDP BASELINE SENSITIVITY CASE (BSC) - CHLORIDE PREDICTIONS

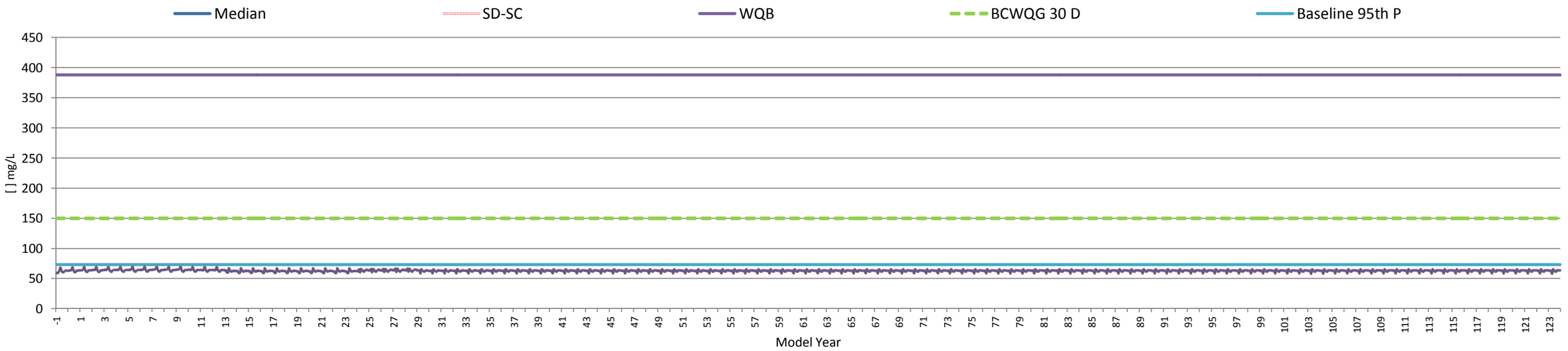
Knight Piésold CONSULTING

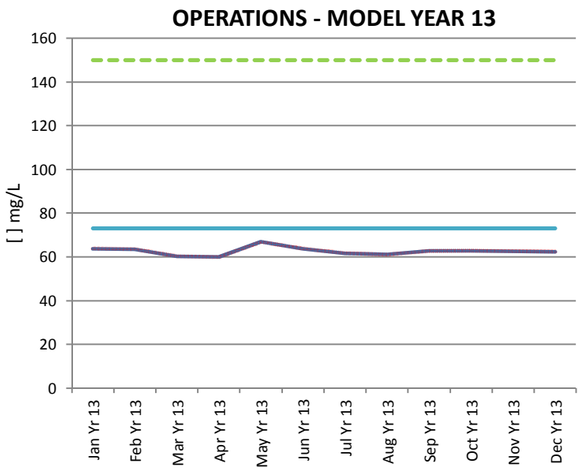
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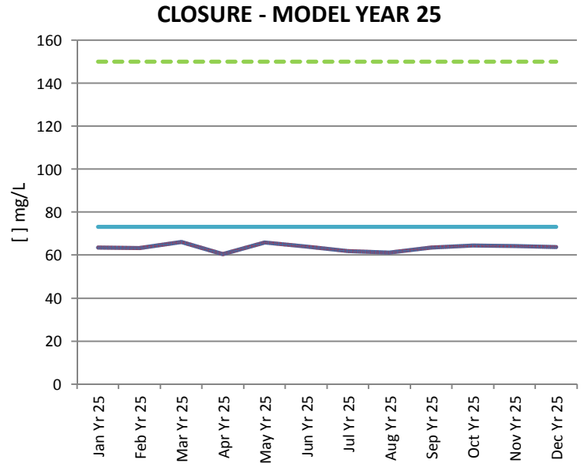
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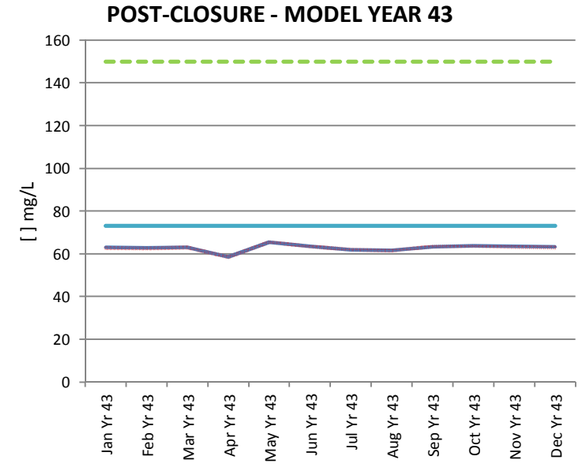
FIGURE E2.5

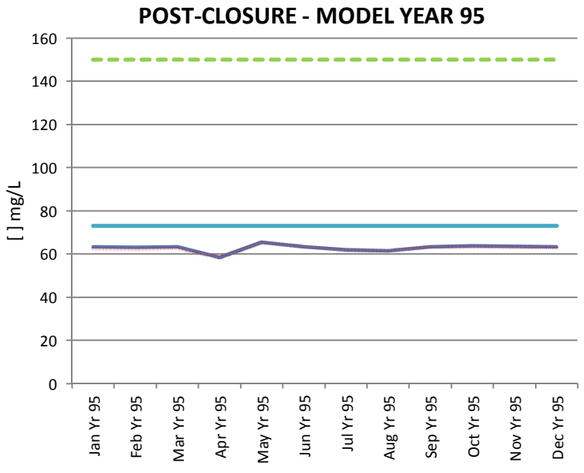
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP TIMING OF SEEPAGE ASSUMPTIONS (SD) - CHLORIDE PREDICTIONS

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P/A NO. VA101-246/31

REF. NO. 3

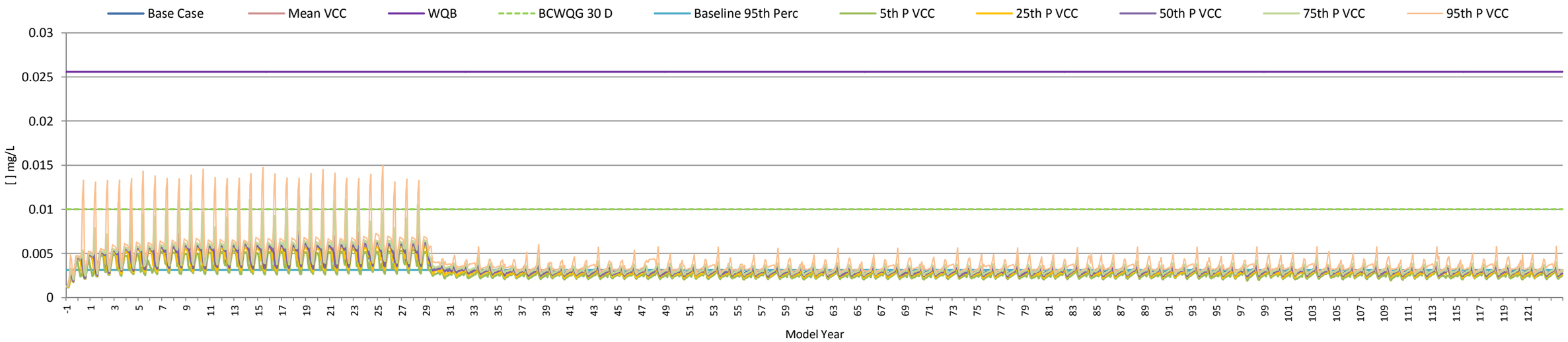
FIGURE E2.6

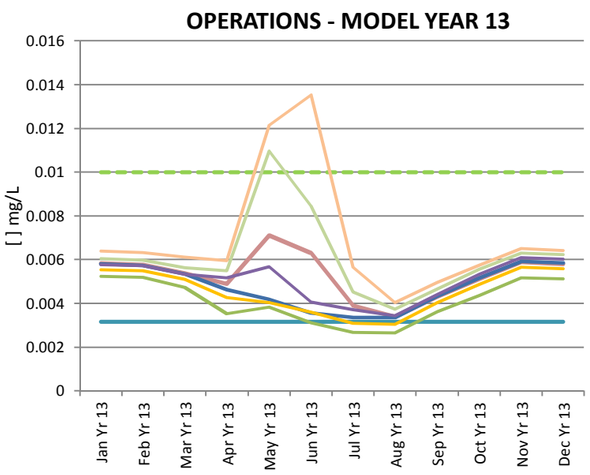
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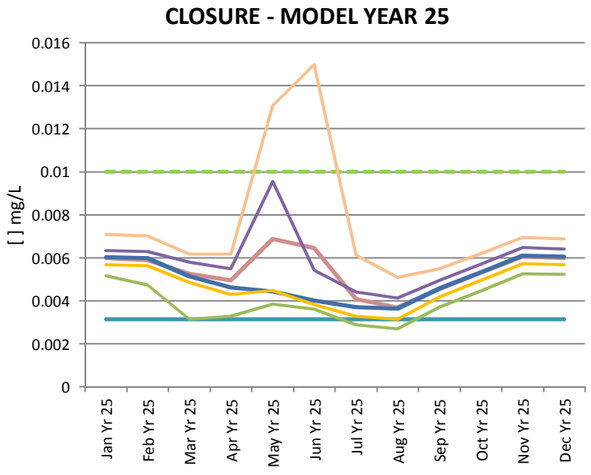
APPENDIX E3

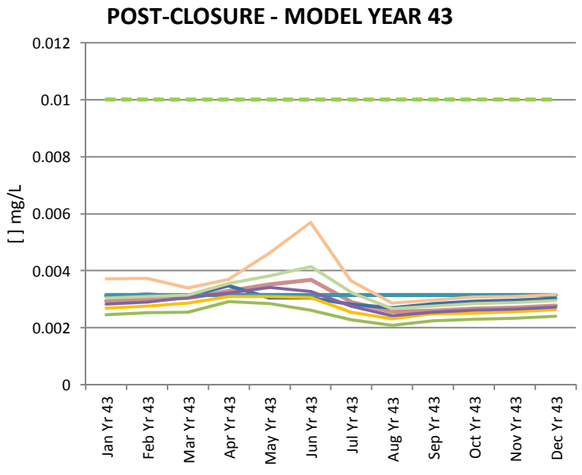
COPPER

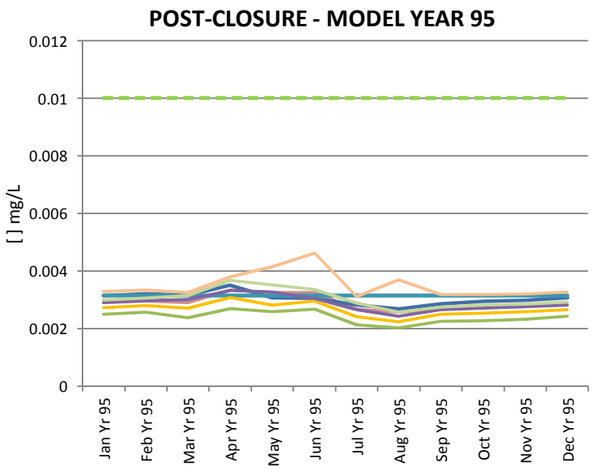
(Figures E3.1 to E3.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP VARIABLE CLIMATE CASE (VCC) - COPPER PREDICTIONS

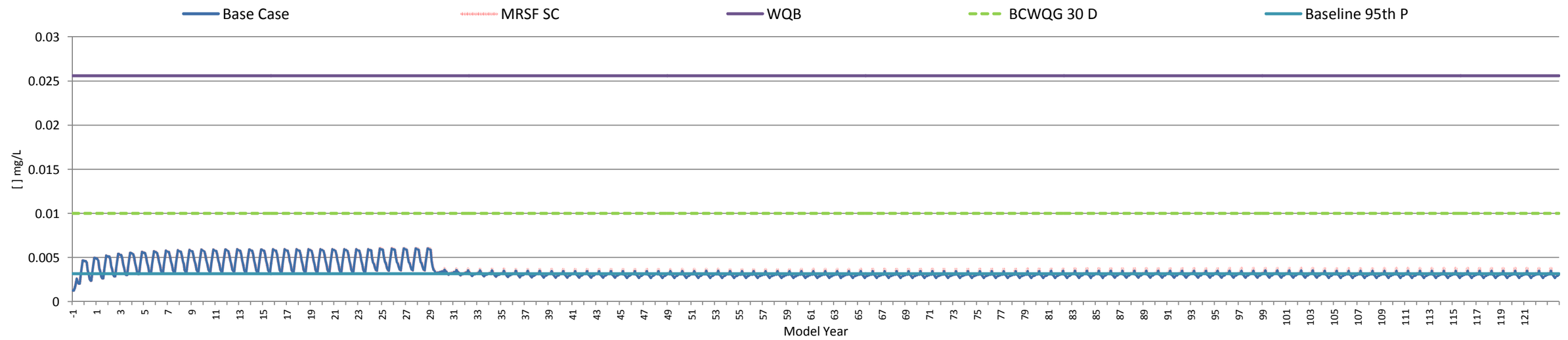
Knight Piésold CONSULTING

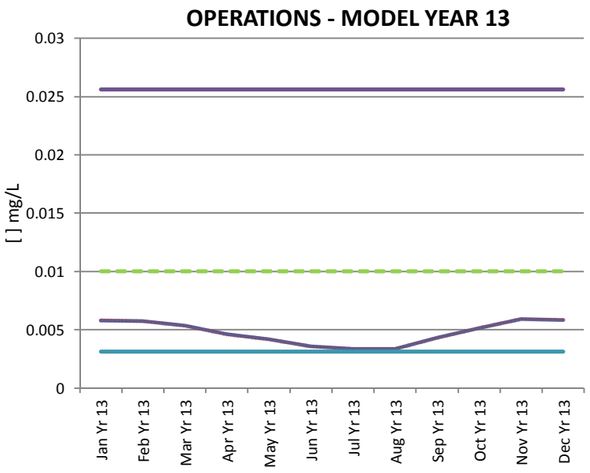
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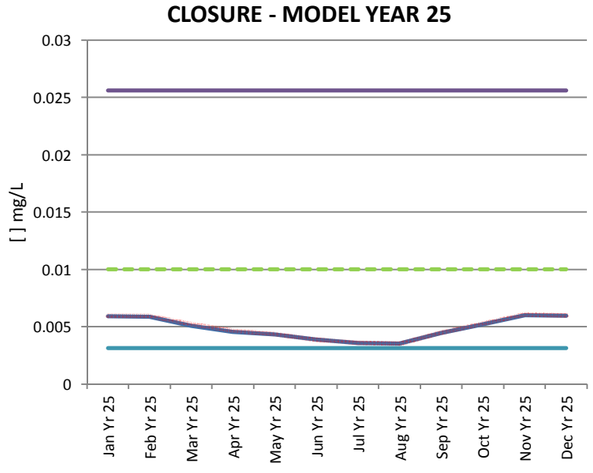
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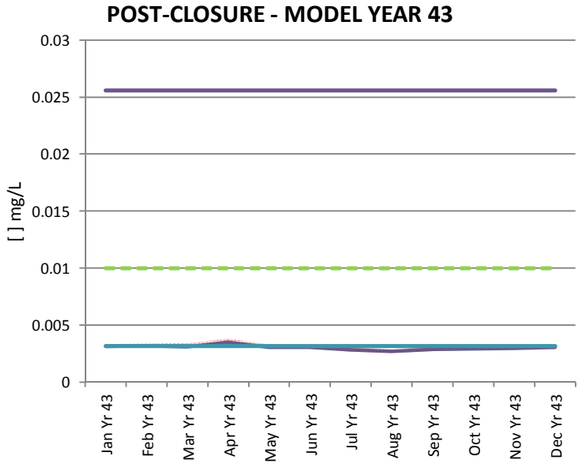
FIGURE E3.1

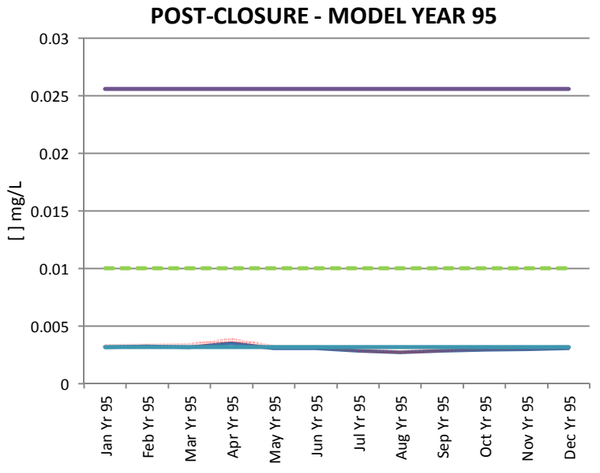
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

PCDP MRSF RECHARGE ASSUMPTIONS - COPPER PREDICTIONS

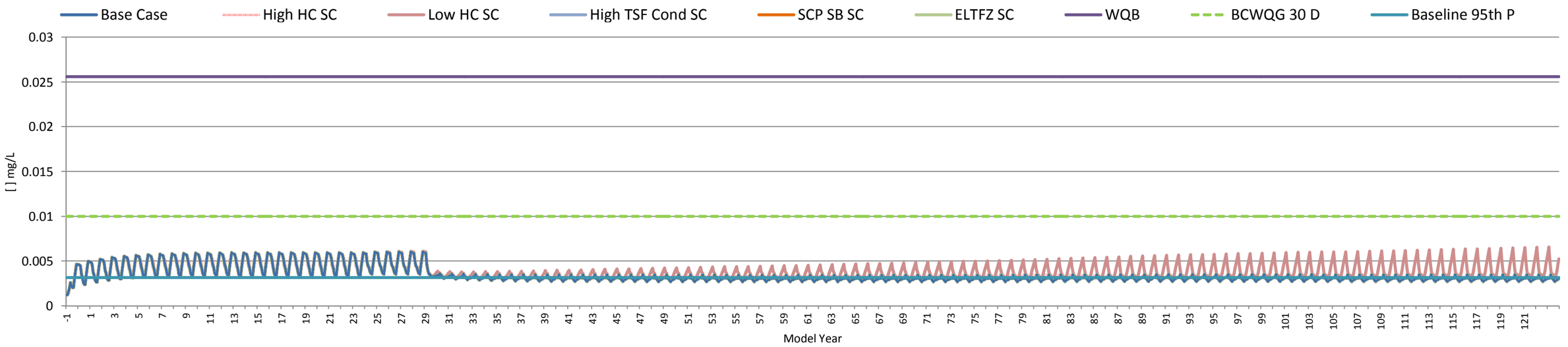
Knight Piésold CONSULTING

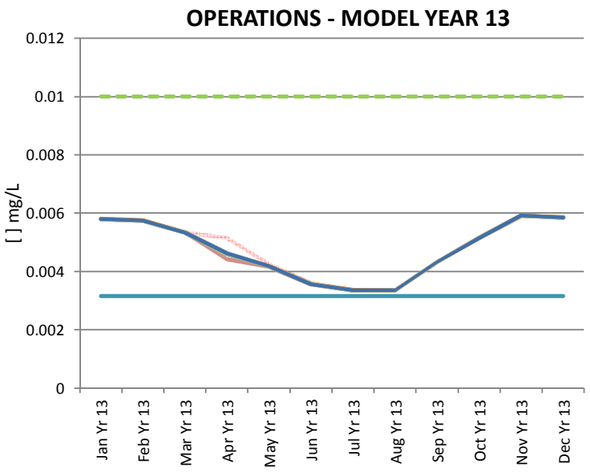
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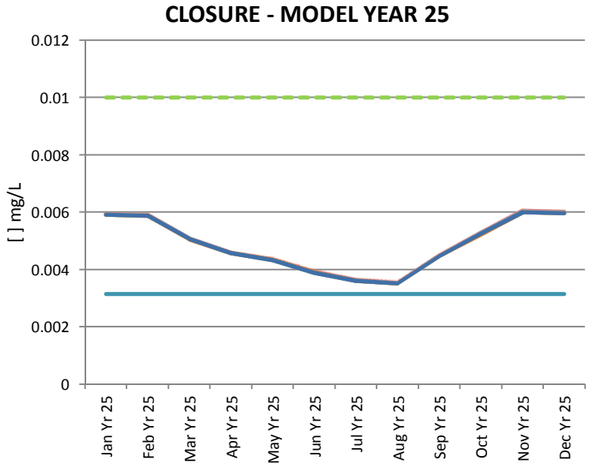
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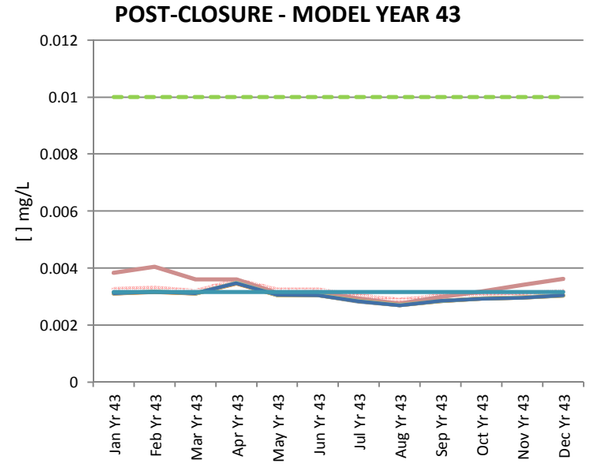
FIGURE E3.2

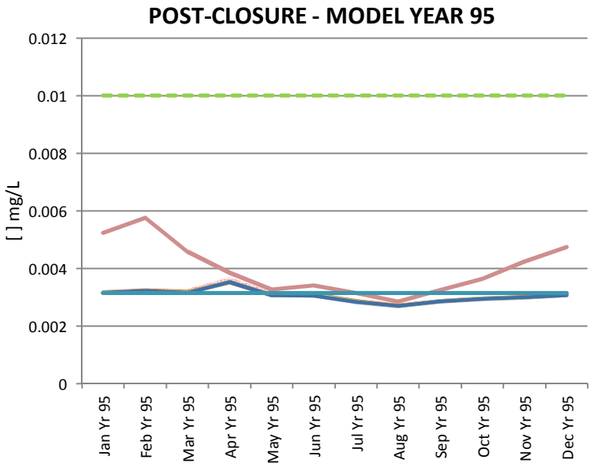
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

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PCDP GROUNDWATER ASSUMPTIONS (GW) - COPPER PREDICTIONS

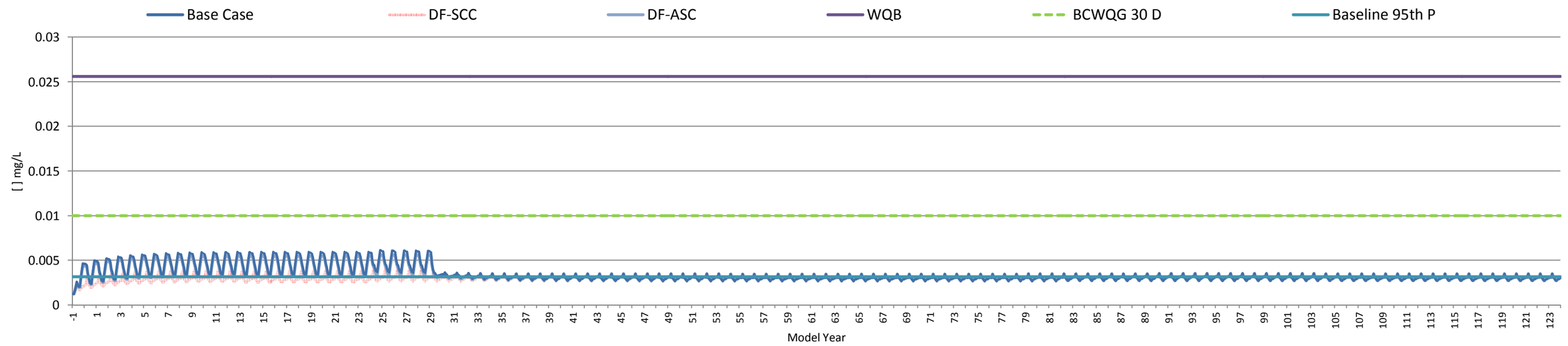
Knight Piésold CONSULTING

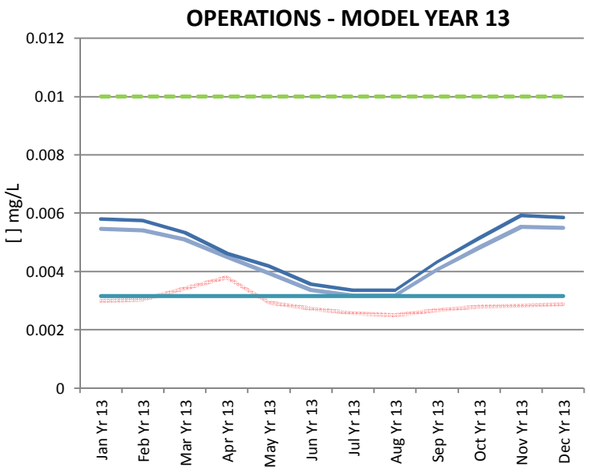
P/A NO. VA101-246/31

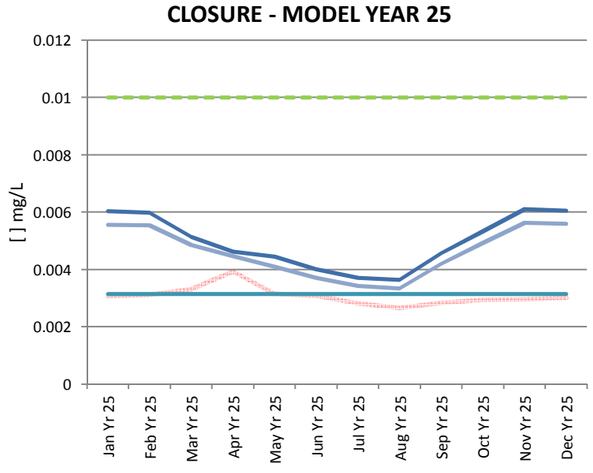
REF. NO. 3

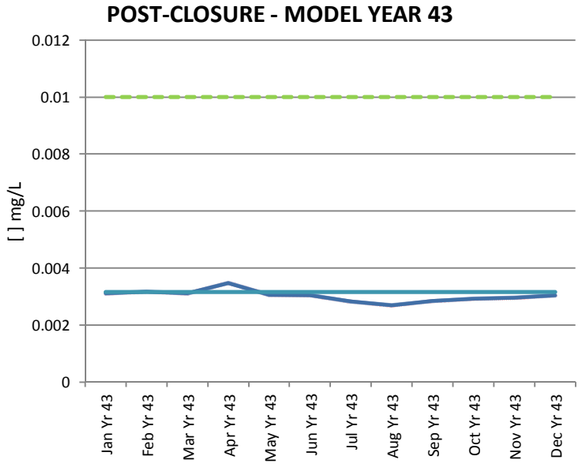
FIGURE E3.3

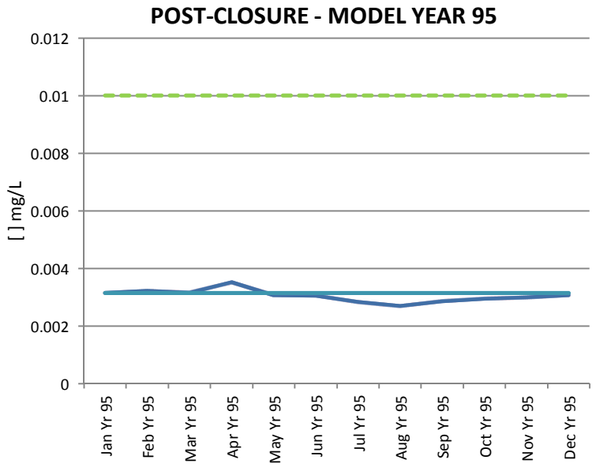
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP DUSTFALL ASSUMPTIONS (DFA) - COPPER PREDICTIONS

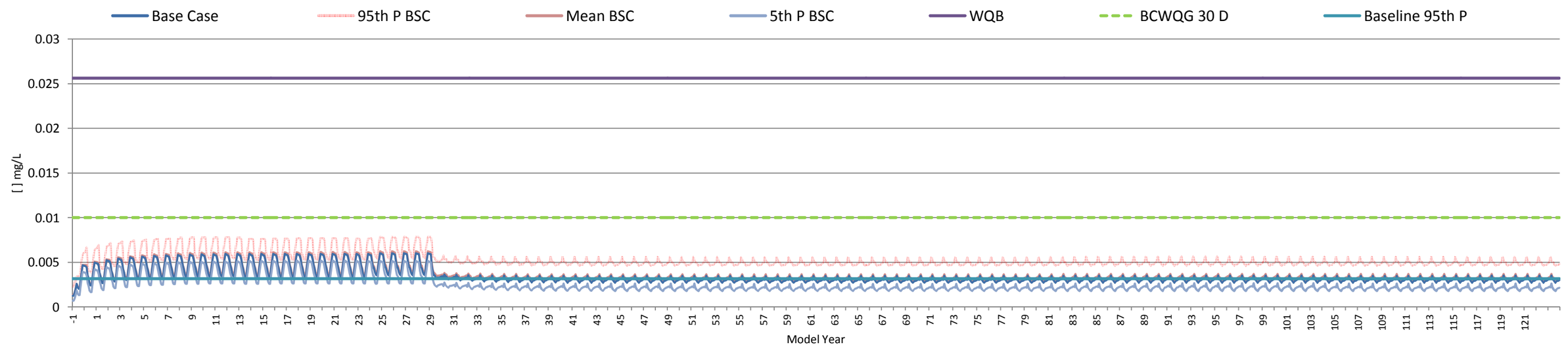
Knight Piésold CONSULTING

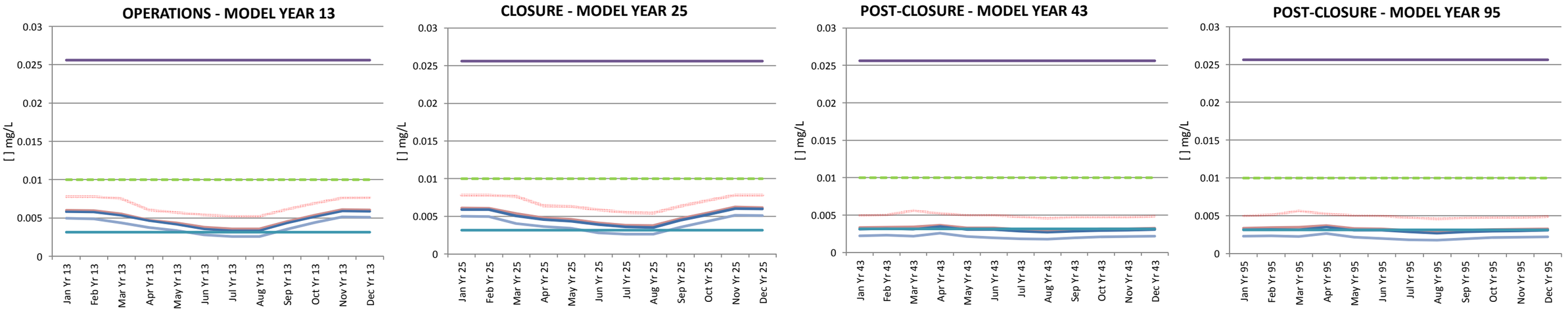
P/A NO. VA101-246/31

REF. NO. 3

FIGURE E3.4

REV 0





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP BASELINE SENSITIVITY CASE (BSC) - COPPER PREDICTIONS

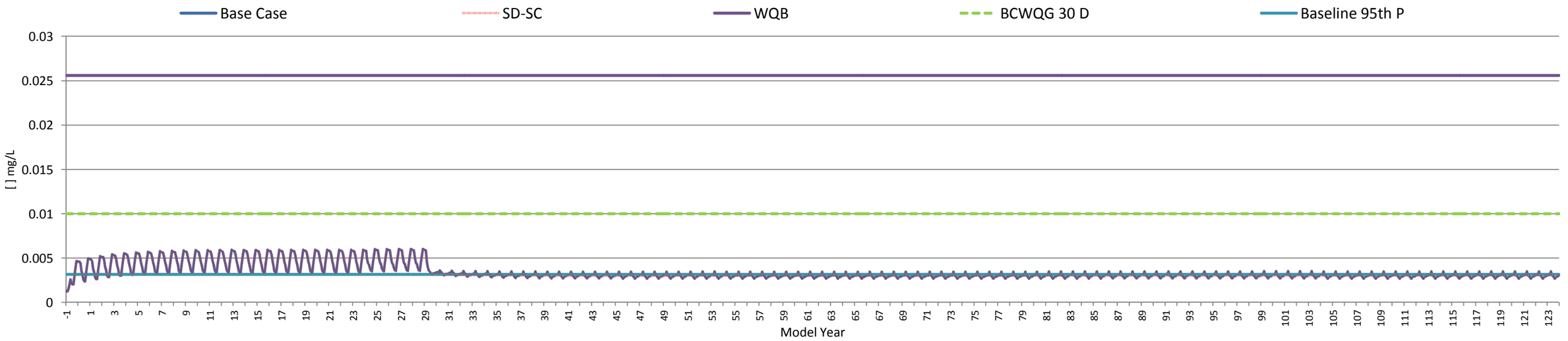
Knight Piésold CONSULTING

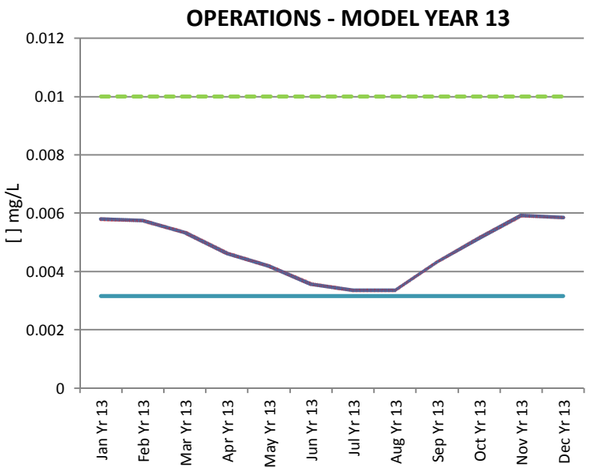
P/A NO. VA101-246/31

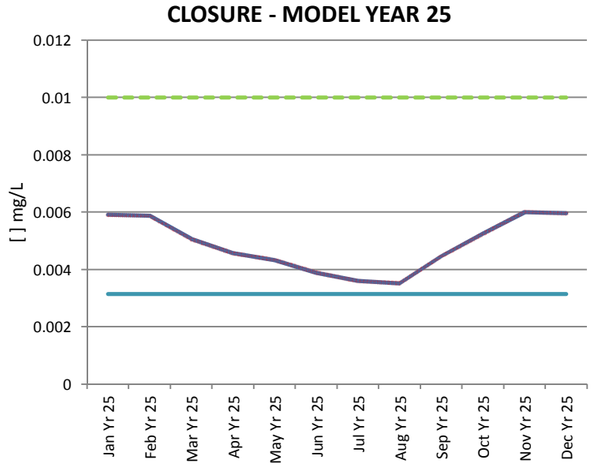
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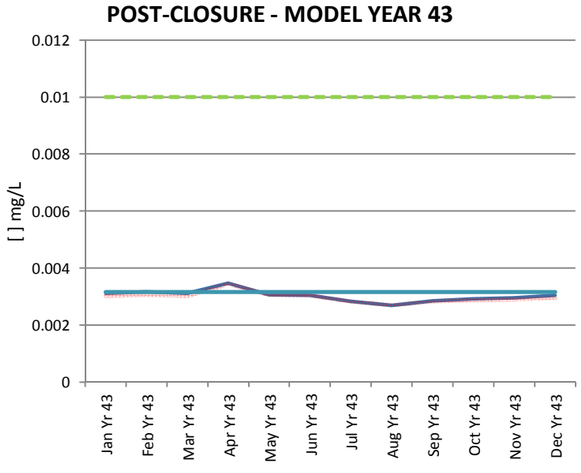
FIGURE E3.5

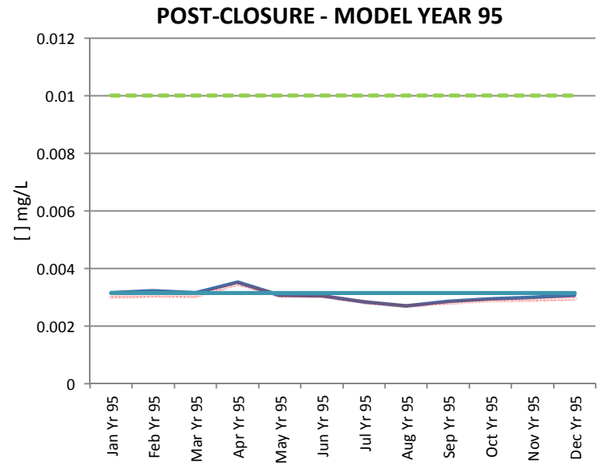
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP TIMING OF SEEPAGE ASSUMPTIONS (SD) - COPPER PREDICTIONS

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 3

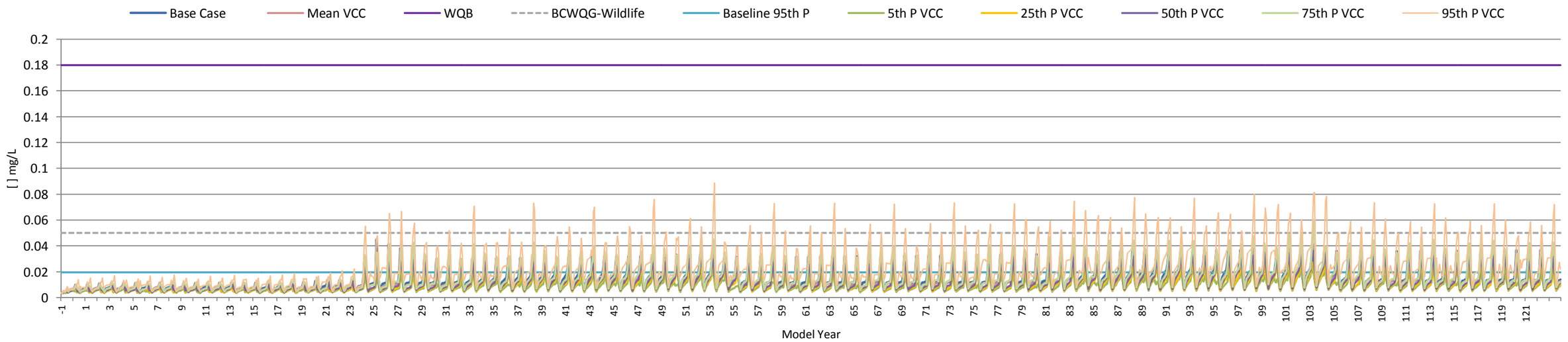
FIGURE E3.6

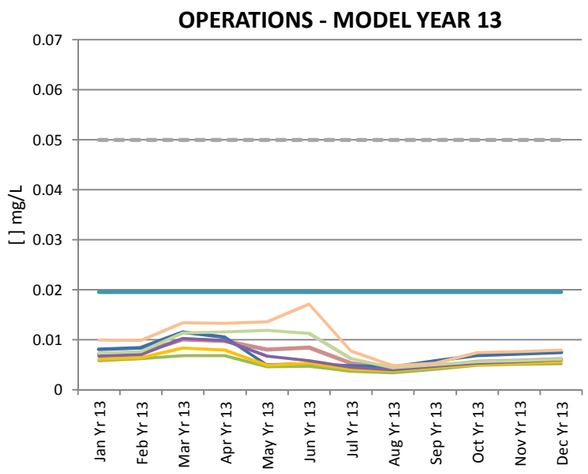
REV 0

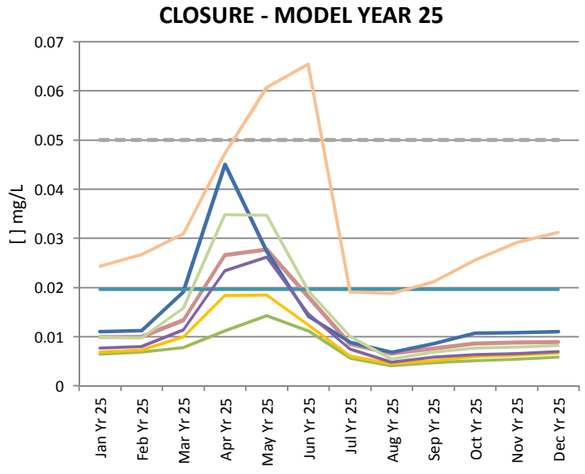
APPENDIX E4

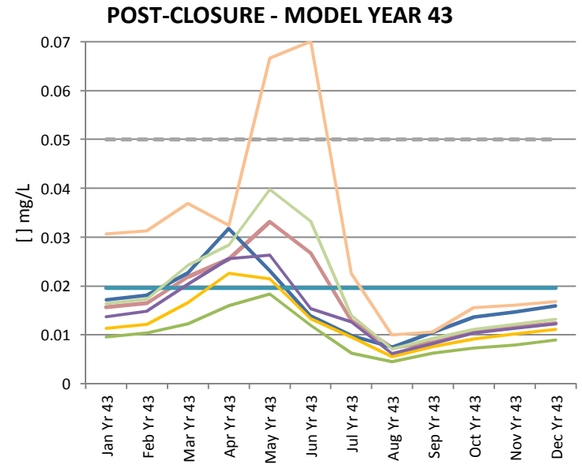
MOLYBDENUM

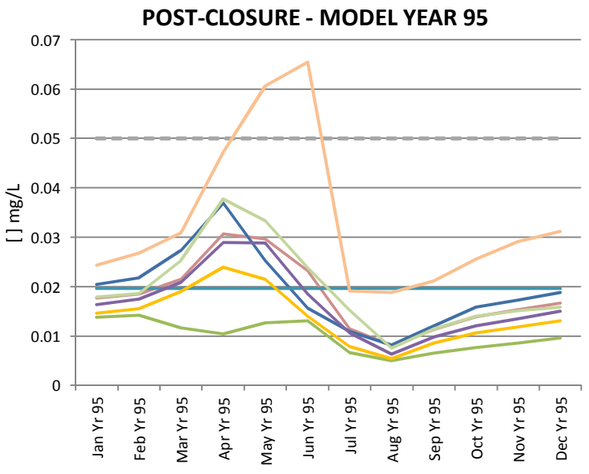
(Figures E4.1 to E4.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP VARIABLE CLIMATE CASE (VCC) - MOLYBDENUM PREDICTIONS

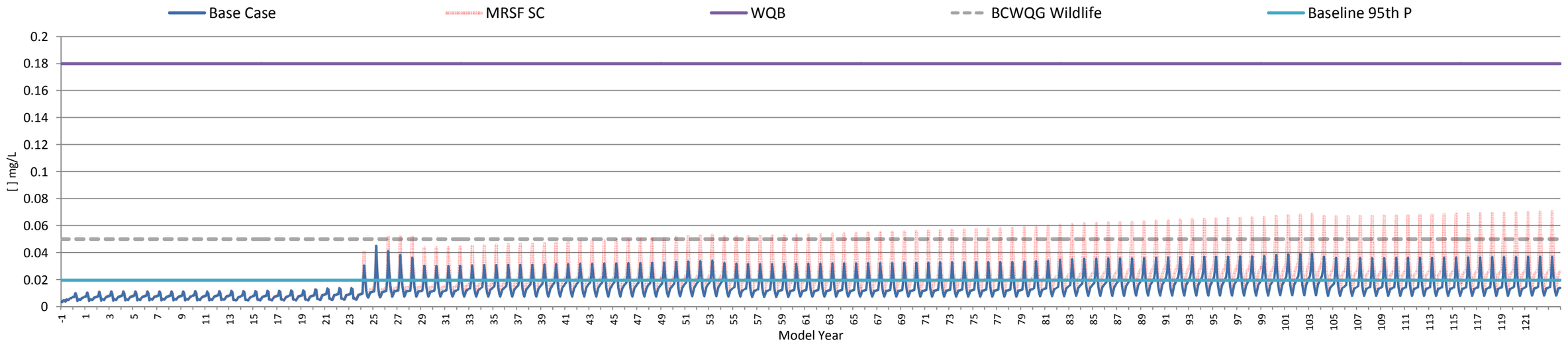
Knight Piésold CONSULTING

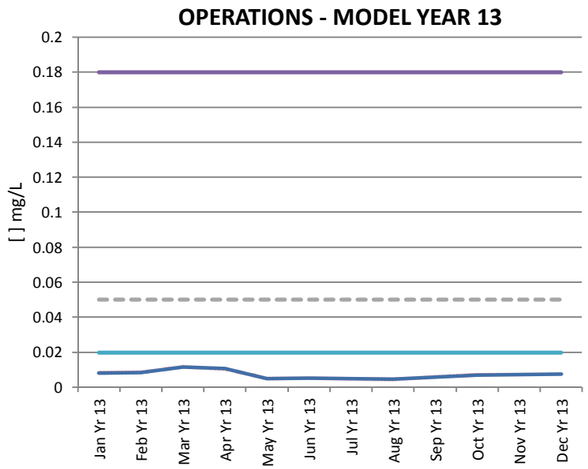
P/A NO. VA101-246/31

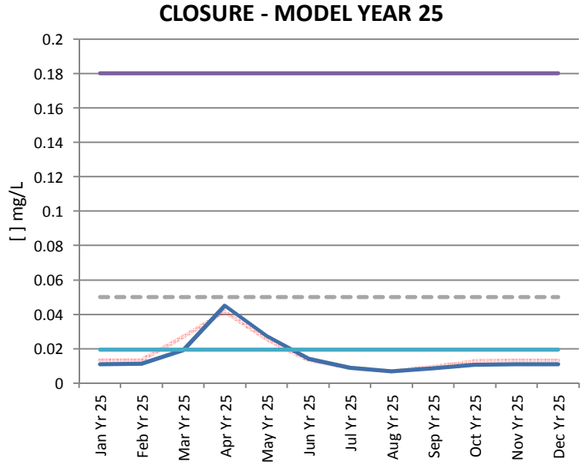
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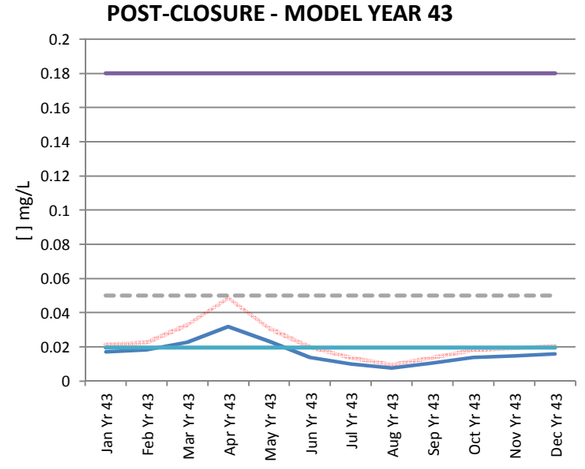
FIGURE E4.1

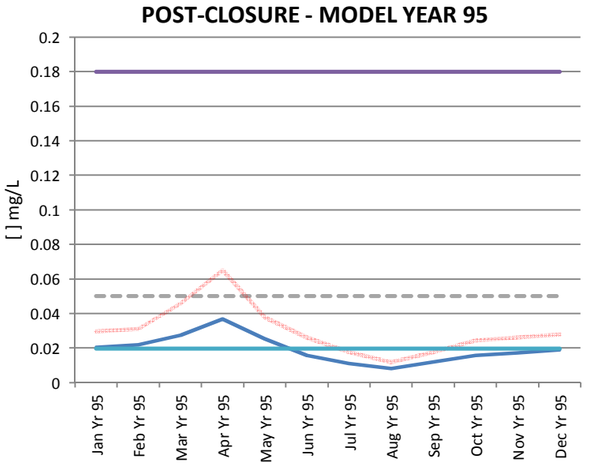
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP MRSF RECHARGE ASSUMPTIONS - MOLYBDENUM PREDICTIONS

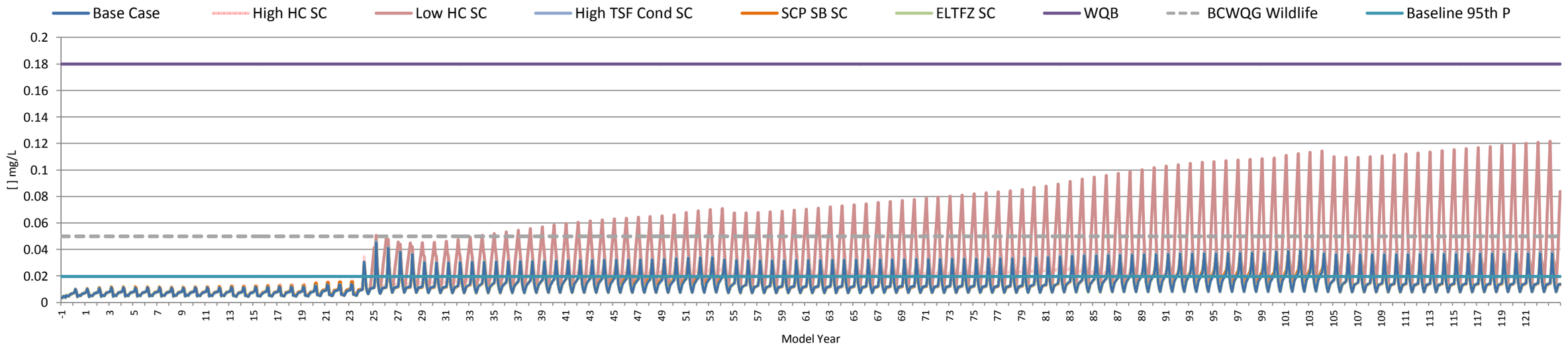
Knight Piésold CONSULTING

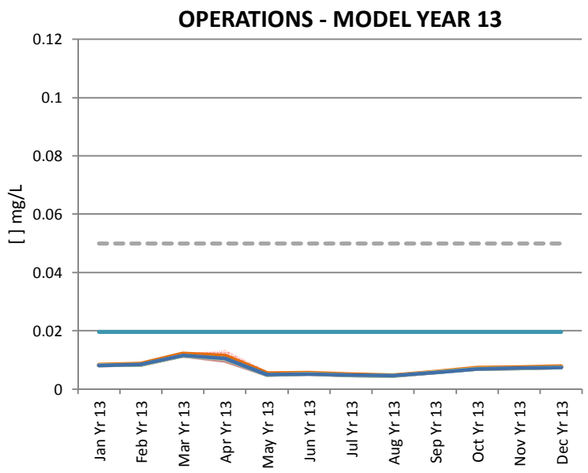
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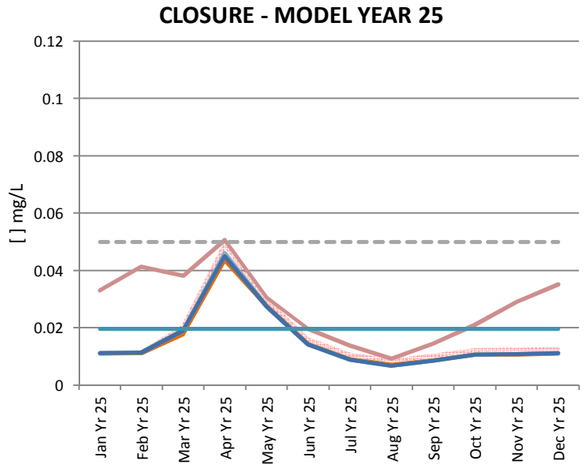
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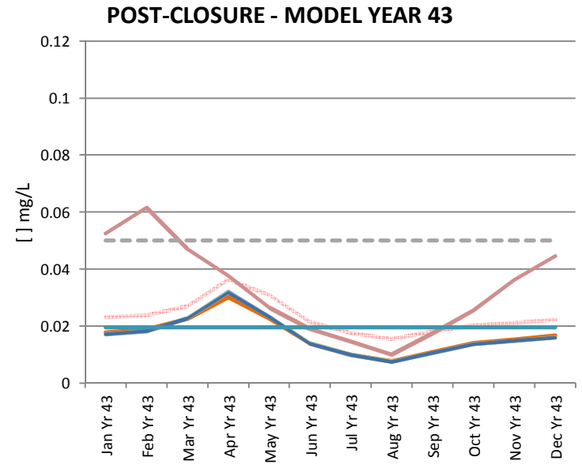
FIGURE E4.2

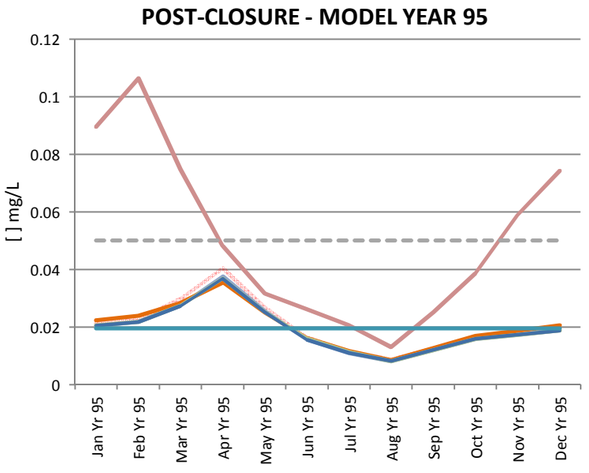
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP GROUNDWATER ASSUMPTIONS (GW) - MOLYBDENUM PREDICTIONS

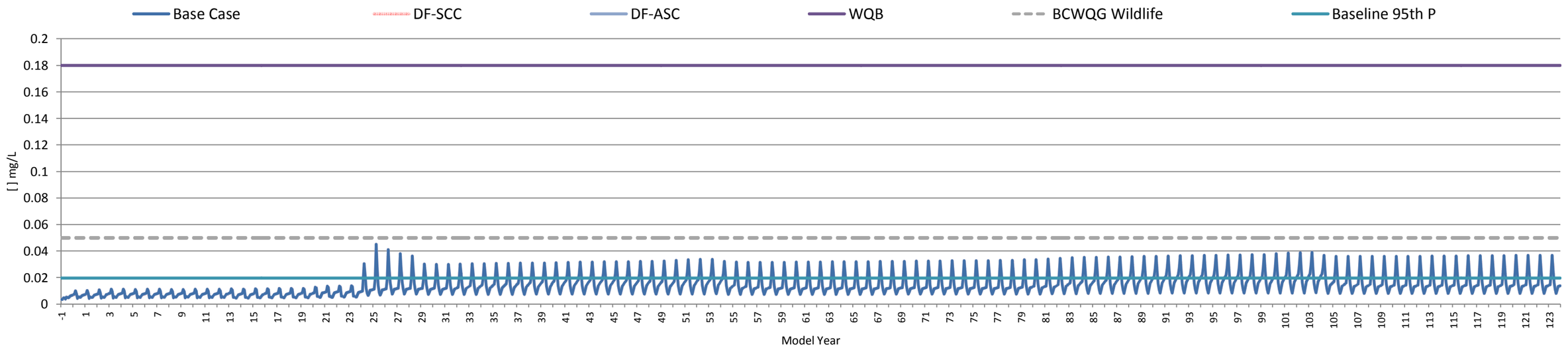
Knight Piésold CONSULTING

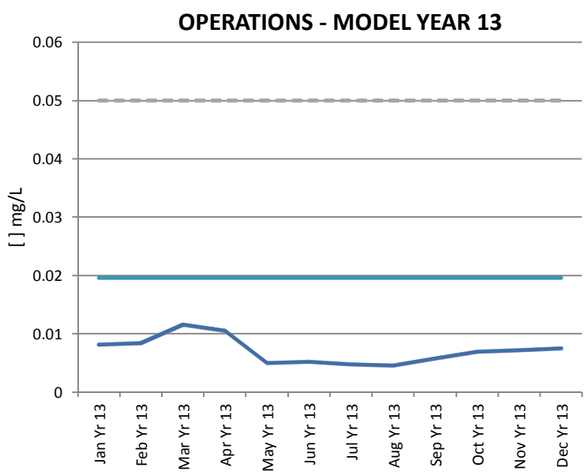
P/A NO. VA101-246/31

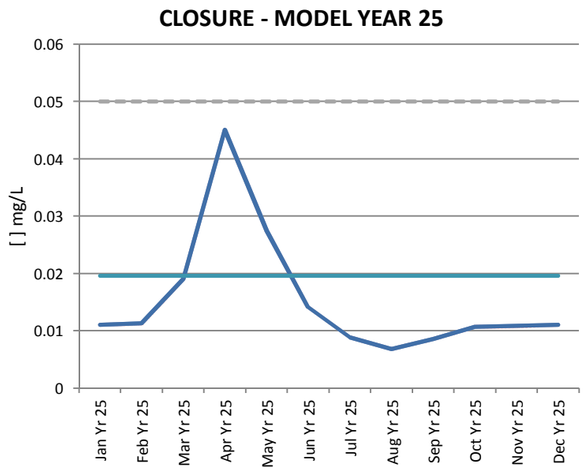
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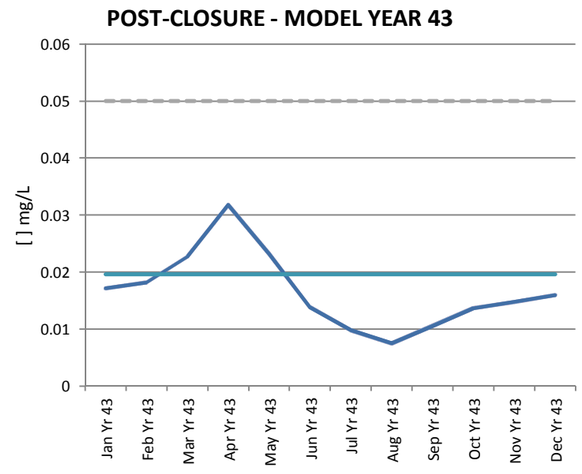
FIGURE E4.3

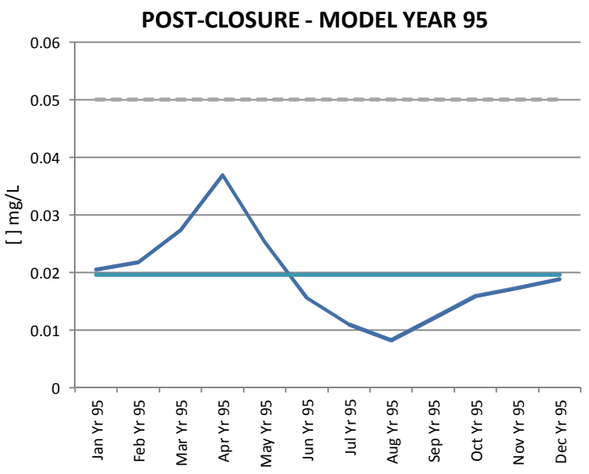
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP DUSTFALL ASSUMPTIONS (DFA) - MOLYBDENUM PREDICTIONS

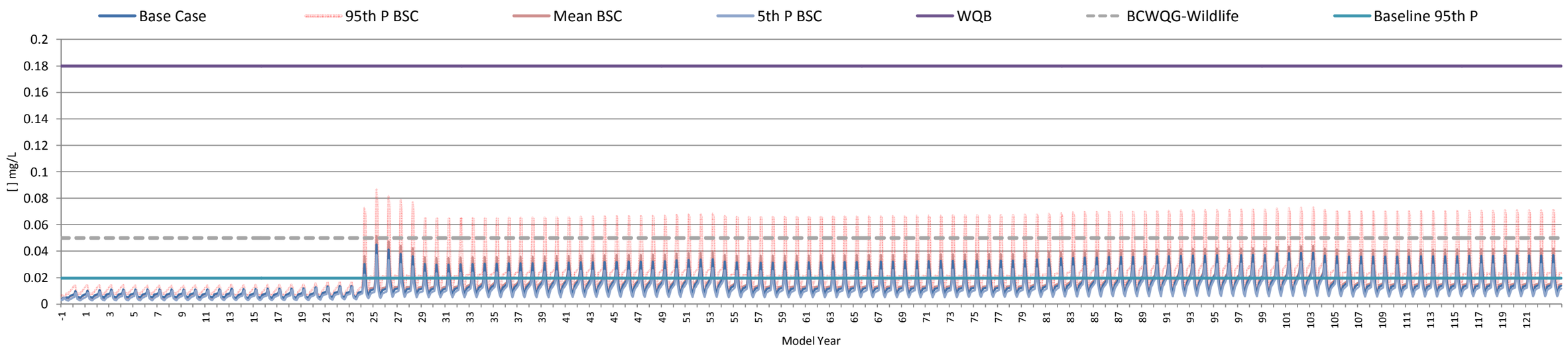
Knight Piésold CONSULTING

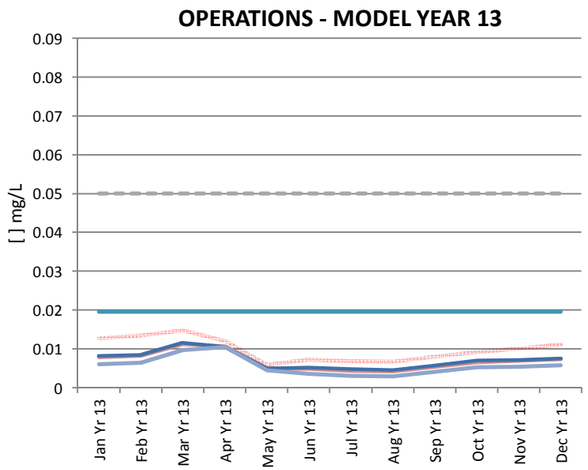
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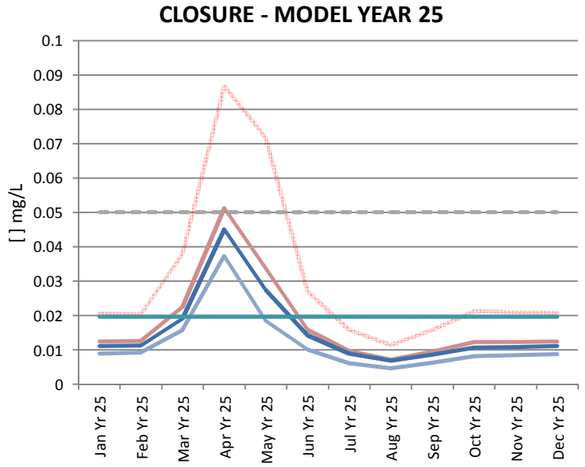
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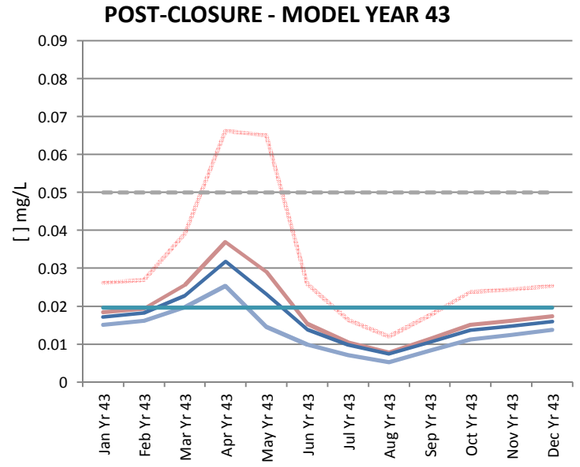
FIGURE E4.4

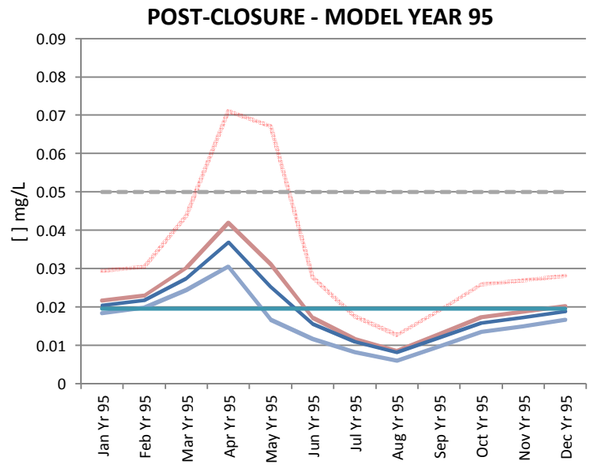
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PCDP BASELINE SENSITIVITY CASE (BSC) - MOLYBDENUM PREDICTIONS

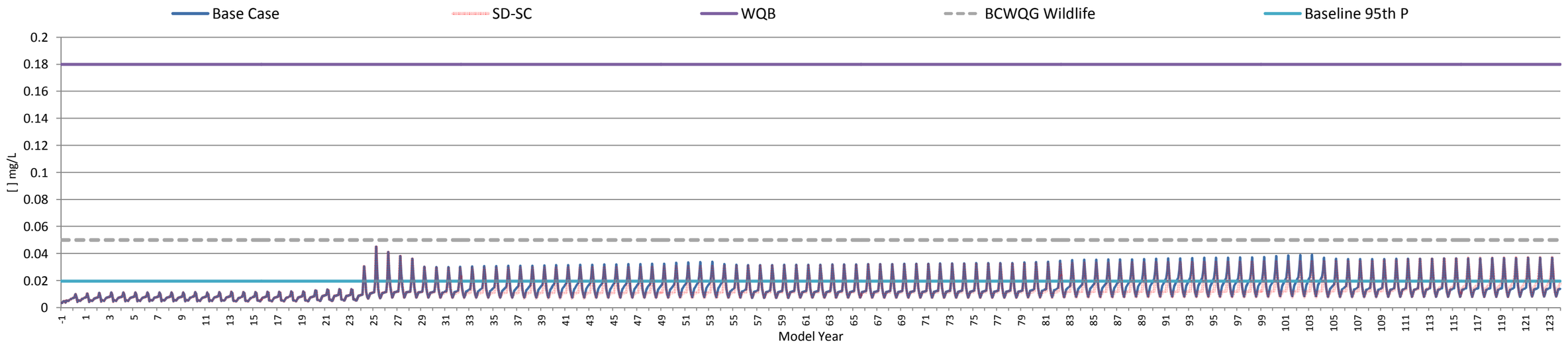
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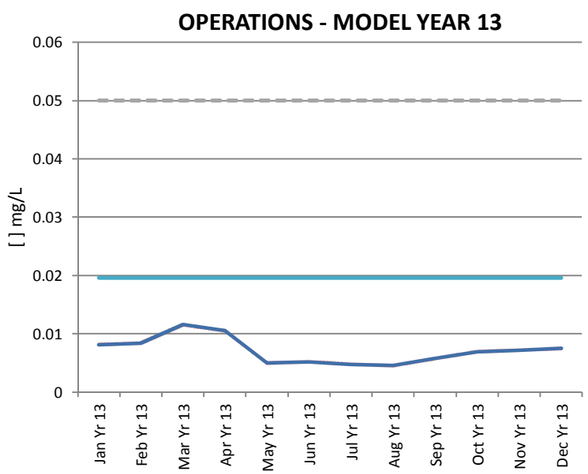
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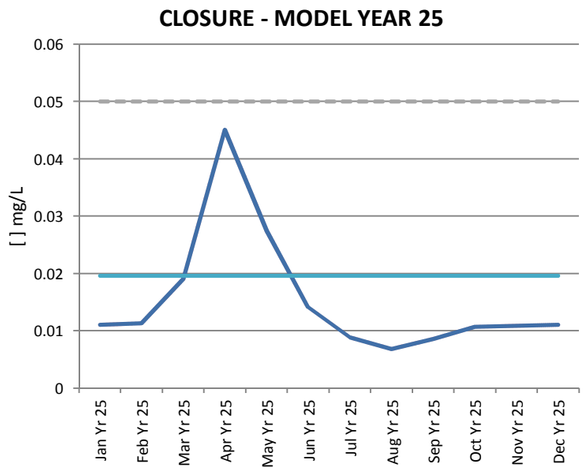
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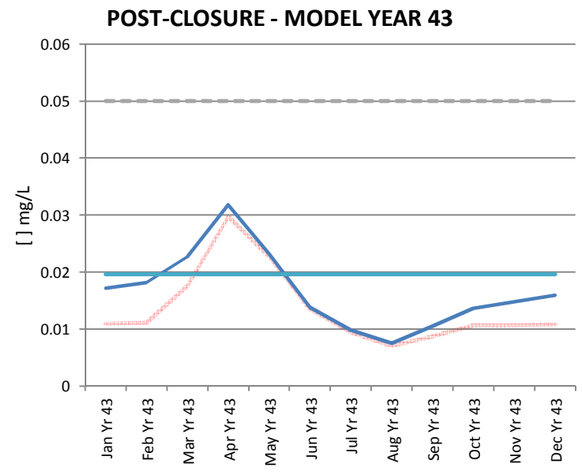
FIGURE E4.5

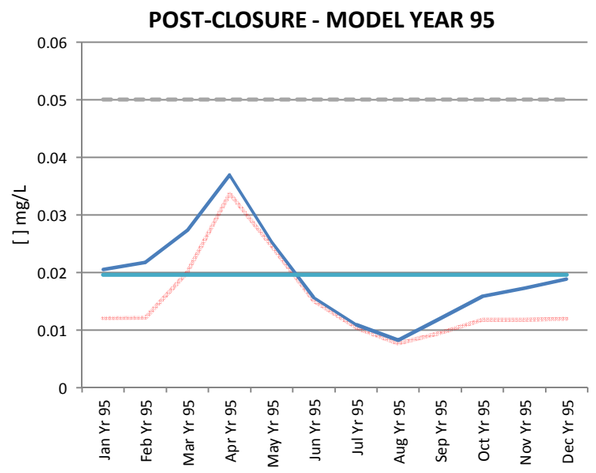
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP TIMING OF SEEPAGE ASSUMPTIONS (SD) - MOLYBDENUM PREDICTIONS

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REF. NO. 3

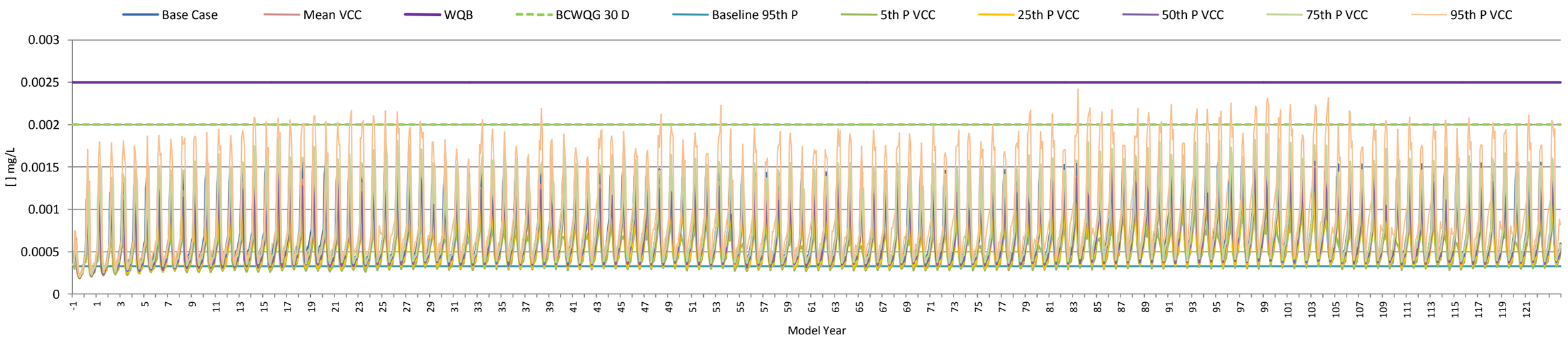
FIGURE E4.6

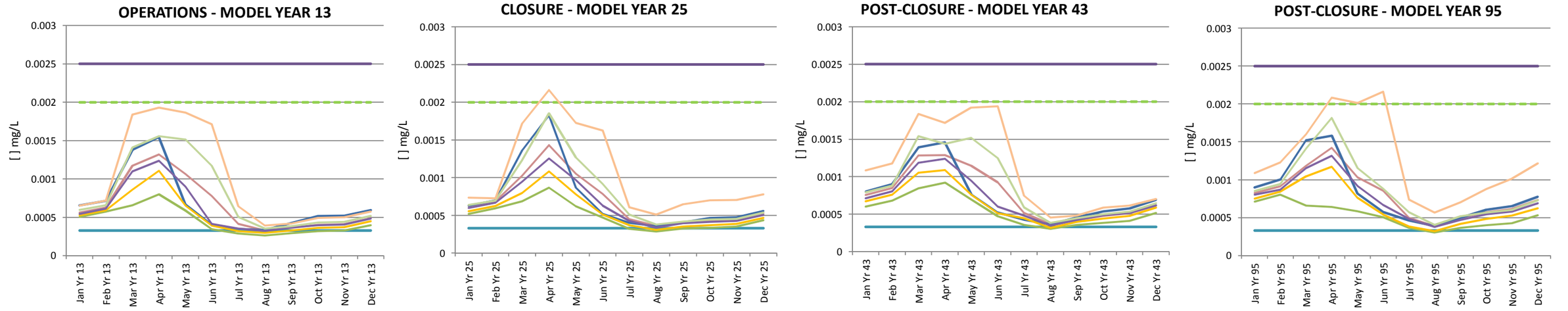
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APPENDIX E5

SELENIUM

(Figures E5.1 to E5.6)





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP VARIABLE CLIMATE CASE (VCC) - SELENIUM PREDICTIONS

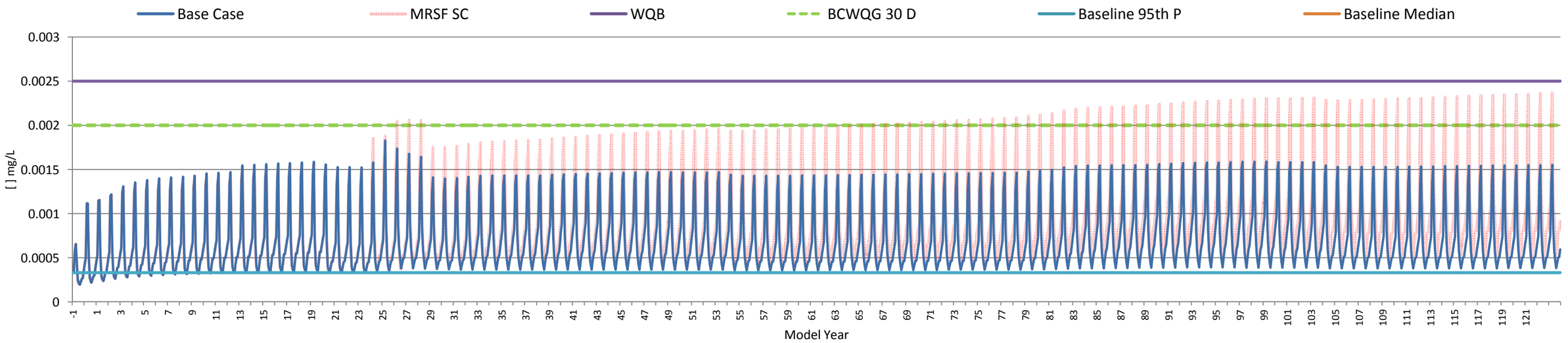
Knight Piésold CONSULTING

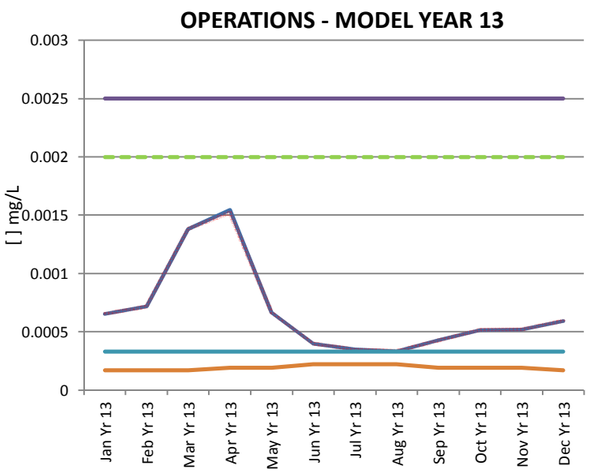
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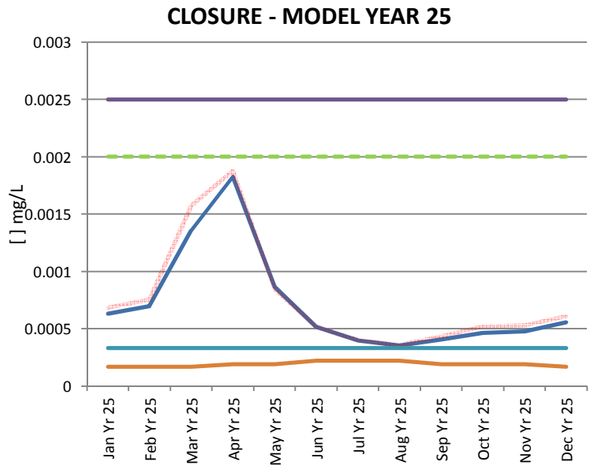
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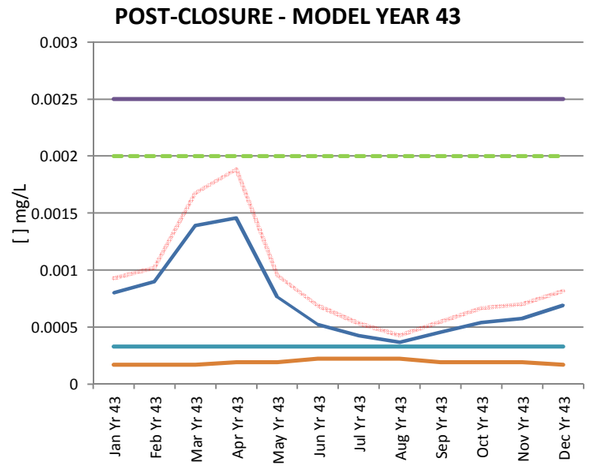
FIGURE E5.1

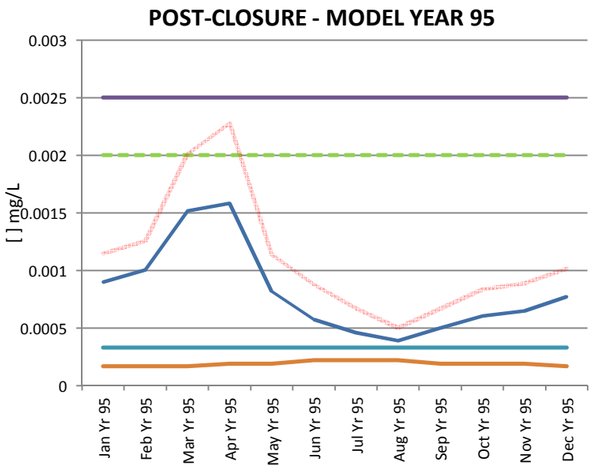
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PCDP MRSF RECHARGE ASSUMPTIONS - SELENIUM PREDICTIONS

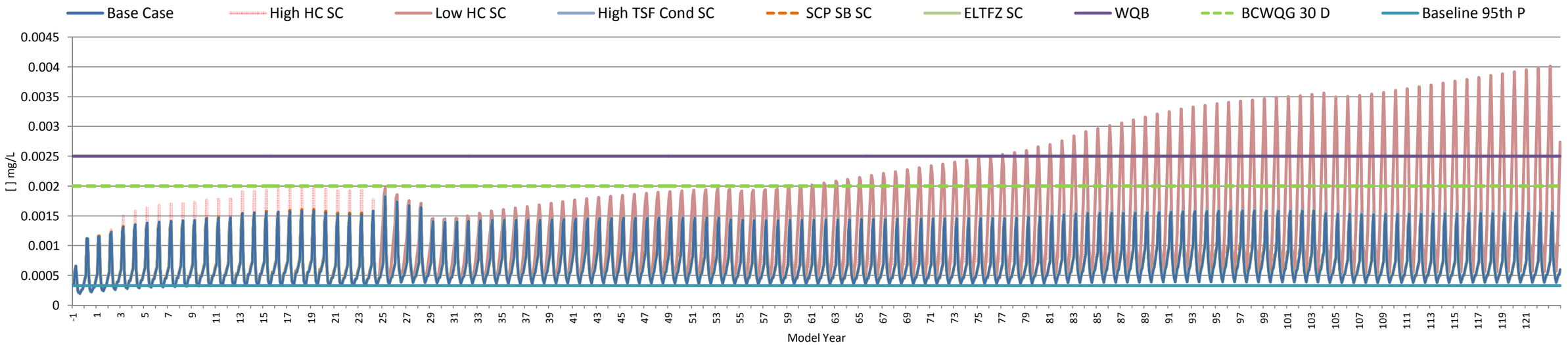
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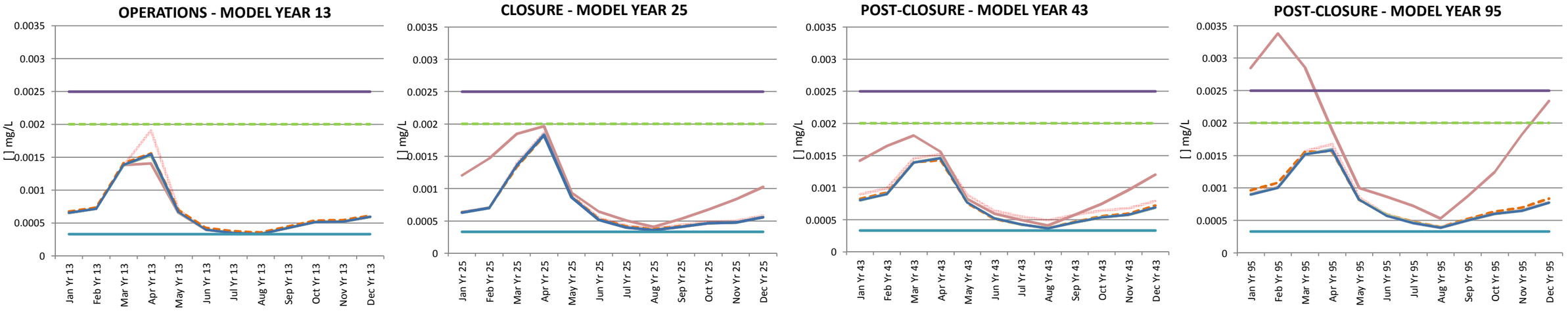
P/A NO. VA101-246/31

REF. NO. 3

FIGURE E5.2

REV 0





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PCDP GROUNDWATER ASSUMPTIONS (GW) - SELENIUM PREDICTIONS

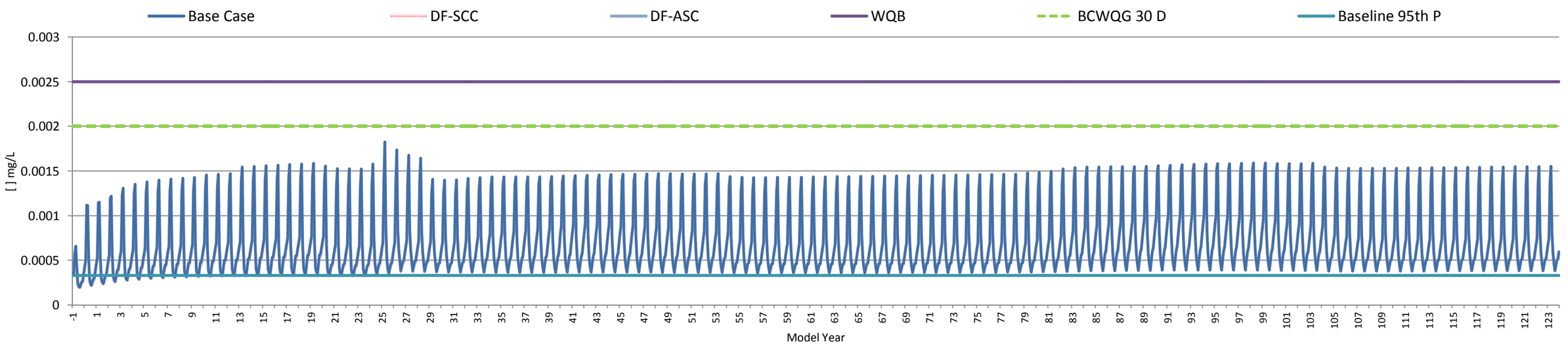
Knight Piésold CONSULTING

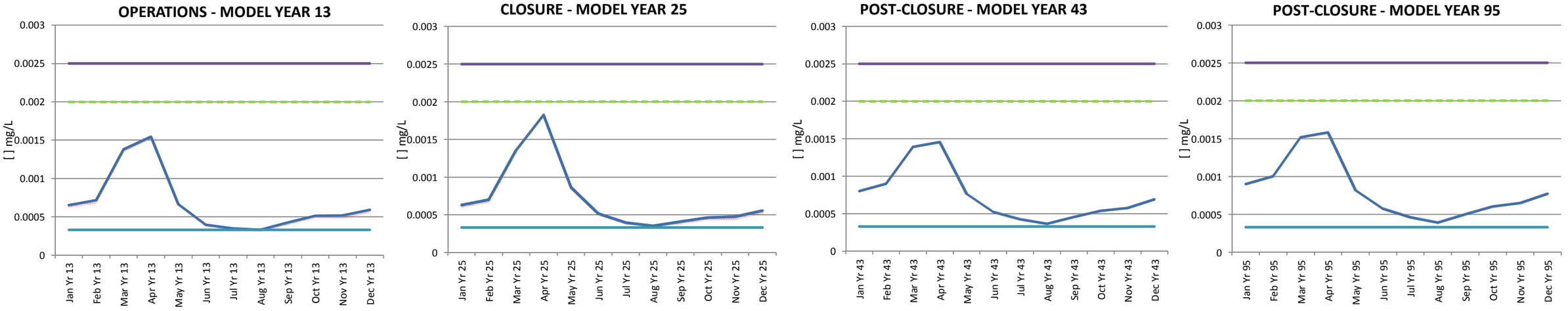
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REF. NO. 3

FIGURE E5.3

REV 0





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP DUSTFALL ASSUMPTIONS (DFA) - SELENIUM PREDICTIONS

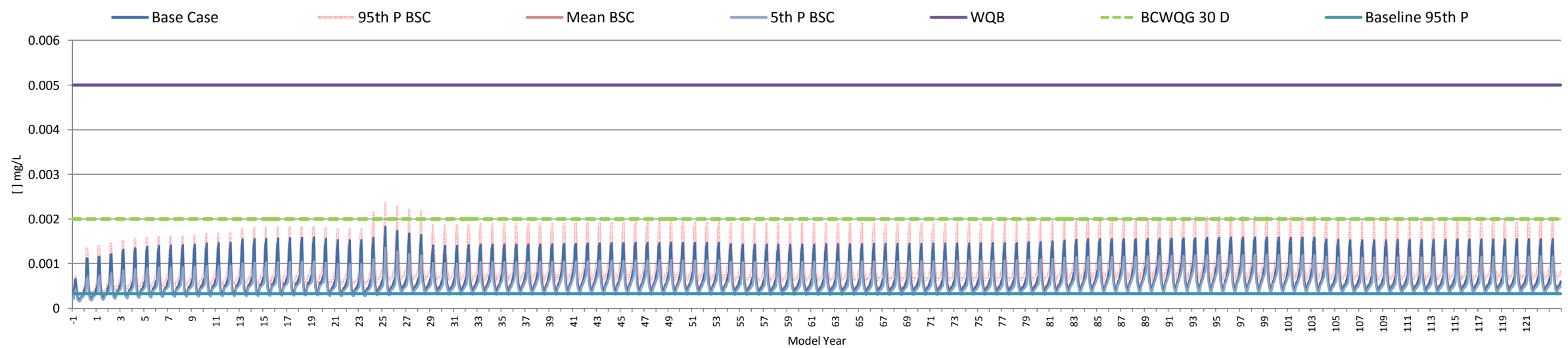
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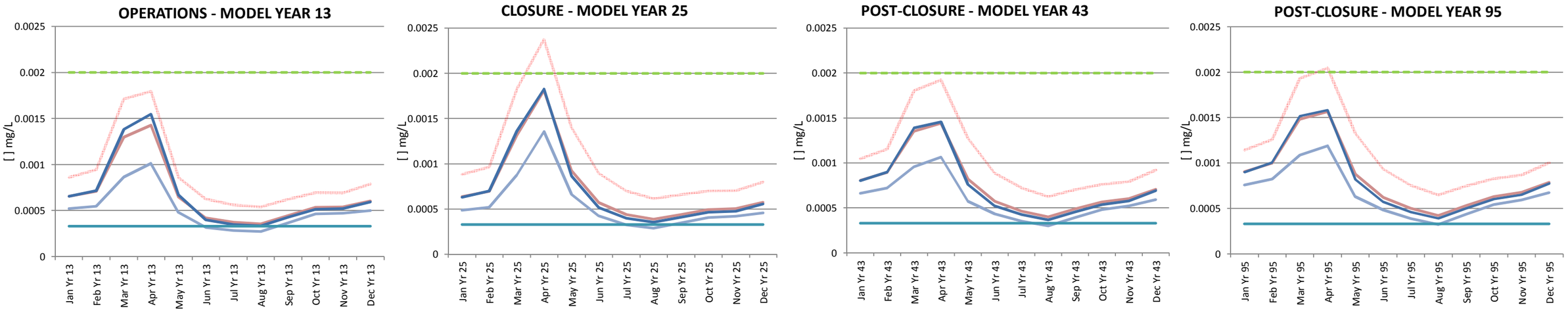
P/A NO. VA101-246/31

REF. NO. 3

FIGURE E5.4

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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PCDP BASELINE SENSITIVITY CASE (BSC) - SELENIUM PREDICTIONS

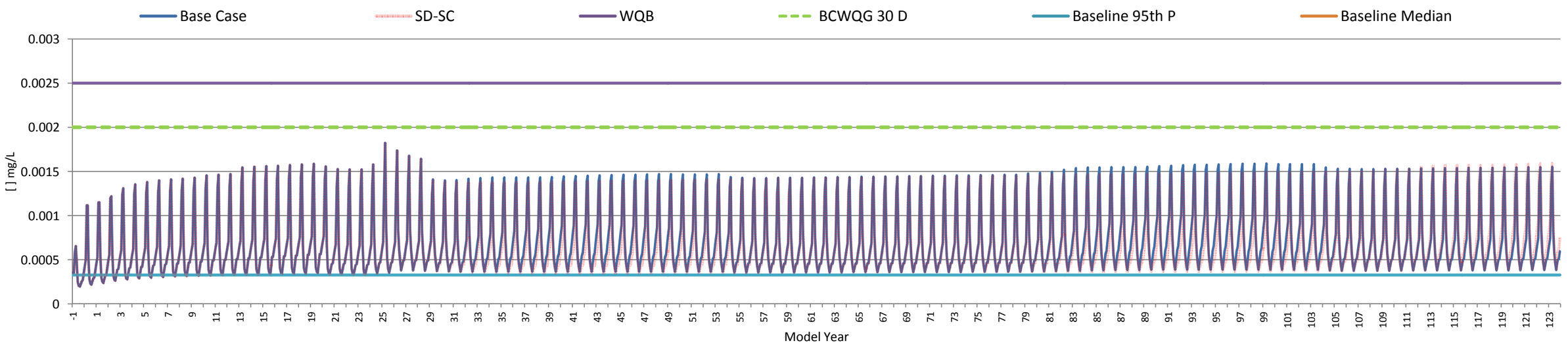
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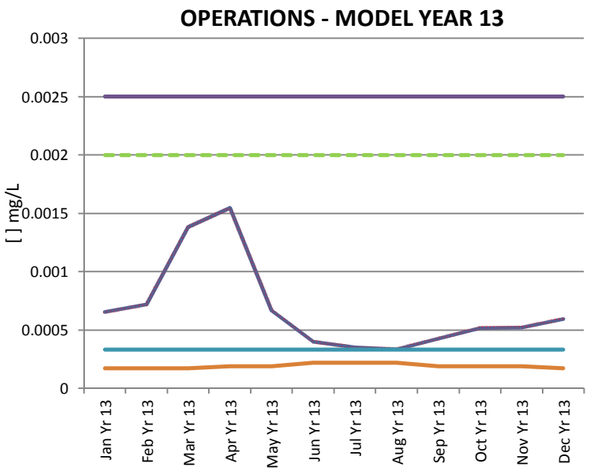
P/A NO. VA101-246/31

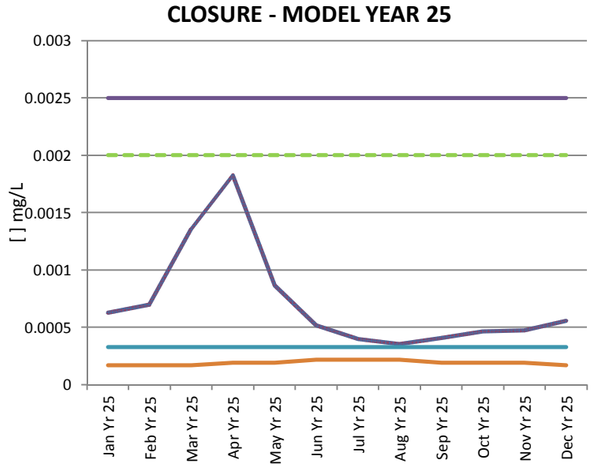
REF. NO. 3

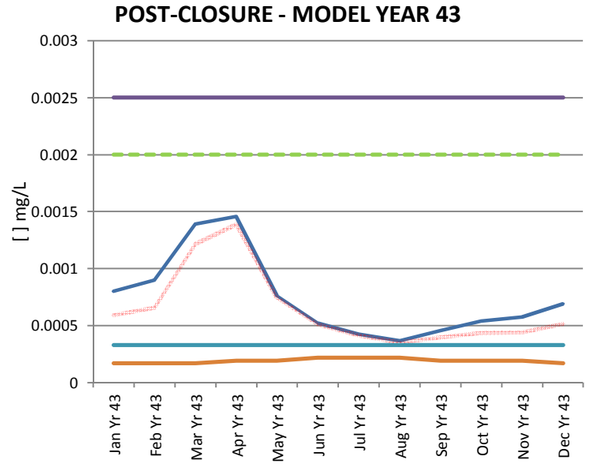
FIGURE E5.5

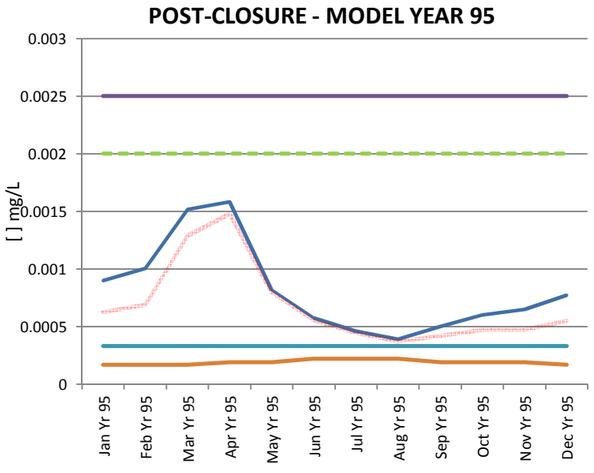
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PCDP TIMING OF SEEPAGE ASSUMPTIONS (SD) - SELENIUM PREDICTIONS

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REF. NO. 3

FIGURE E5.6

REV 0

APPENDIX F

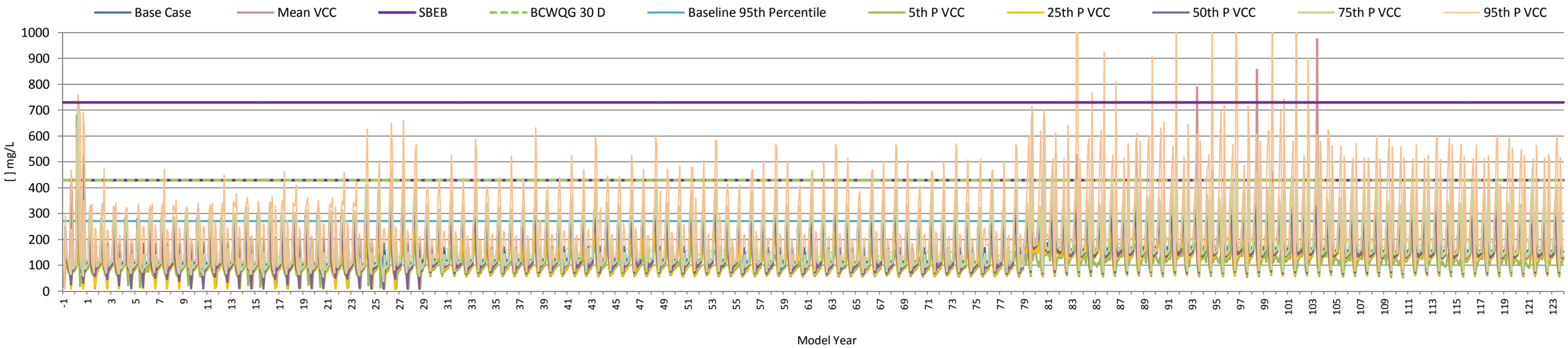
PC02.3

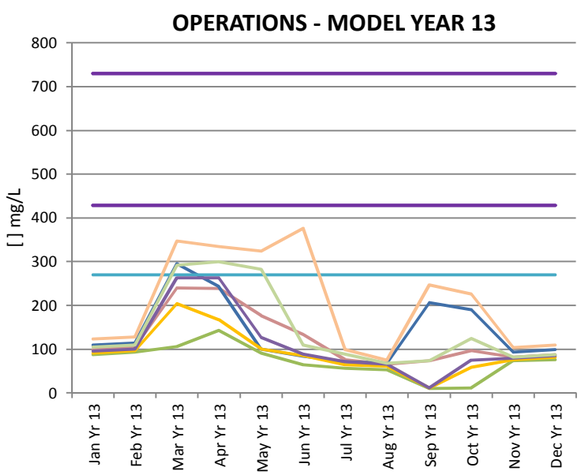
Appendix F1 Sulphate
Appendix F2 Chloride
Appendix F3 Copper
Appendix F4 Molybdenum
Appendix F5 Selenium

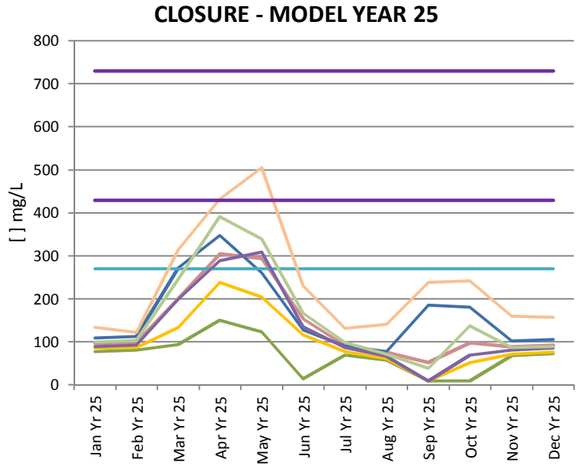
APPENDIX F1

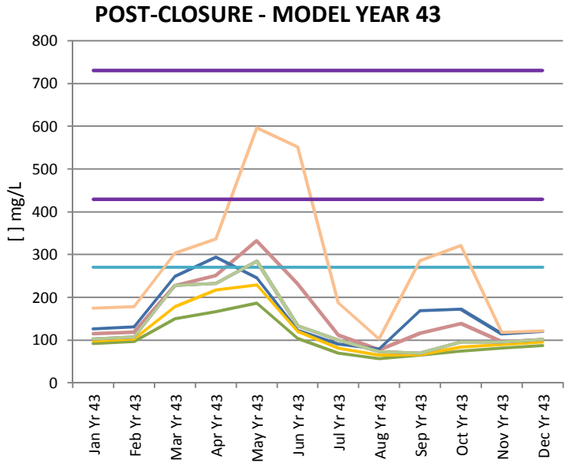
SULPHATE

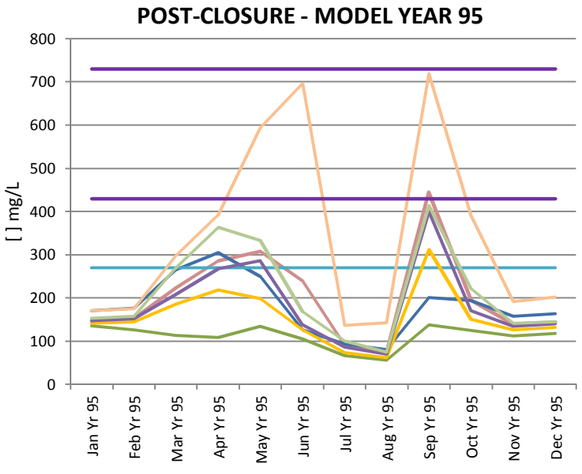
(Figures F1.1 to F1.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB); HIGHER SBEB FOR PERIODS OF YEAR WHEN EARLY LIFE STAGES OF FISH ARE ABSENT FROM WATERCOURSE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PC02.3 VARIABLE CLIMATE CASE (VCC) - SULPHATE PREDICTIONS

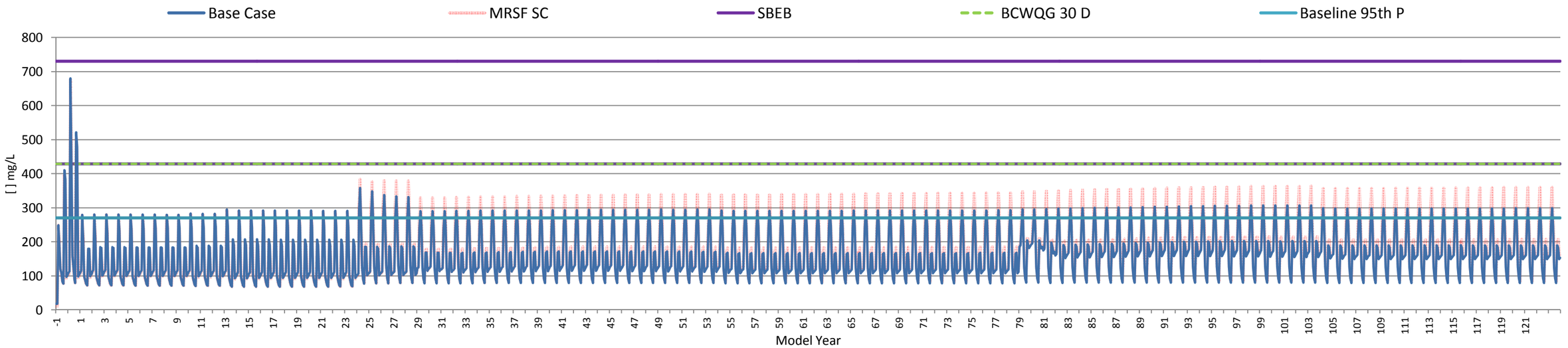
Knight Piésold CONSULTING

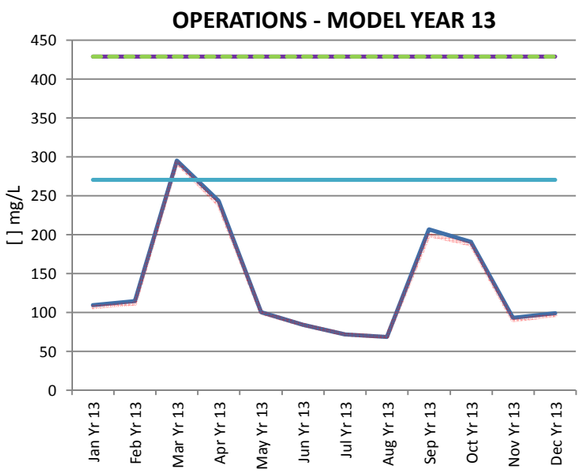
P/A NO. VA101-246/31

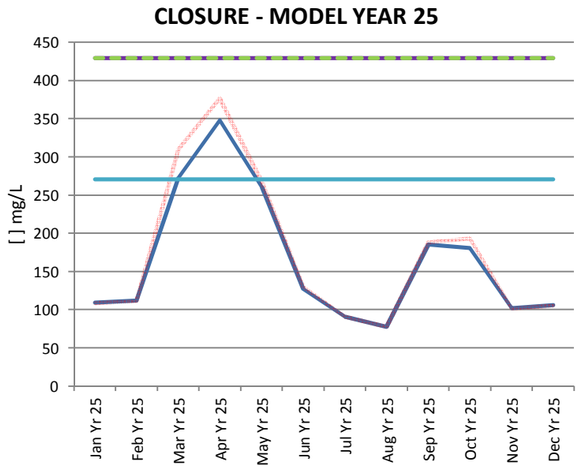
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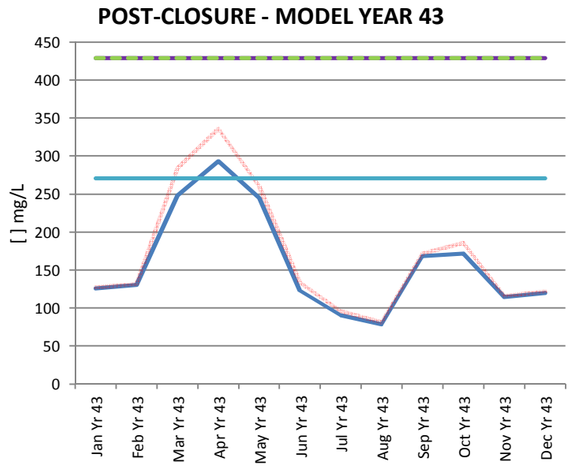
FIGURE F1.1

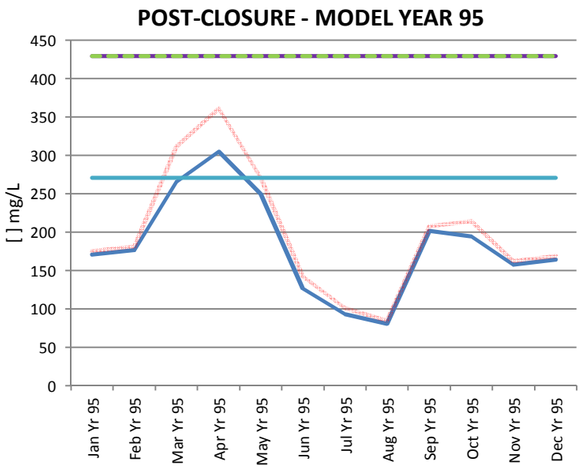
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB); HIGHER SBEB FOR PERIODS OF YEAR WHEN EARLY LIFE STAGES OF FISH ARE ABSENT FROM WATERCOURSE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02.3 MRSF RECHARGE ASSUMPTIONS - SULPHATE PREDICTIONS

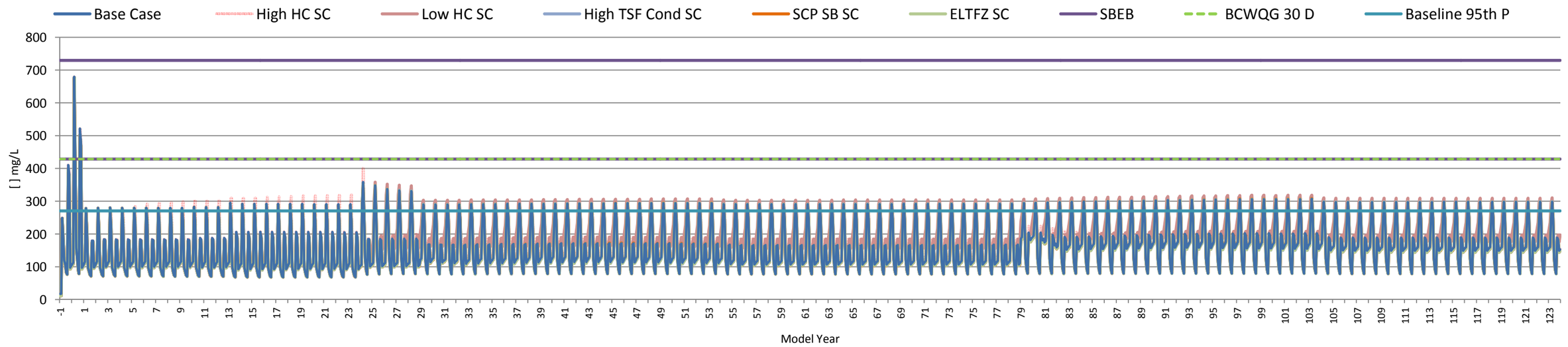
Knight Piésold CONSULTING

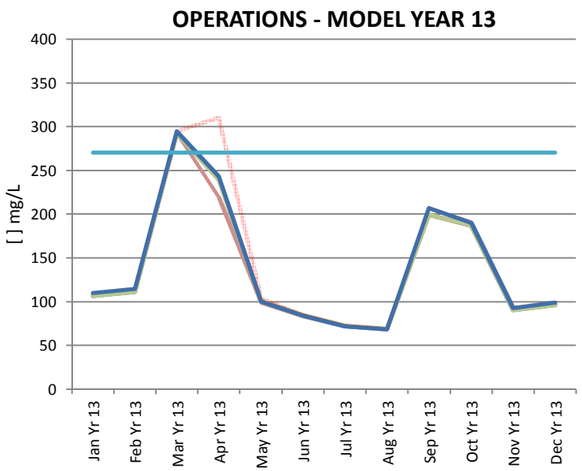
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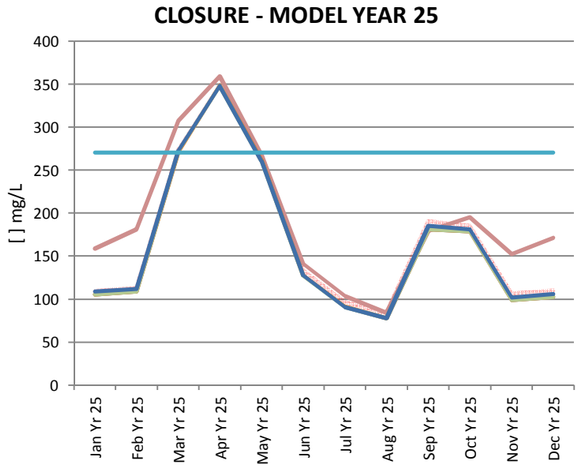
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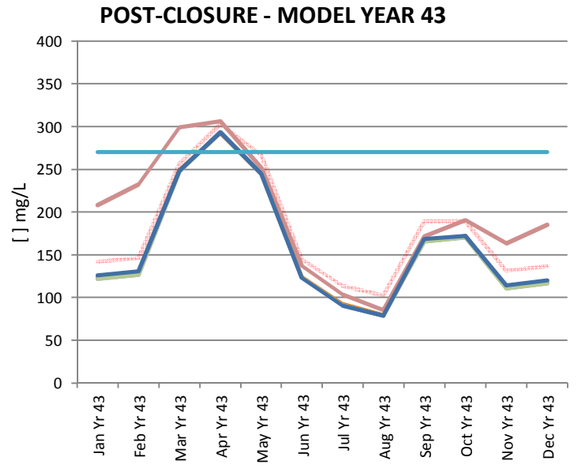
FIGURE F1.2

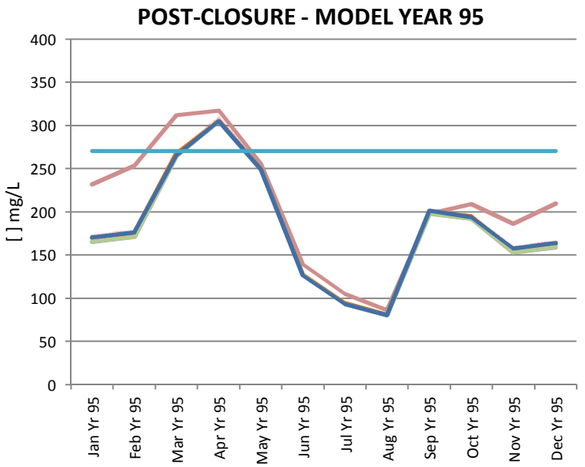
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB); HIGHER SBEB FOR PERIODS OF YEAR WHEN EARLY LIFE STAGES OF FISH ARE ABSENT FROM WATERCOURSE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PC02.3 GROUNDWATER ASSUMPTIONS (GW) - SULPHATE PREDICTIONS

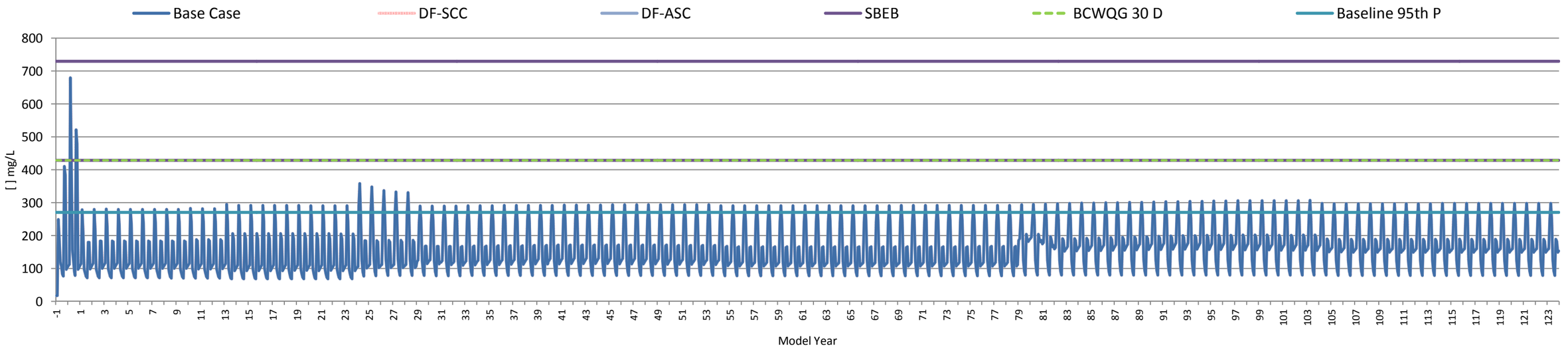
Knight Piésold CONSULTING

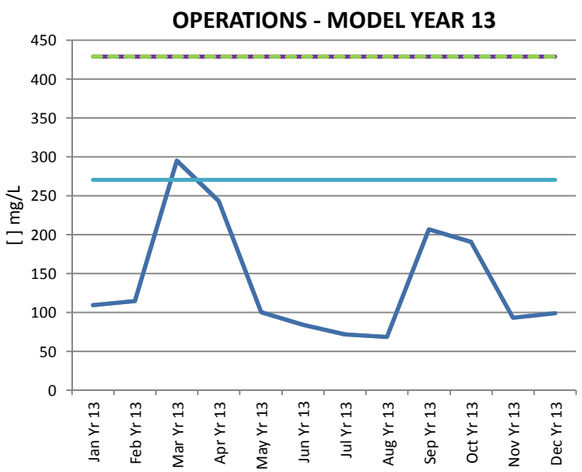
P/A NO. VA101-246/31

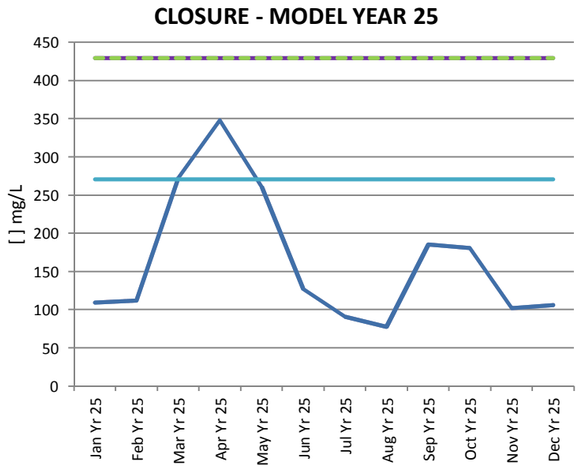
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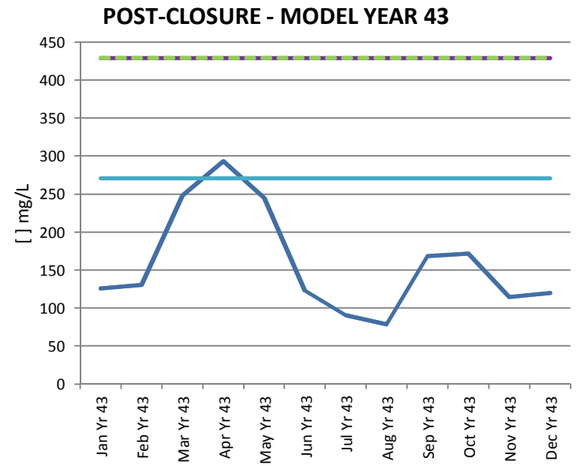
FIGURE F1.3

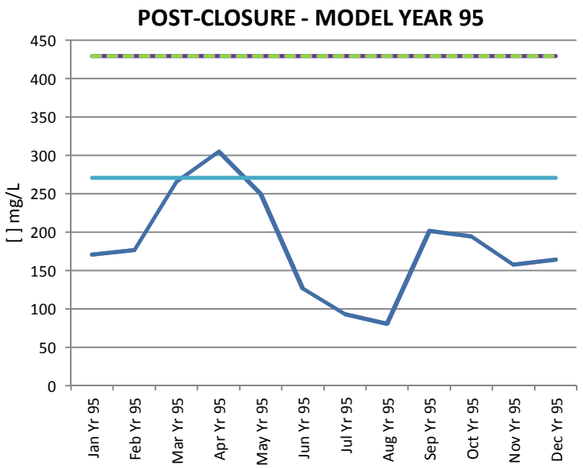
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB); HIGHER SBEB FOR PERIODS OF YEAR WHEN EARLY LIFE STAGES OF FISH ARE ABSENT FROM WATERCOURSE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02.3 DUSTFALL ASSUMPTIONS (DFA) - SULPHATE PREDICTIONS

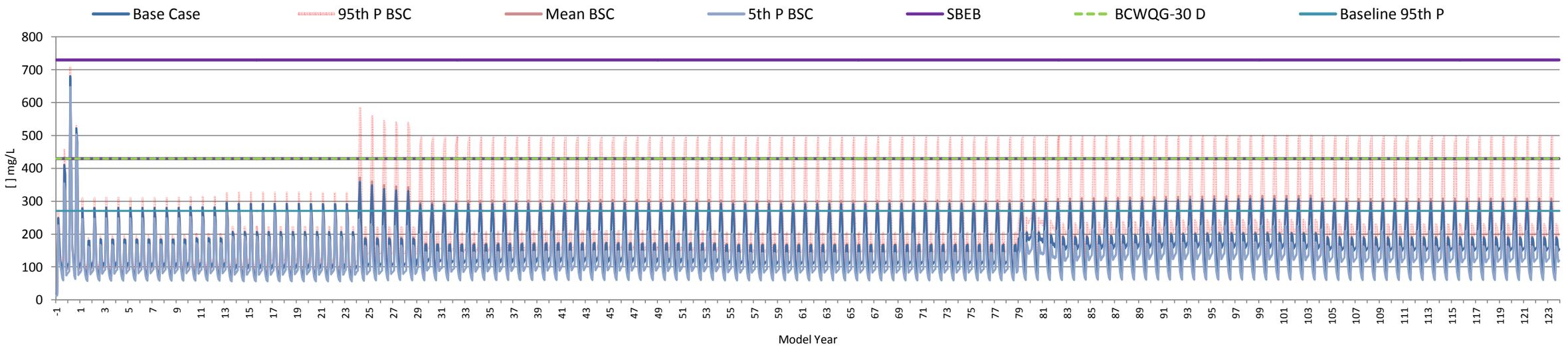
Knight Piésold CONSULTING

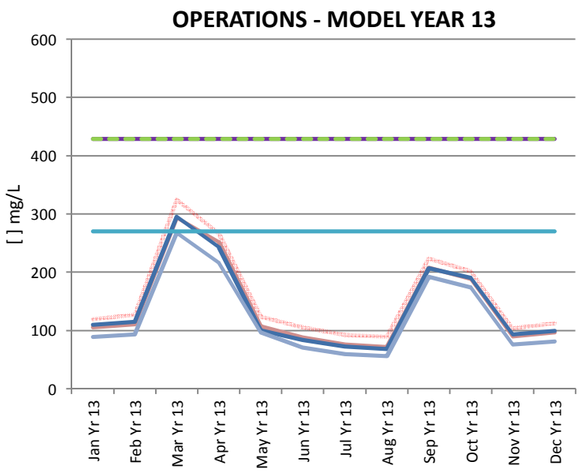
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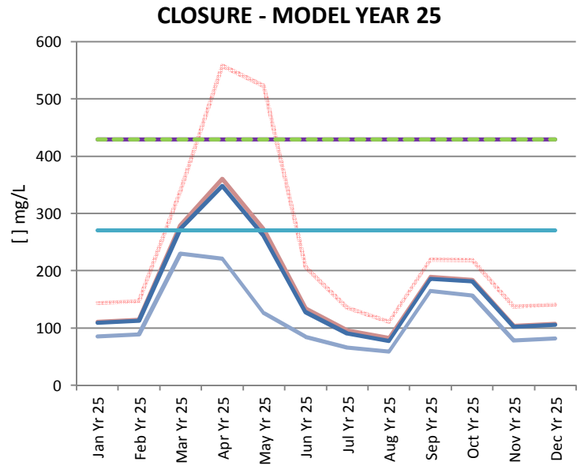
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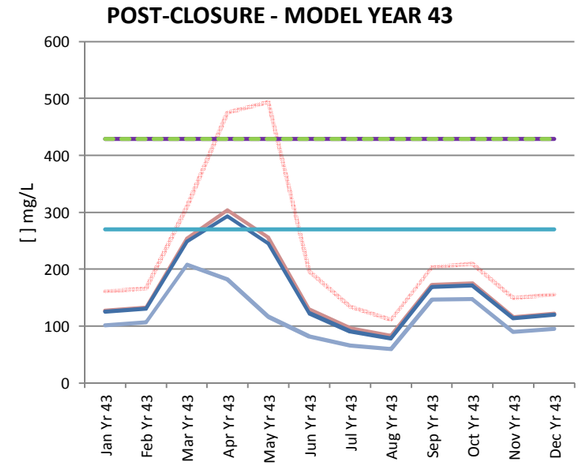
FIGURE F1.4

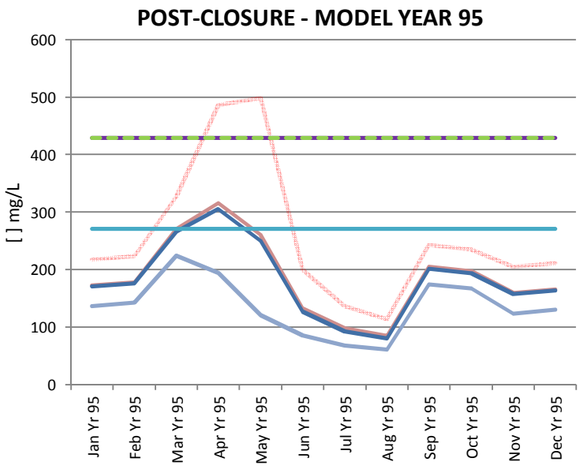
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB); HIGHER SBEB FOR PERIODS OF YEAR WHEN EARLY LIFE STAGES OF FISH ARE ABSENT FROM WATERCOURSE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

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PC02.3 BASELINE SENSITIVITY CASE (BSC) - SULPHATE PREDICTIONS

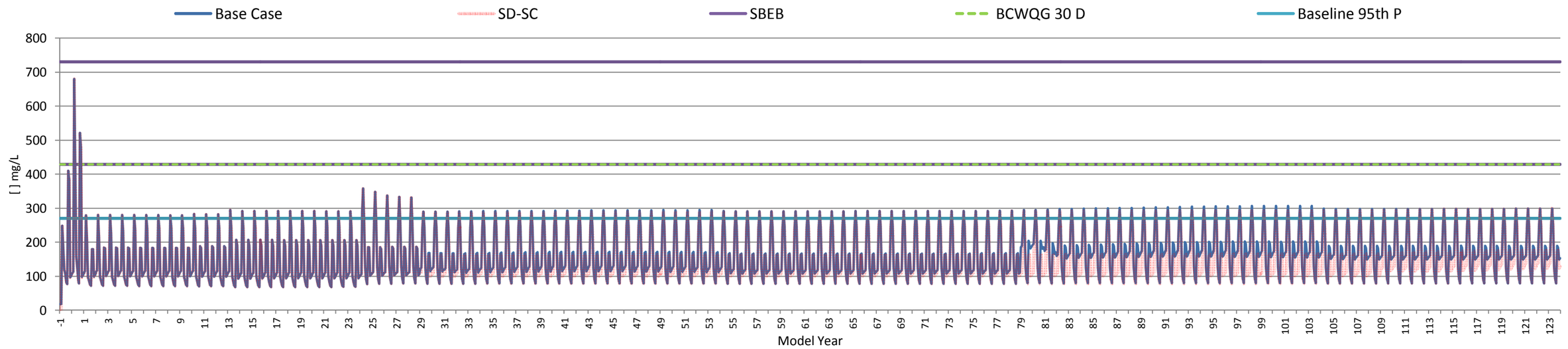
Knight Piésold CONSULTING

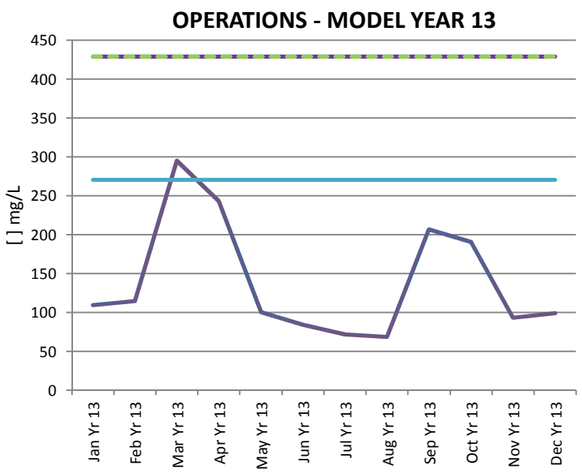
P/A NO. VA101-246/31

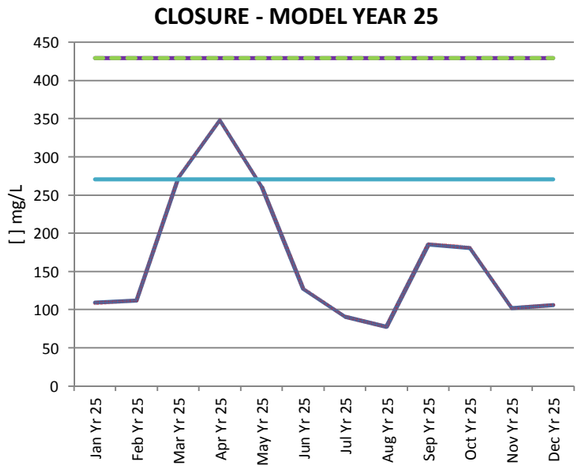
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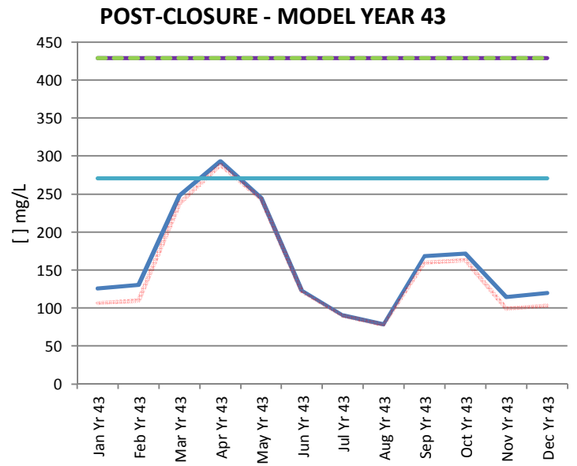
FIGURE F1.5

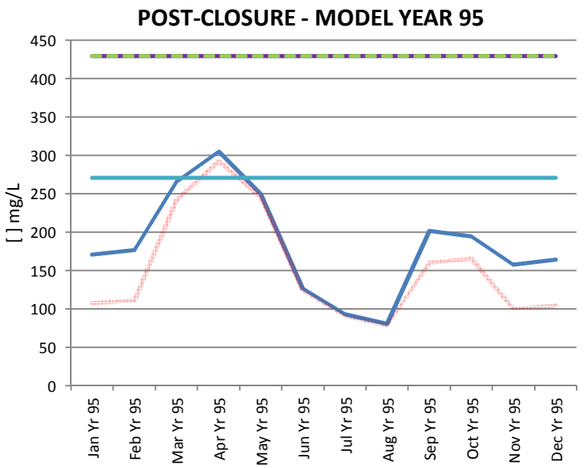
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

PC02.3 TIMING OF SEEPAGE ASSUMPTIONS (SD) - SULPHATE PREDICTIONS

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REF. NO. 3

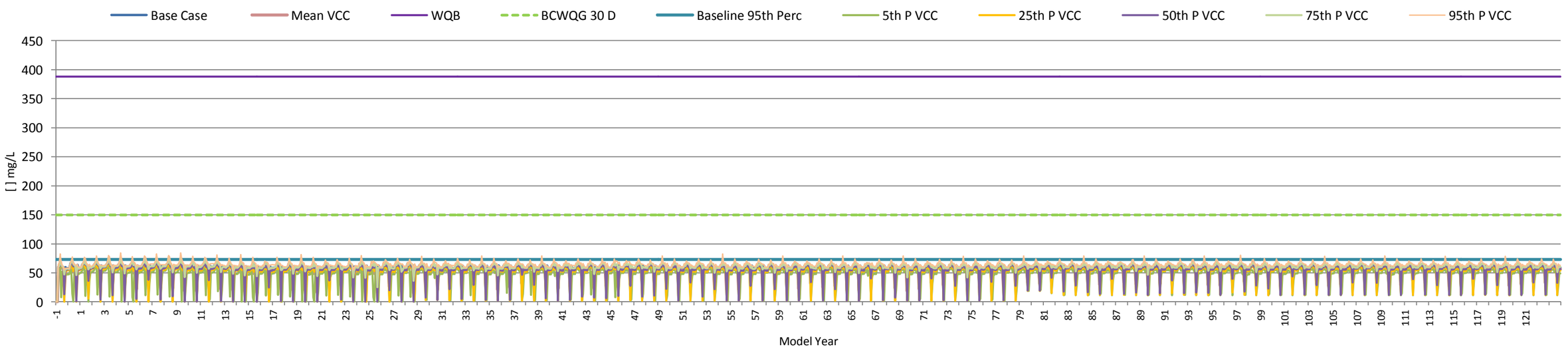
FIGURE F1.6

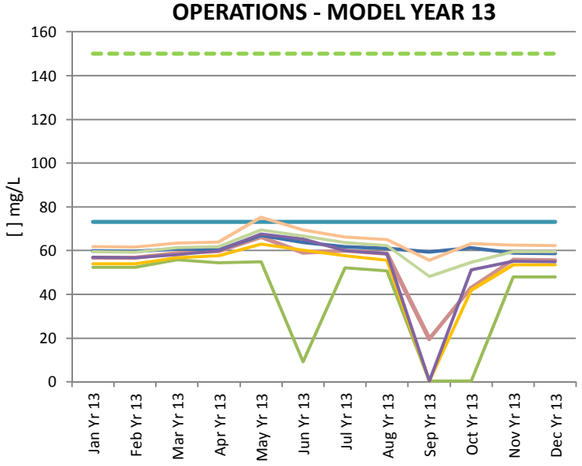
REV 0

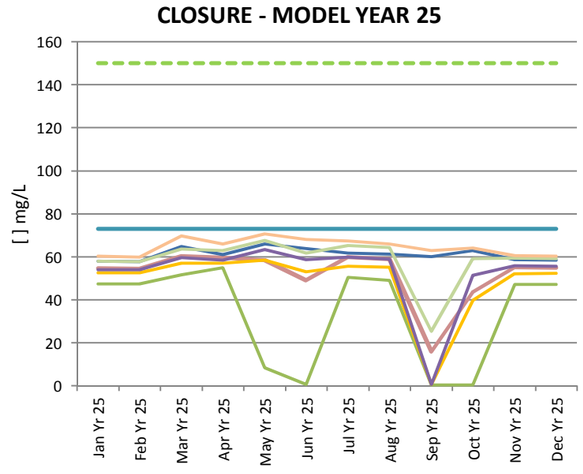
APPENDIX F2

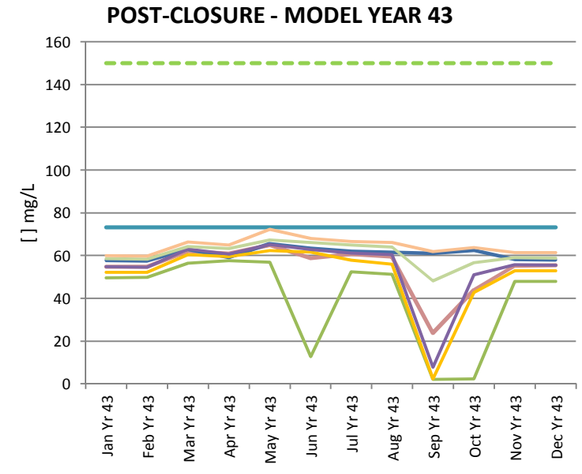
CHLORIDE

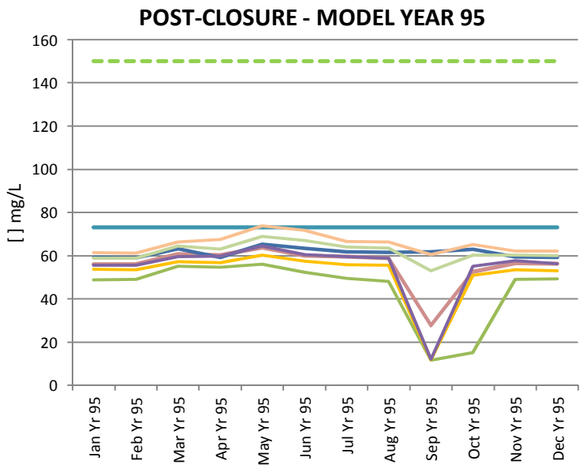
(Figures F2.1 to F2.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02.3 VARIABLE CLIMATE CASE (VCC) - CHLORIDE PREDICTIONS

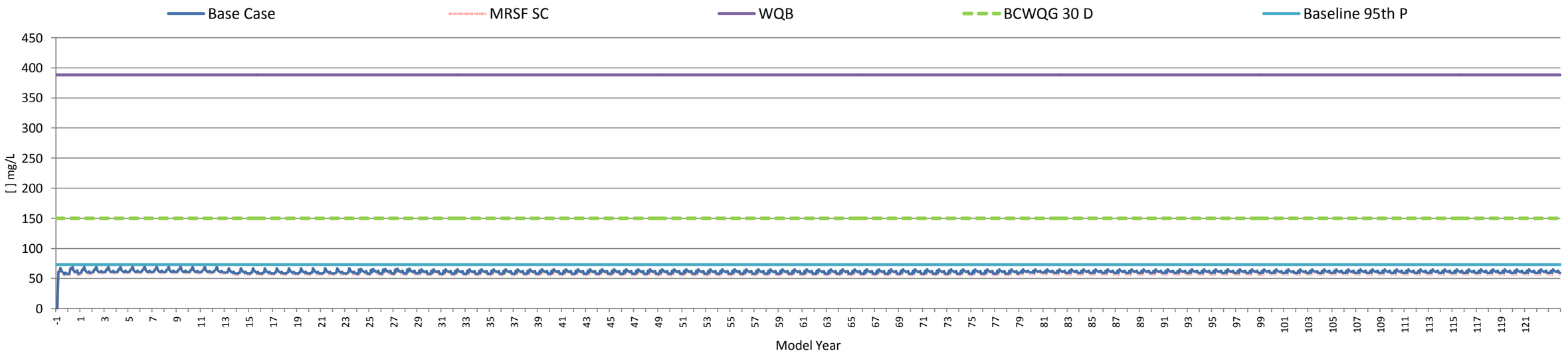
Knight Piésold CONSULTING

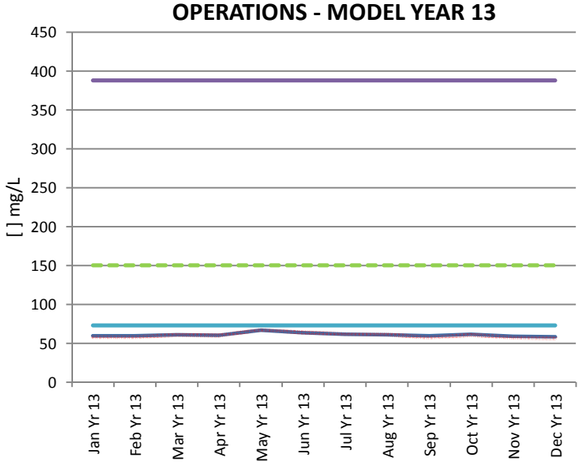
P/A NO. VA101-246/31

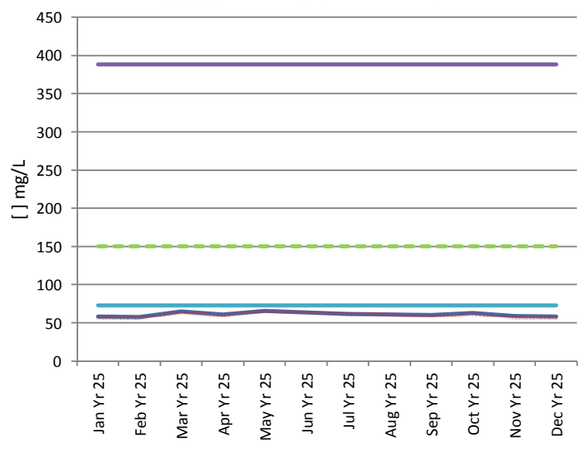
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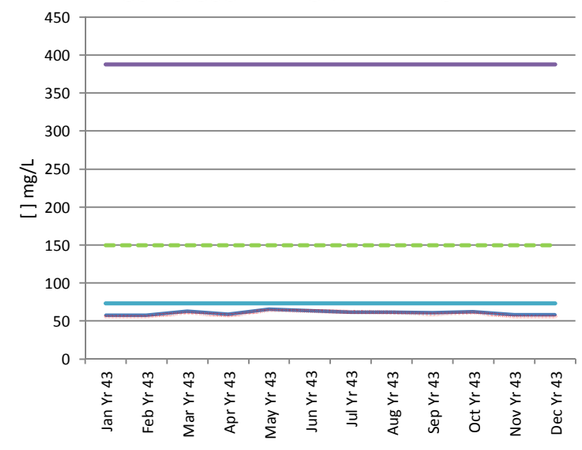
FIGURE F2.1

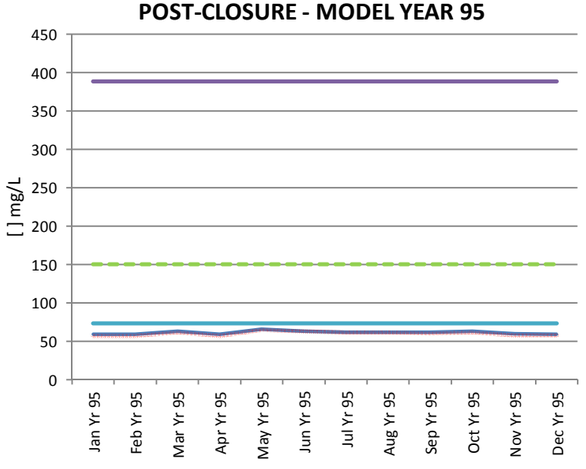
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02.3 MRSF RECHARGE ASSUMPTIONS - CHLORIDE PREDICTIONS

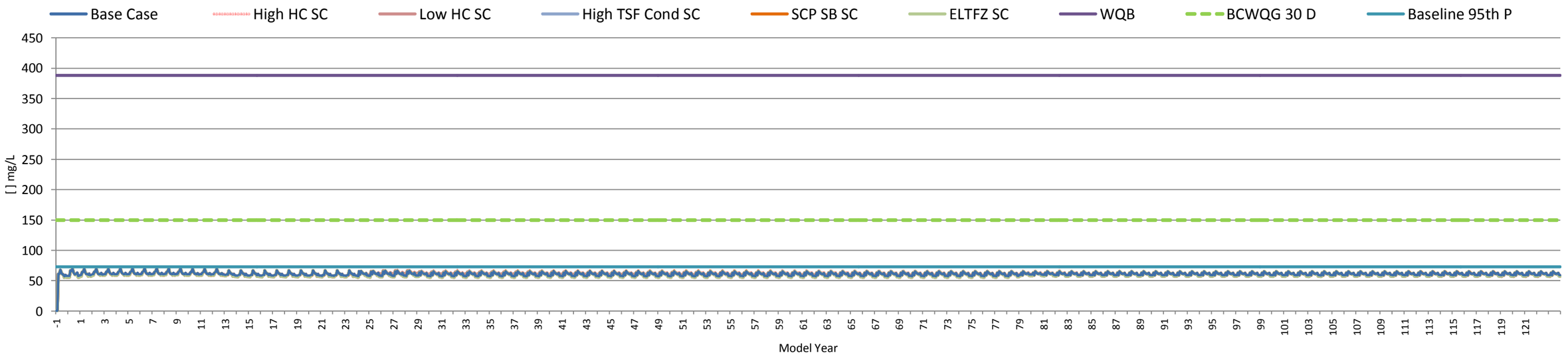
Knight Piésold CONSULTING

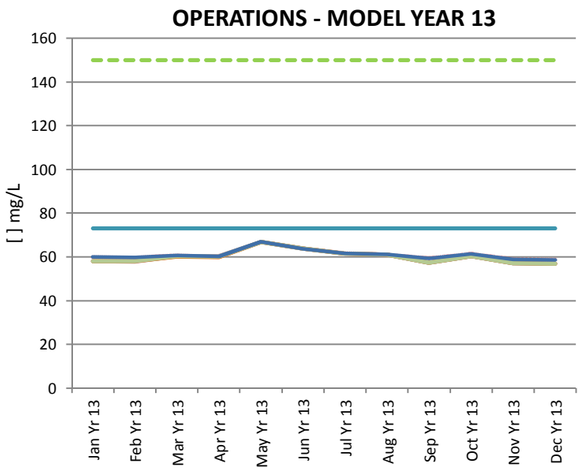
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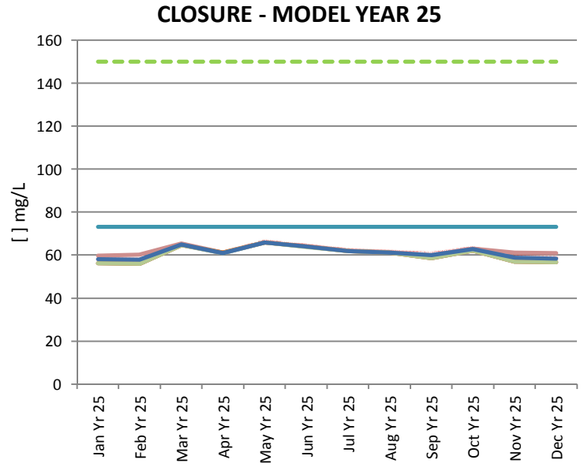
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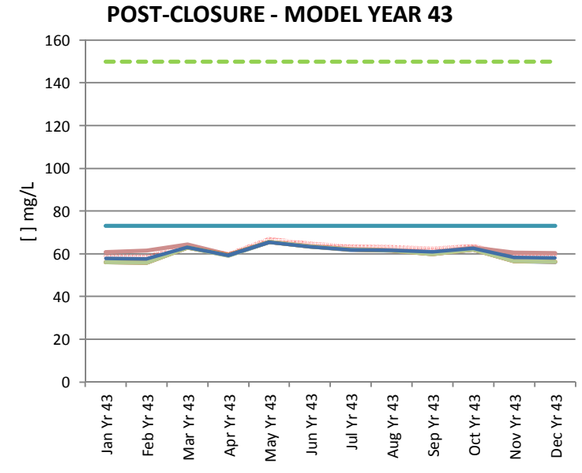
FIGURE F2.2

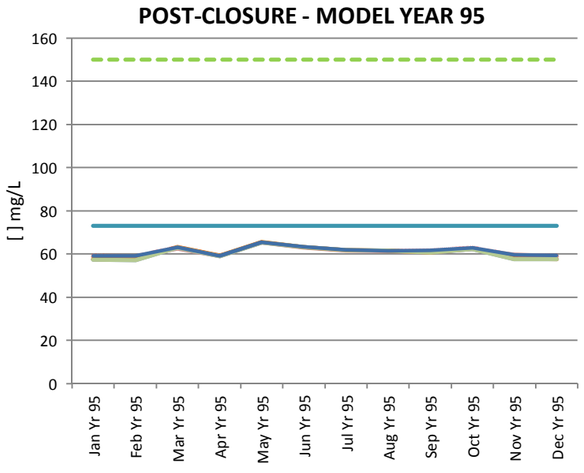
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02.3 GROUNDWATER ASSUMPTIONS (GW) - CHLORIDE PREDICTIONS

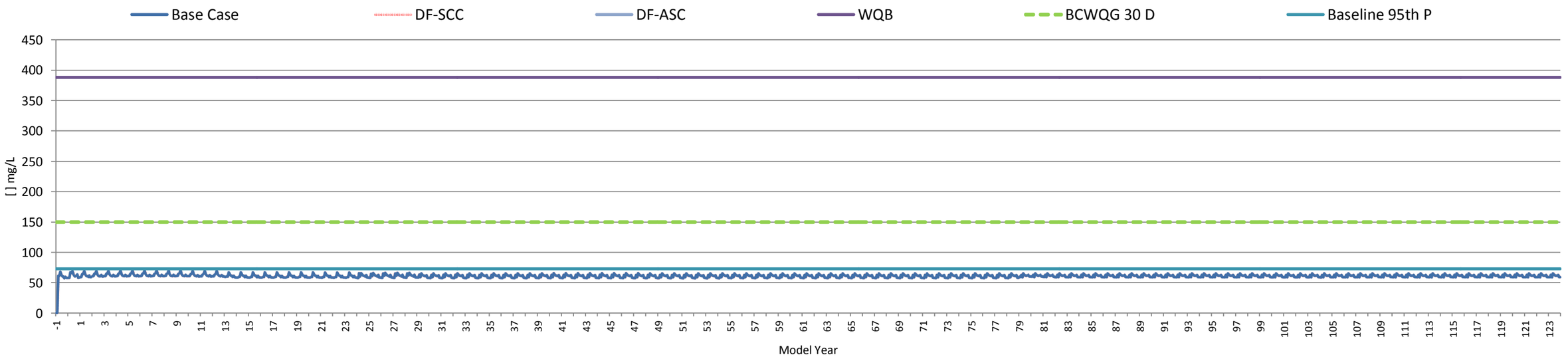
Knight Piésold CONSULTING

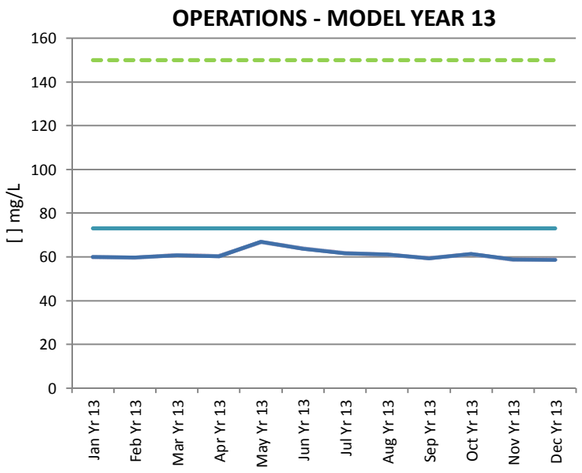
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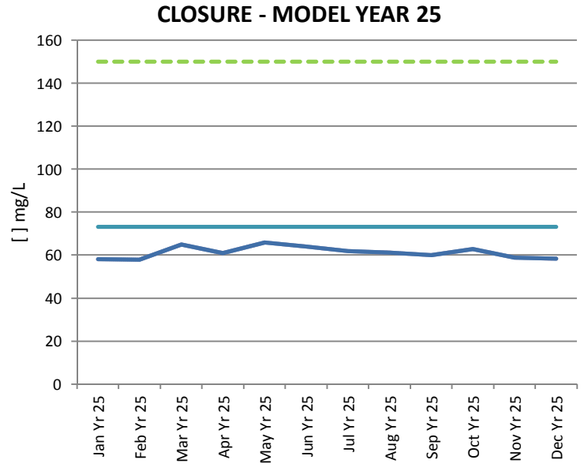
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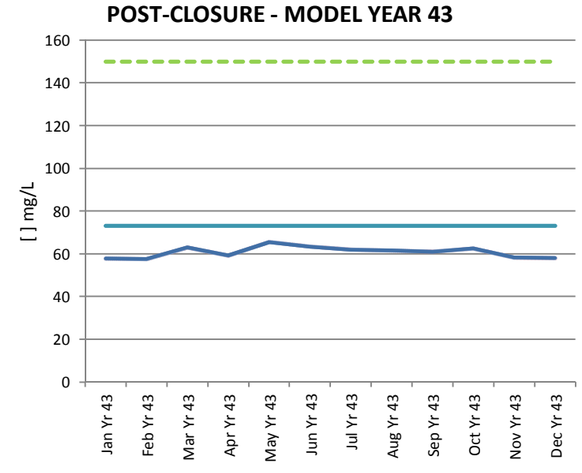
FIGURE F2.3

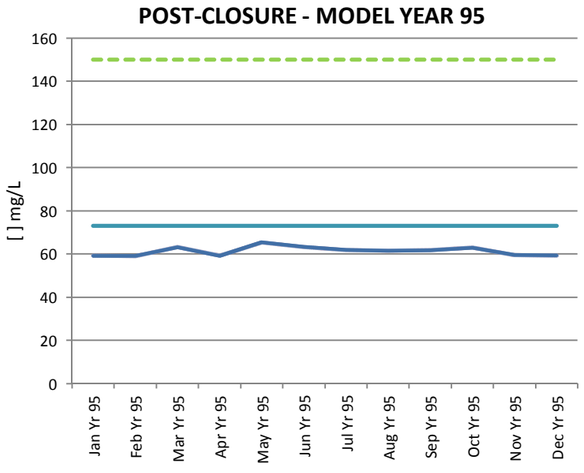
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PC02.3 DUSTFALL ASSUMPTIONS (DFA) - CHLORIDE PREDICTIONS

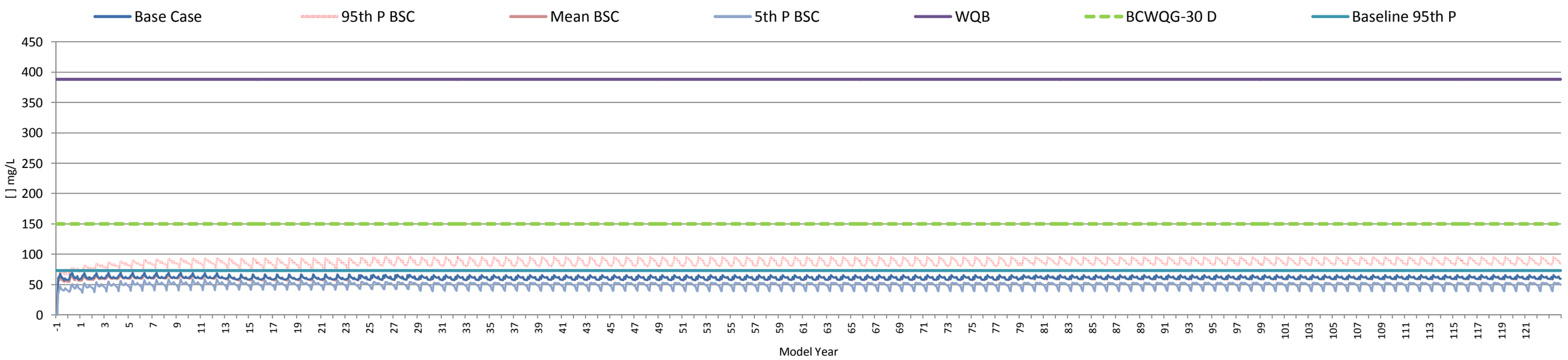
Knight Piésold CONSULTING

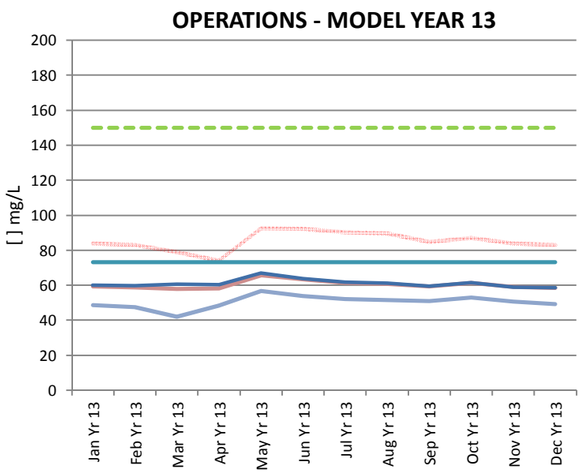
P/A NO. VA101-246/31

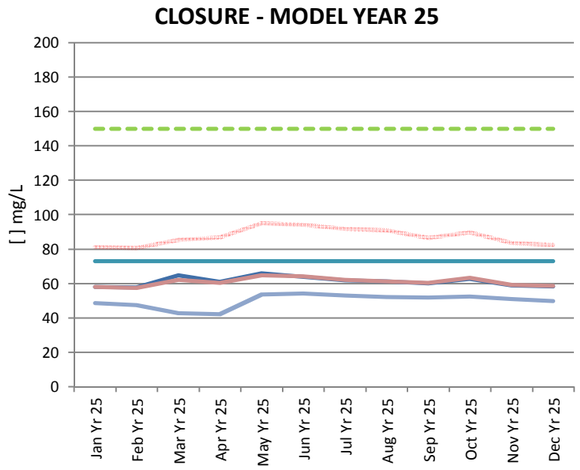
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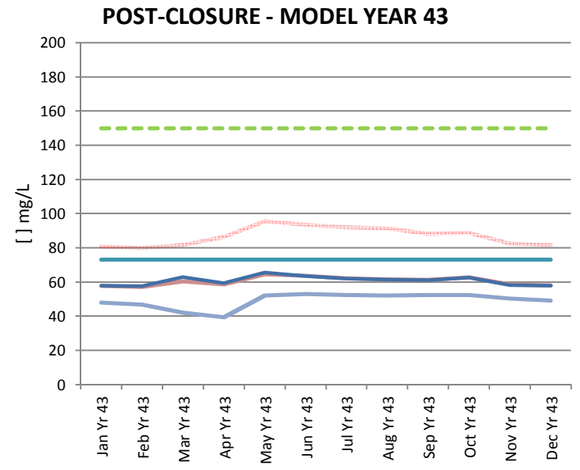
FIGURE F2.4

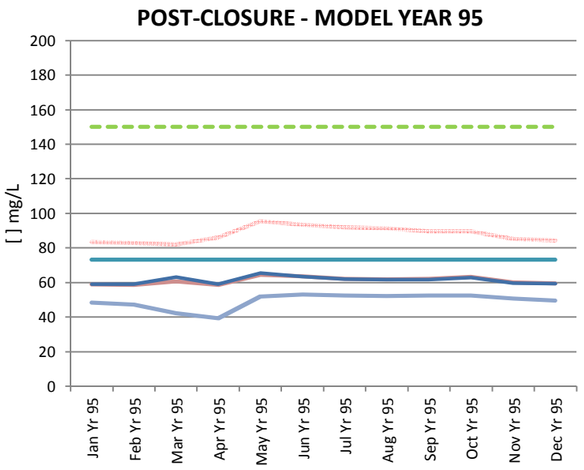
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02.3 BASELINE SENSITIVITY CASE (BSC) - CHLORIDE PREDICTIONS

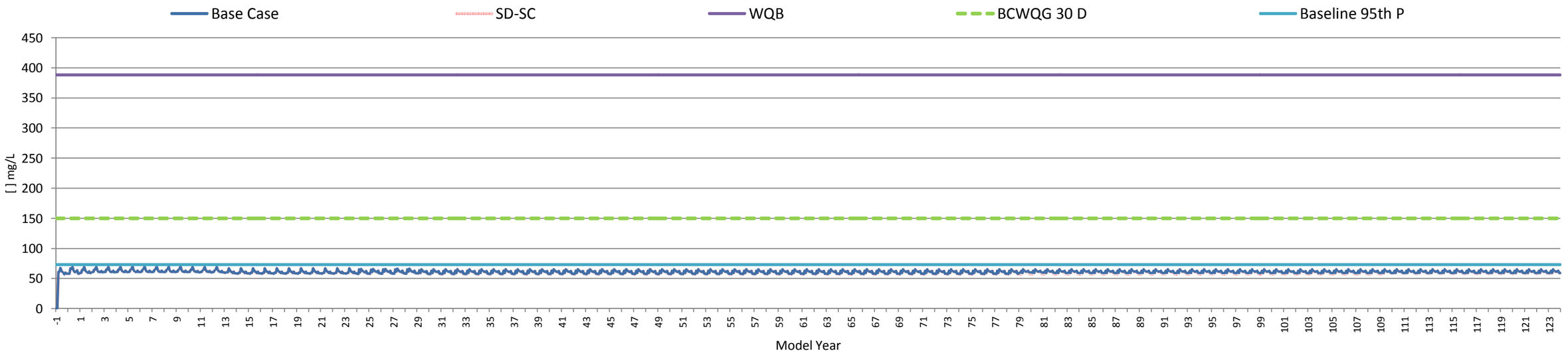
Knight Piésold CONSULTING

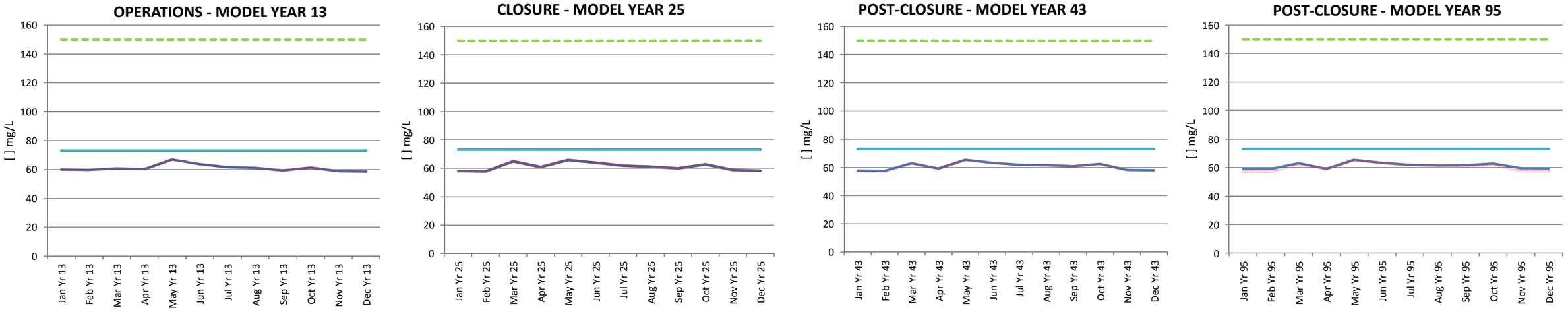
P/A NO. VA101-246/31

REF. NO. 3

FIGURE F2.5

REV 0





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

PC02.3 TIMING OF SEEPAGE ASSUMPTIONS (SD) - CHLORIDE PREDICTIONS

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 3

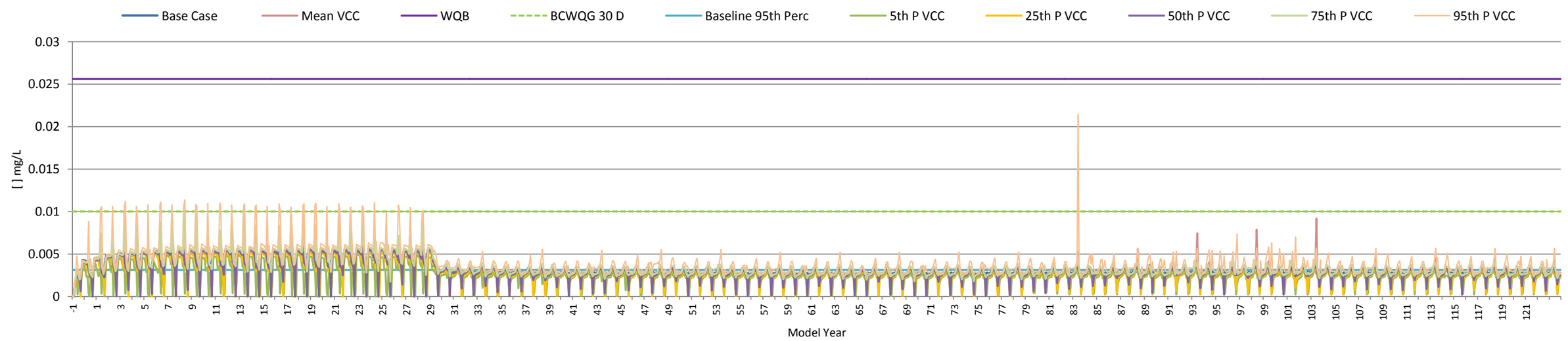
FIGURE F2.6

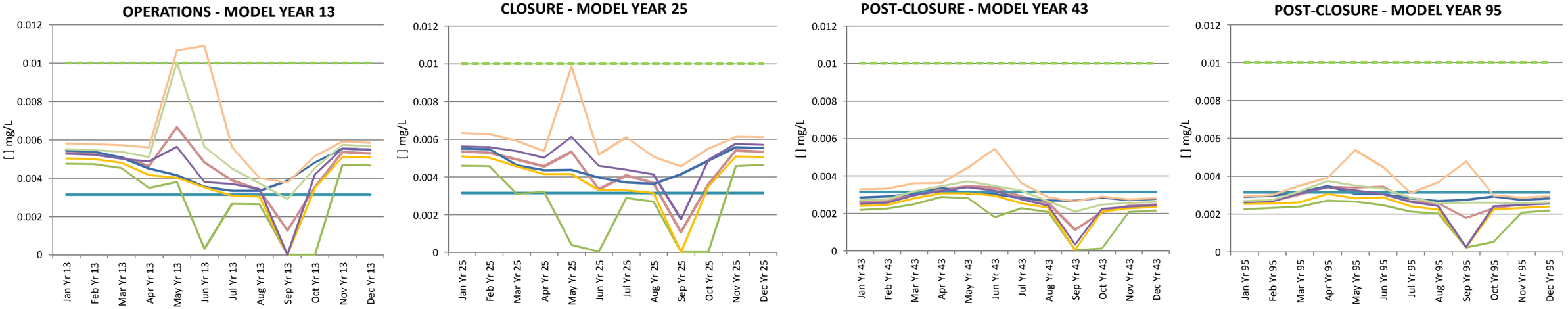
REV 0

APPENDIX F3

COPPER

(Figures F3.1 to F3.6)





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

REV	DATE	DESCRIPTION	PREP'D	APP'D
0	15JUL'15	ISSUED WITH REPORT	JMQ	JEM

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AJAX PROJECT

PC02.3 VARIABLE CLIMATE CASE (VCC) - COPPER PREDICTIONS

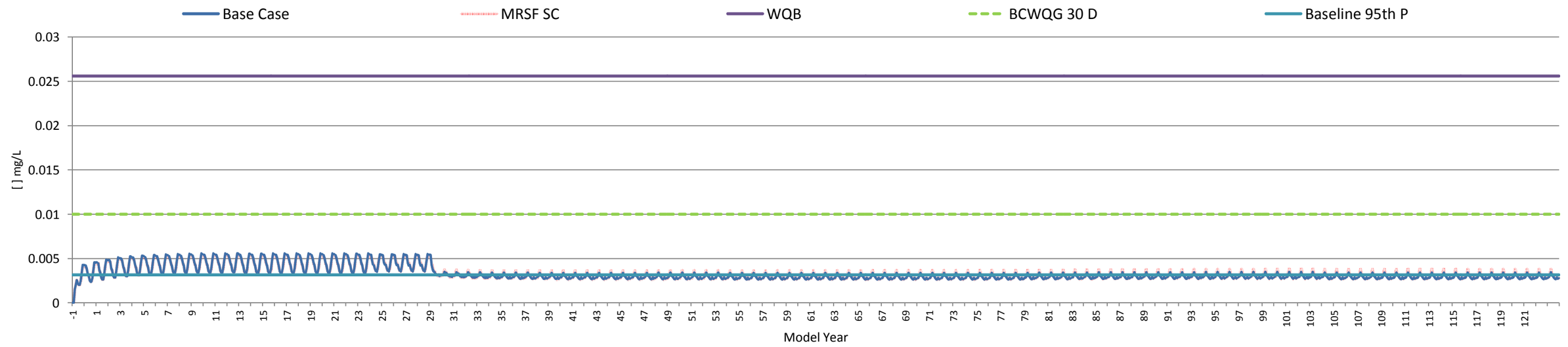
Knight Piésold CONSULTING

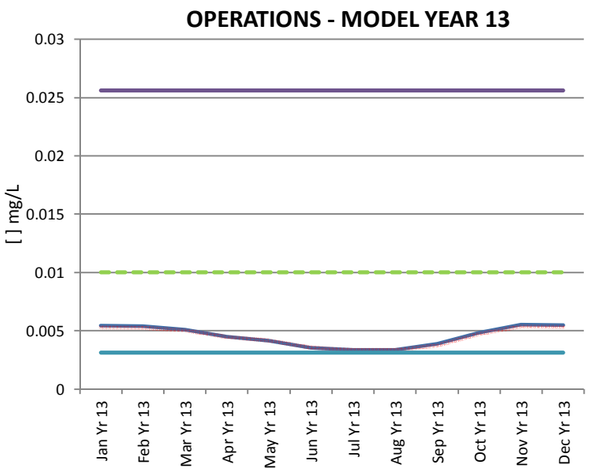
P/A NO. VA101-246/31

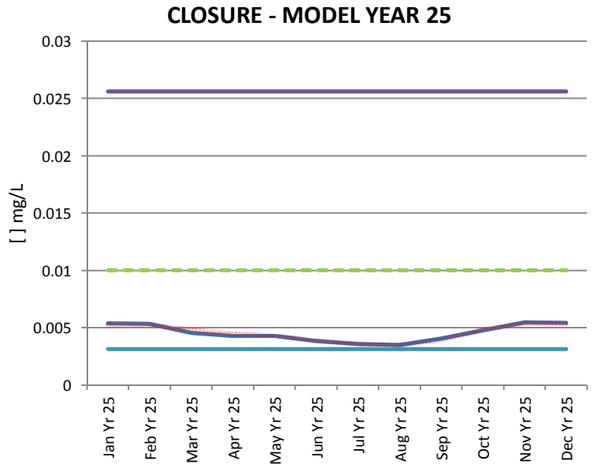
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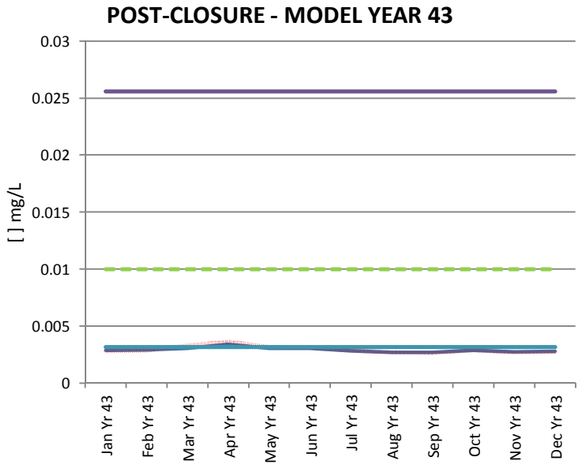
FIGURE F3.1

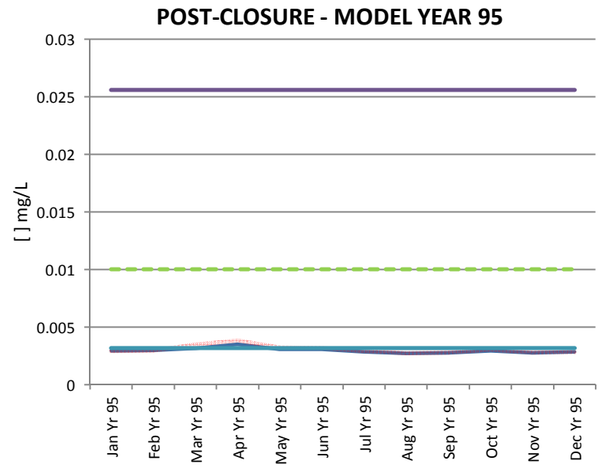
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02.3 MRSF RECHARGE ASSUMPTIONS - COPPER PREDICTIONS

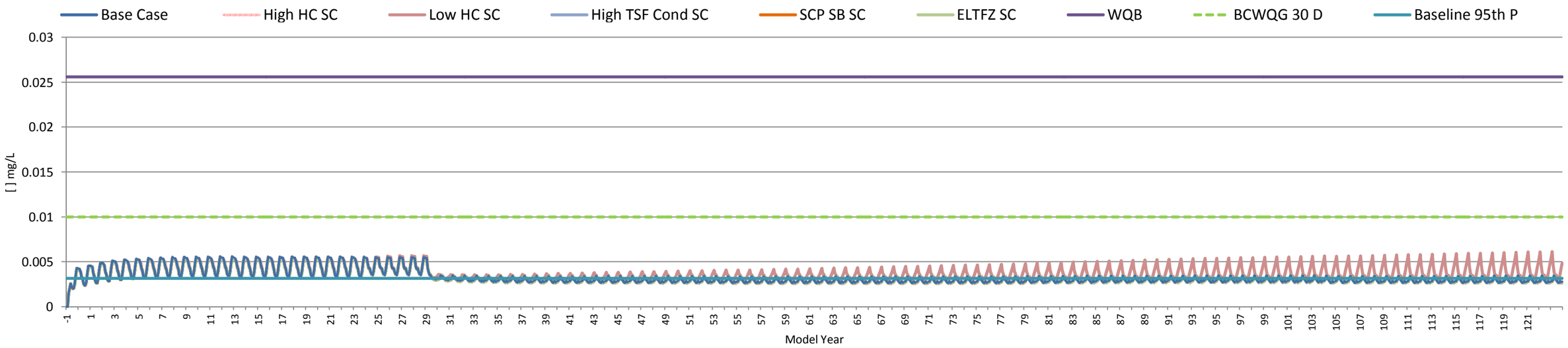
Knight Piésold CONSULTING

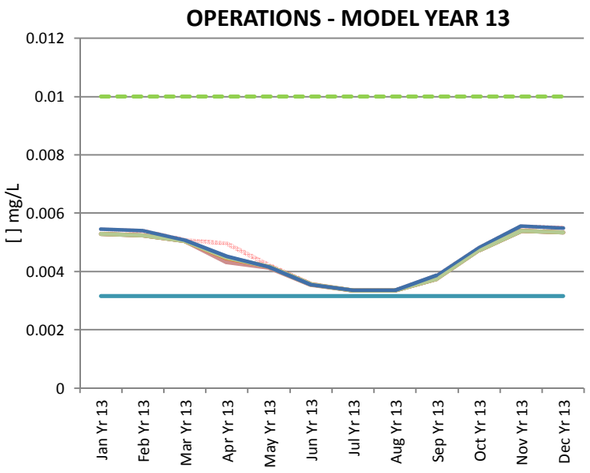
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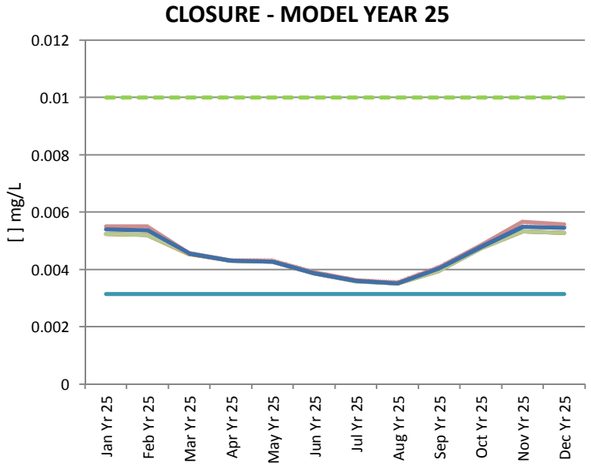
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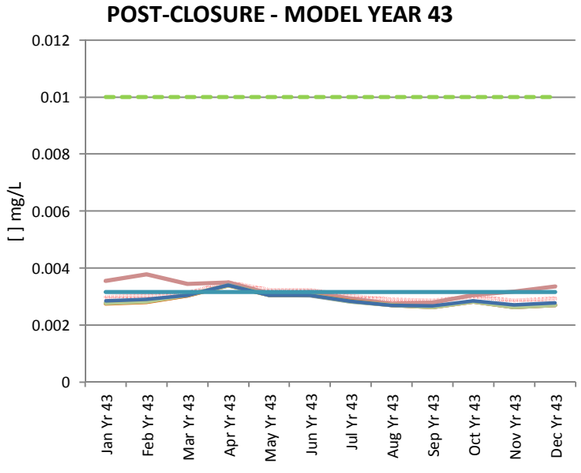
FIGURE F3.2

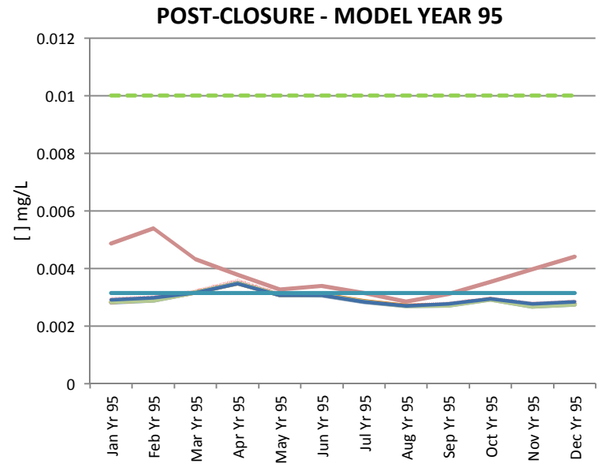
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02.3 GROUNDWATER ASSUMPTIONS (GW) - COPPER PREDICTIONS

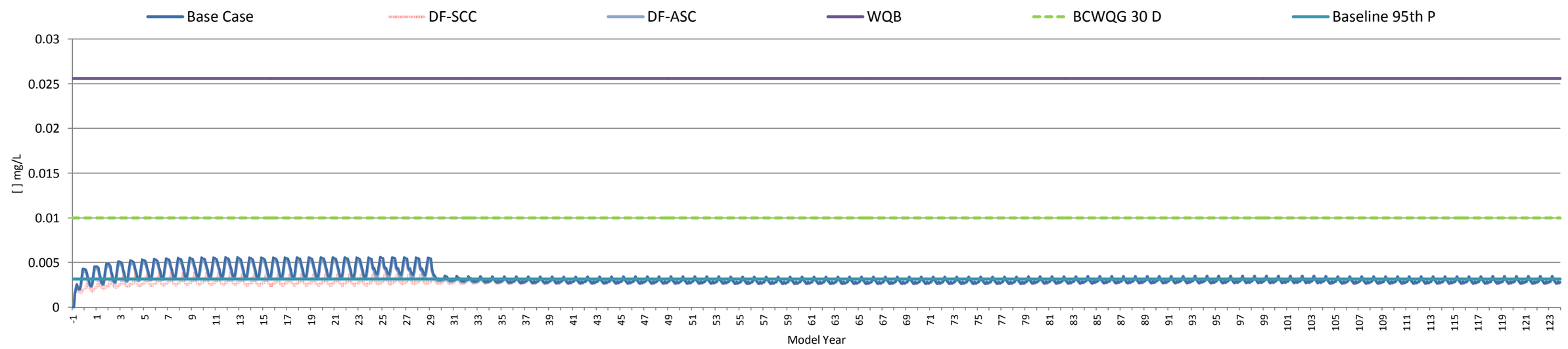
Knight Piésold CONSULTING

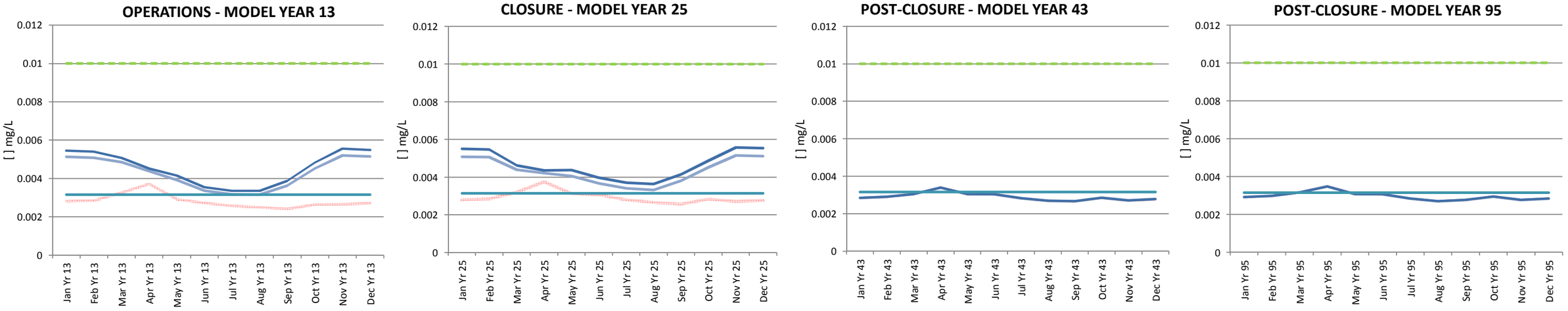
P/A NO. VA101-246/31

REF. NO. 3

FIGURE F3.3

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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02.3 DUSTFALL ASSUMPTIONS (DFA) - COPPER PREDICTIONS

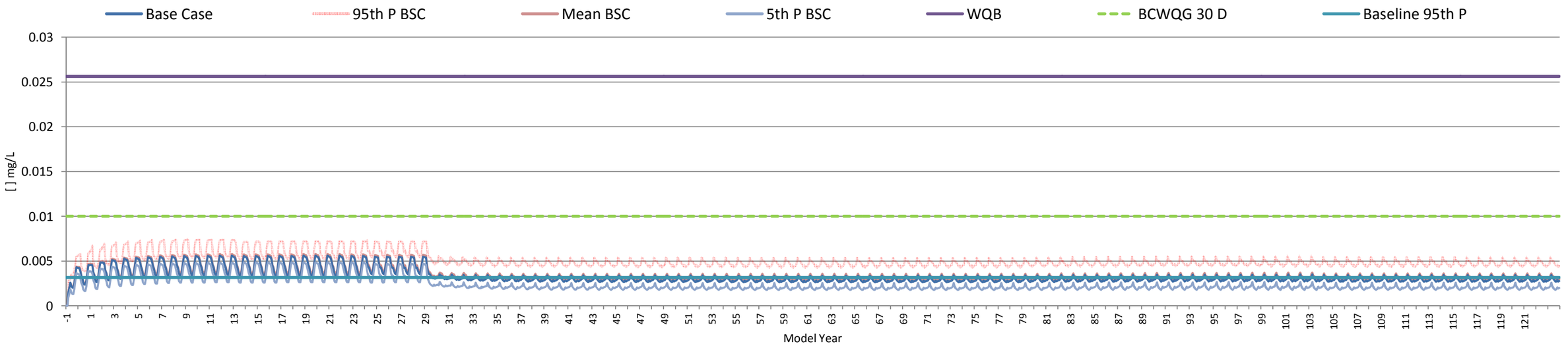
Knight Piésold CONSULTING

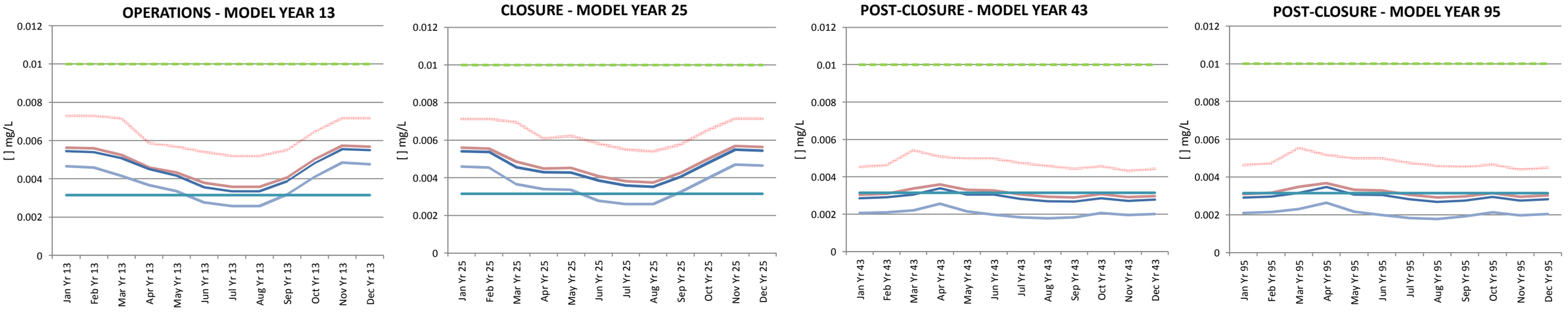
P/A NO. VA101-246/31

REF. NO. 3

FIGURE F3.4

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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

PC02.3 BASELINE SENSITIVITY CASE (BSC) - COPPER PREDICTIONS

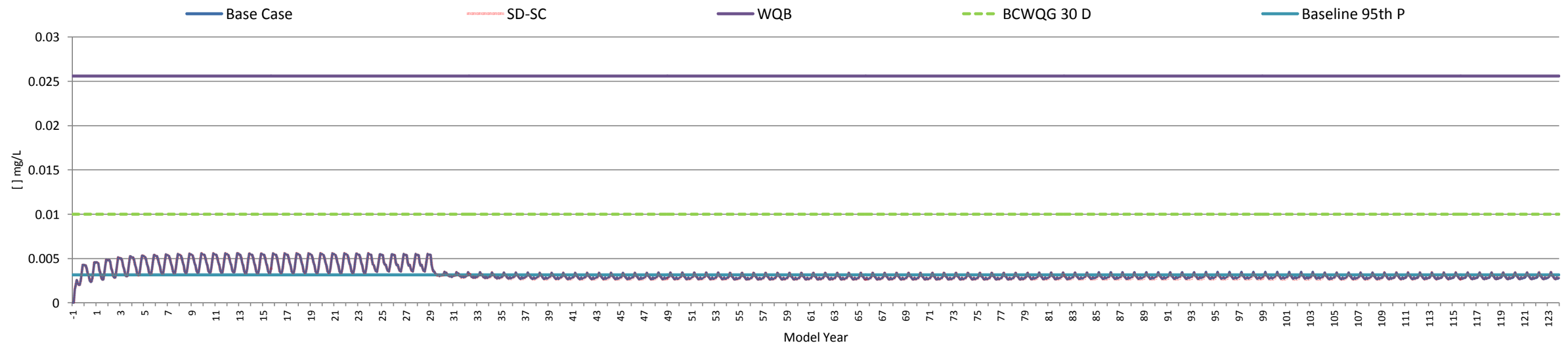
Knight Piésold CONSULTING

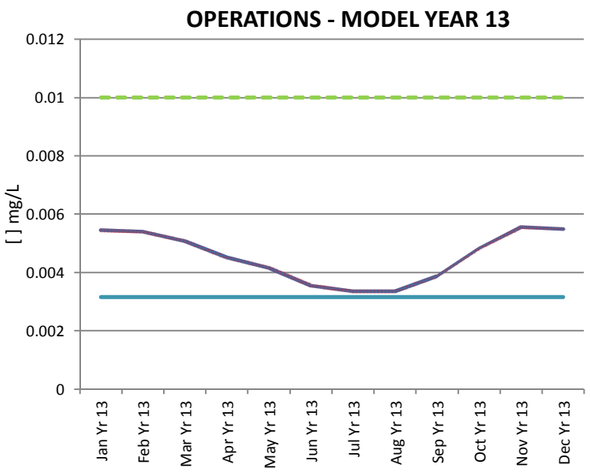
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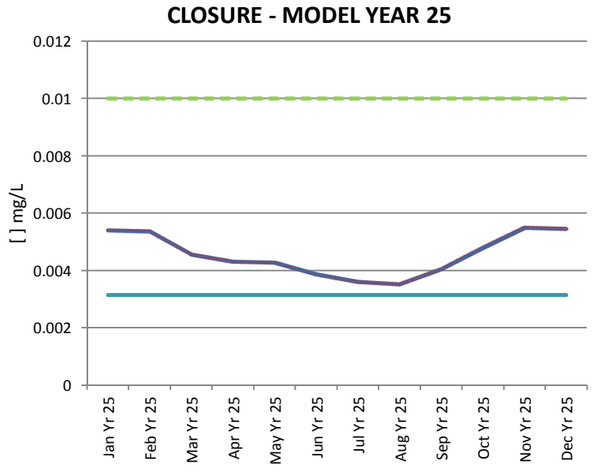
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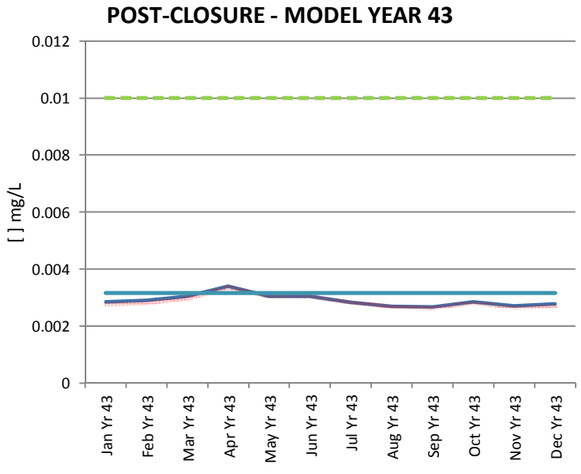
FIGURE F3.5

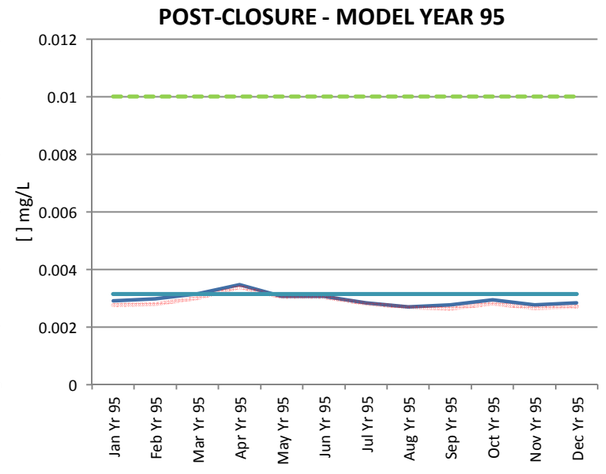
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02.3 TIMING OF SEEPAGE ASSUMPTIONS (SD) - COPPER PREDICTIONS

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 3

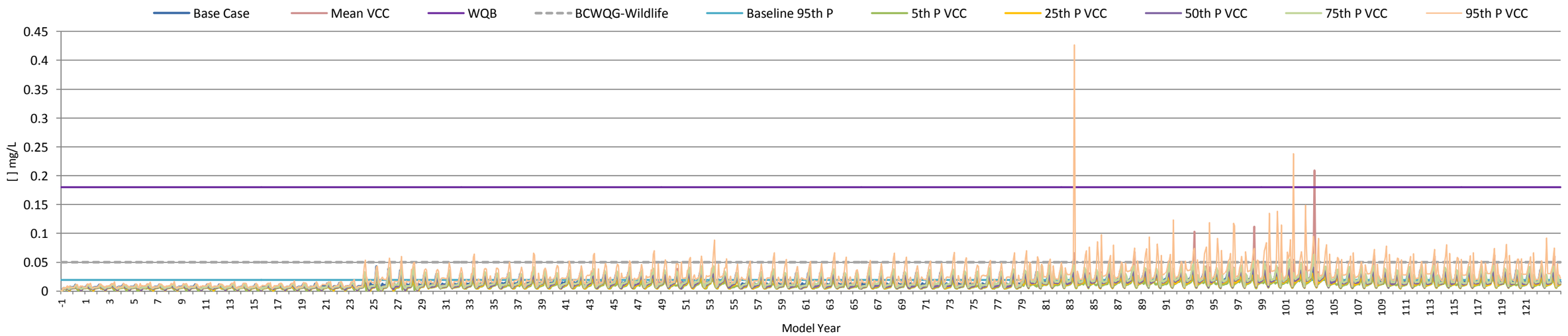
FIGURE F3.6

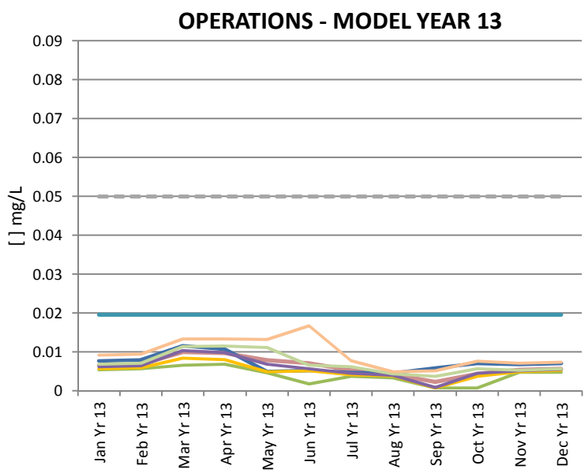
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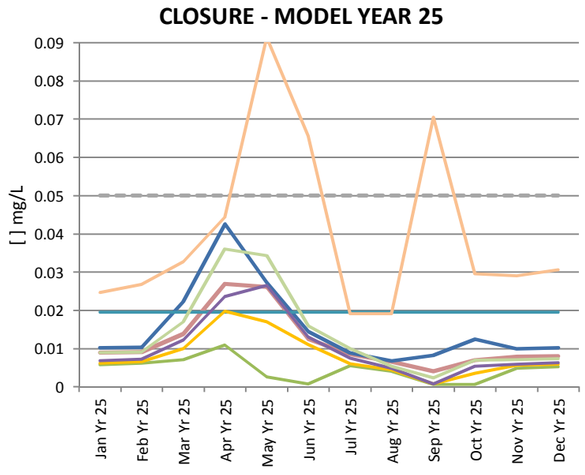
APPENDIX F4

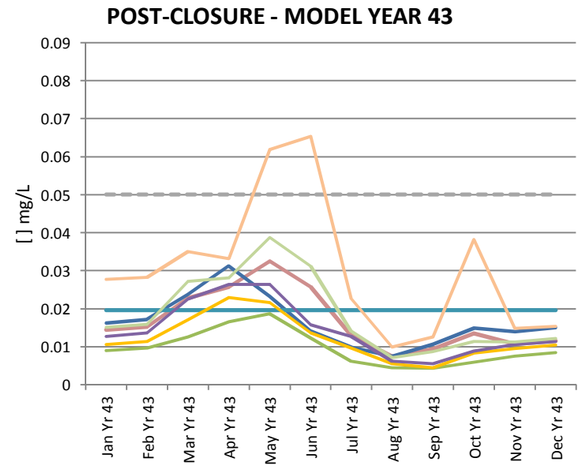
MOLYBDENUM

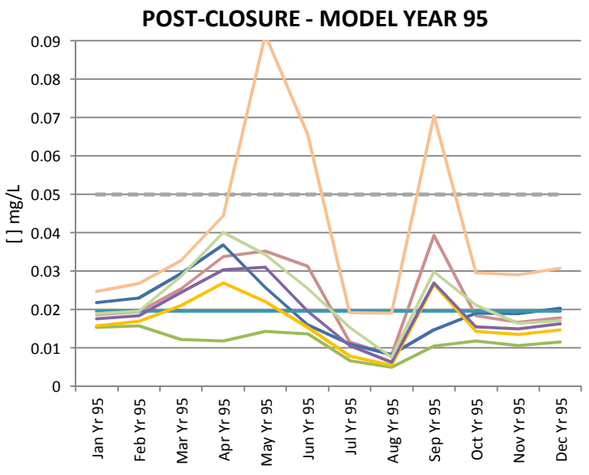
(Figures F4.1 to F4.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

PC02.3 VARIABLE CLIMATE CASE (VCC) - MOLYBDENUM PREDICTIONS

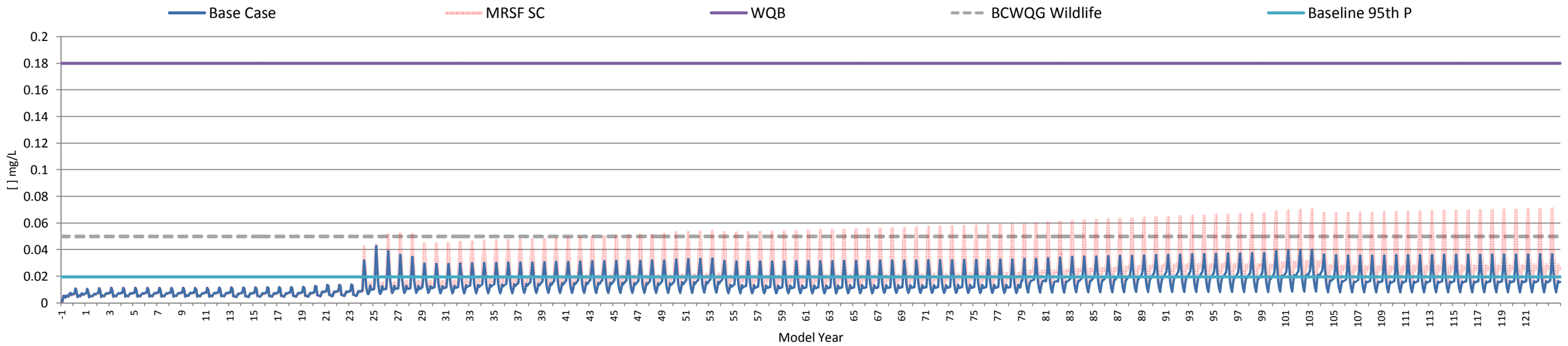
Knight Piésold CONSULTING

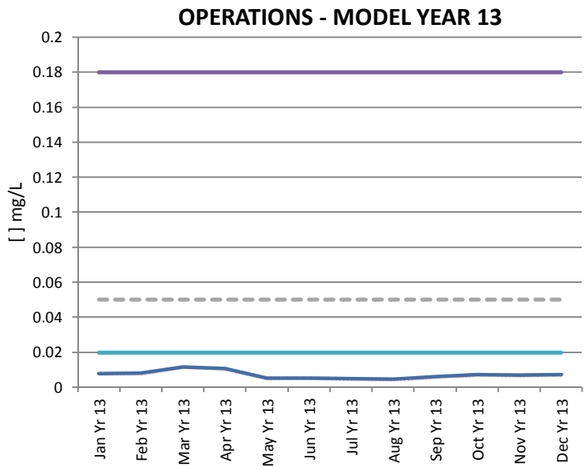
P/A NO. VA101-246/31

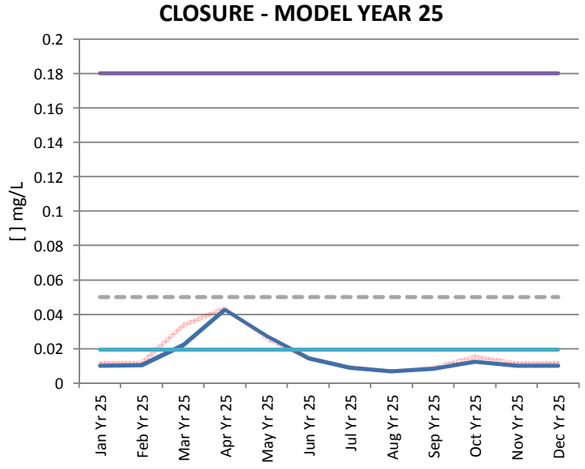
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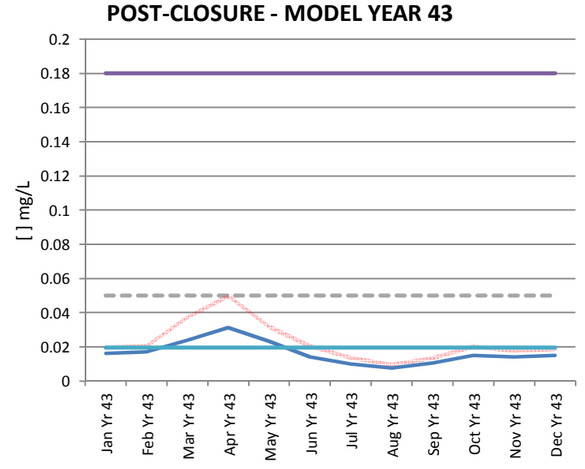
FIGURE F4.1

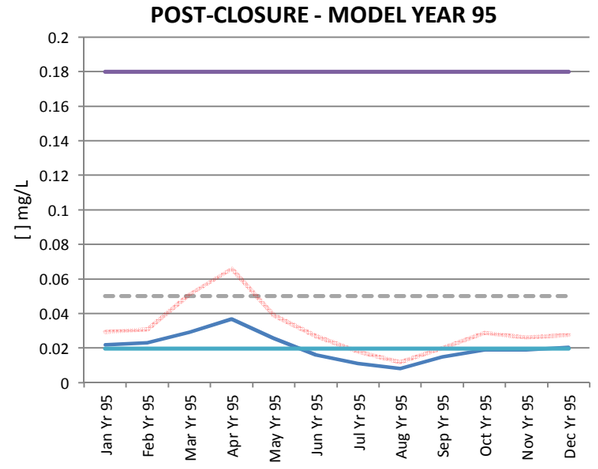
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

PC02.3 MRSF RECHARGE ASSUMPTIONS - MOLYBDENUM PREDICTIONS

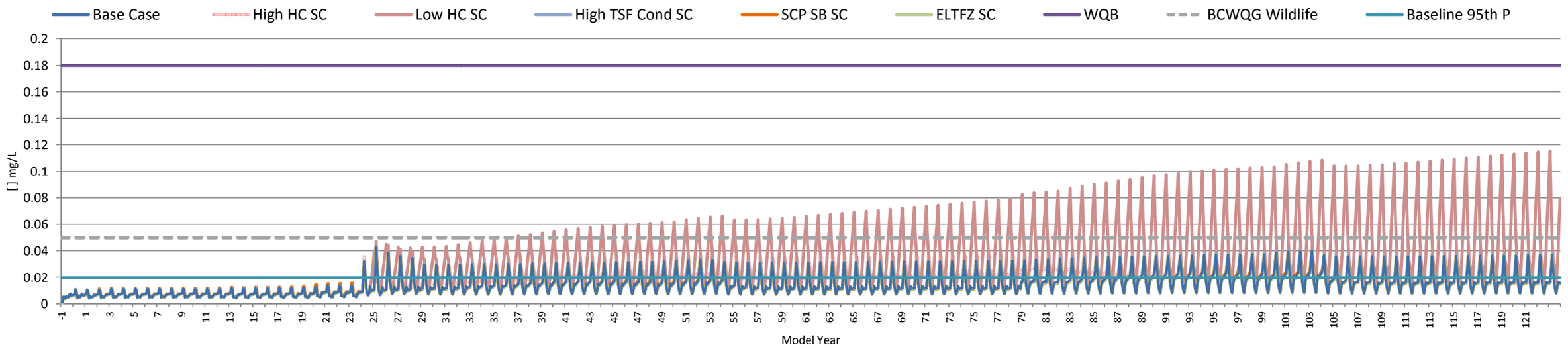
Knight Piésold CONSULTING

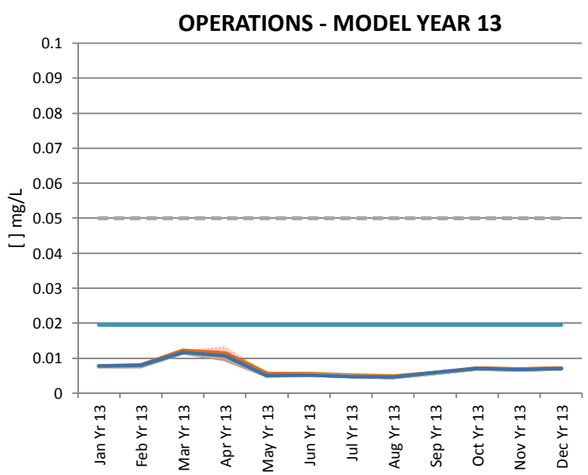
P/A NO. VA101-246/31

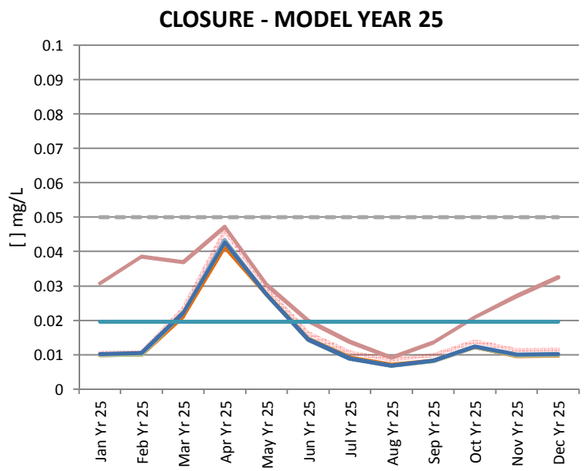
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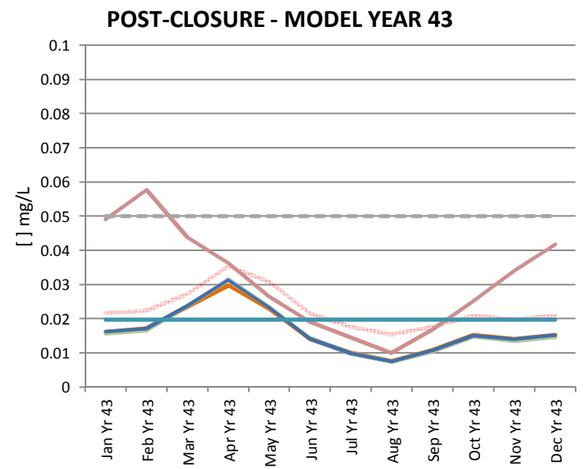
FIGURE F4.2

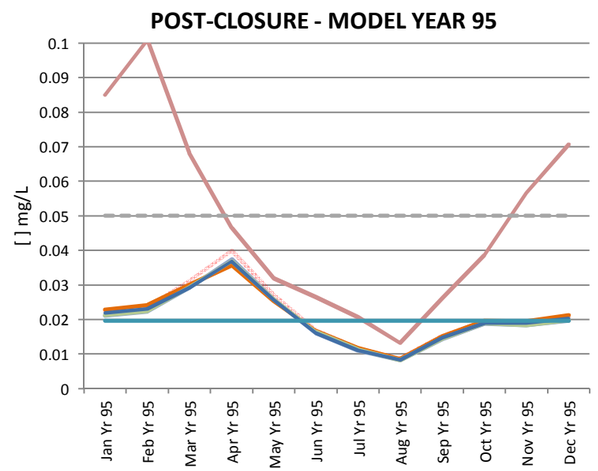
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PC02.3 GROUNDWATER ASSUMPTIONS (GW) - MOLYBDENUM PREDICTIONS

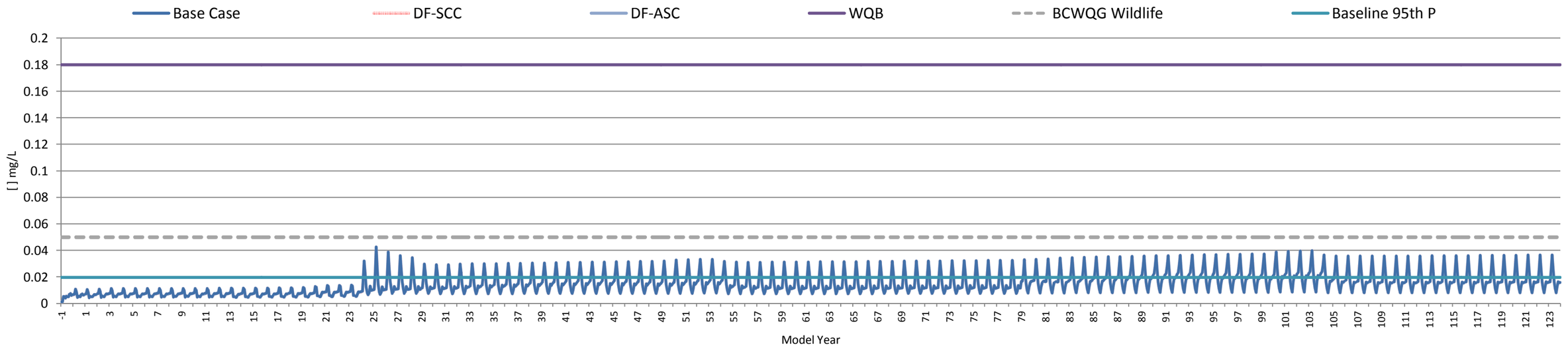
Knight Piésold CONSULTING

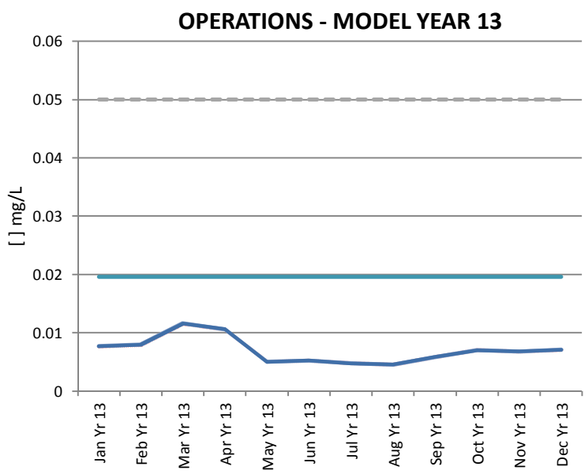
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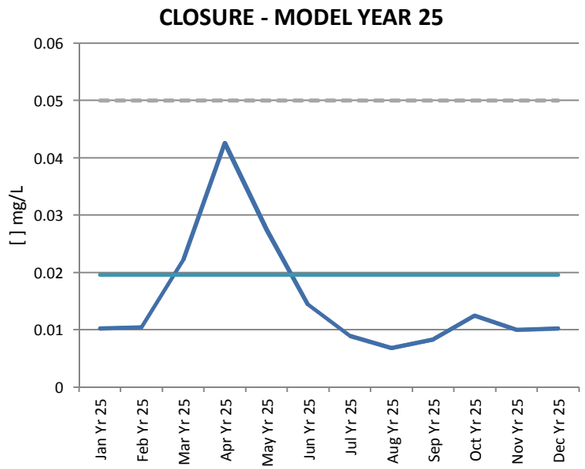
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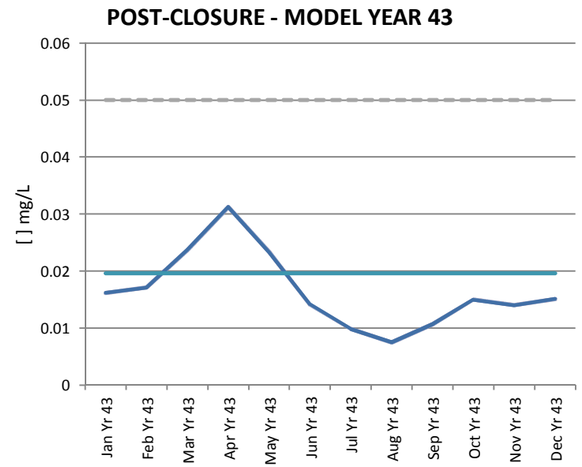
FIGURE F4.3

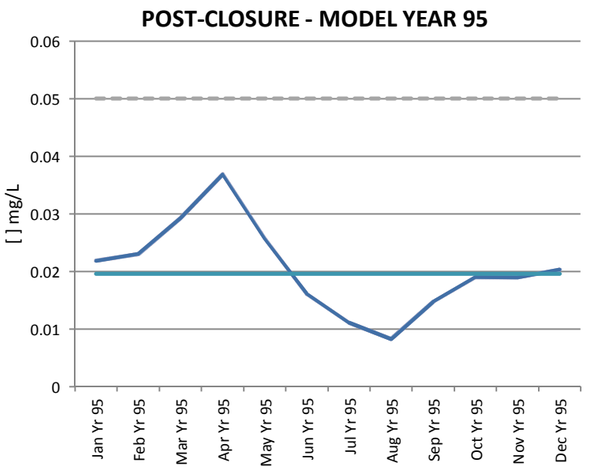
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PC02.3 DUSTFALL ASSUMPTIONS (DFA) - MOLYBDENUM PREDICTIONS

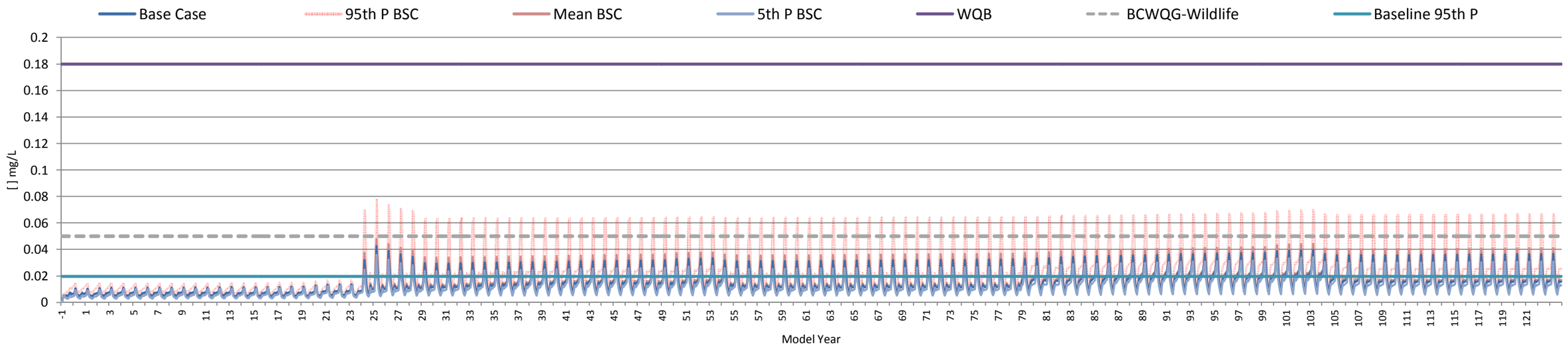
Knight Piésold CONSULTING

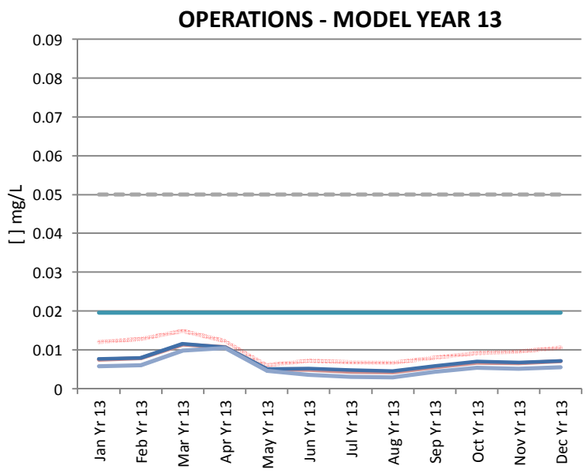
P/A NO. VA101-246/31

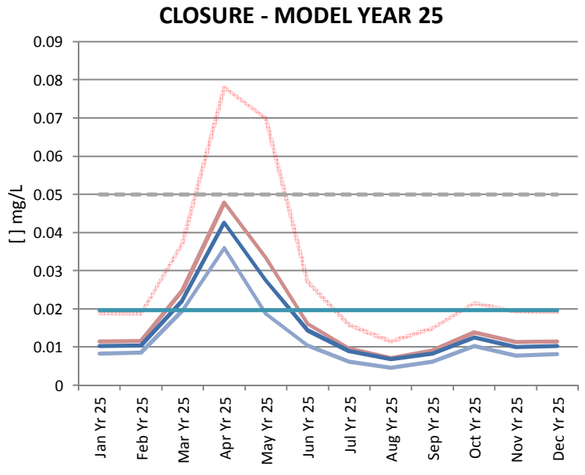
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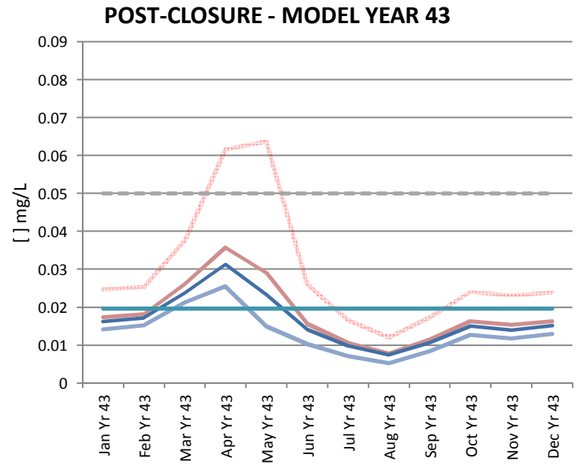
FIGURE F4.4

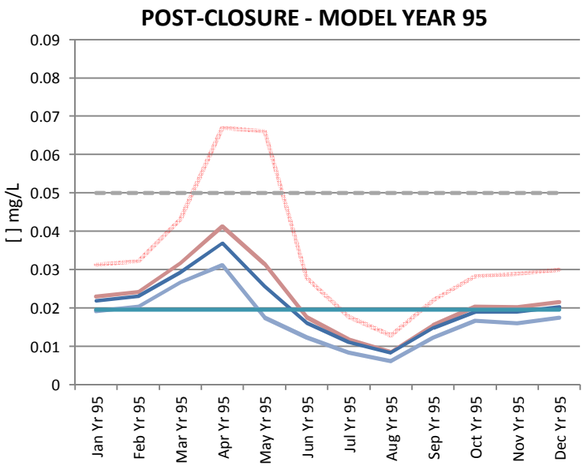
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

PC02.3 BASELINE SENSITIVITY CASE (BSC) - MOLYBDENUM PREDICTIONS

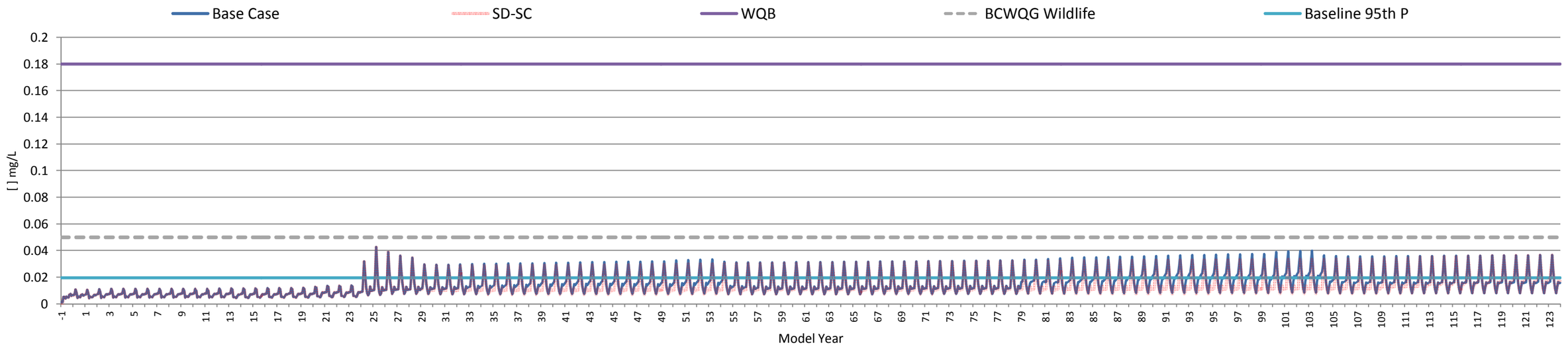
Knight Piésold CONSULTING

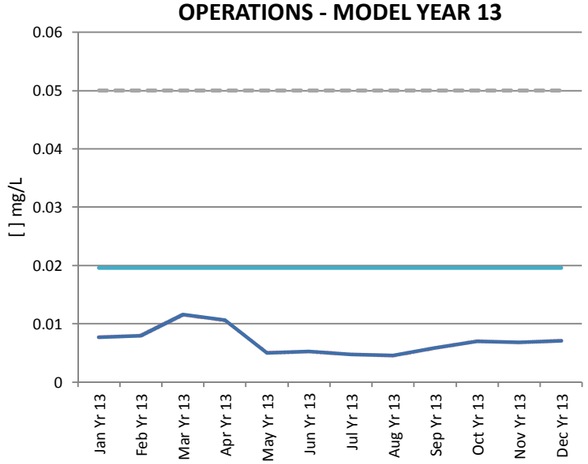
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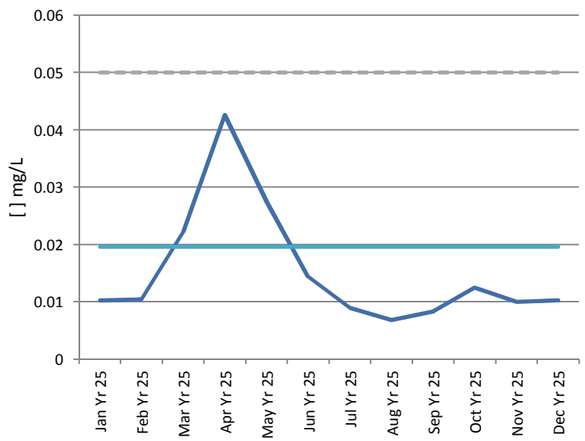
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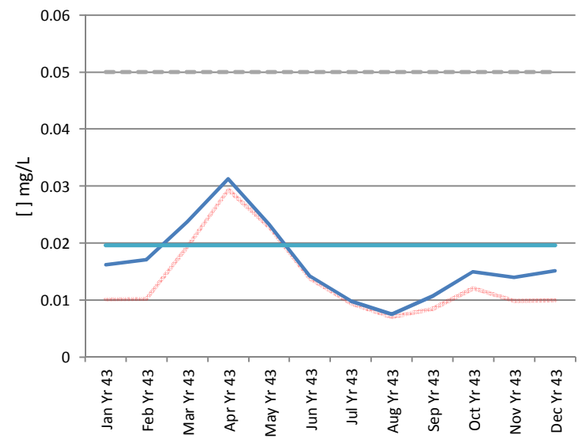
FIGURE F4.5

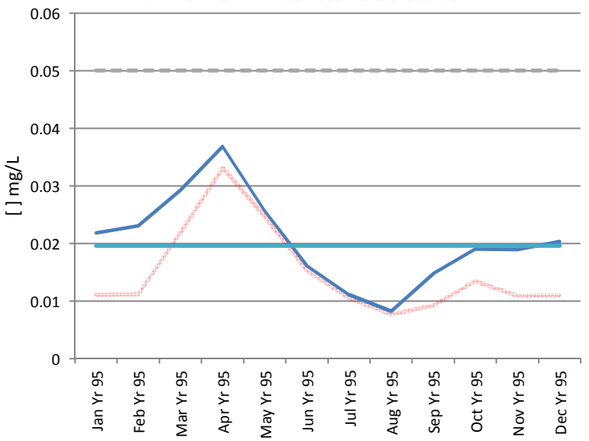
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

PC02.3 TIMING OF SEEPAGE ASSUMPTIONS (SD) - MOLYBDENUM PREDICTIONS

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P/A NO. VA101-246/31

REF. NO. 3

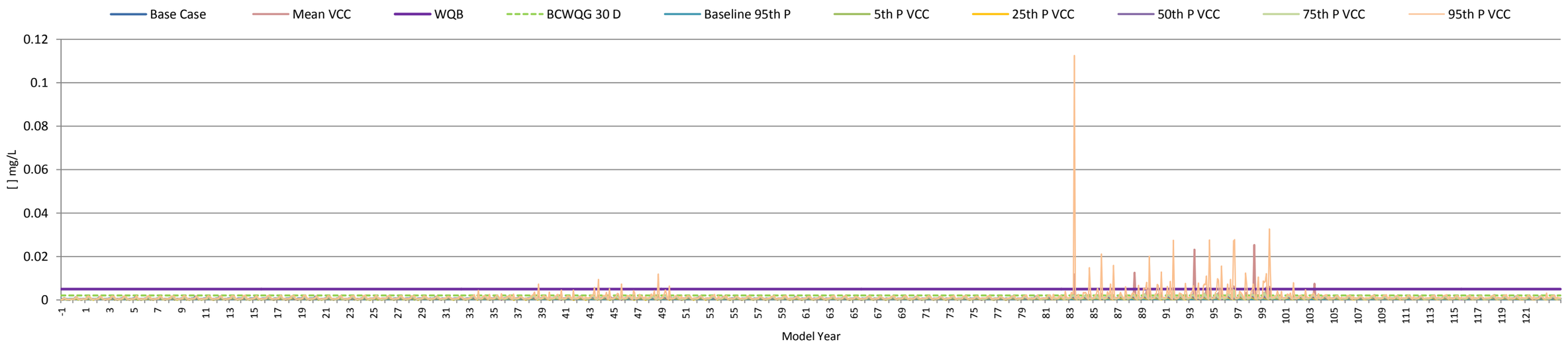
FIGURE F4.6

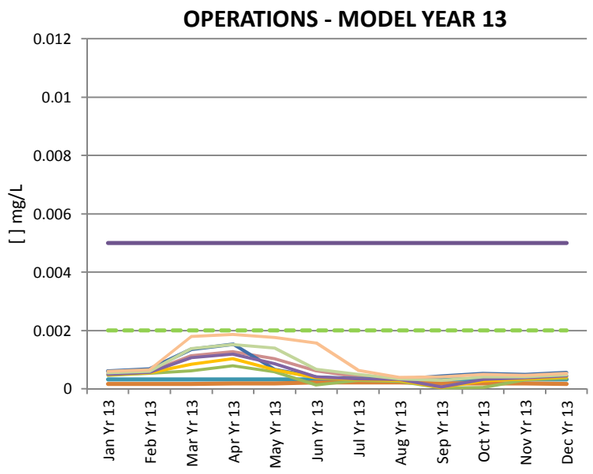
REV 0

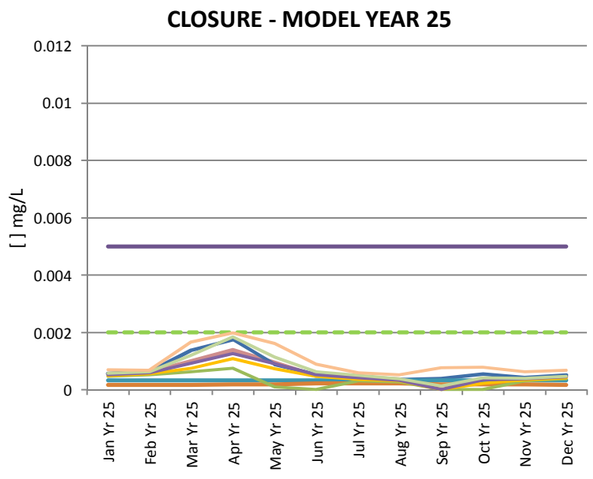
APPENDIX F5

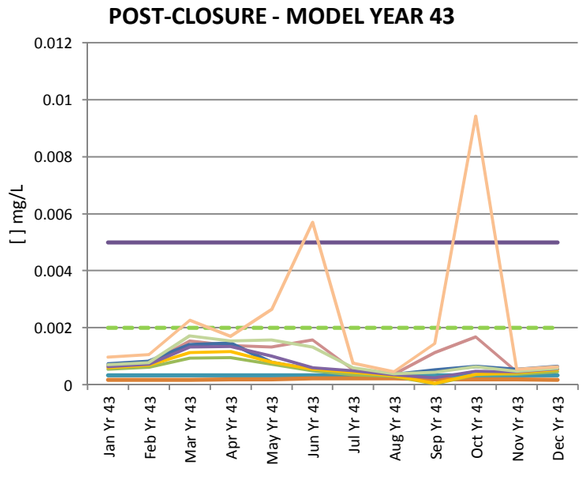
SELENIUM

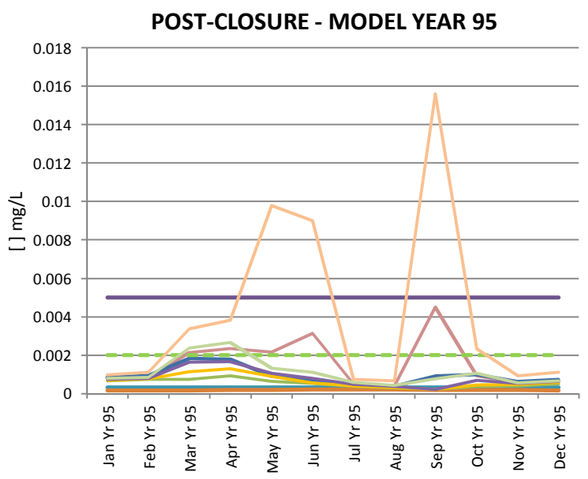
(Figures F5.1 to F5.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

PC02.3 VARIABLE CLIMATE CASE (VCC) - SELENIUM PREDICTIONS

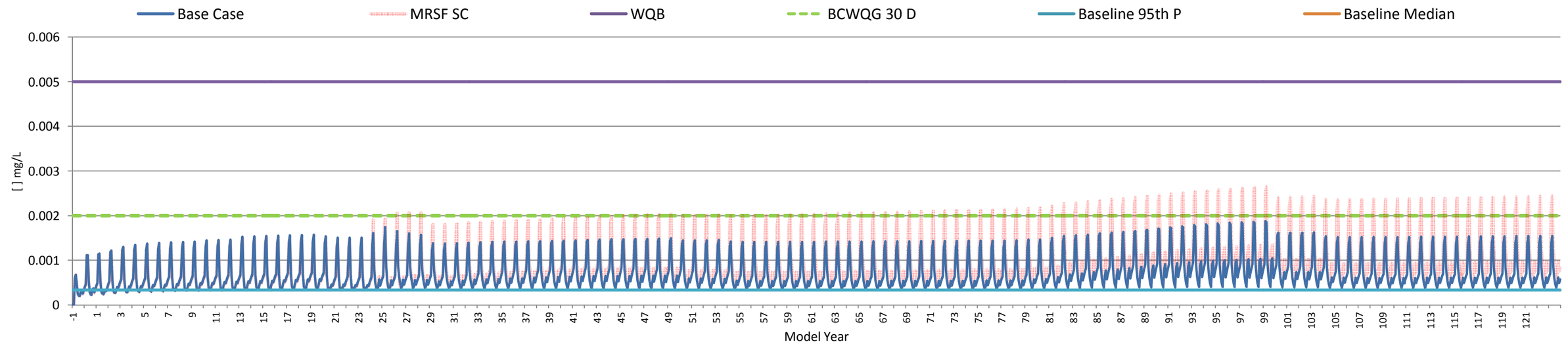
Knight Piésold CONSULTING

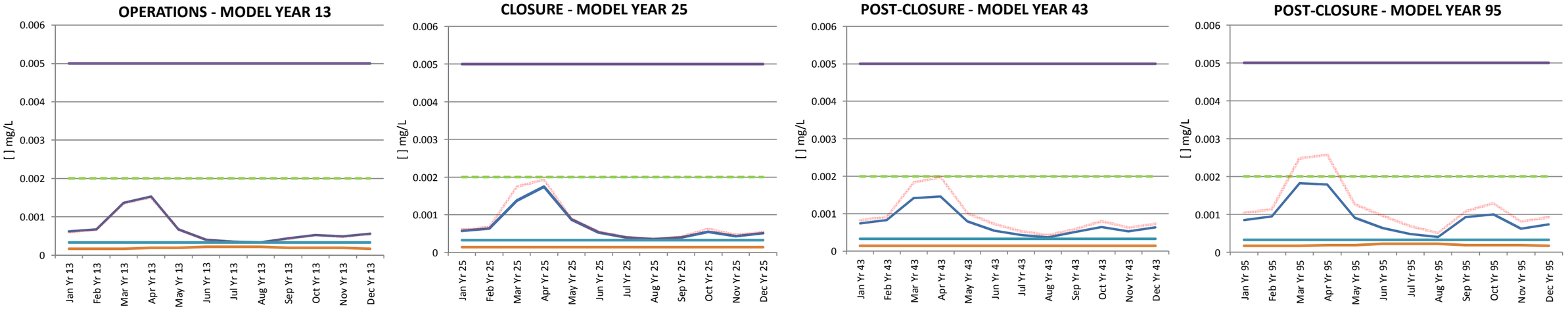
P/A NO. VA101-246/31

REF. NO. 3

FIGURE F5.1

REV 0





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PC02.3 MRSF RECHARGE ASSUMPTIONS - SELENIUM PREDICTIONS

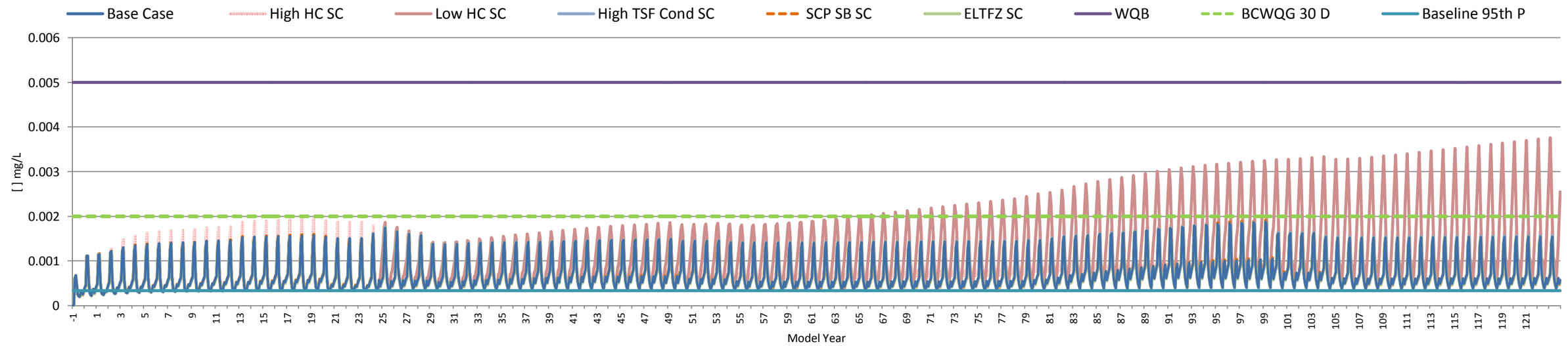
Knight Piésold CONSULTING

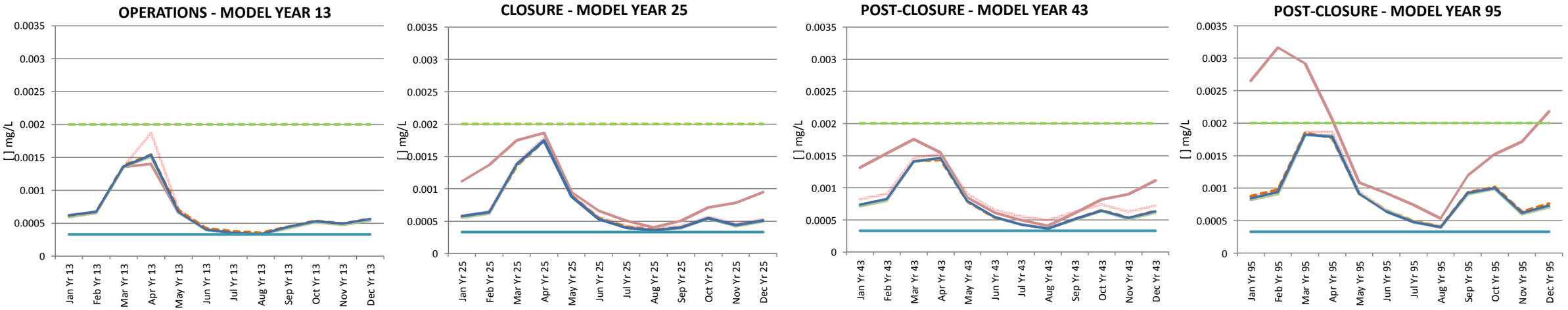
P/A NO. VA101-246/31

REF. NO. 3

FIGURE F5.2

REV 0





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02.3 GROUNDWATER ASSUMPTIONS (GW) - SELENIUM PREDICTIONS

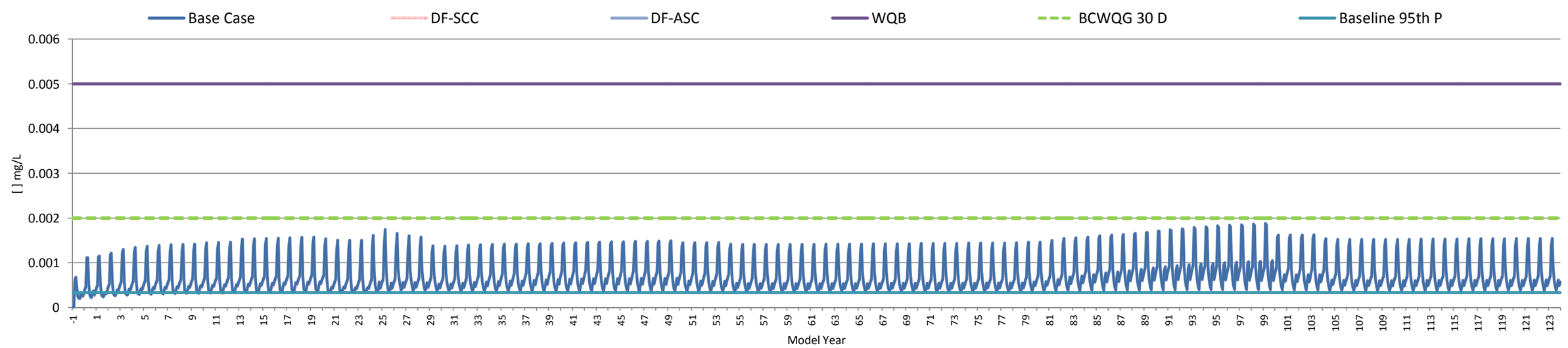
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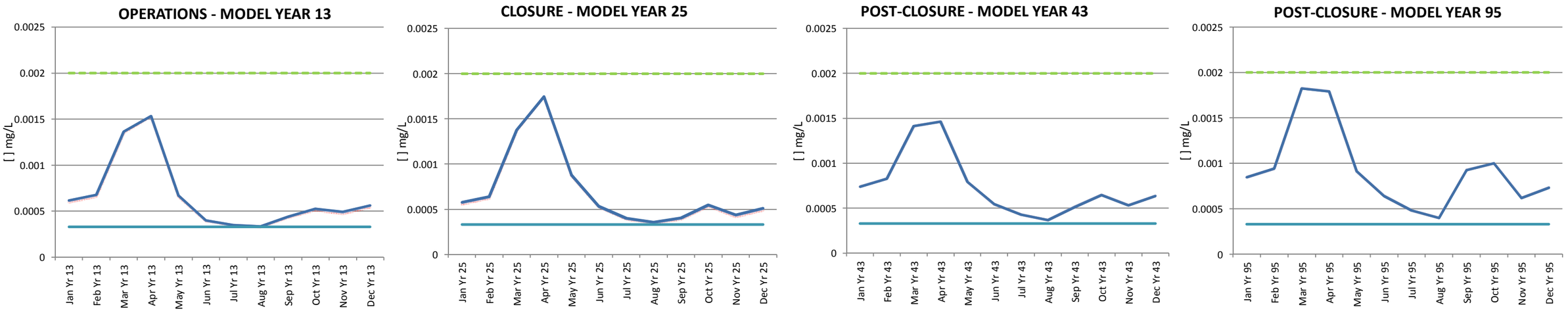
P/A NO. VA101-246/31

REF. NO. 3

FIGURE F5.3

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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02.3 DUSTFALL ASSUMPTIONS (DFA) - SELENIUM PREDICTIONS

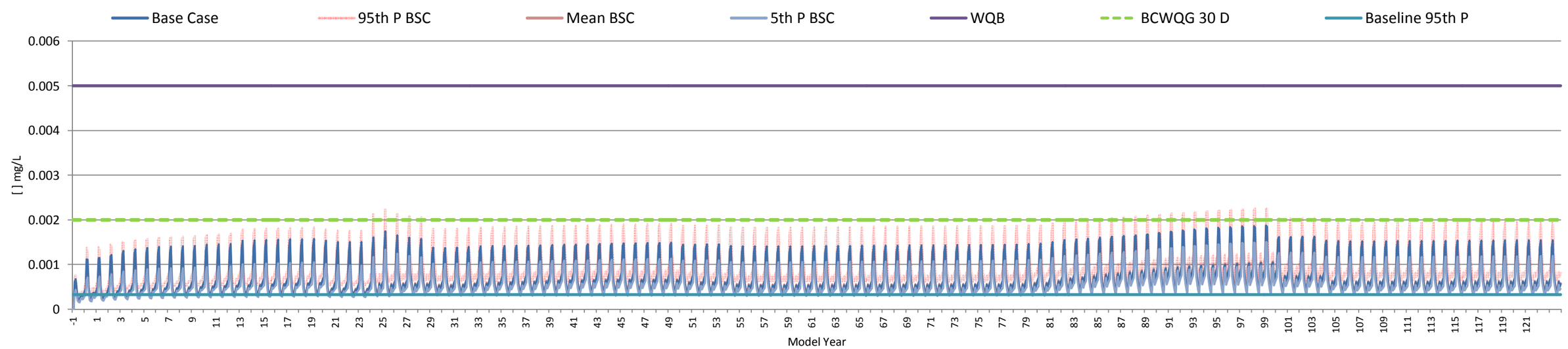
Knight Piésold CONSULTING

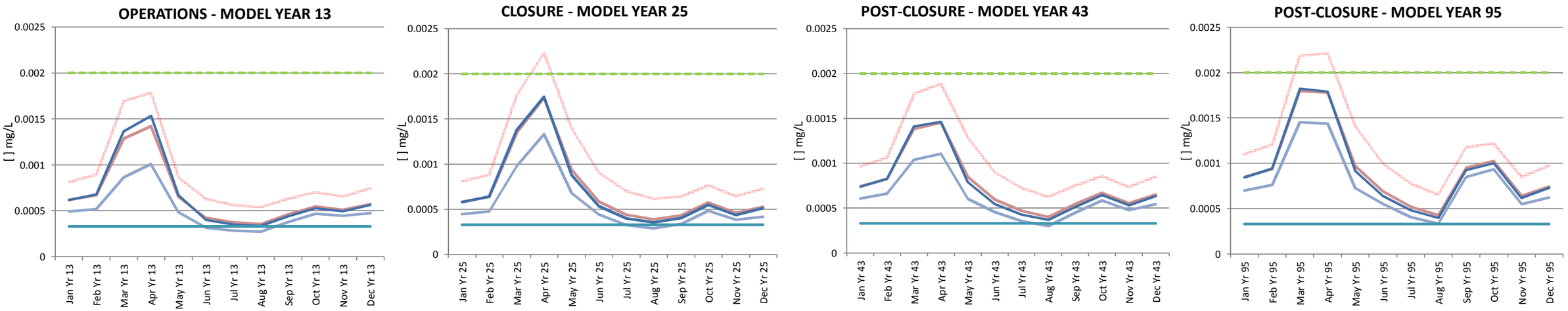
P/A NO. VA101-246/31

REF. NO. 3

FIGURE F5.4

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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02.3 BASELINE SENSITIVITY CASE (BSC) - SELENIUM PREDICTIONS

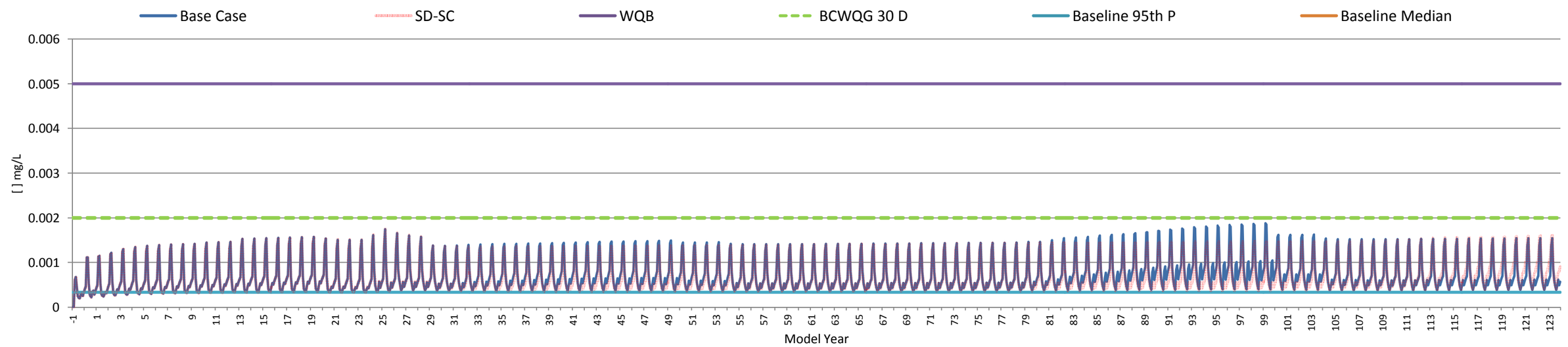
Knight Piésold CONSULTING

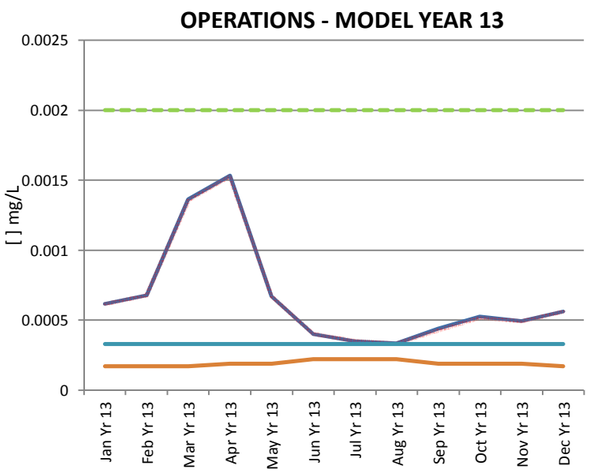
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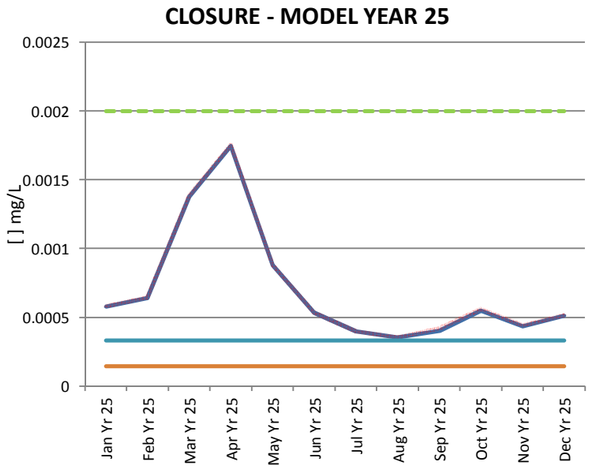
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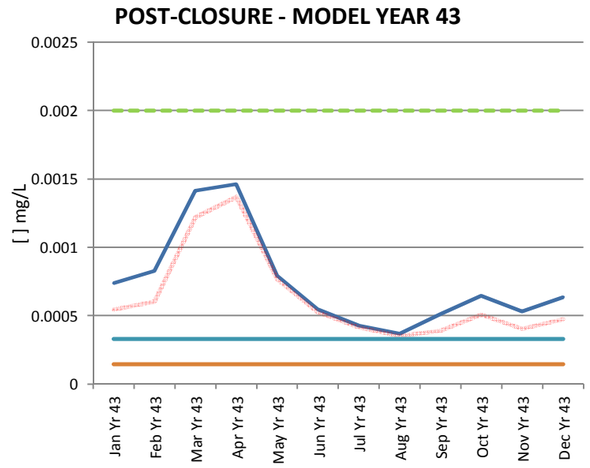
FIGURE F5.5

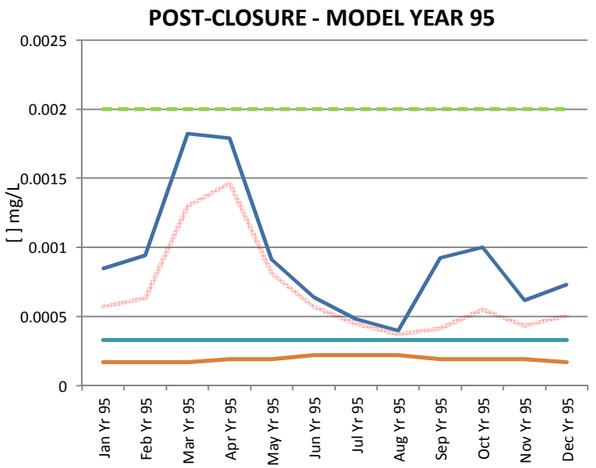
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02.3 TIMING OF SEEPAGE ASSUMPTIONS (SD) - SELENIUM PREDICTIONS

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REF. NO. 3

FIGURE F5.6

REV 0

APPENDIX G

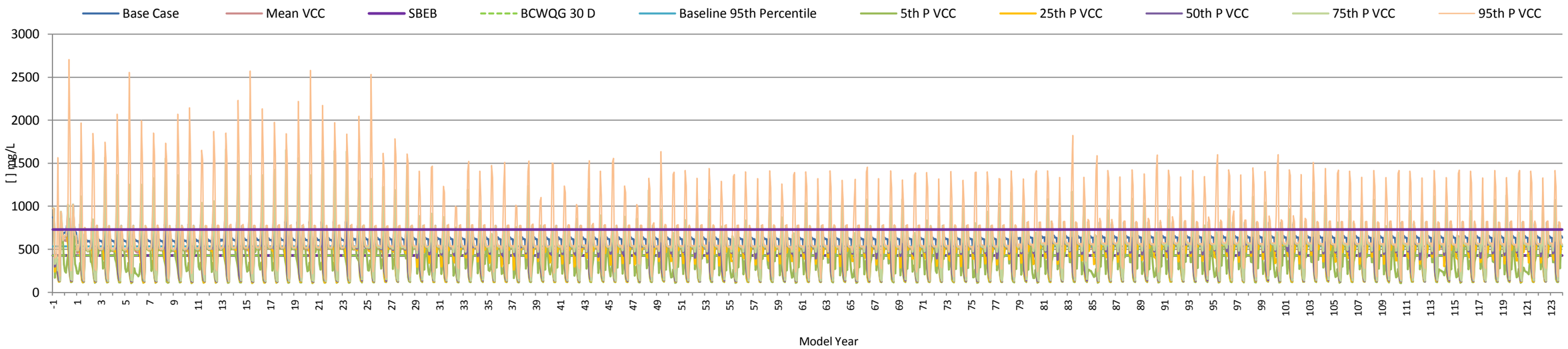
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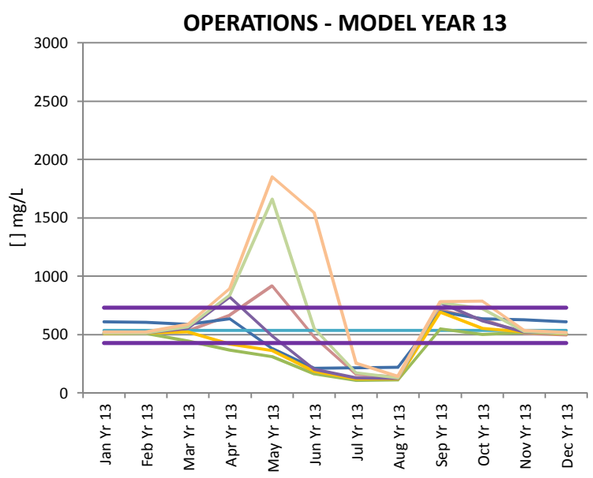
Appendix G1 Sulphate
Appendix G2 Chloride
Appendix G3 Copper
Appendix G4 Molybdenum
Appendix G5 Selenium

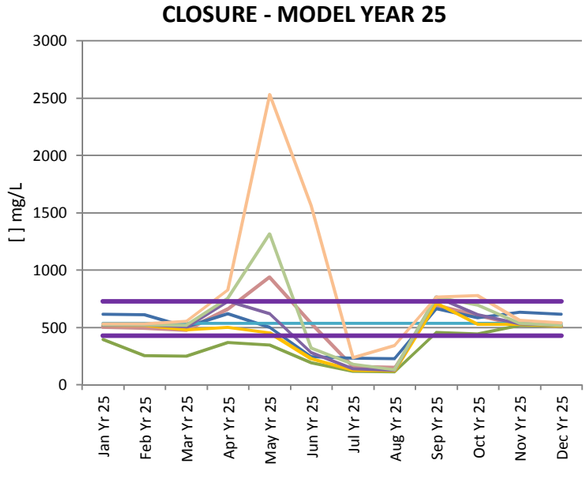
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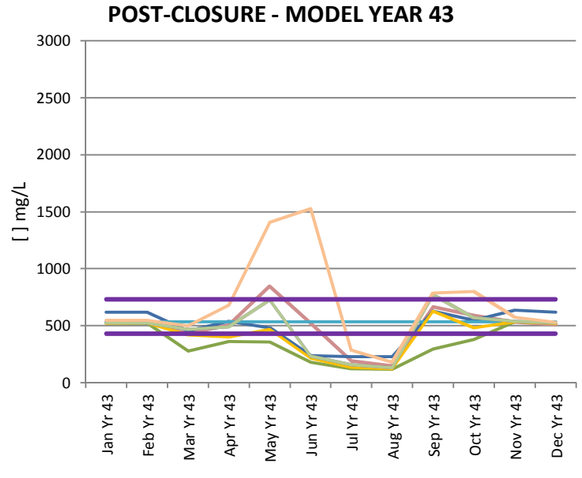
SULPHATE

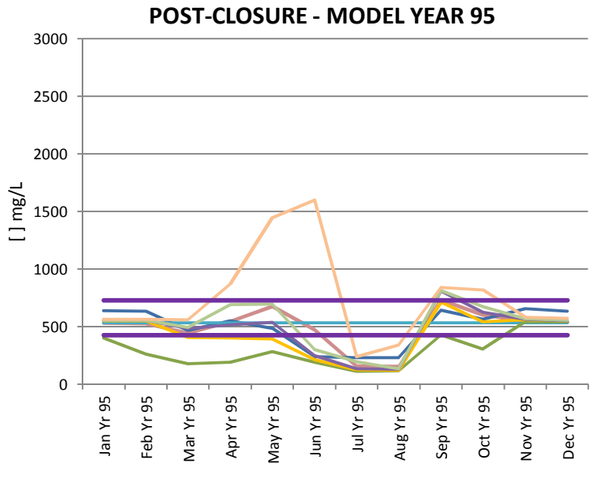
(Figures G13.1 to G1.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB); HIGHER SBEB FOR PERIODS OF YEAR WHEN EARLY LIFE STAGES OF FISH ARE ABSENT FROM WATERCOURSE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 VARIABLE CLIMATE CASE (VCC) - SULPHATE PREDICTIONS

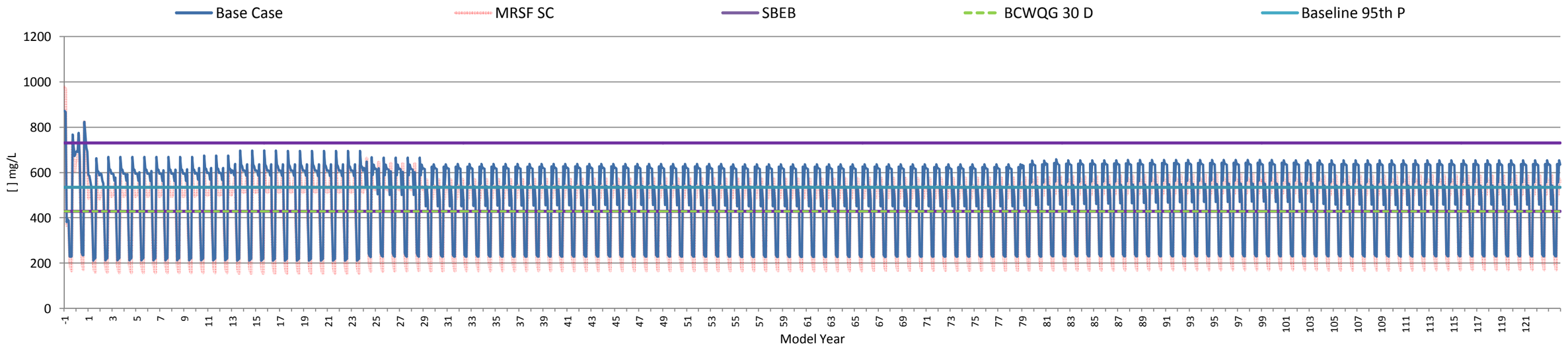
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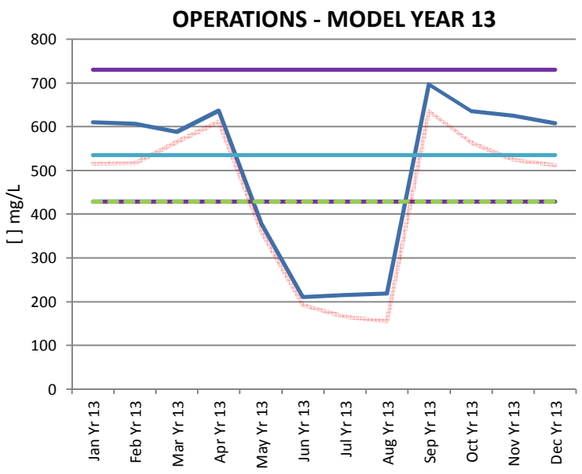
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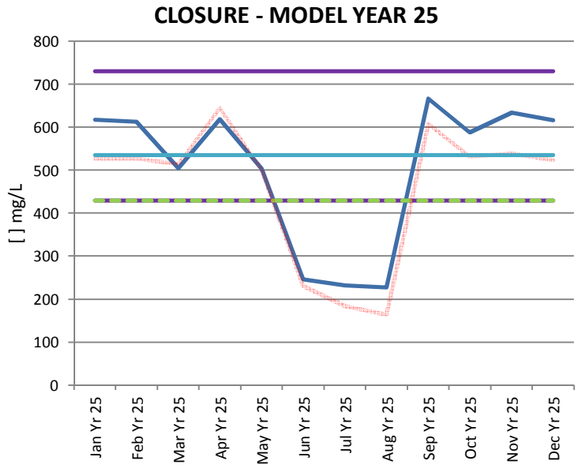
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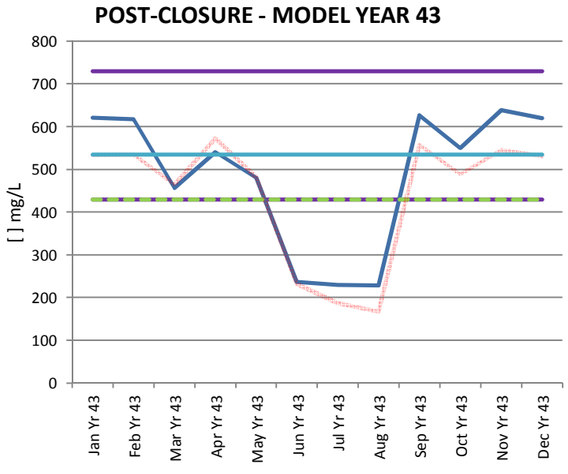
FIGURE G1.1

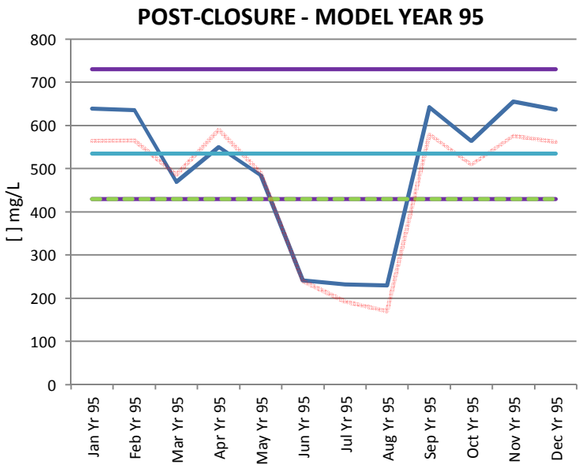
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB); HIGHER SBEB FOR PERIODS OF YEAR WHEN EARLY LIFE STAGES OF FISH ARE ABSENT FROM WATERCOURSE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 MRSF RECHARGE ASSUMPTIONS - SULPHATE PREDICTIONS

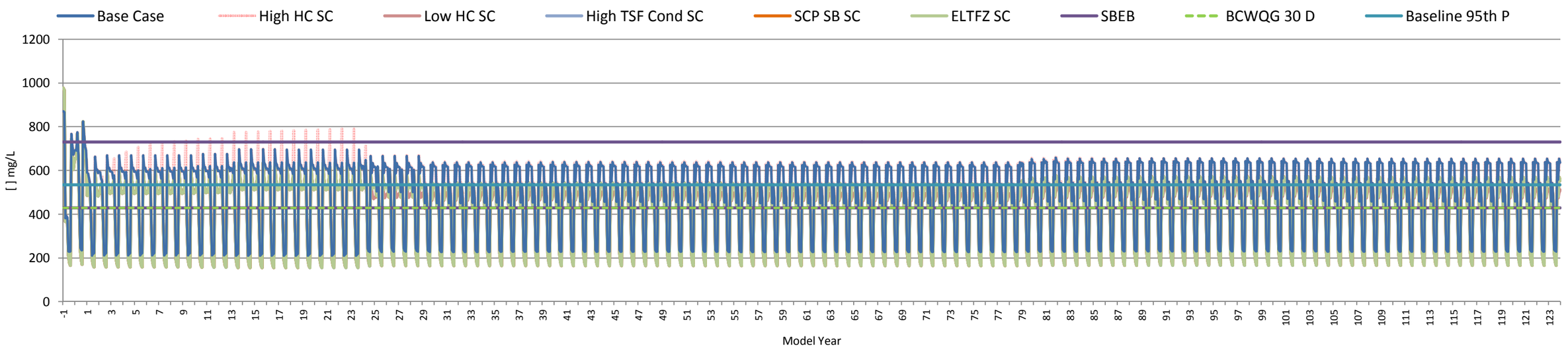
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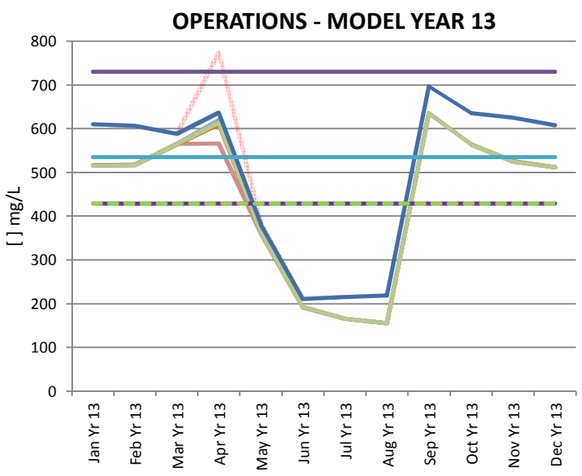
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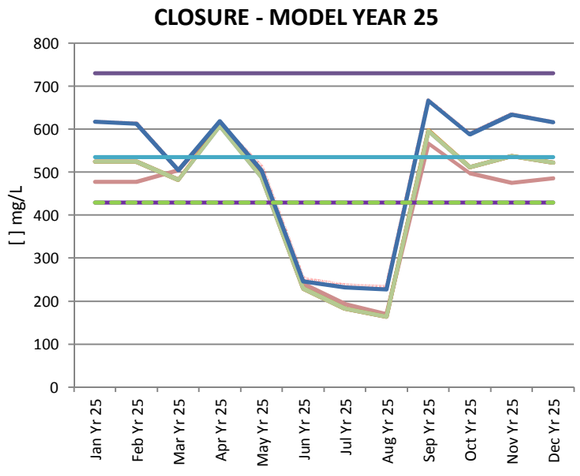
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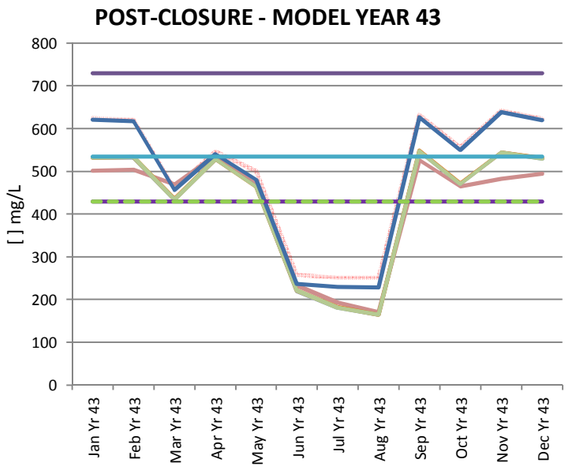
FIGURE G1.2

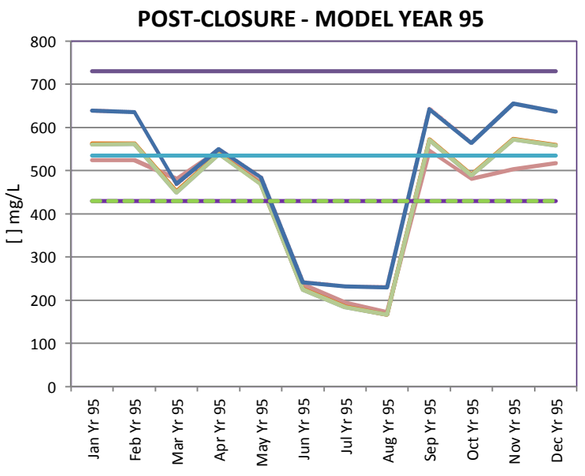
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB); HIGHER SBEB FOR PERIODS OF YEAR WHEN EARLY LIFE STAGES OF FISH ARE ABSENT FROM WATERCOURSE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PC02 GROUNDWATER ASSUMPTIONS (GW) - SULPHATE PREDICTIONS

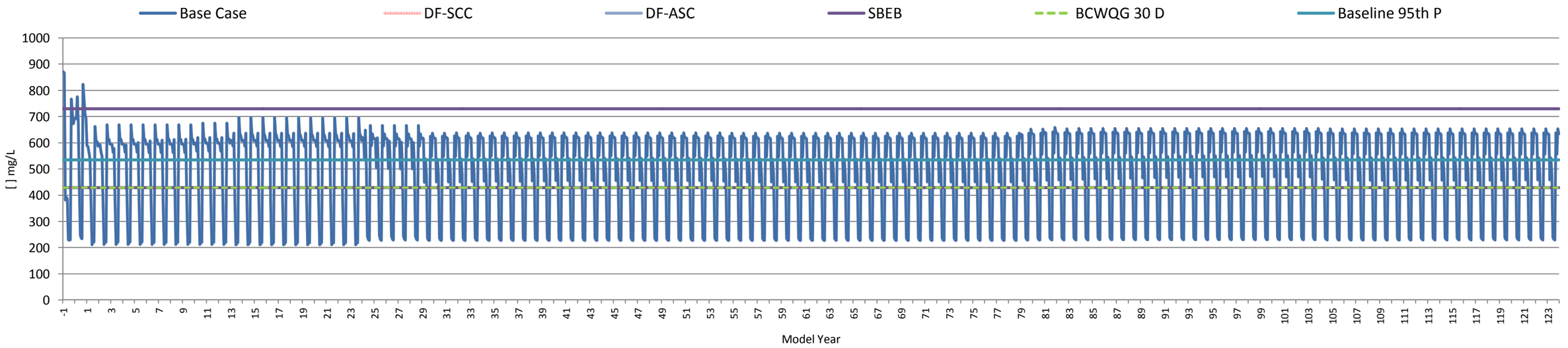
Knight Piésold CONSULTING

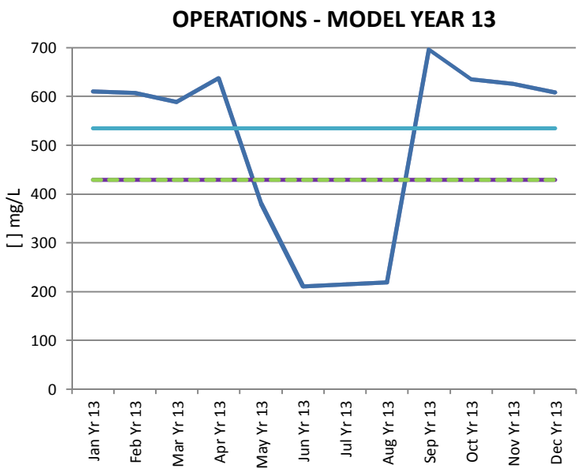
P/A NO. VA101-246/31

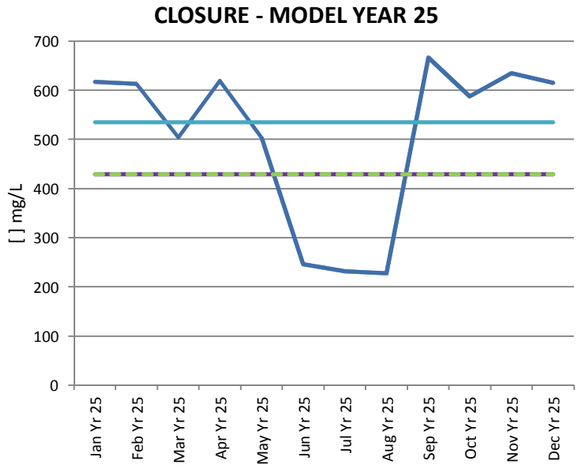
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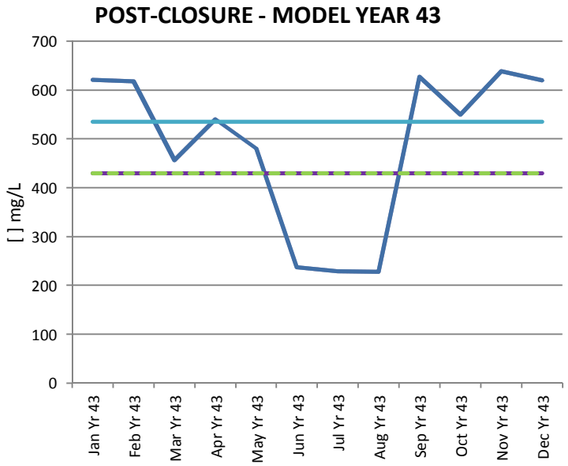
FIGURE G1.3

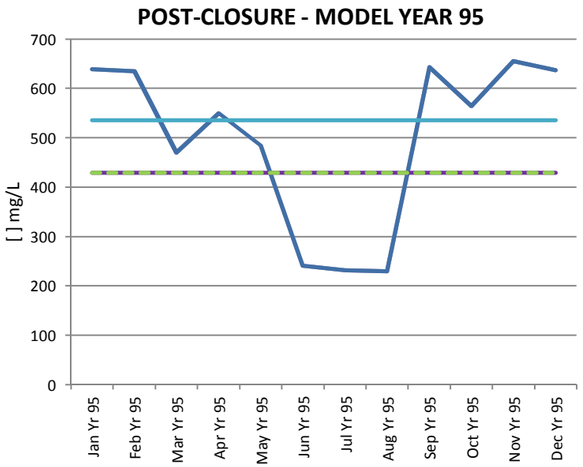
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB); HIGHER SBEB FOR PERIODS OF YEAR WHEN EARLY LIFE STAGES OF FISH ARE ABSENT FROM WATERCOURSE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PC02 DUSTFALL ASSUMPTIONS (DFA) - SULPHATE PREDICTIONS

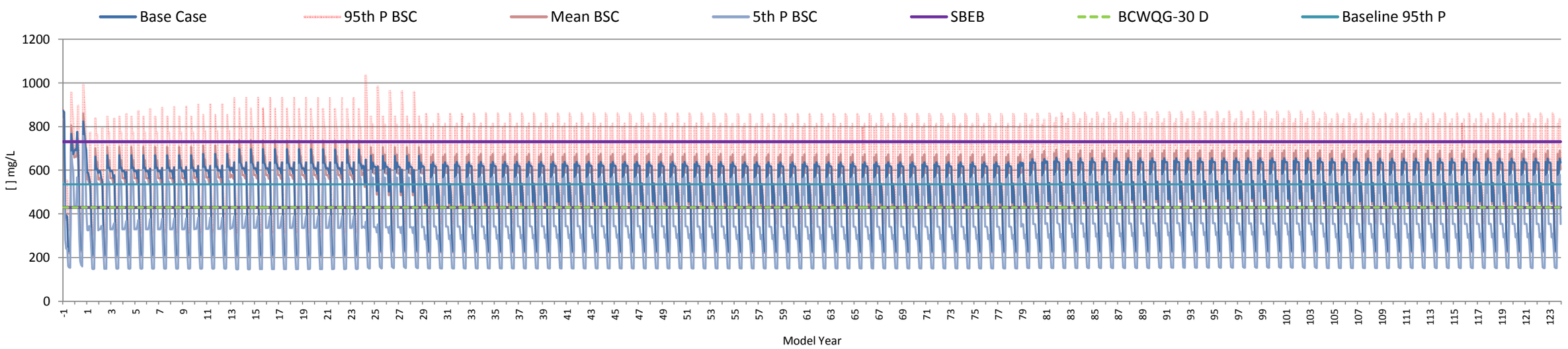
Knight Piésold CONSULTING

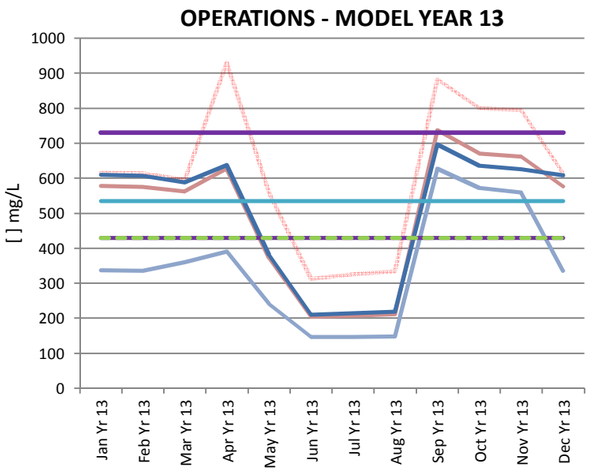
P/A NO. VA101-246/31

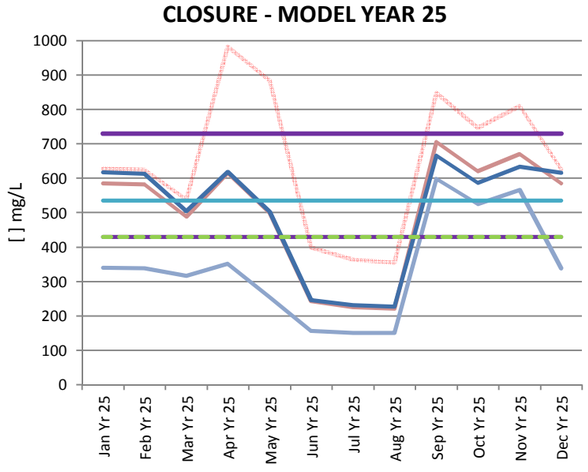
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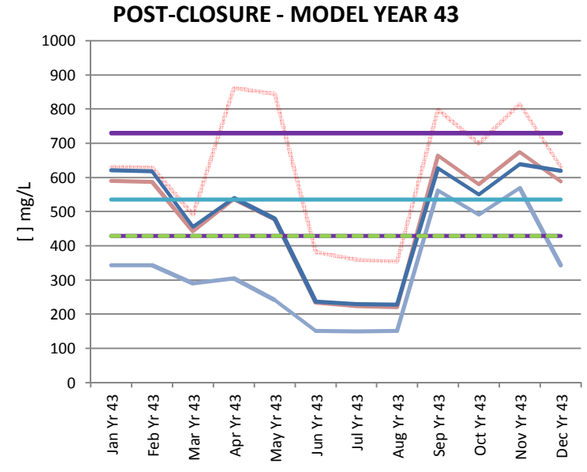
FIGURE G1.4

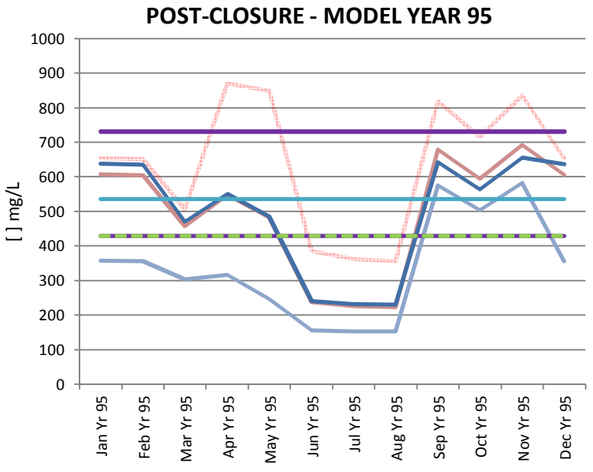
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB); HIGHER SBEB FOR PERIODS OF YEAR WHEN EARLY LIFESTAGES OF FISH ARE ABSENT FROM WATERCOURSE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 BASELINE SENSITIVITY CASE (BSC) - SULPHATE PREDICTIONS

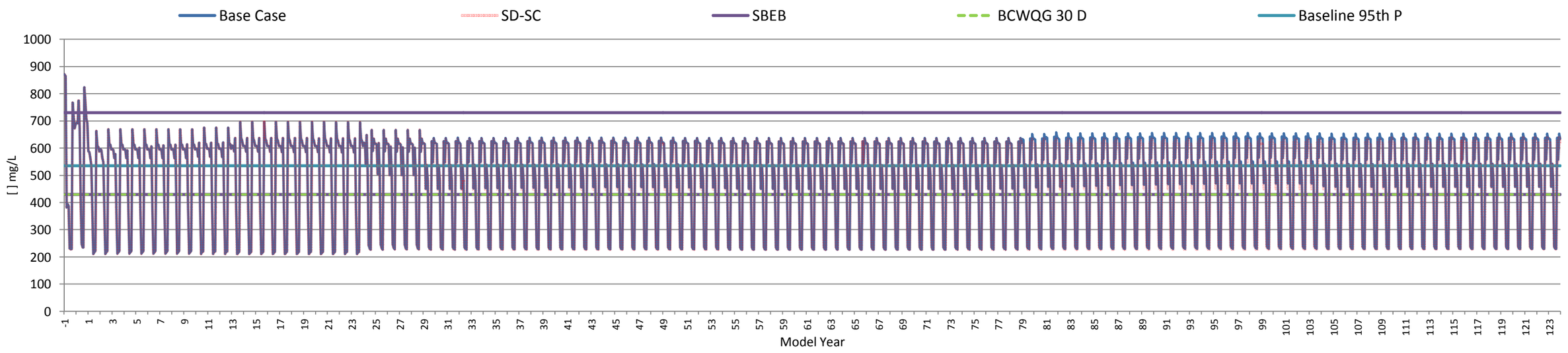
Knight Piésold CONSULTING

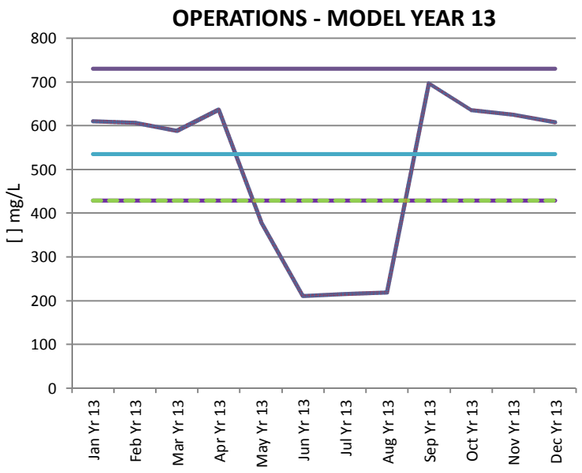
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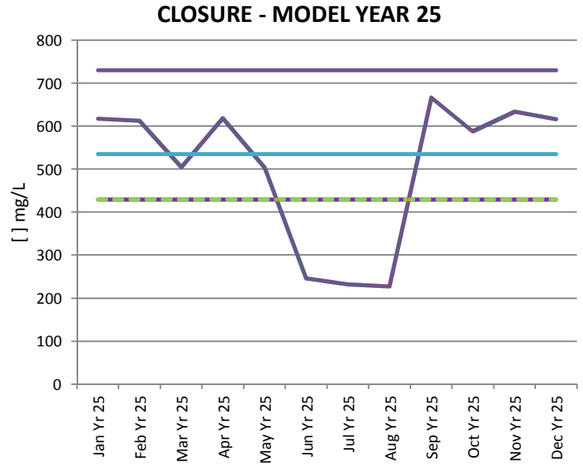
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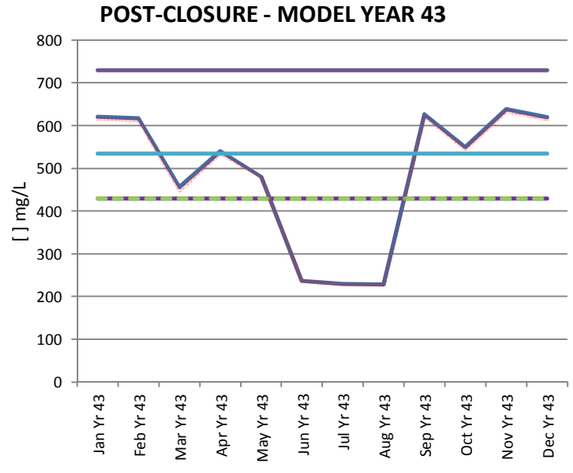
FIGURE G1.5

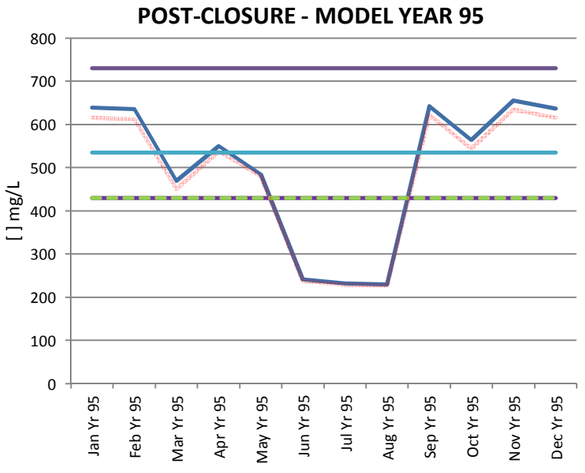
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 TIMING OF SEEPAGE ASSUMPTIONS (SD) - SULPHATE PREDICTIONS

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P/A NO. VA101-246/31

REF. NO. 3

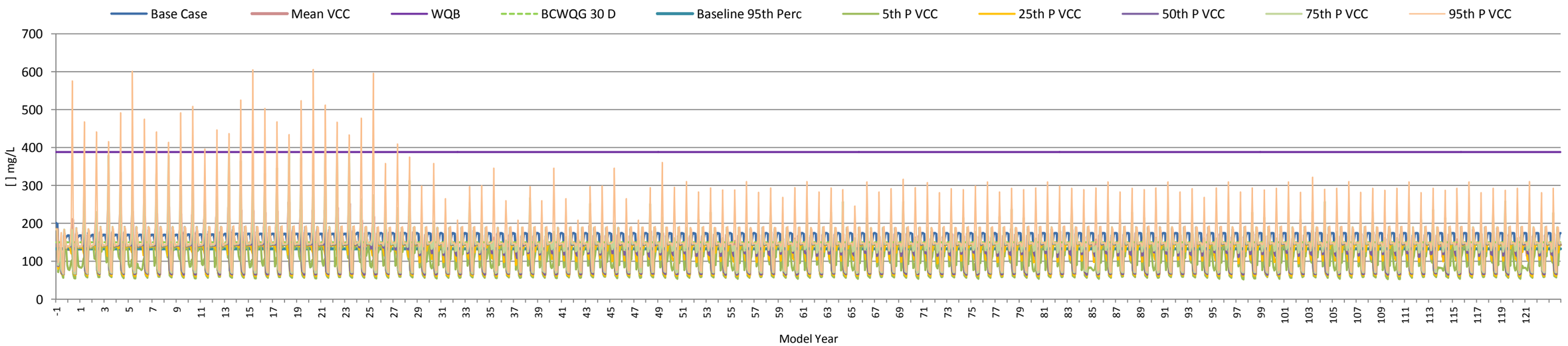
FIGURE G1.6

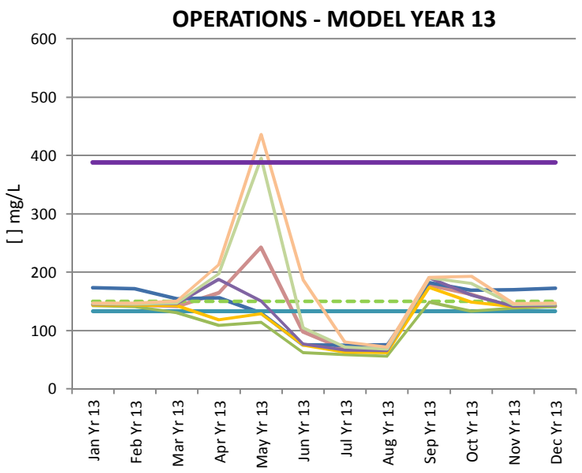
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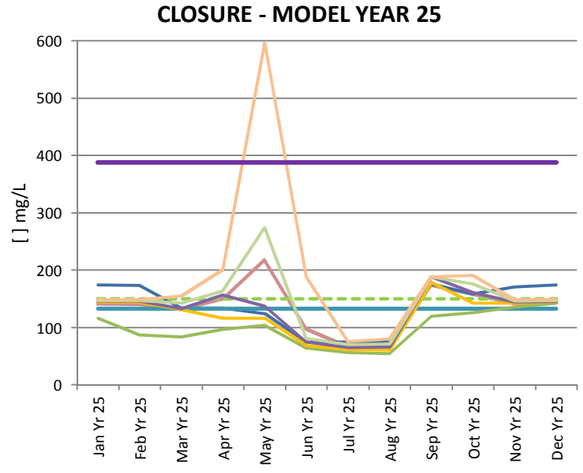
APPENDIX G2

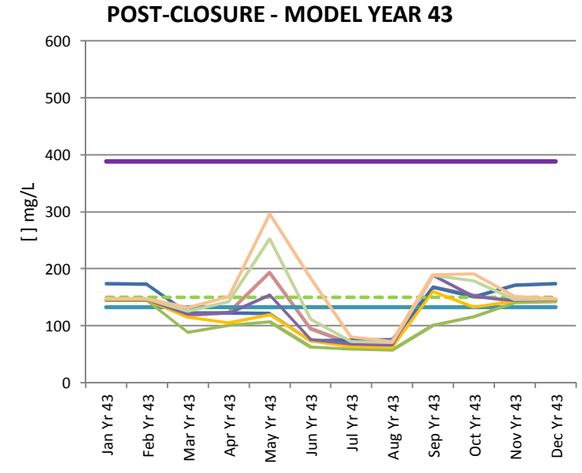
CHLORIDE

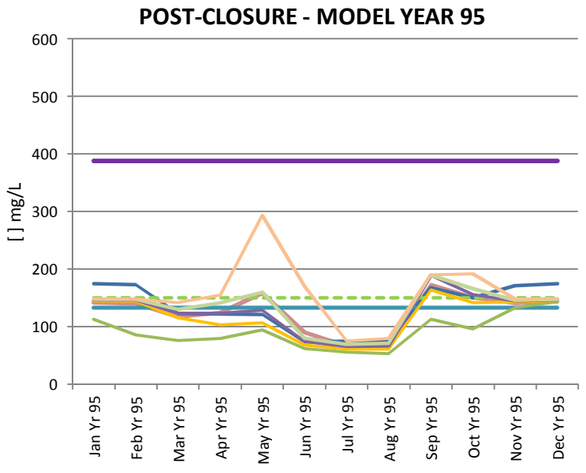
(Figures G2.1 to G2.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 VARIABLE CLIMATE CASE (VCC) - CHLORIDE PREDICTIONS

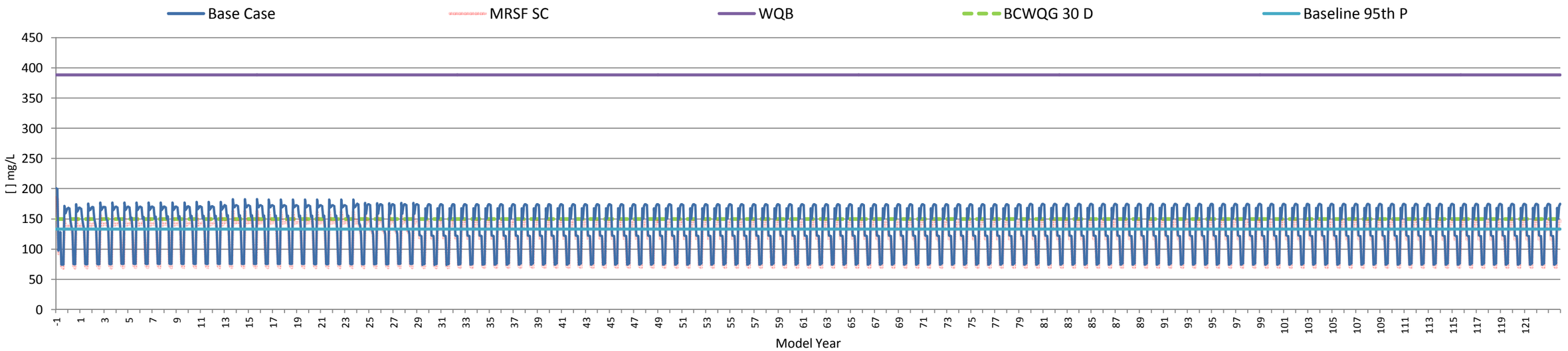
Knight Piésold CONSULTING

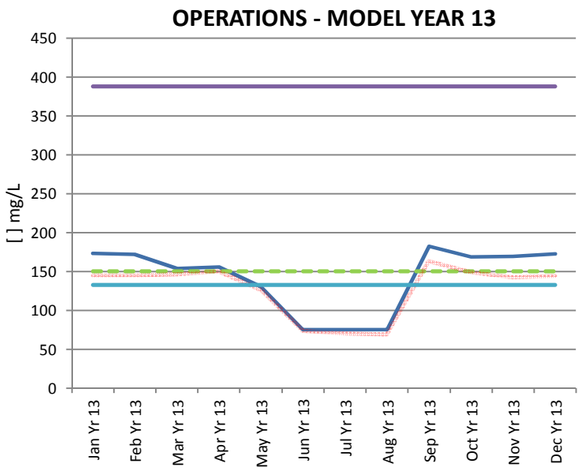
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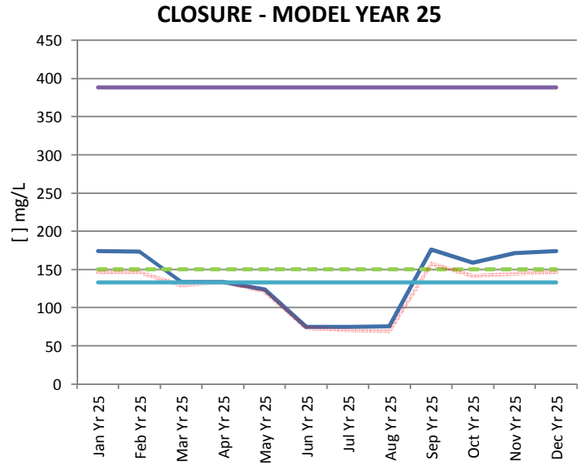
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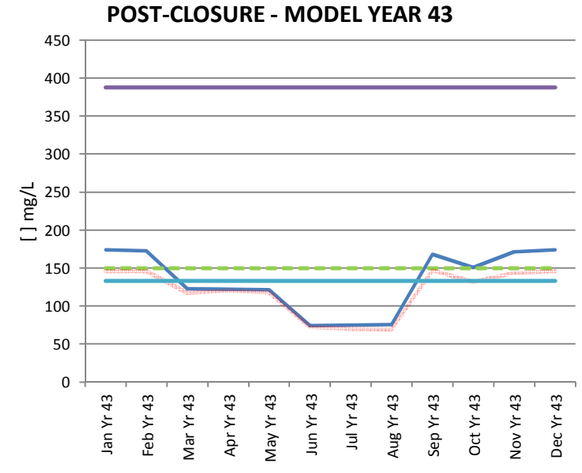
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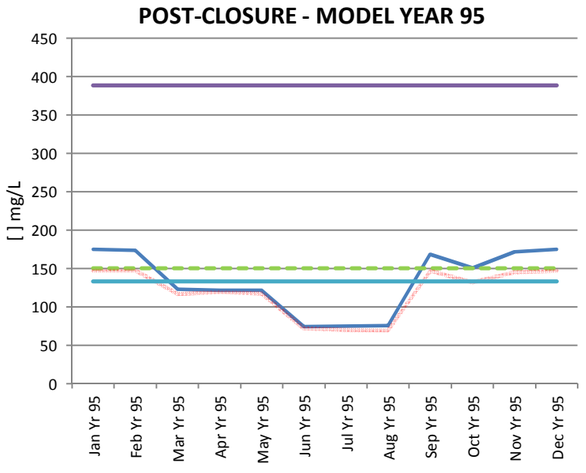
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 MRSF RECHARGE ASSUMPTIONS - CHLORIDE PREDICTIONS

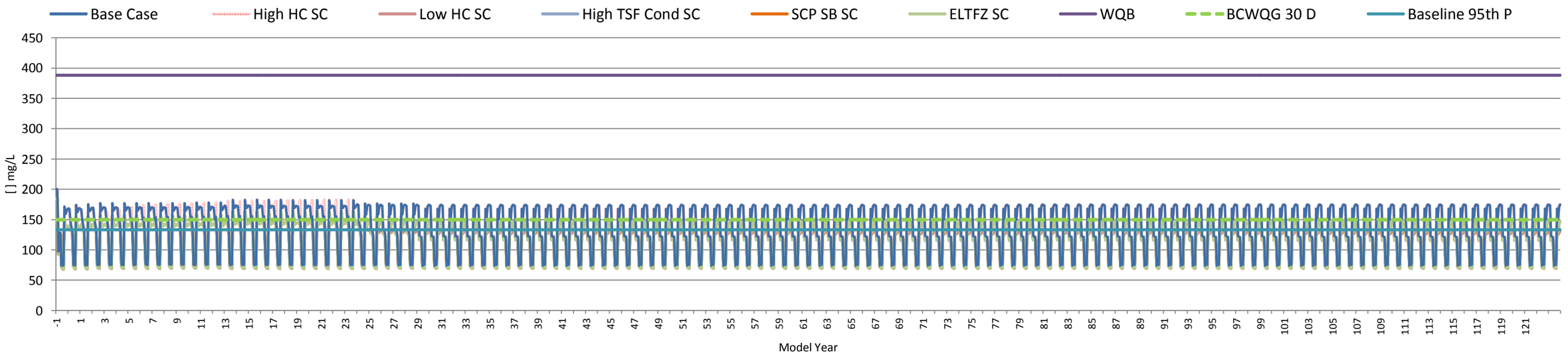
Knight Piésold CONSULTING

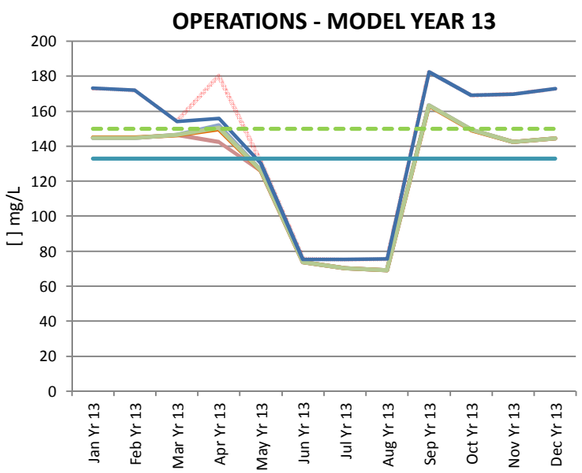
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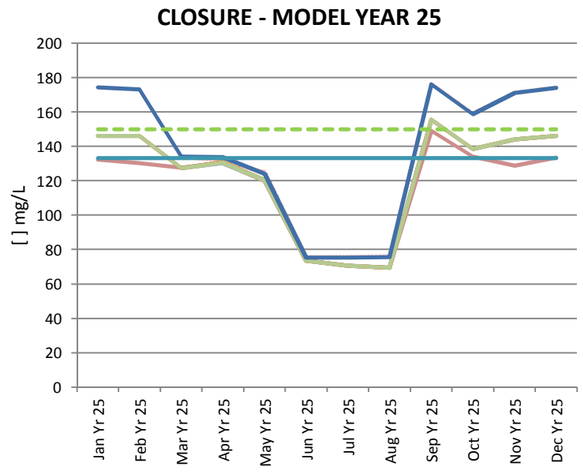
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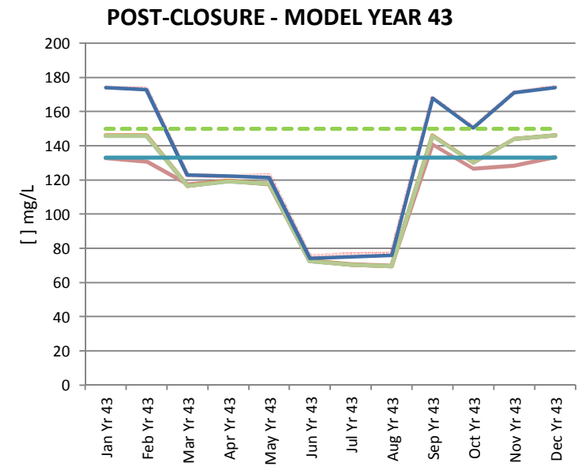
FIGURE G2.2

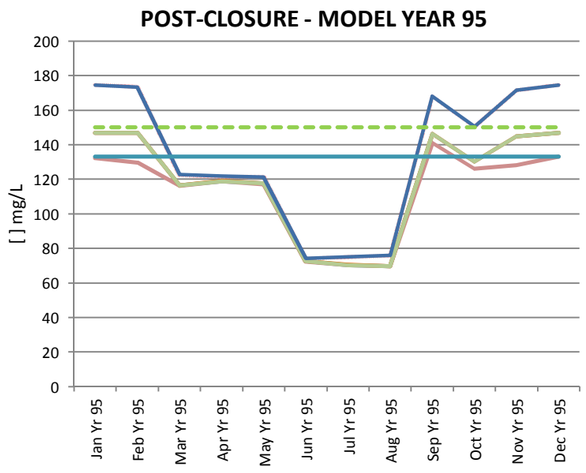
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PC02 GROUNDWATER ASSUMPTIONS (GW) - CHLORIDE PREDICTIONS

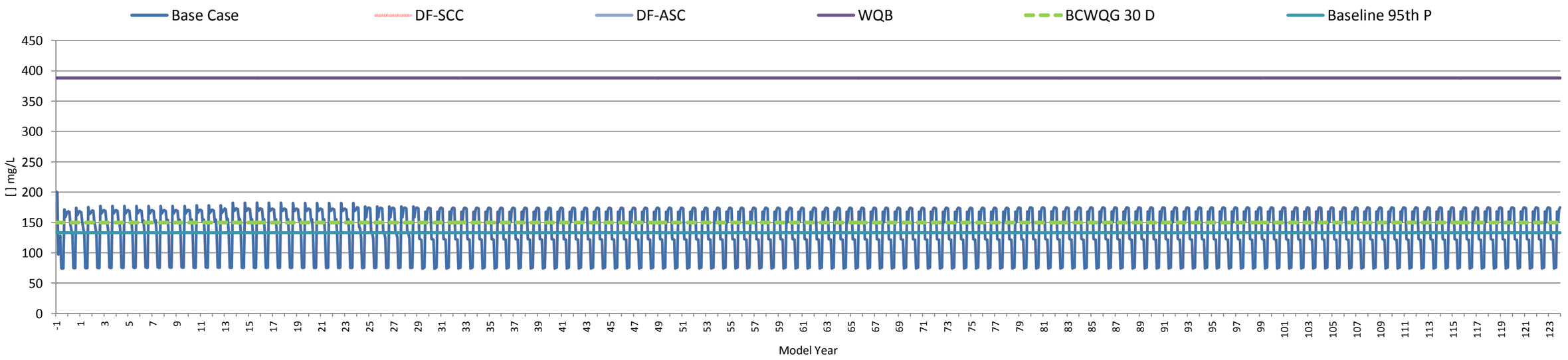
Knight Piésold CONSULTING

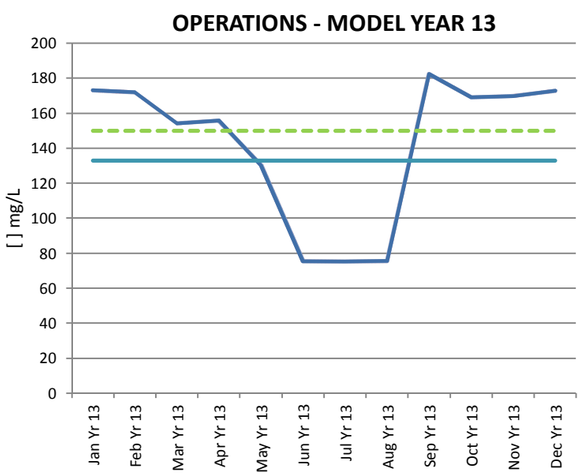
P/A NO. VA101-246/31

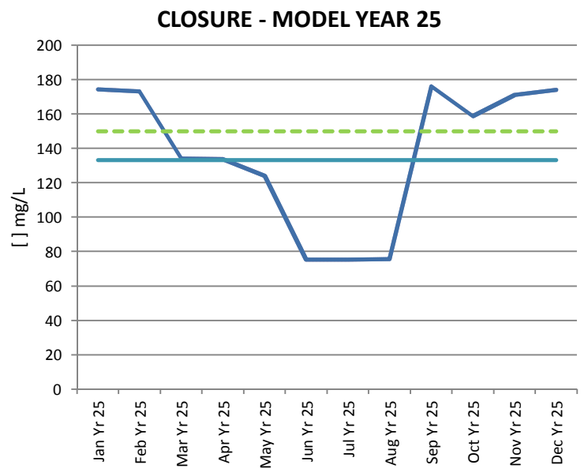
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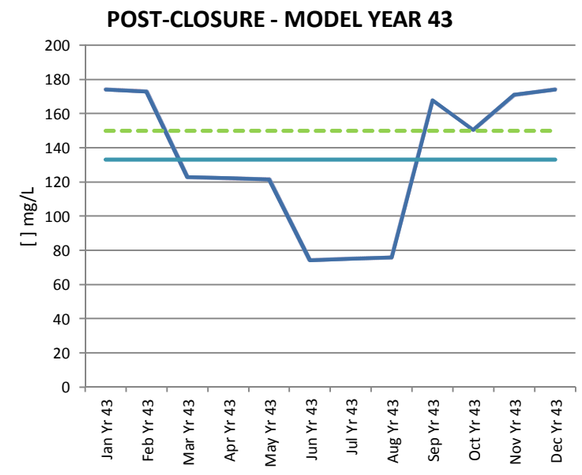
FIGURE G2.3

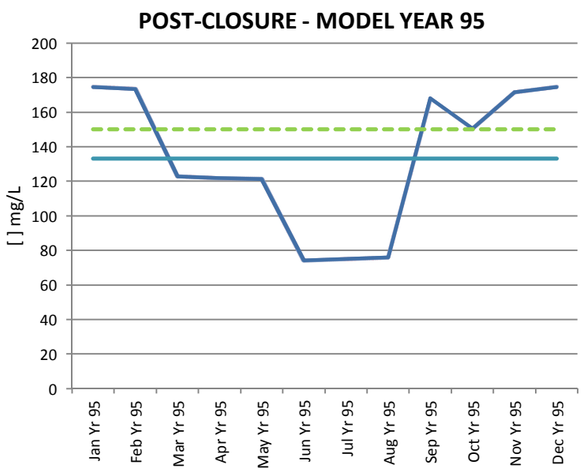
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

PC02 DUSTFALL ASSUMPTIONS (DFA) - CHLORIDE PREDICTIONS

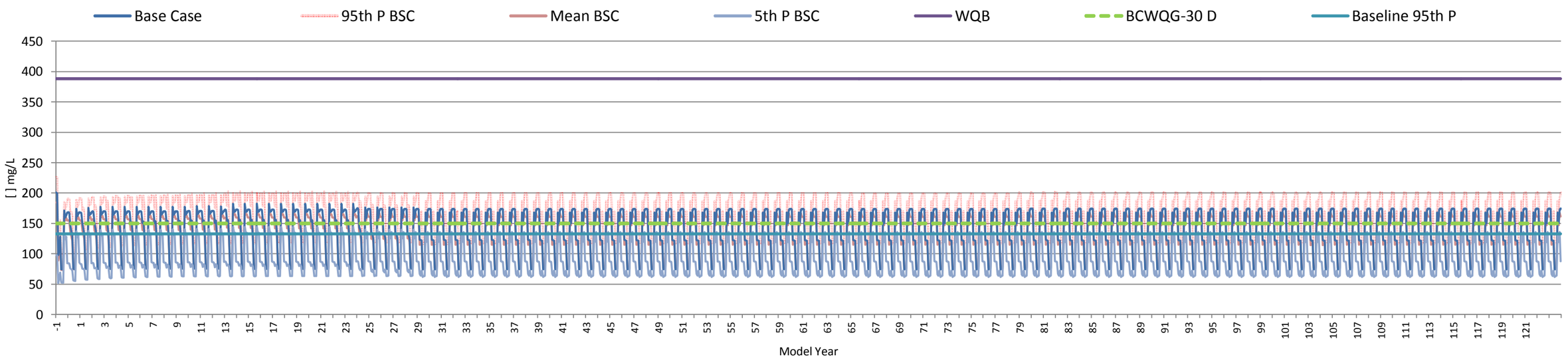
Knight Piésold CONSULTING

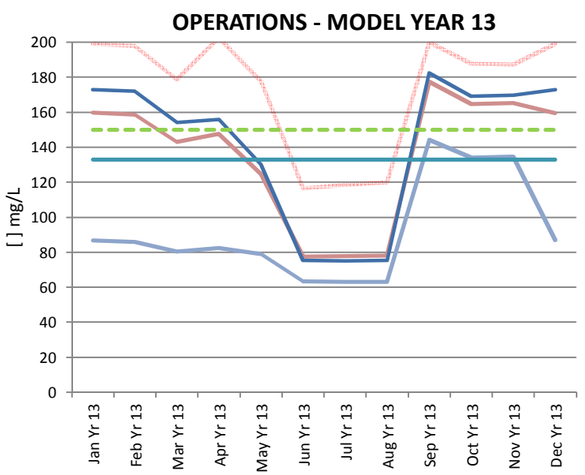
P/A NO. VA101-246/31

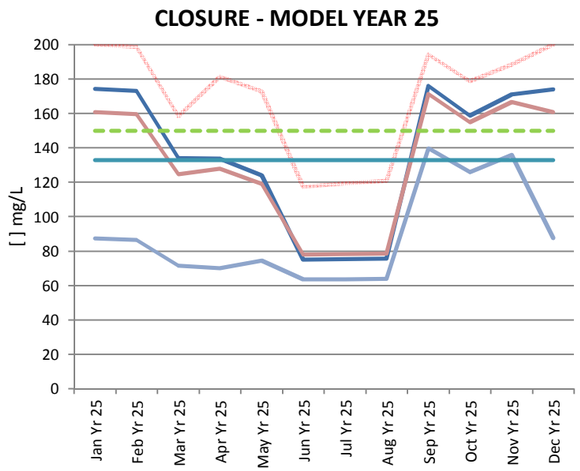
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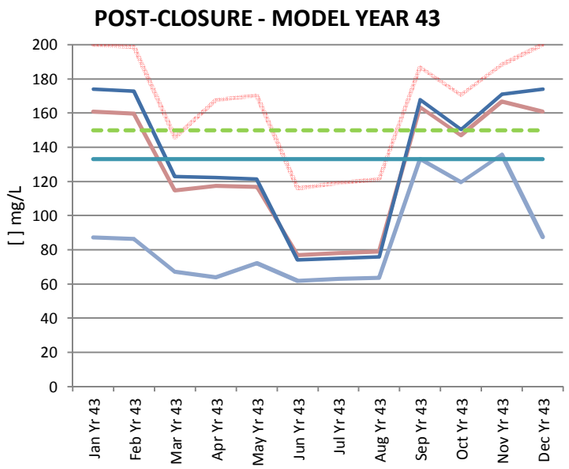
FIGURE G2.4

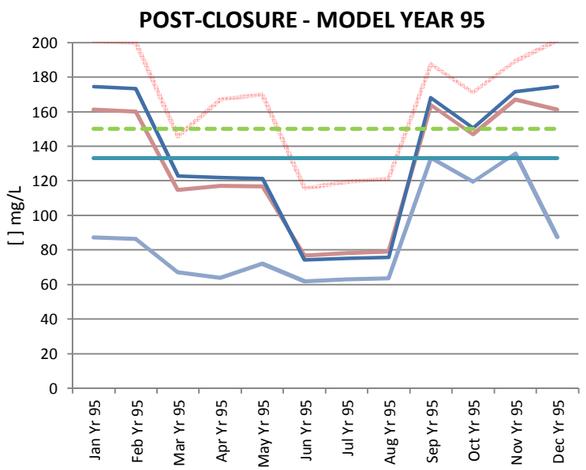
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

REV	DATE	DESCRIPTION	PREP'D	APP'D
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PC02 BASELINE SENSITIVITY CASE (BSC) - CHLORIDE PREDICTIONS

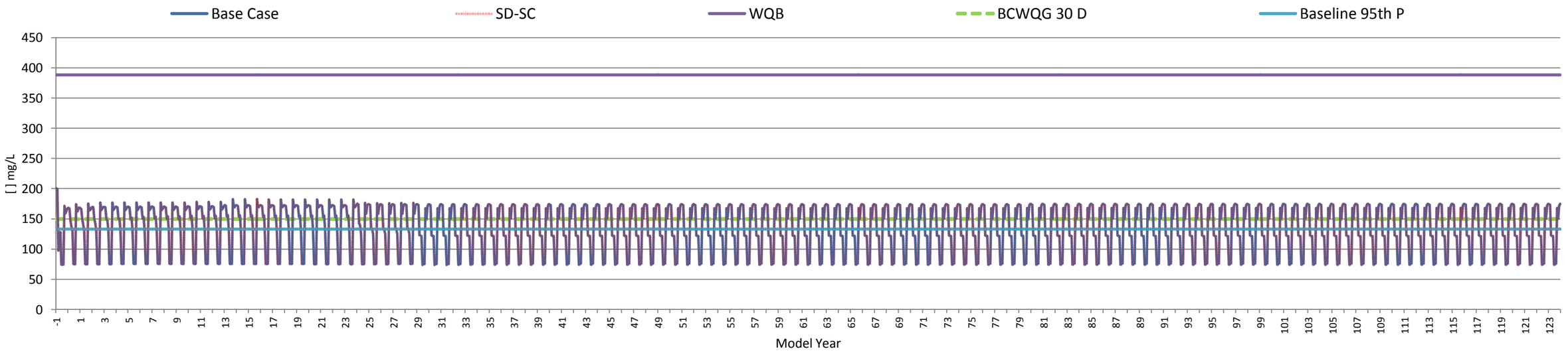
Knight Piésold CONSULTING

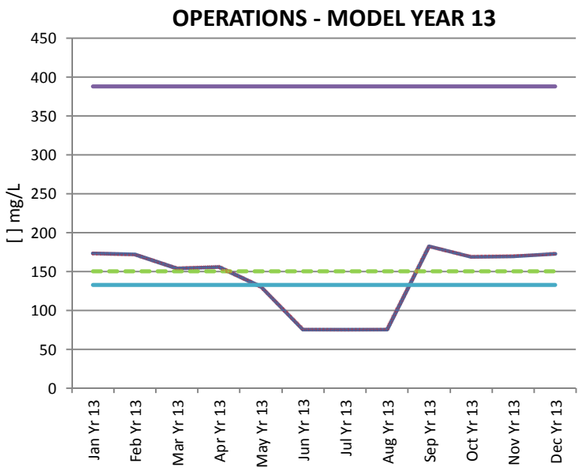
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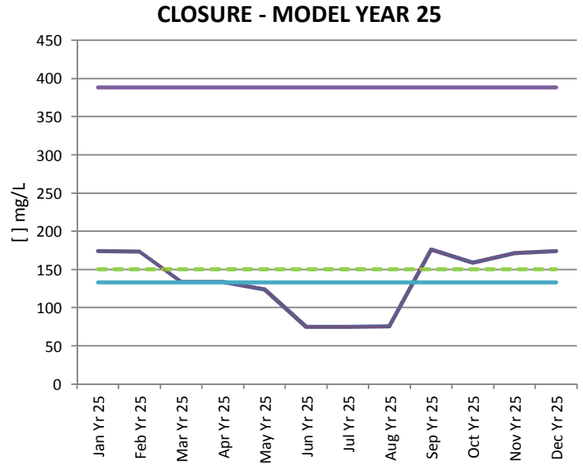
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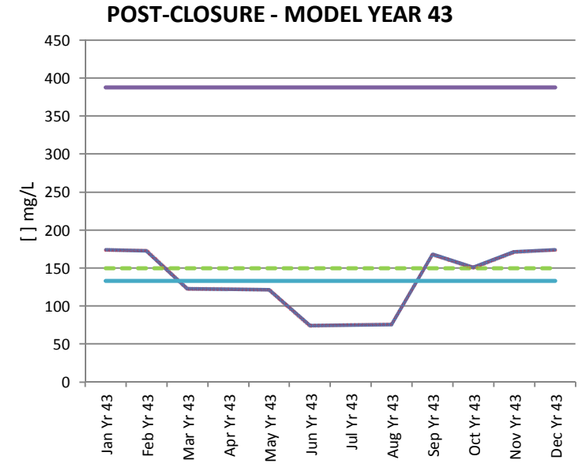
FIGURE G2.5

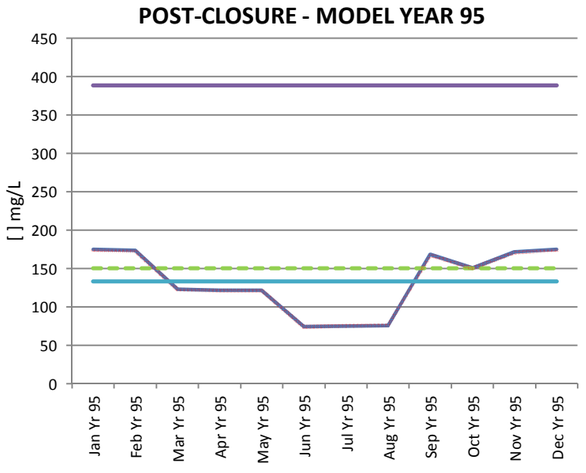
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 TIMING OF SEEPAGE ASSUMPTIONS (SD) - CHLORIDE PREDICTIONS

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REF. NO. 3

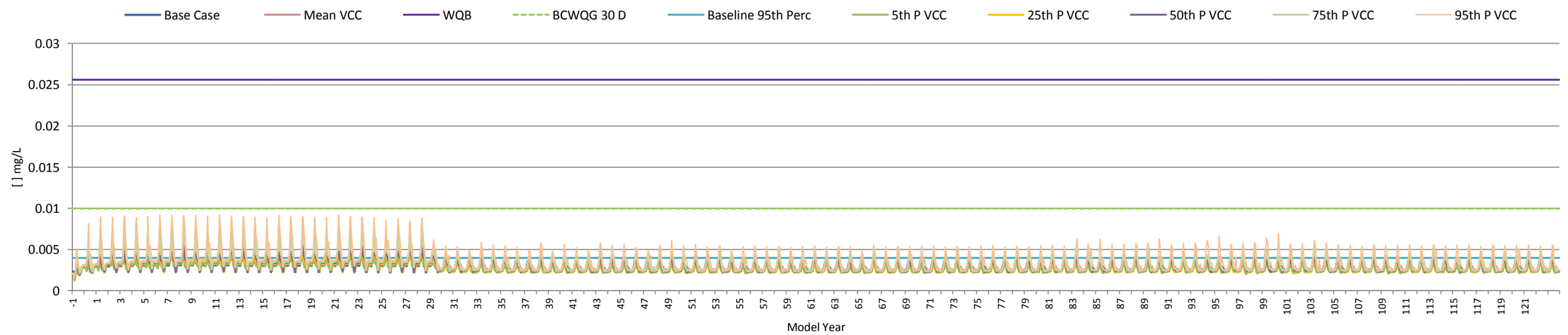
FIGURE G2.6

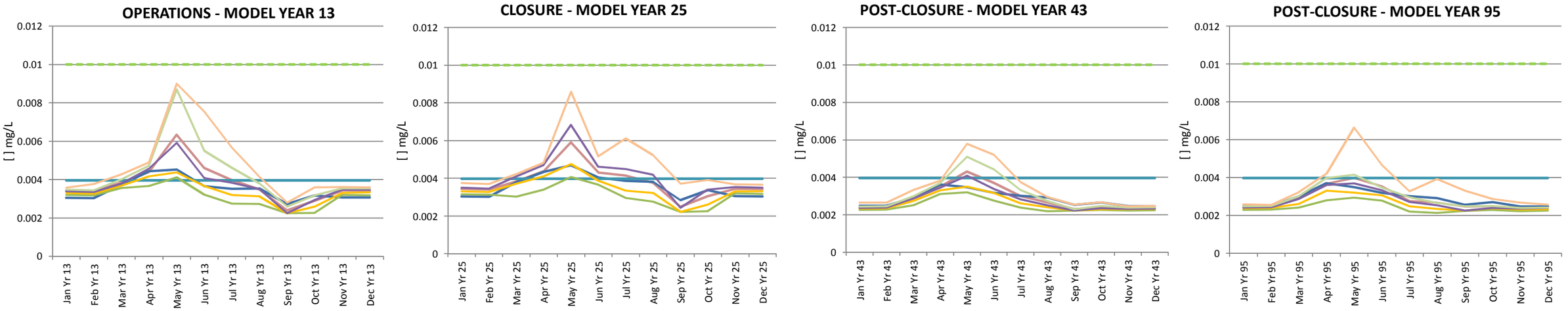
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APPENDIX G3

COPPER

(Figures G3.1 to G3.6)





NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

REV	DATE	DESCRIPTION	PREP'D	APP'D
0	15JUL'15	ISSUED WITH REPORT	JMQ	JEM

KGHM AJAX INC.

AJAX PROJECT

PC02 VARIABLE CLIMATE CASE (VCC) - COPPER PREDICTIONS

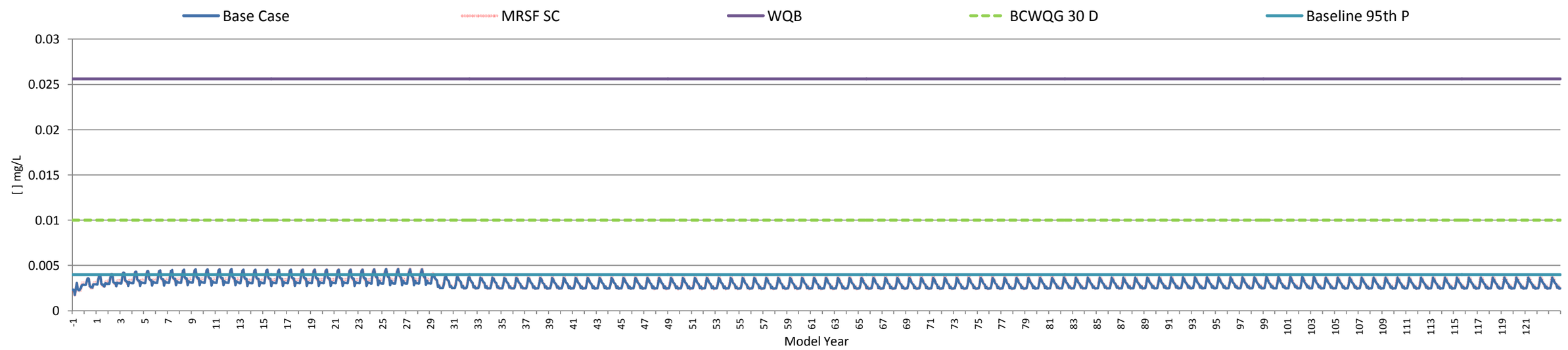
Knight Piésold CONSULTING

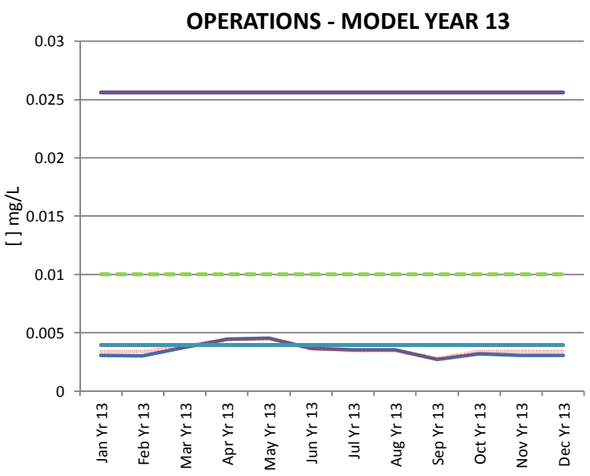
P/A NO. VA101-246/31

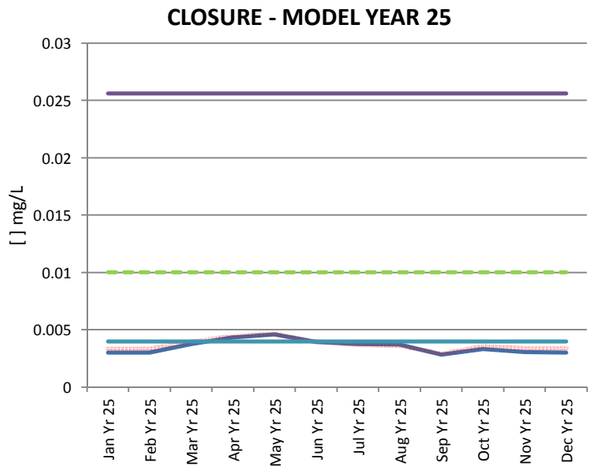
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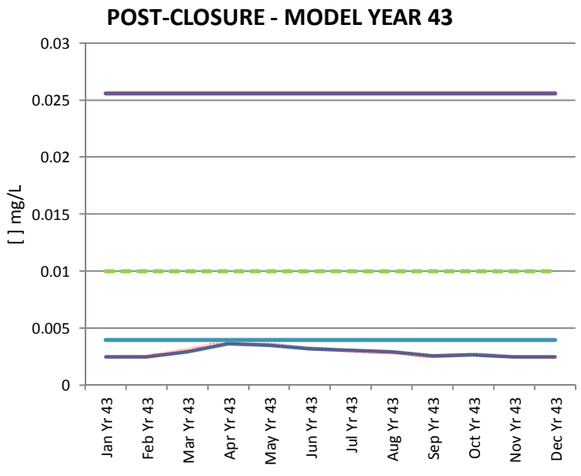
FIGURE G3.1

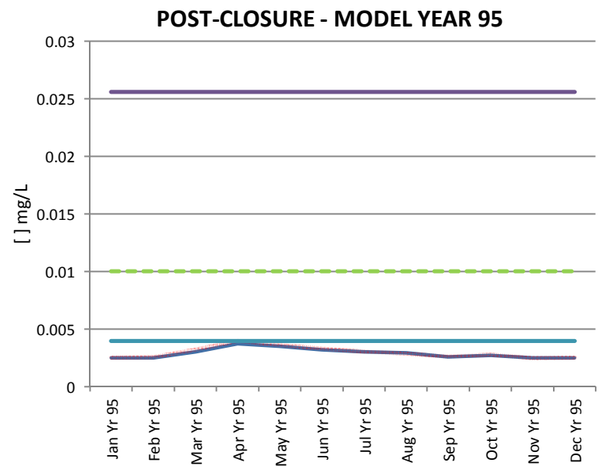
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 MRSF RECHARGE ASSUMPTIONS - COPPER PREDICTIONS

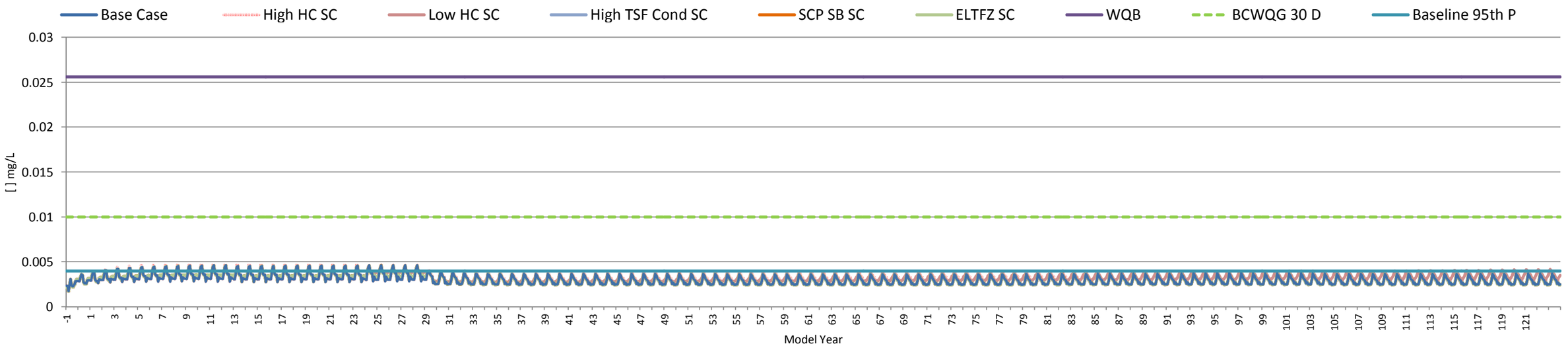
Knight Piésold CONSULTING

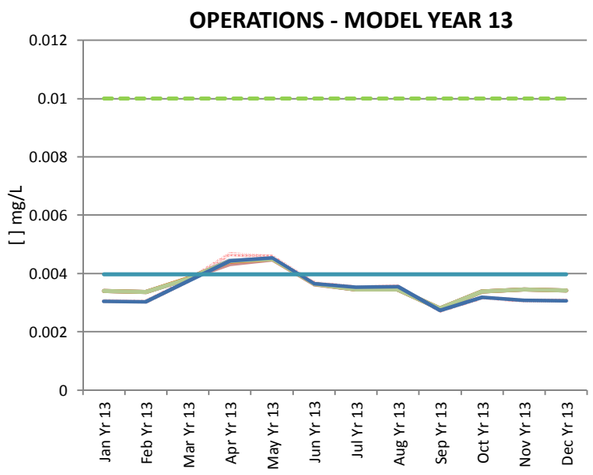
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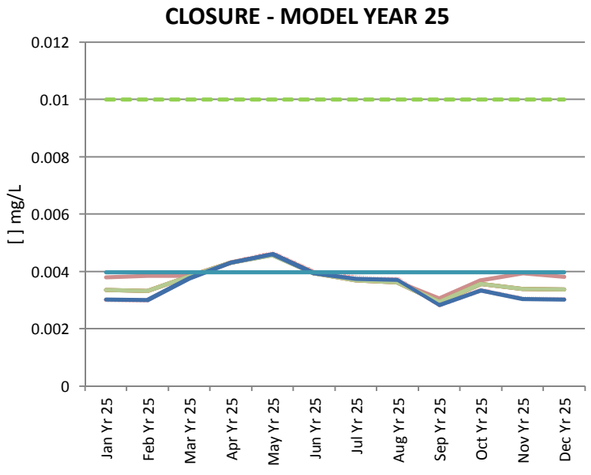
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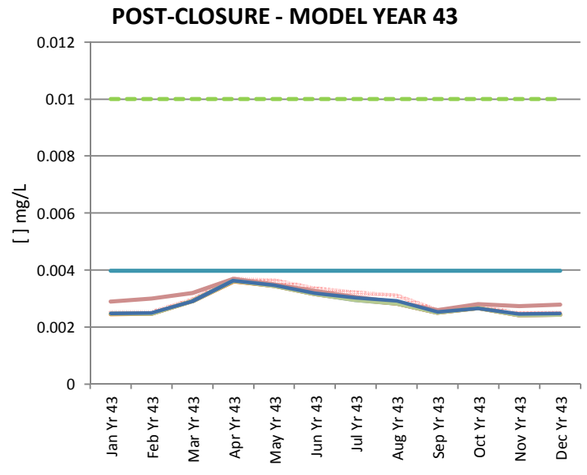
FIGURE G3.2

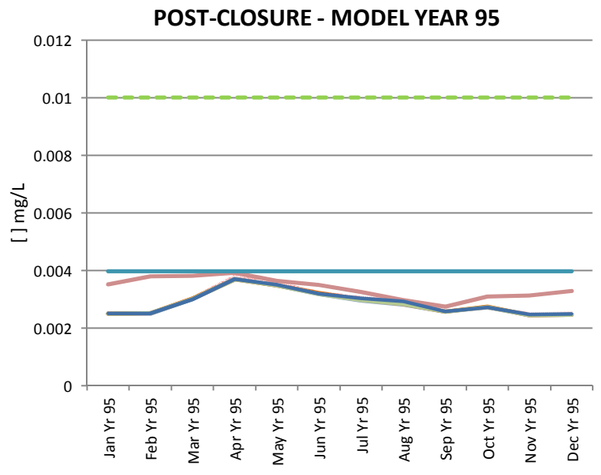
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 GROUNDWATER ASSUMPTIONS (GW) - COPPER PREDICTIONS

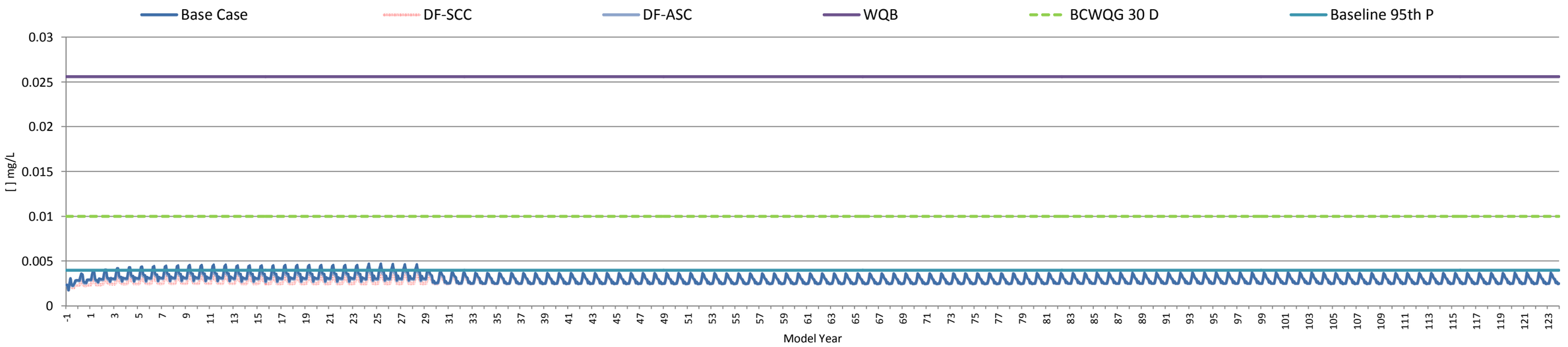
Knight Piésold CONSULTING

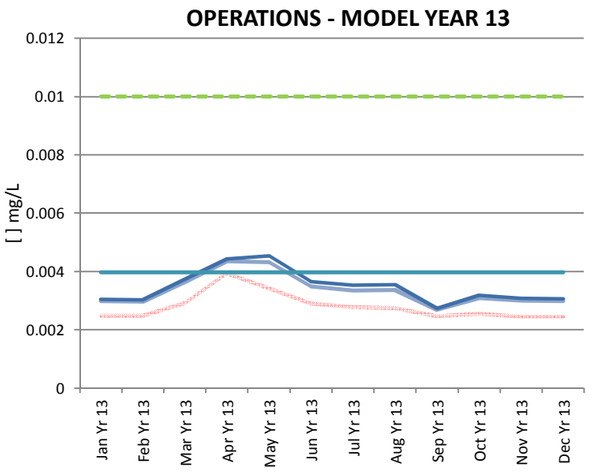
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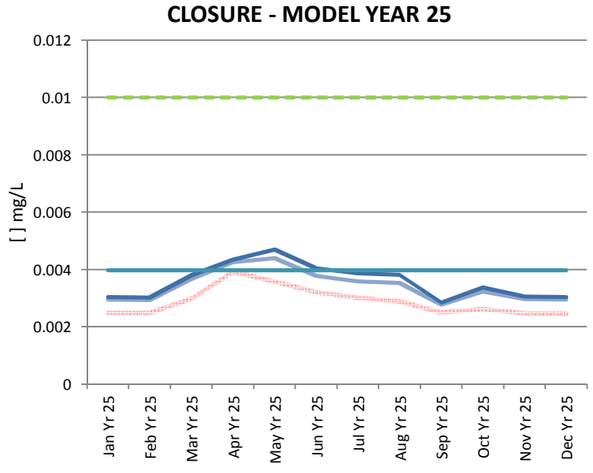
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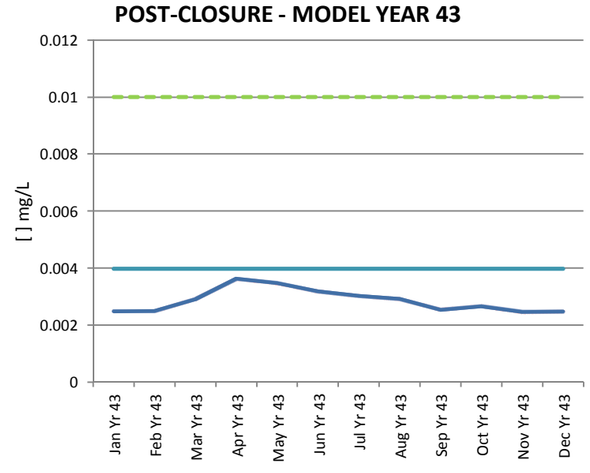
FIGURE G3.3

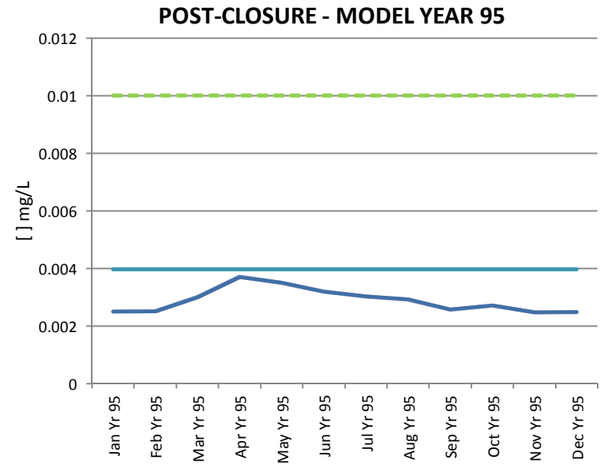
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 DUSTFALL ASSUMPTIONS (DFA) - COPPER PREDICTIONS

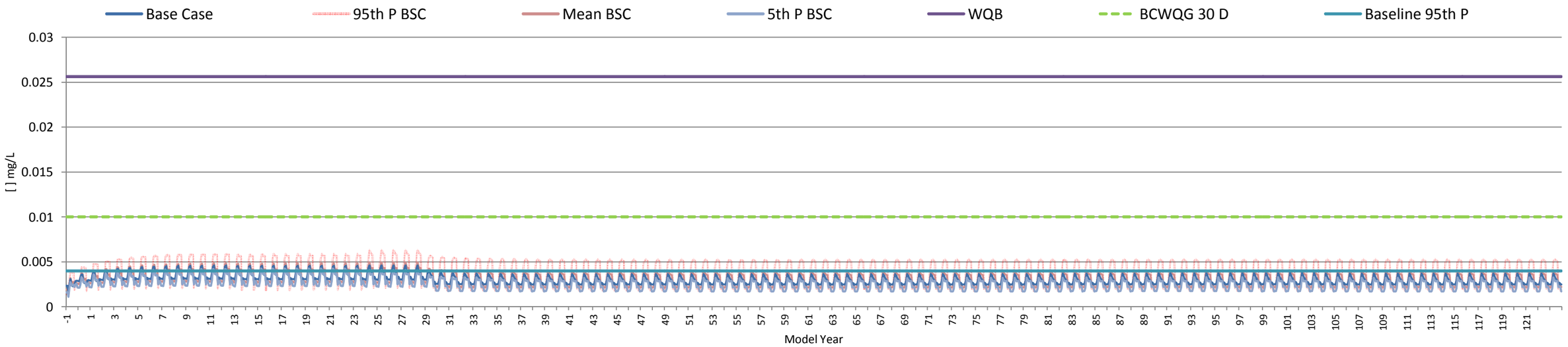
Knight Piésold CONSULTING

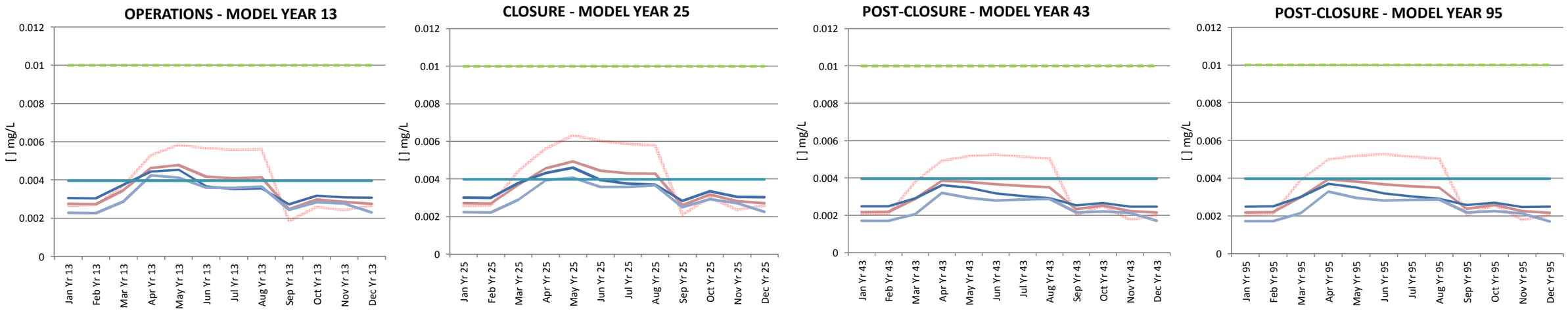
P/A NO. VA101-246/31

REF. NO. 3

FIGURE G3.4

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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PC02 BASELINE SENSITIVITY CASE (BSC) - COPPER PREDICTIONS

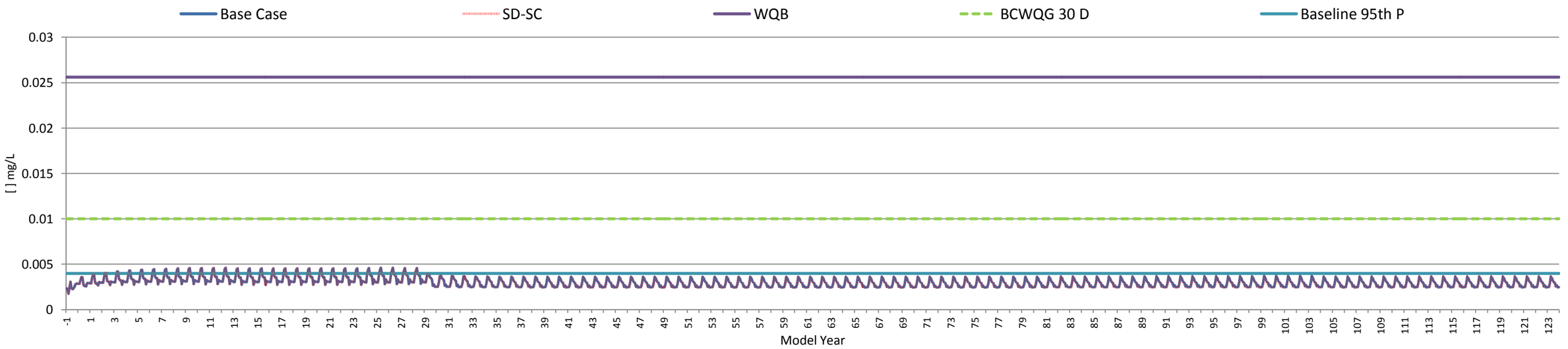
Knight Piésold CONSULTING

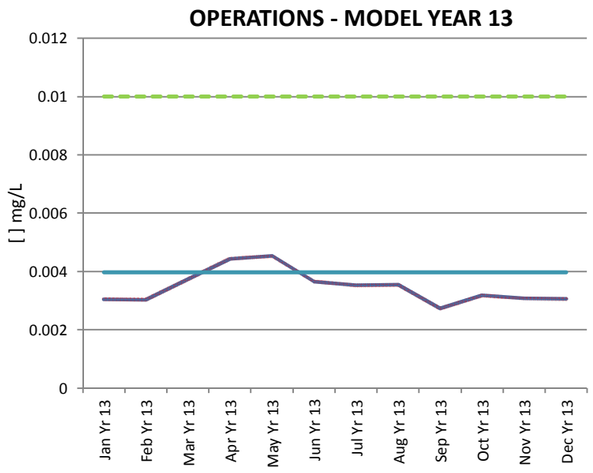
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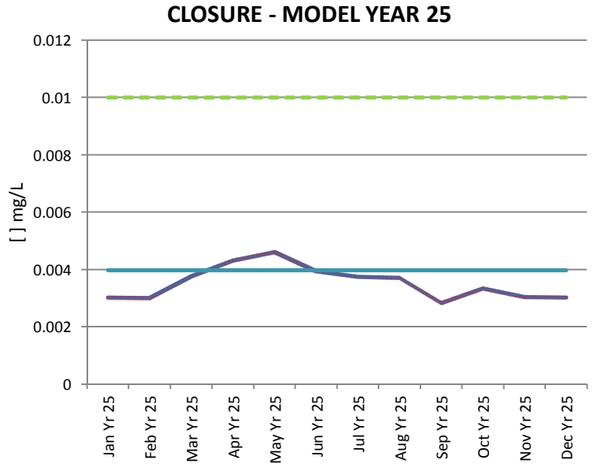
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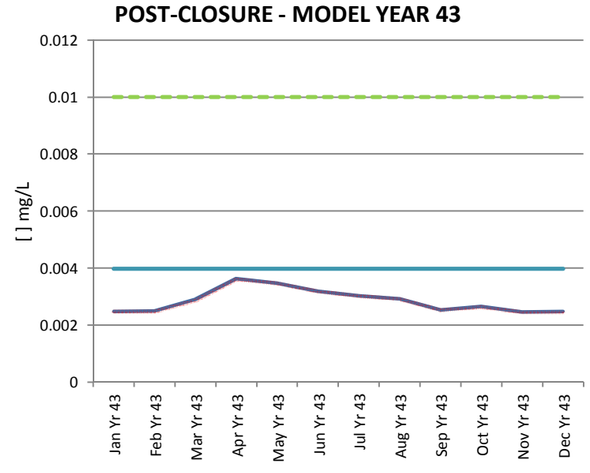
FIGURE G3.5

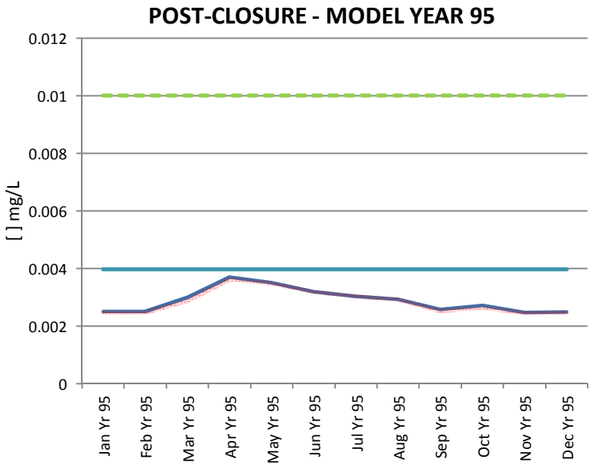
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 TIMING OF SEEPAGE ASSUMPTIONS (SD) - COPPER PREDICTIONS

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REF. NO. 3

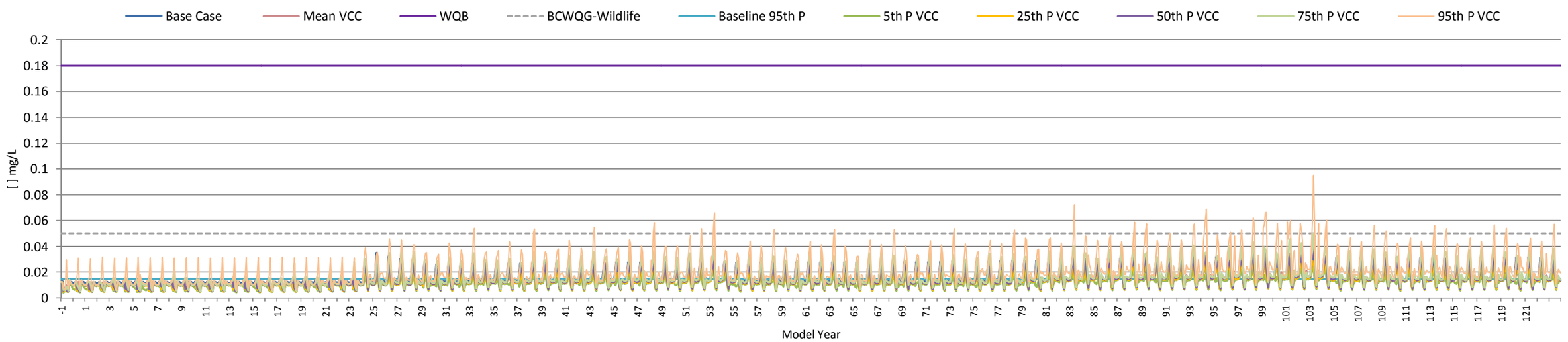
FIGURE G3.6

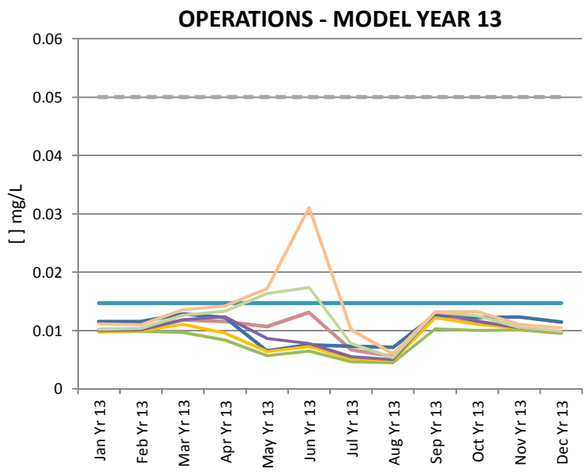
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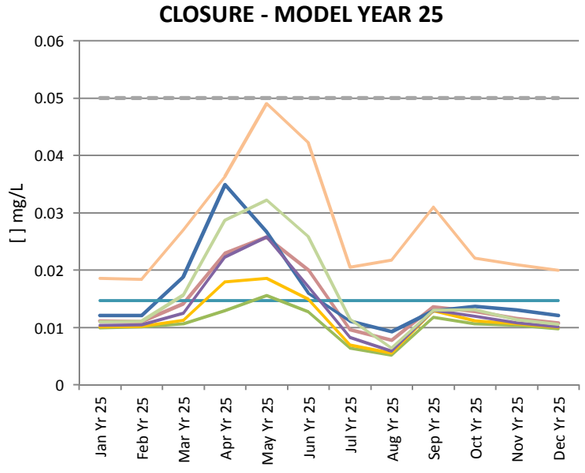
APPENDIX G4

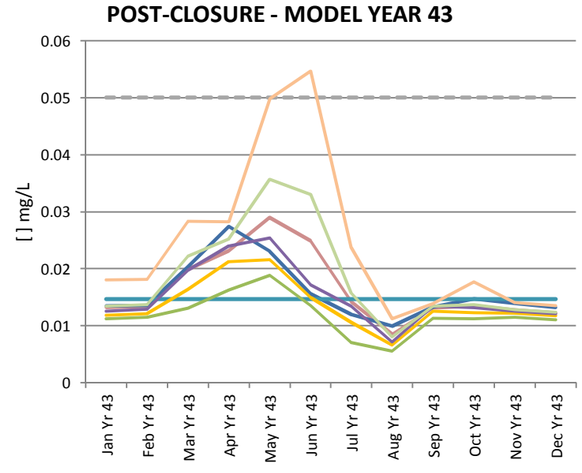
MOLYBDENUM

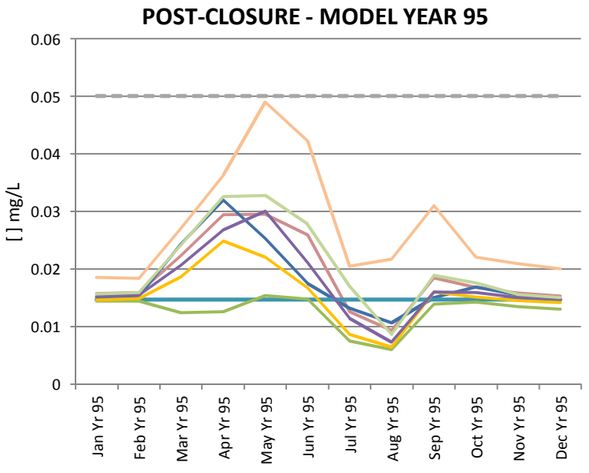
(Figures G4.1 to G4.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 VARIABLE CLIMATE CASE (VCC) - MOLYBDENUM PREDICTIONS

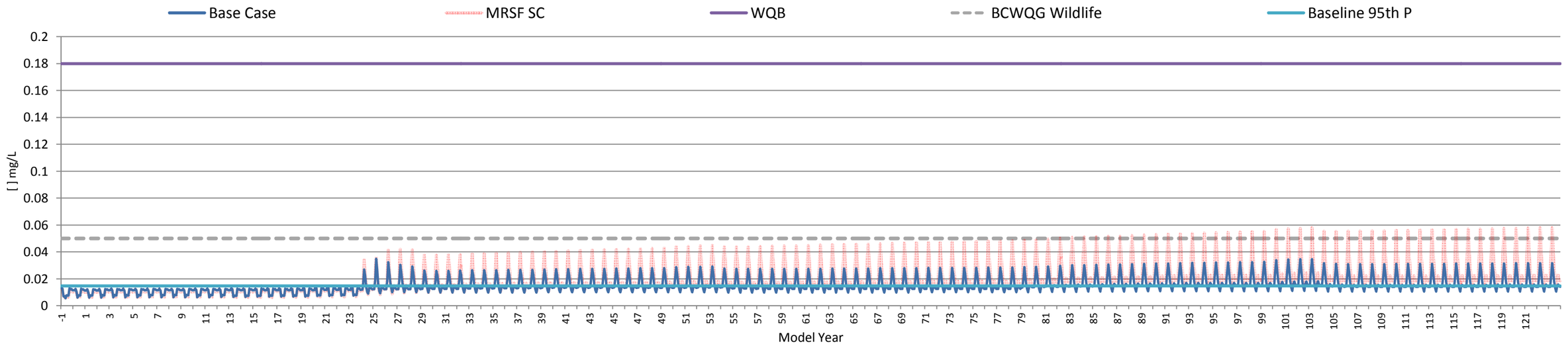
Knight Piésold CONSULTING

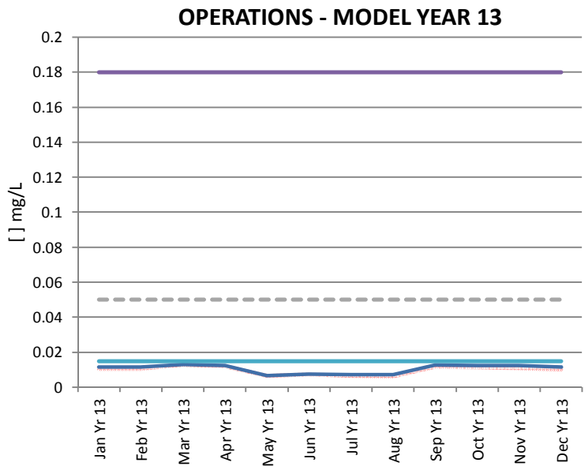
P/A NO. VA101-246/31

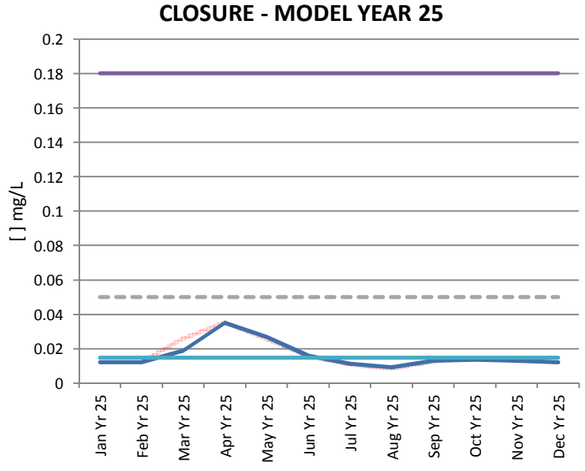
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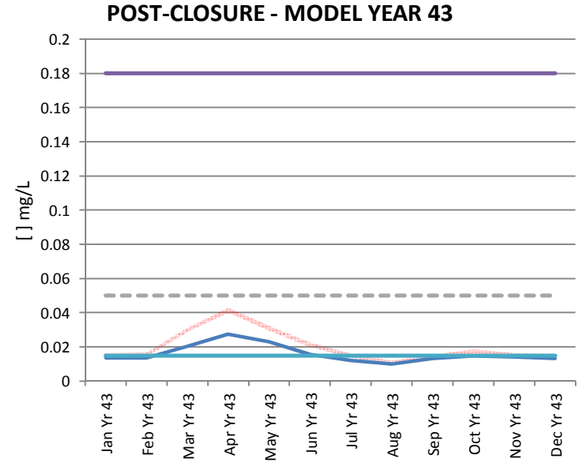
FIGURE G4.1

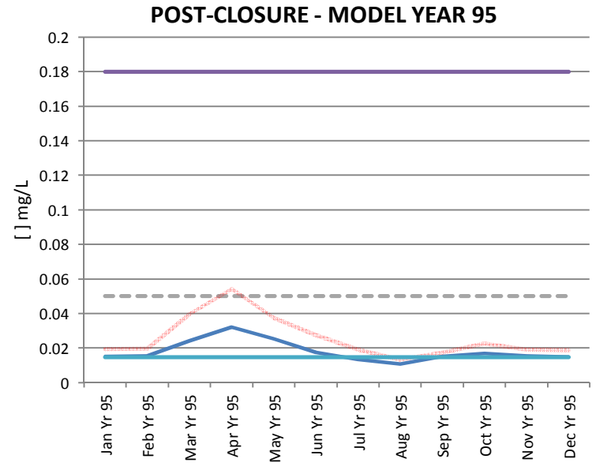
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 MRSF RECHARGE ASSUMPTIONS - MOLYBDENUM PREDICTIONS

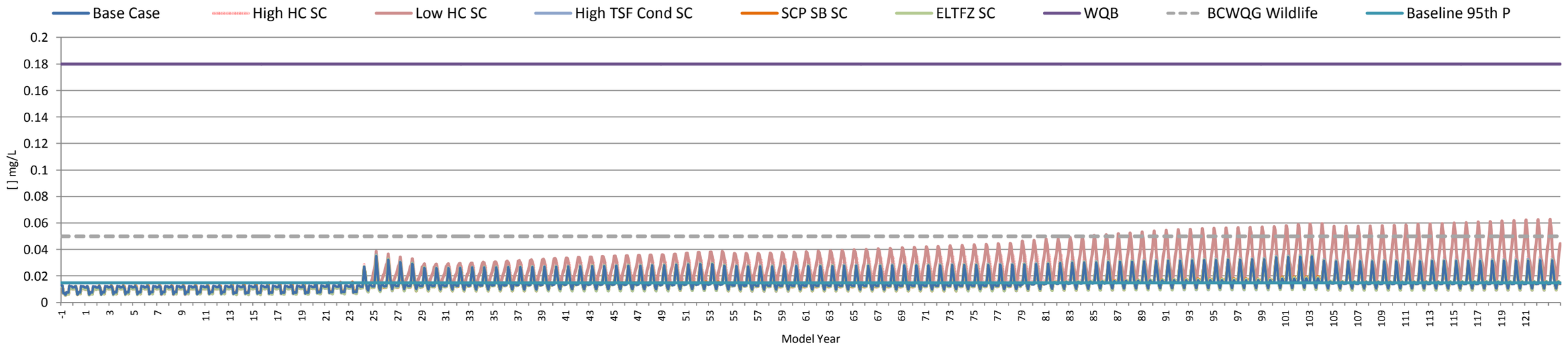
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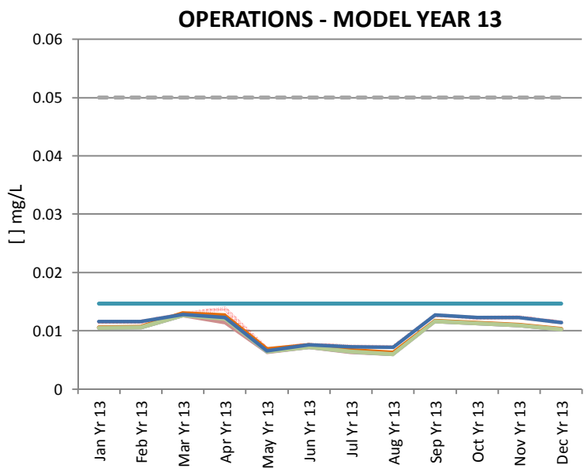
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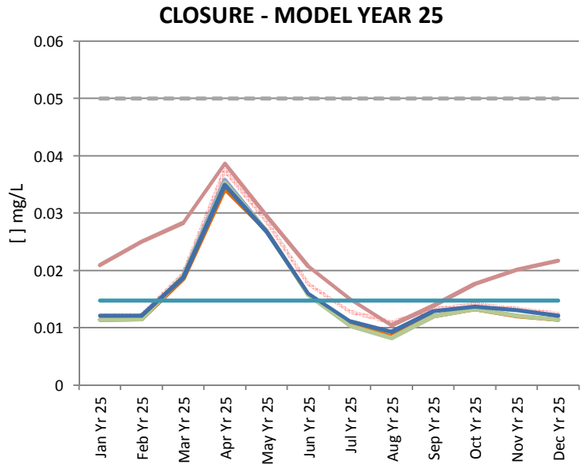
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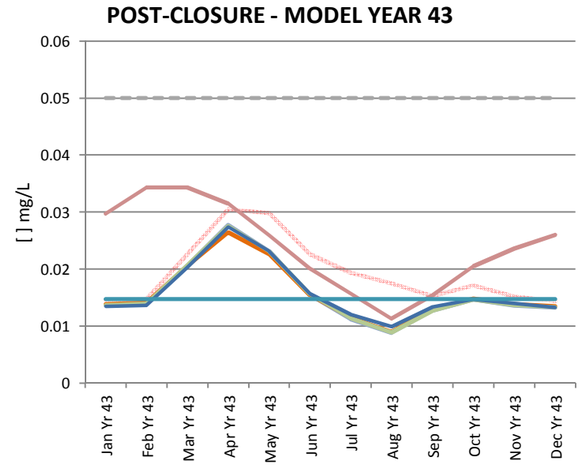
FIGURE G4.2

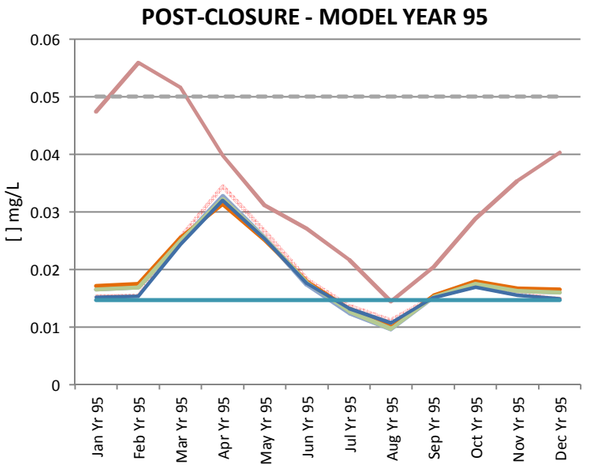
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 GROUNDWATER ASSUMPTIONS (GW) - MOLYBDENUM PREDICTIONS

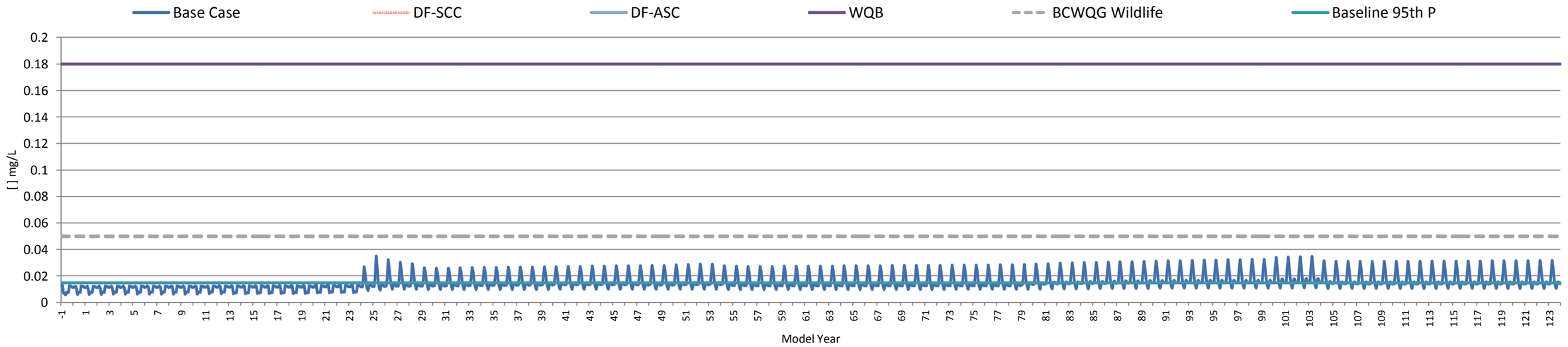
Knight Piésold CONSULTING

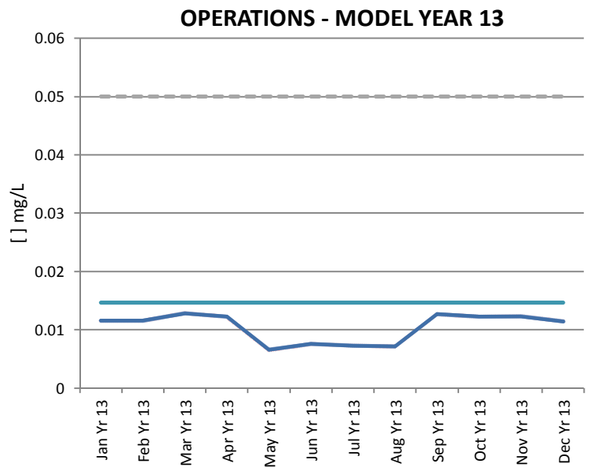
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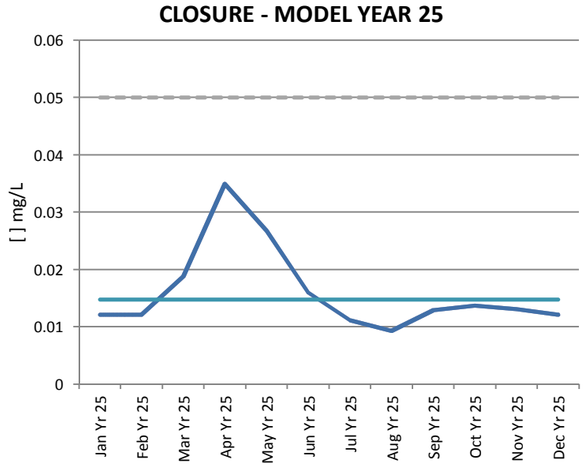
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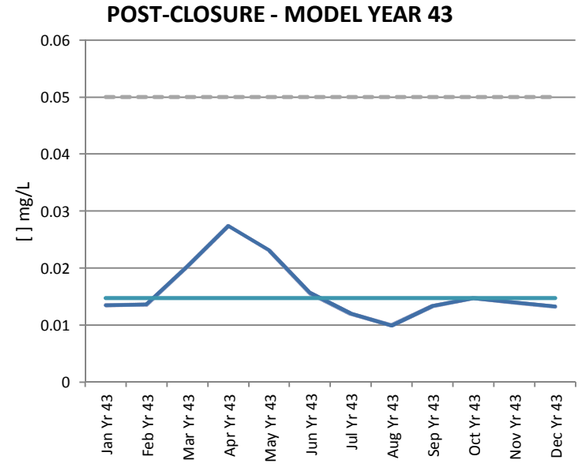
FIGURE G4.3

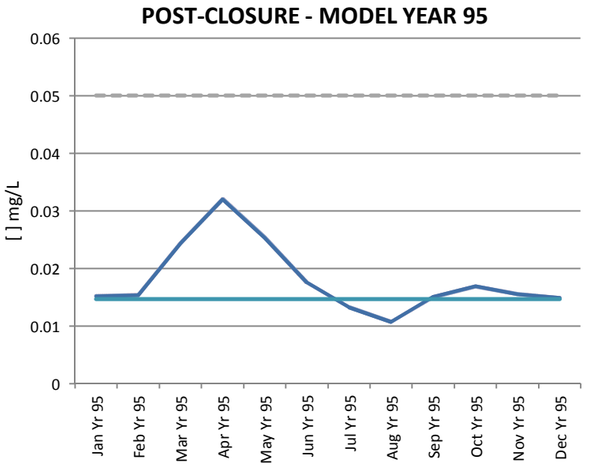
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 DUSTFALL ASSUMPTIONS (DFA) - MOLYBDENUM PREDICTIONS

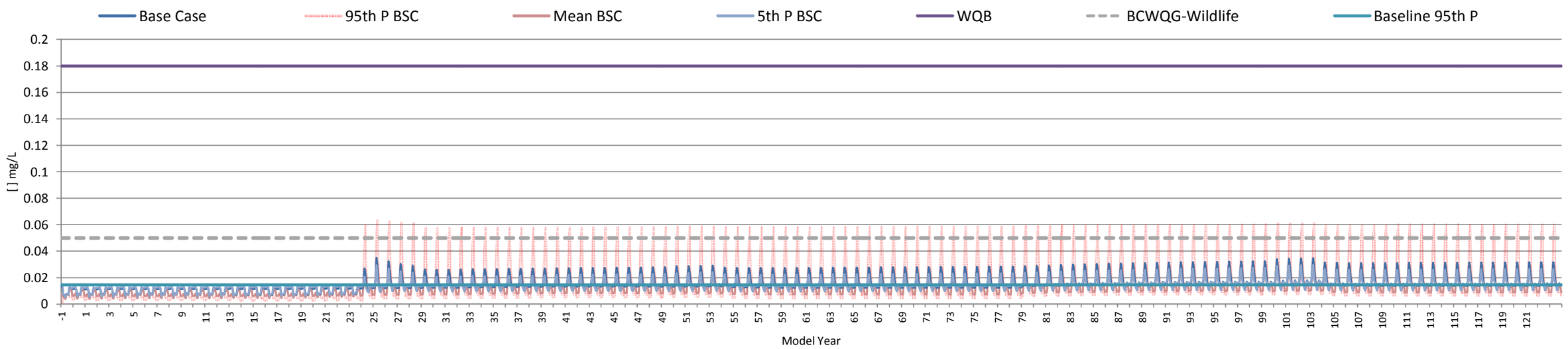
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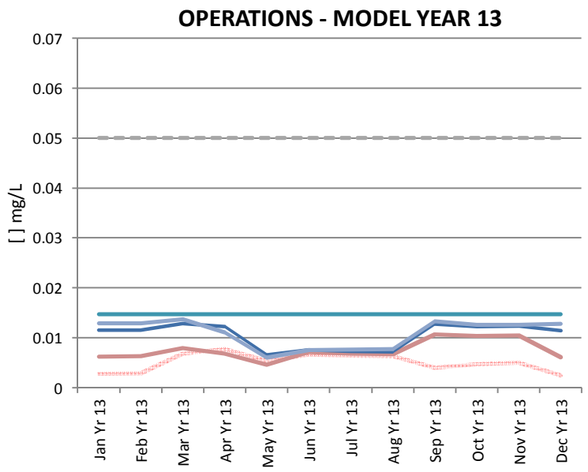
P/A NO. VA101-246/31

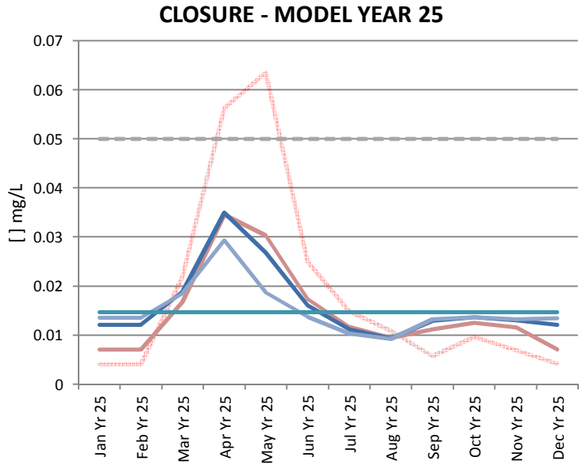
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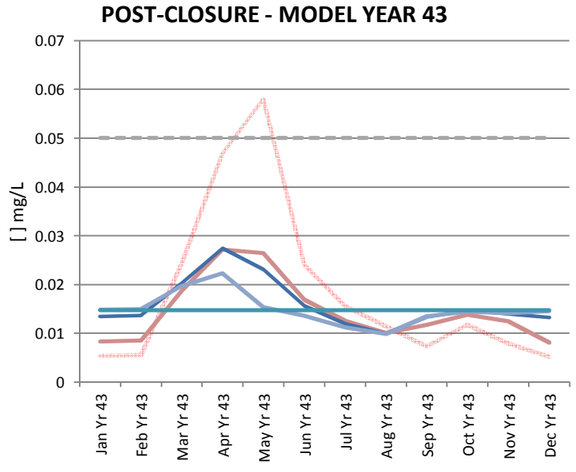
FIGURE G4.4

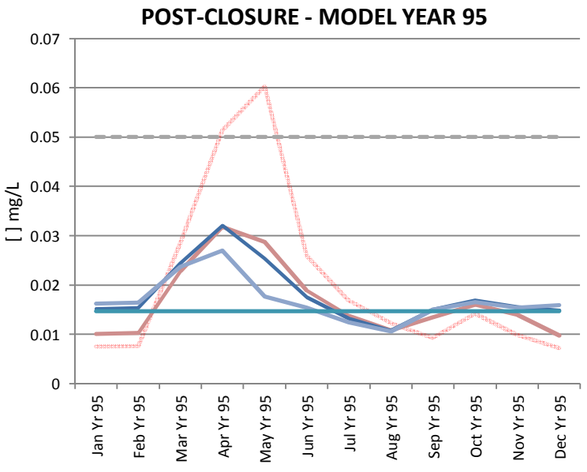
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PC02 BASELINE SENSITIVITY CASE (BSC) - MOLYBDENUM PREDICTIONS

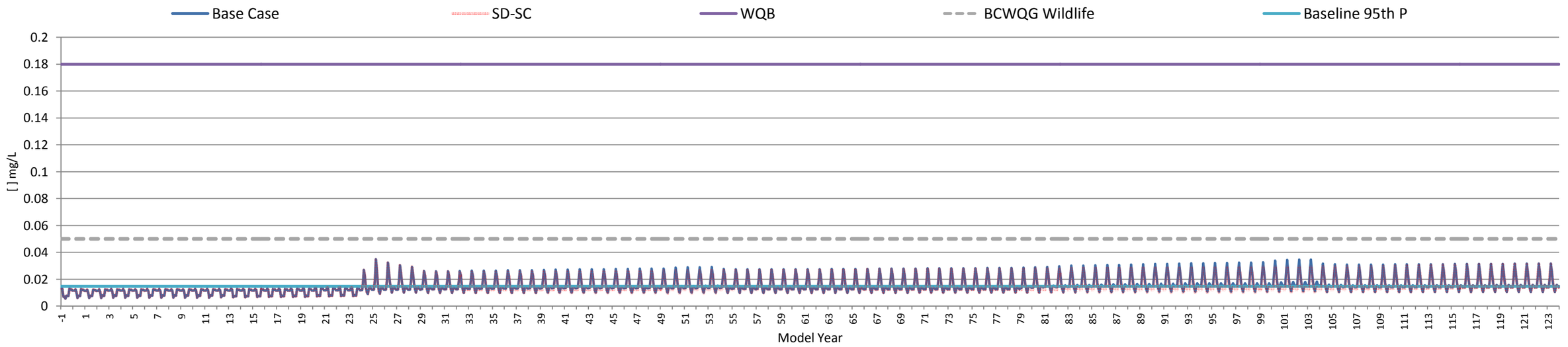
Knight Piésold CONSULTING

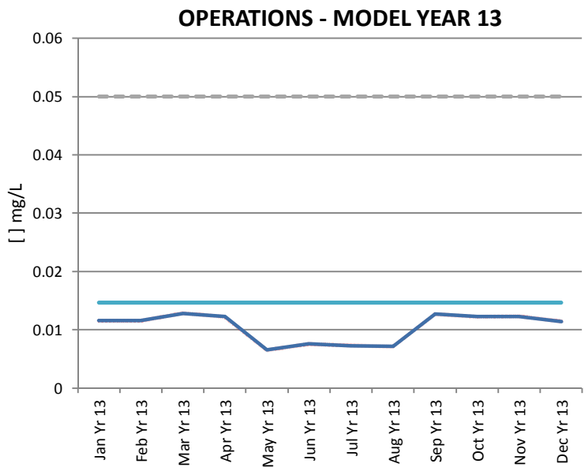
P/A NO. VA101-246/31

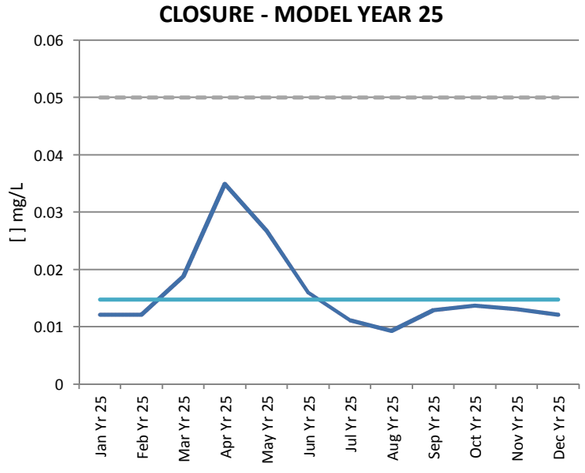
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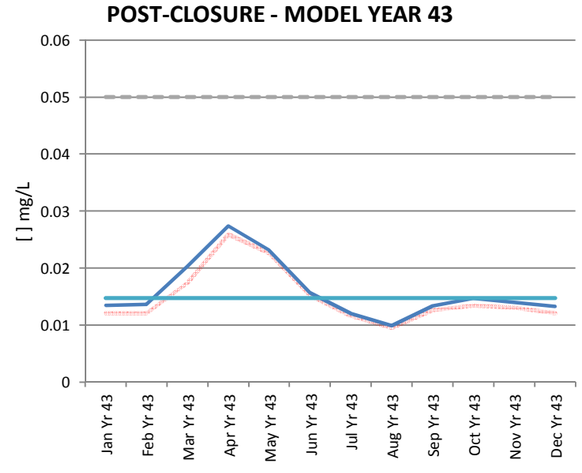
FIGURE G4.5

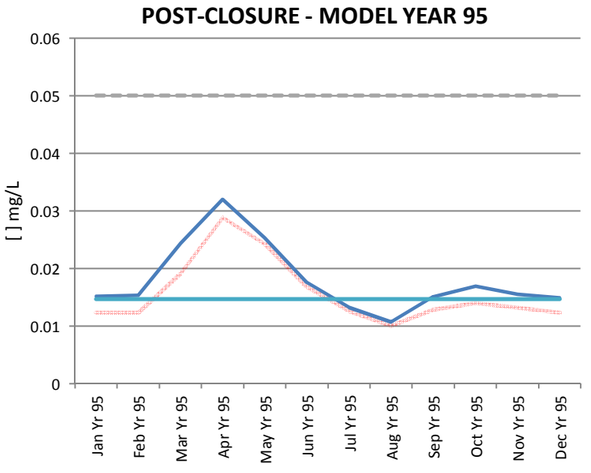
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PC02 TIMING OF SEEPAGE ASSUMPTIONS (SD) - MOLYBDENUM PREDICTIONS

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REF. NO. 3

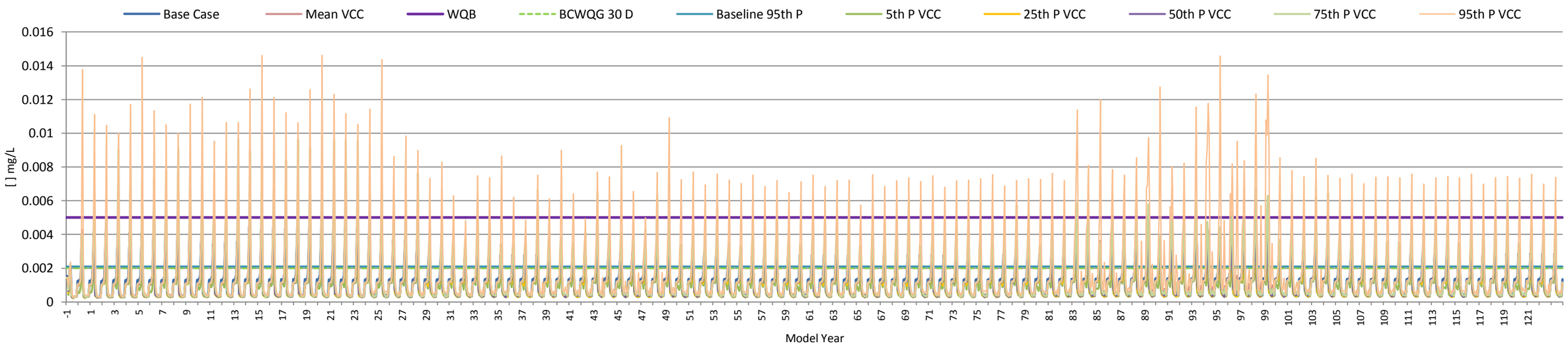
FIGURE G4.6

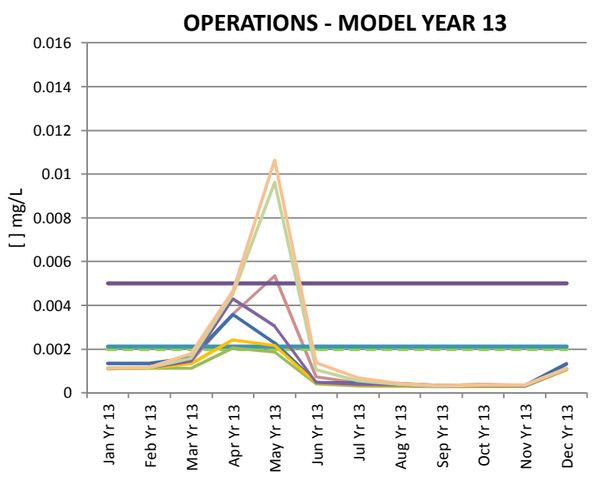
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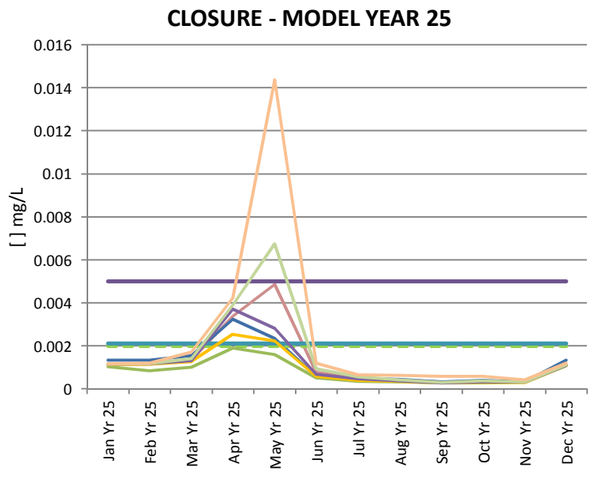
APPENDIX G5

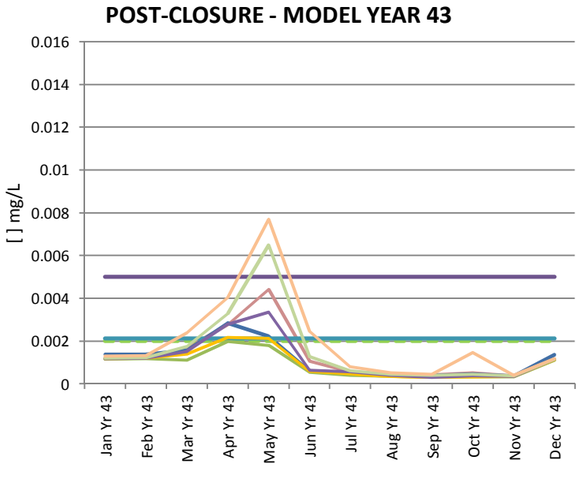
SELENIUM

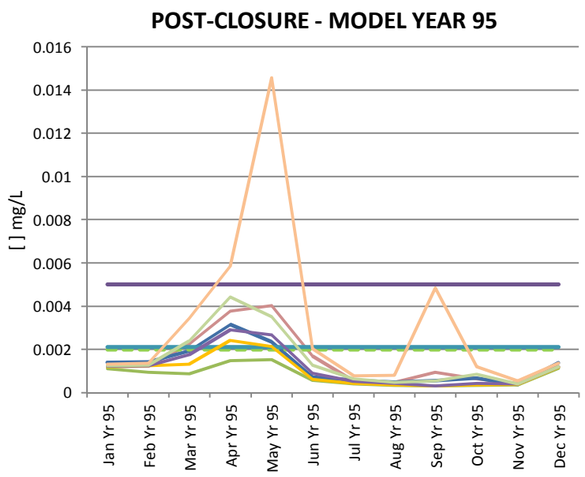
(Figures G5.1 to G5.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

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PC02 VARIABLE CLIMATE CASE (VCC) - SELENIUM PREDICTIONS

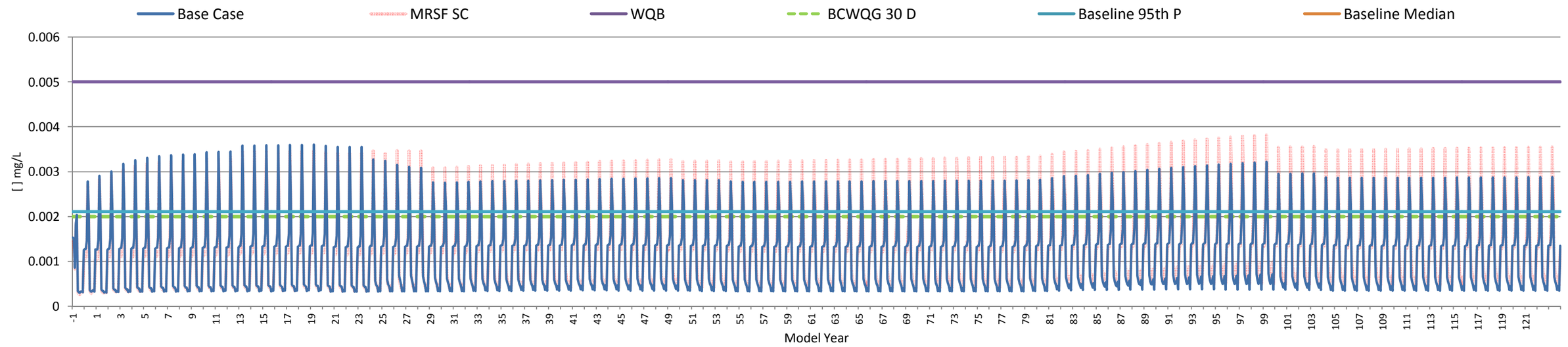
Knight Piésold CONSULTING

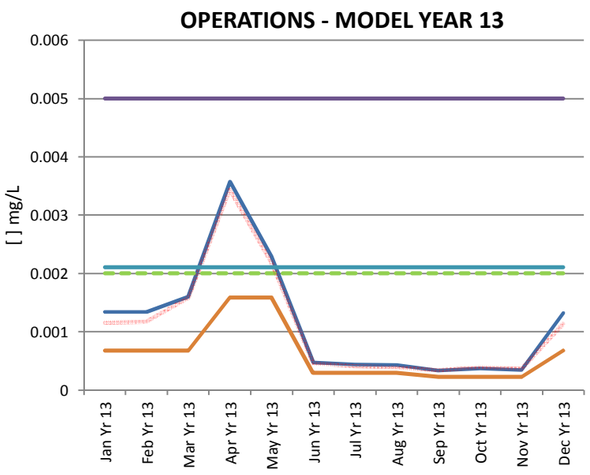
P/A NO. VA101-246/31

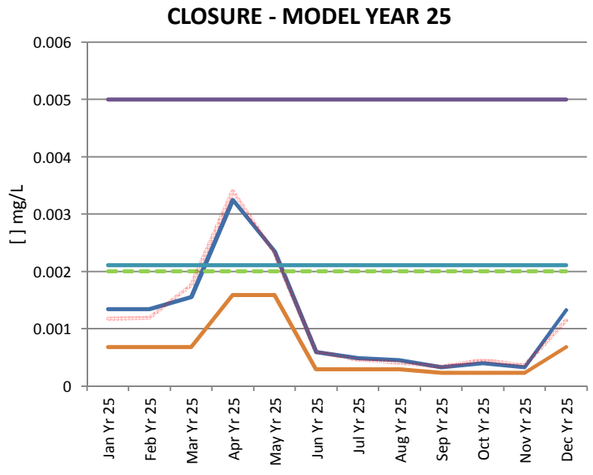
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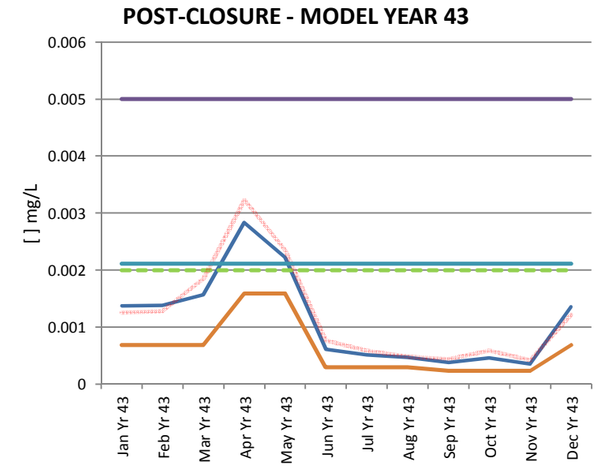
FIGURE G5.1

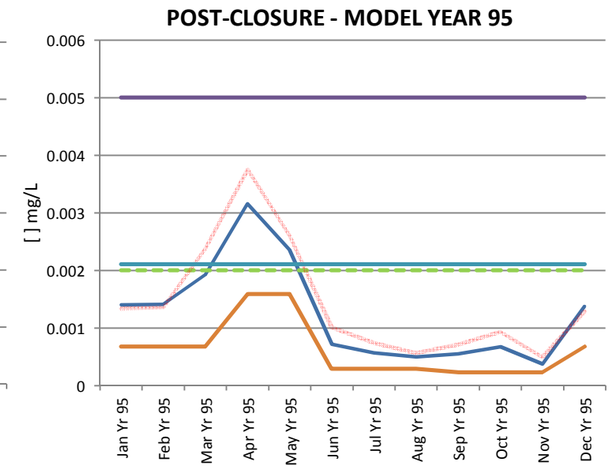
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

PC02 MRSF RECHARGE ASSUMPTIONS - SELENIUM PREDICTIONS

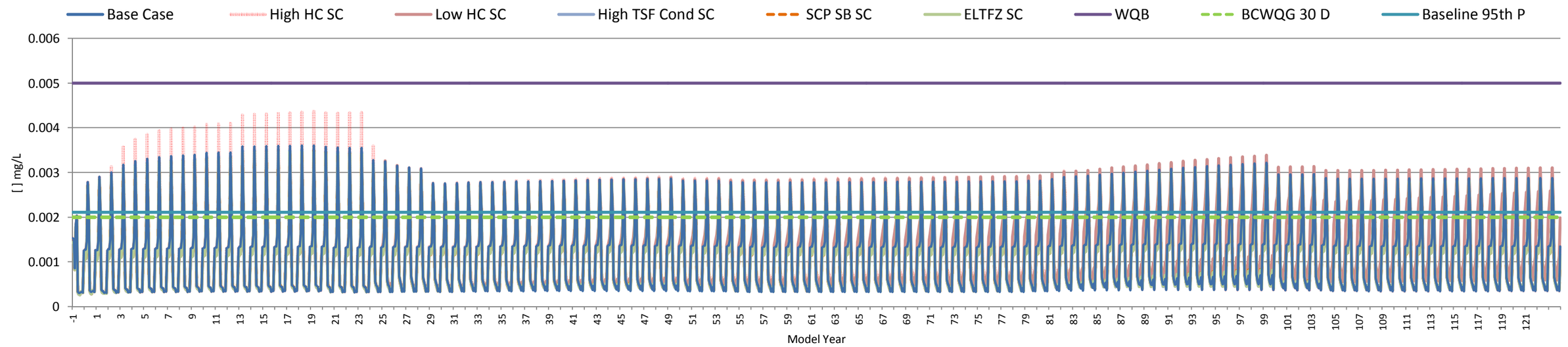
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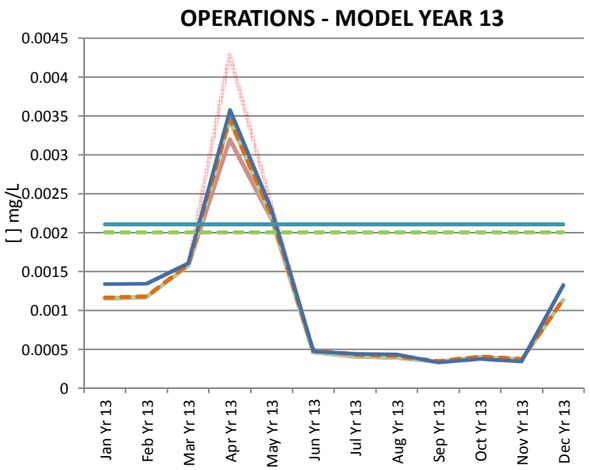
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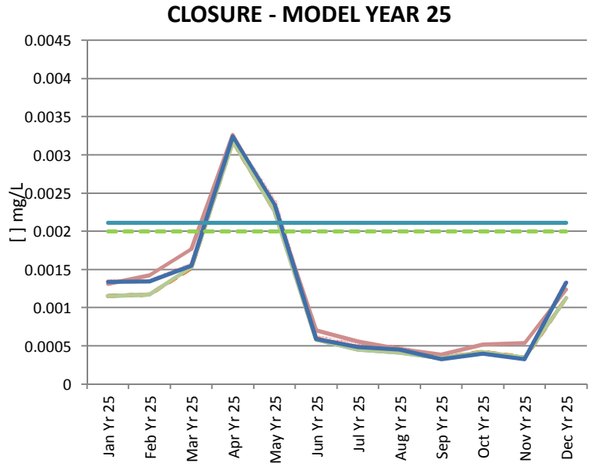
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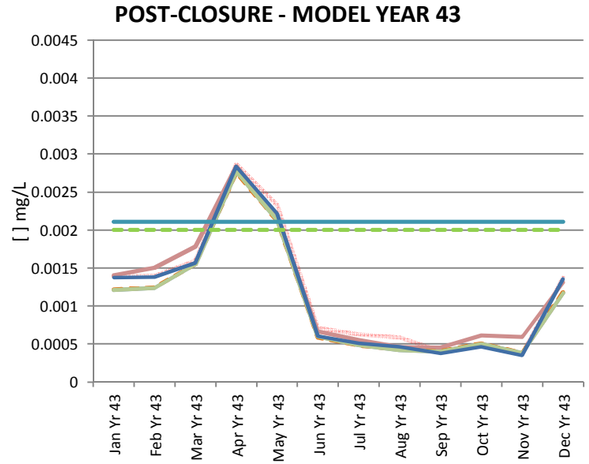
FIGURE G5.2

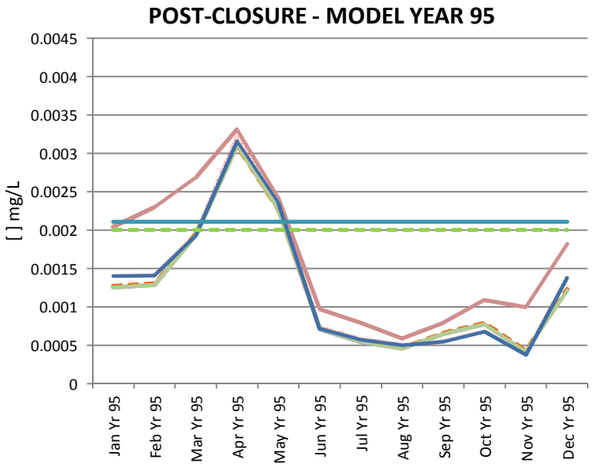
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 GROUNDWATER ASSUMPTIONS (GW) - SELENIUM PREDICTIONS

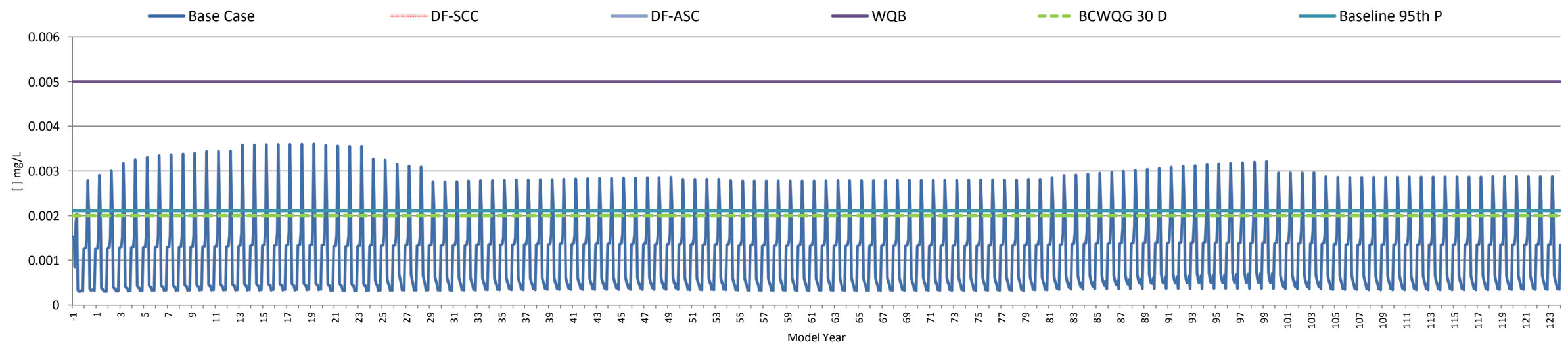
Knight Piésold CONSULTING

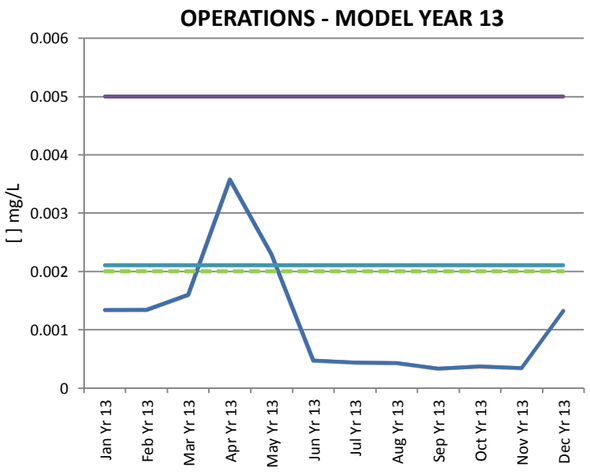
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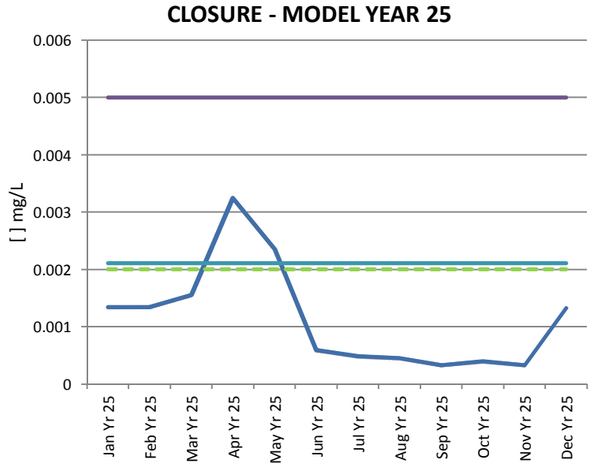
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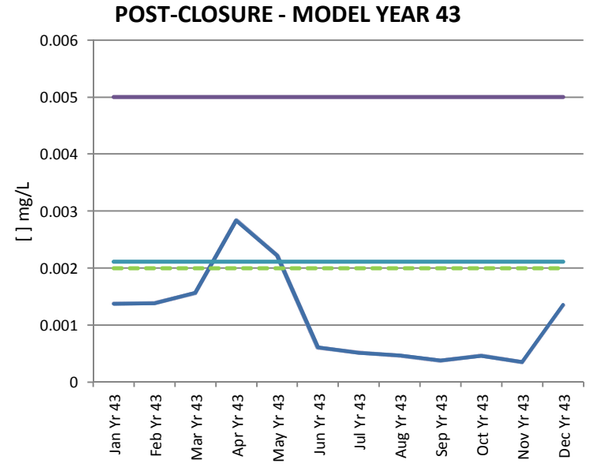
FIGURE G5.3

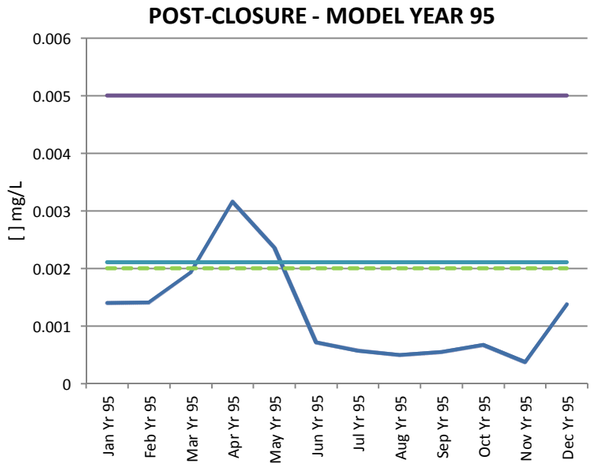
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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PC02 DUSTFALL ASSUMPTIONS (DFA) - SELENIUM PREDICTIONS

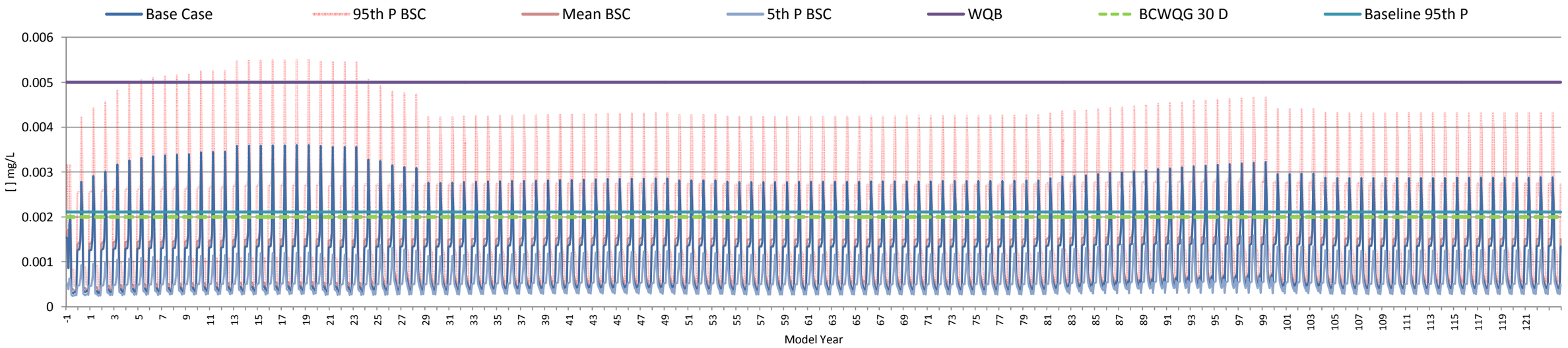
Knight Piésold CONSULTING

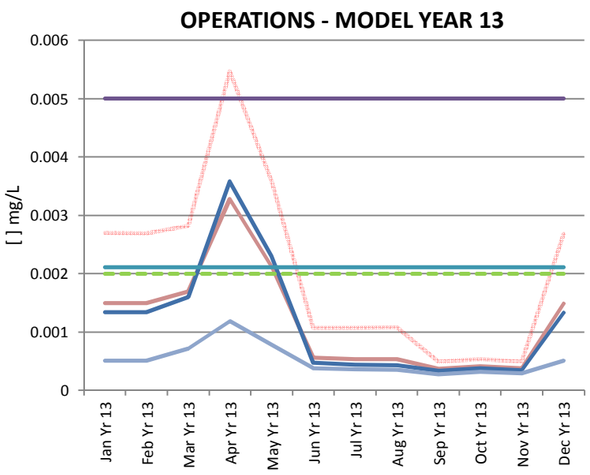
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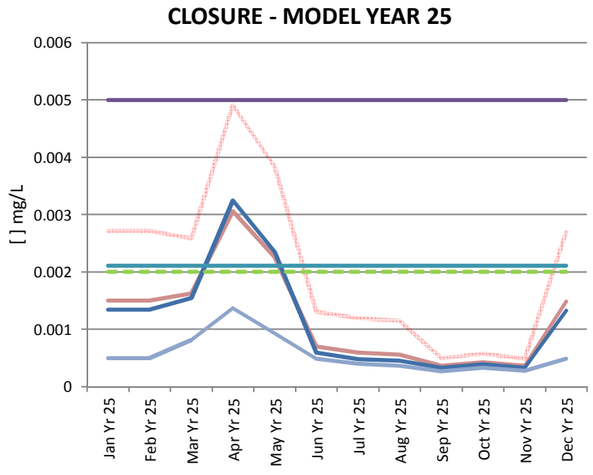
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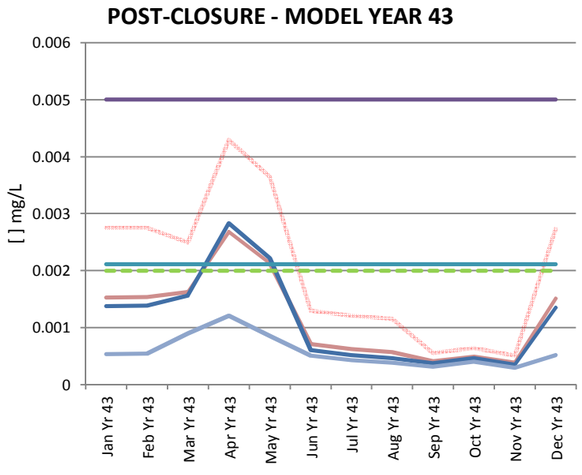
FIGURE G5.4

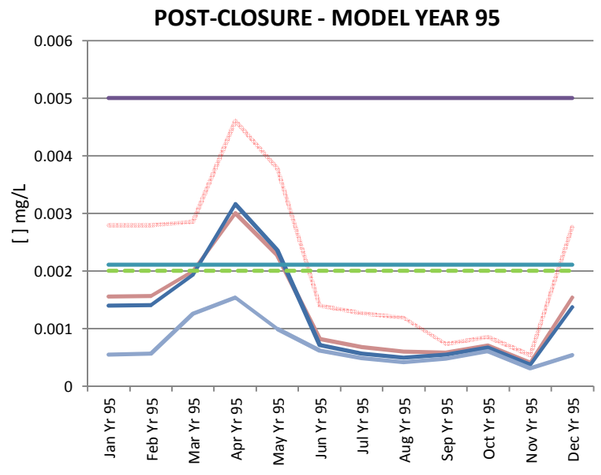
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

PC02 BASELINE SENSITIVITY CASE (BSC) - SELENIUM PREDICTIONS

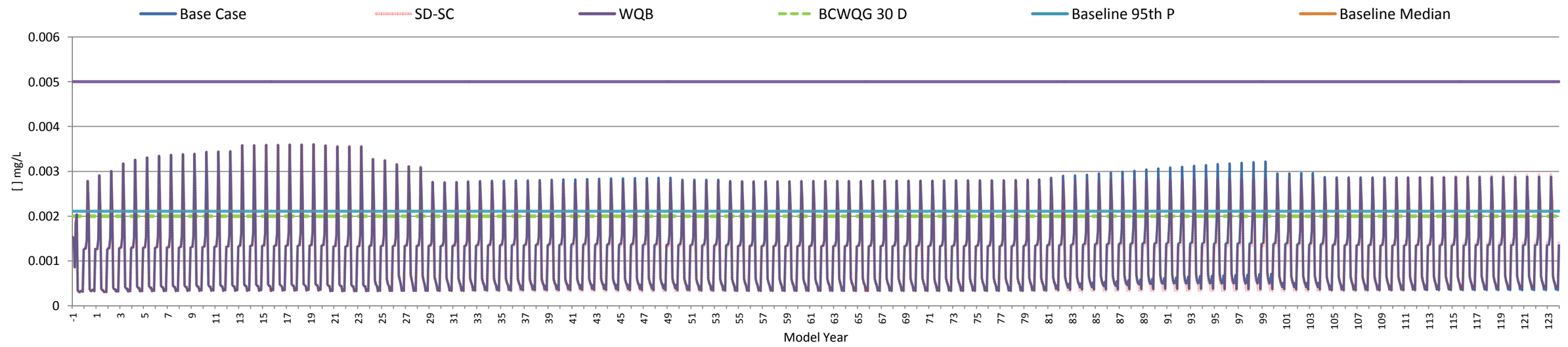
Knight Piésold CONSULTING

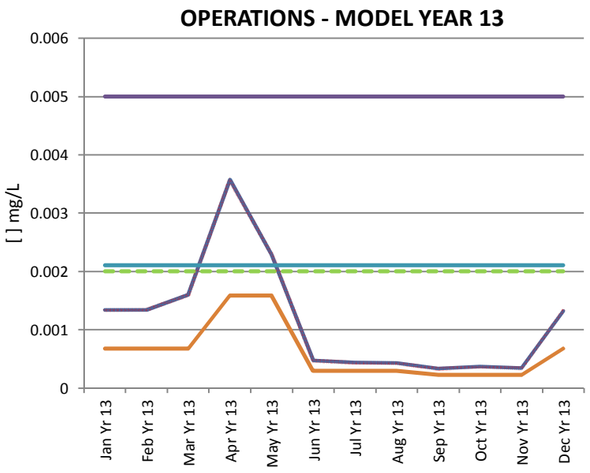
P/A NO. VA101-246/31

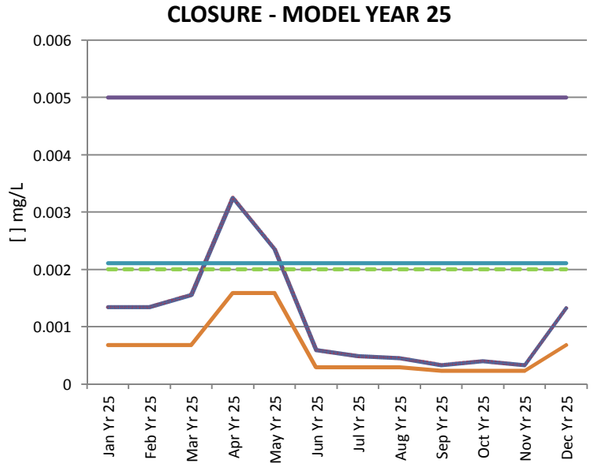
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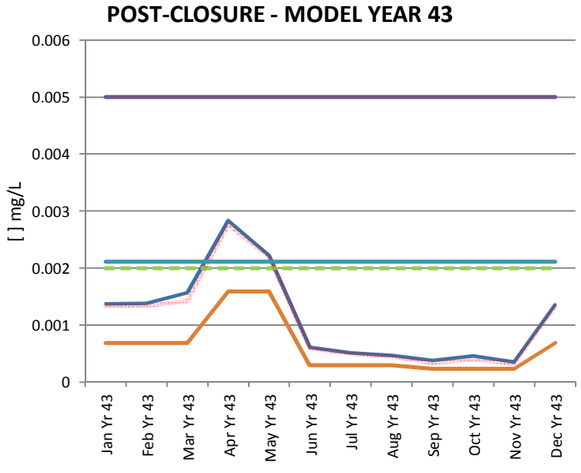
FIGURE G5.5

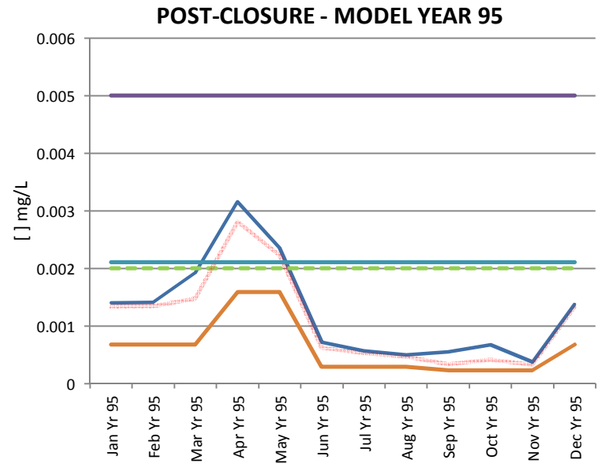
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

PC02 TIMING OF SEEPAGE ASSUMPTIONS (SD) - SELENIUM PREDICTIONS

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P/A NO. VA101-246/31

REF. NO. 3

FIGURE G5.6

REV 0

APPENDIX H

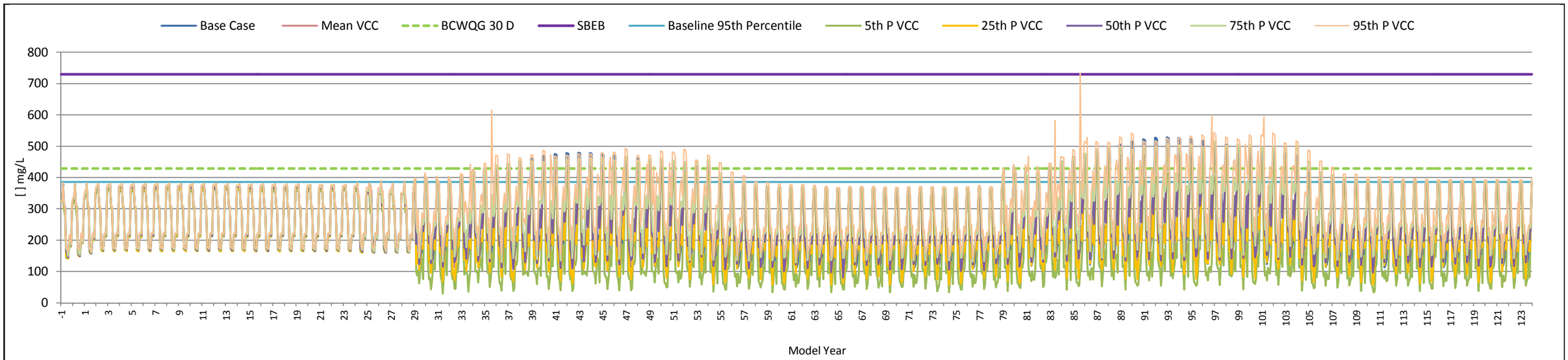
HUMPHREY CREEK

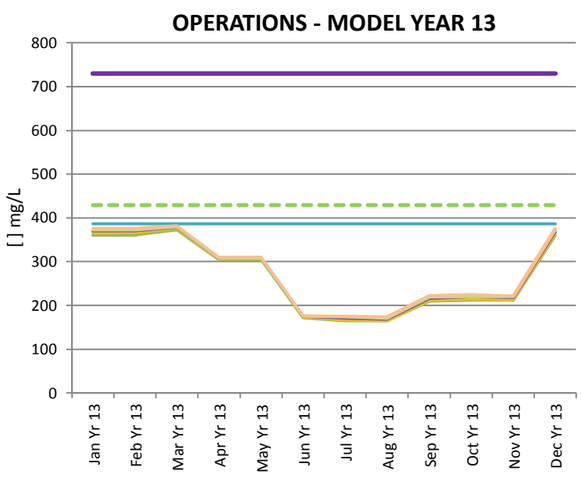
Appendix H1 Sulphate
Appendix H2 Chloride
Appendix H3 Copper
Appendix H4 Molybdenum
Appendix H5 Selenium

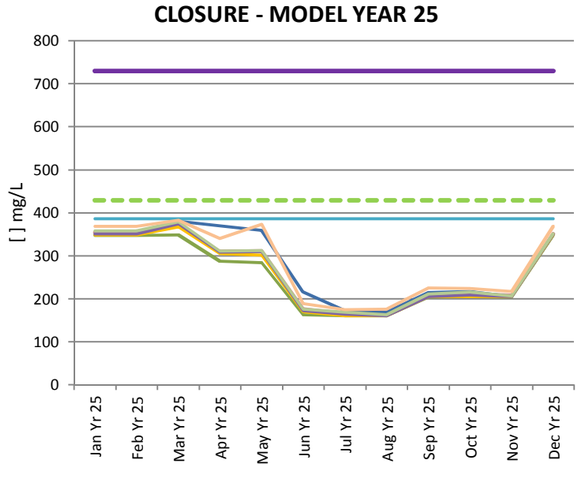
APPENDIX H1

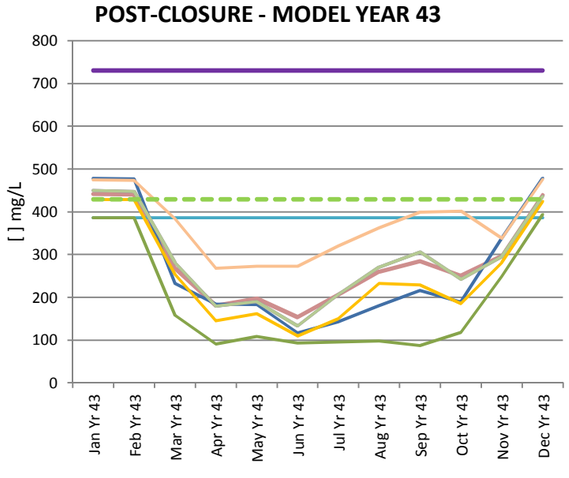
SULPHATE

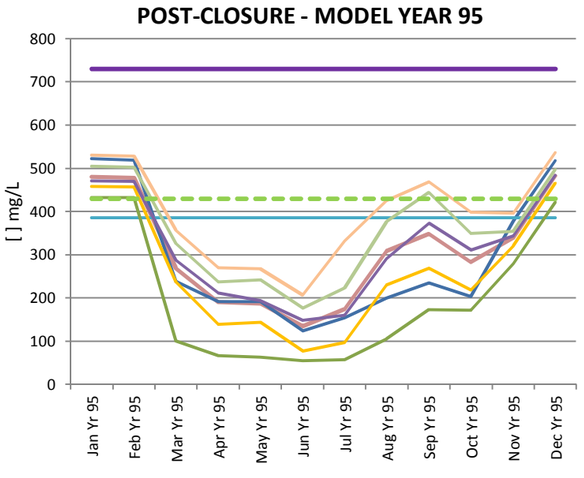
(Figures H1.1 to H1.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK VARIABLE CLIMATE CASE (VCC) - SULPHATE PREDICTIONS

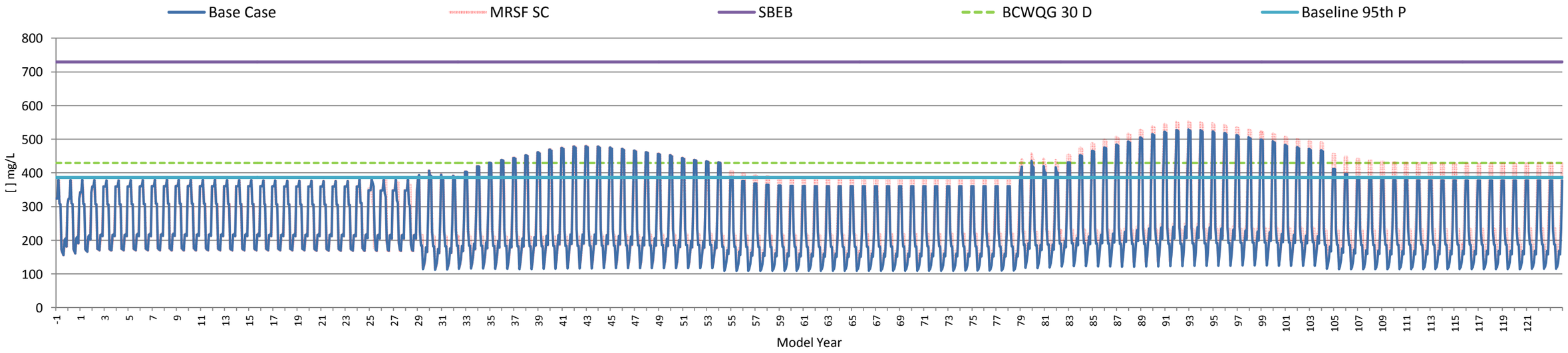
Knight Piésold CONSULTING

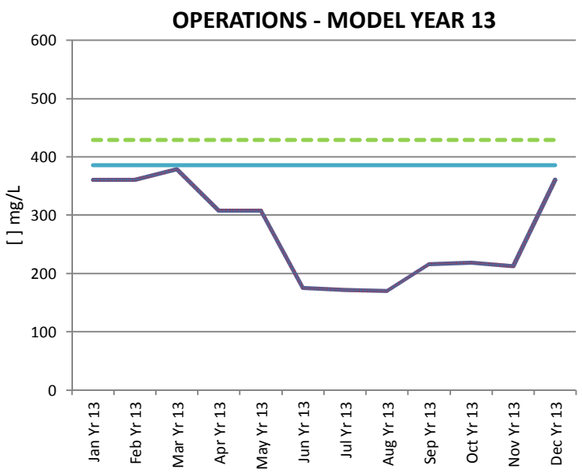
P/A NO. VA101-246/31

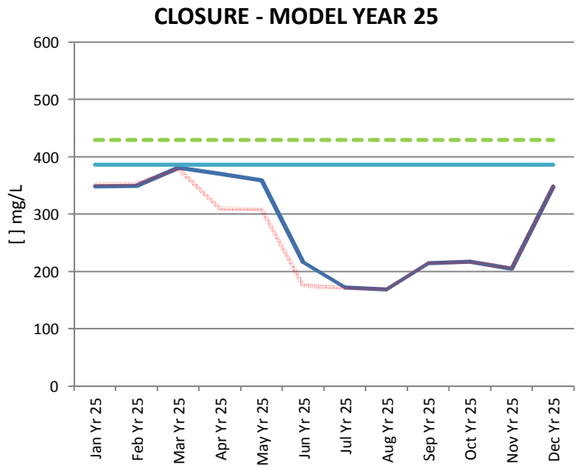
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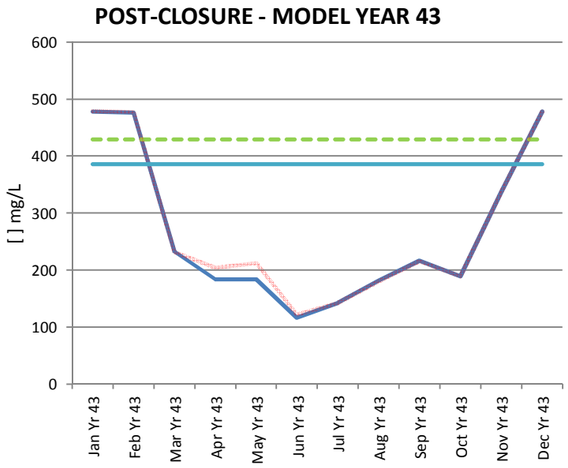
FIGURE H1.1

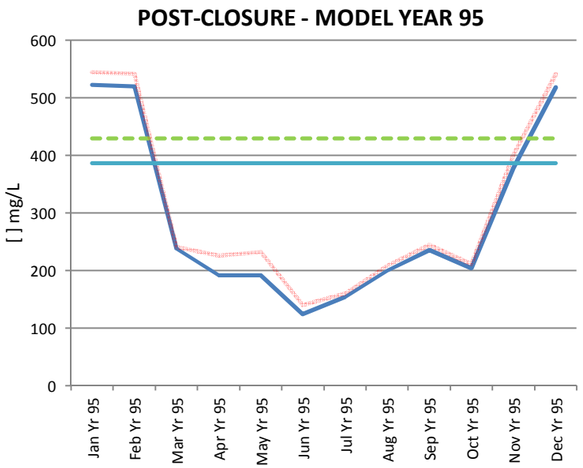
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK MRSF RECHARGE ASSUMPTIONS - SULPHATE PREDICTIONS

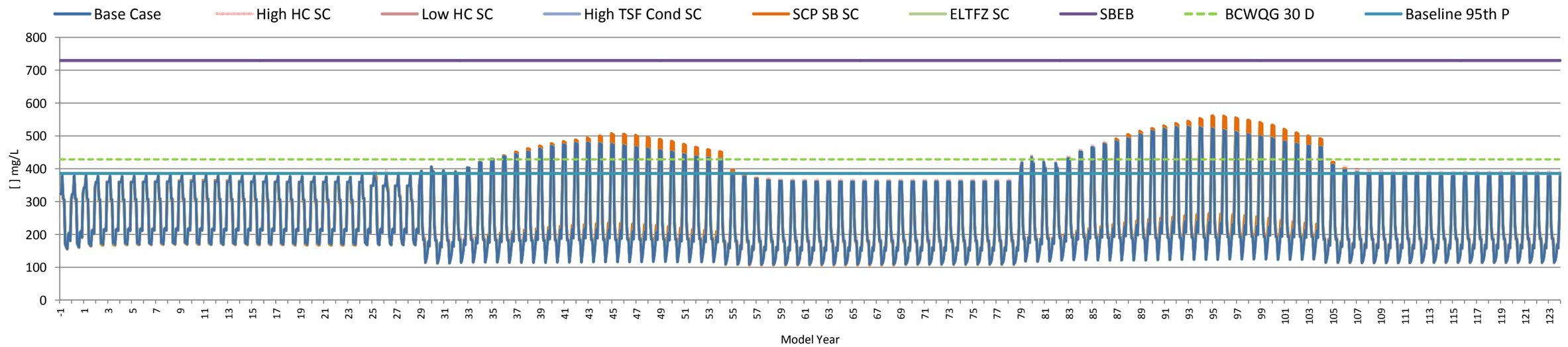
Knight Piésold CONSULTING

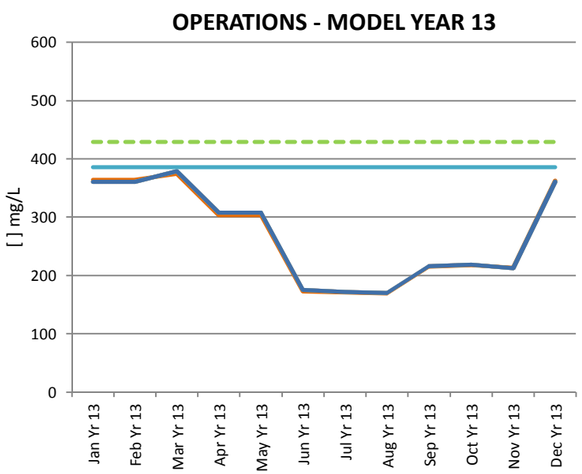
P/A NO. VA101-246/31

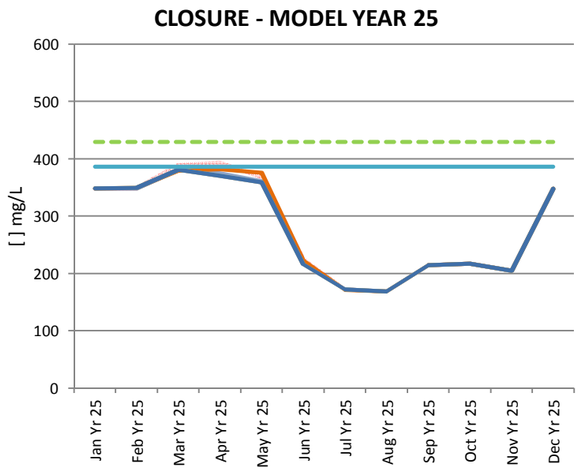
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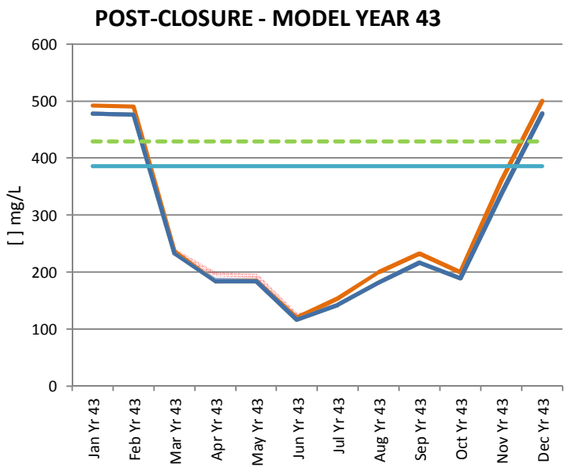
FIGURE H1.2

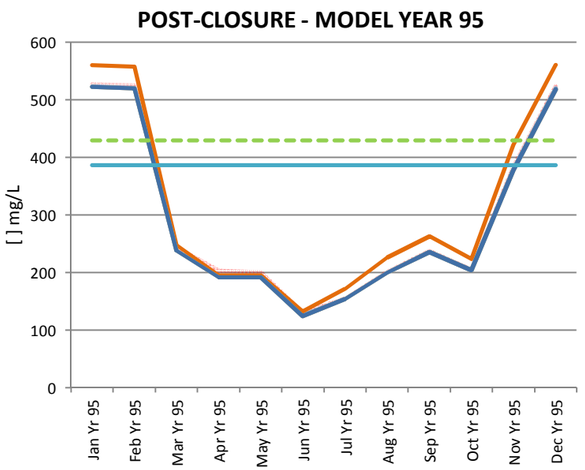
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

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HUMPHREY CREEK GROUNDWATER ASSUMPTIONS (GW) - SULPHATE PREDICTIONS

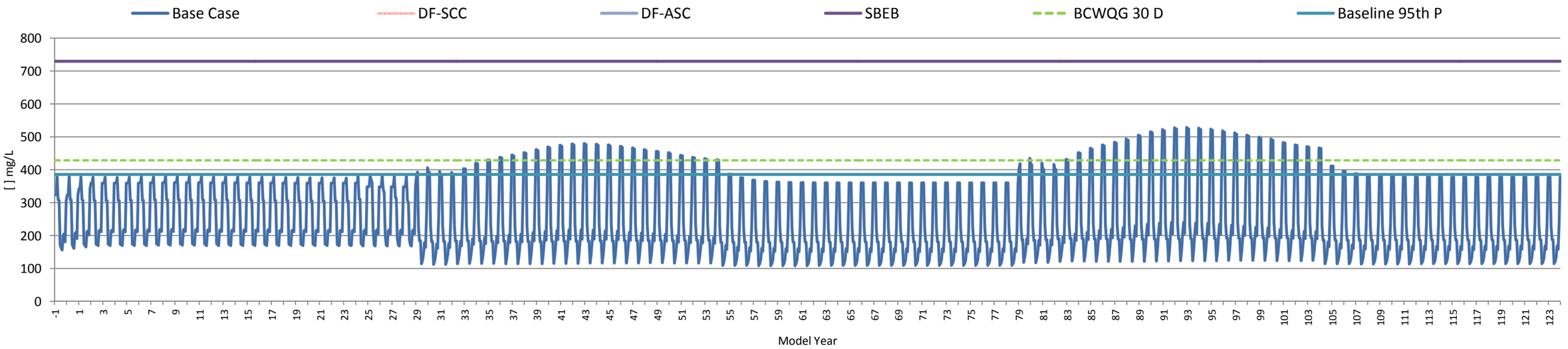
Knight Piésold CONSULTING

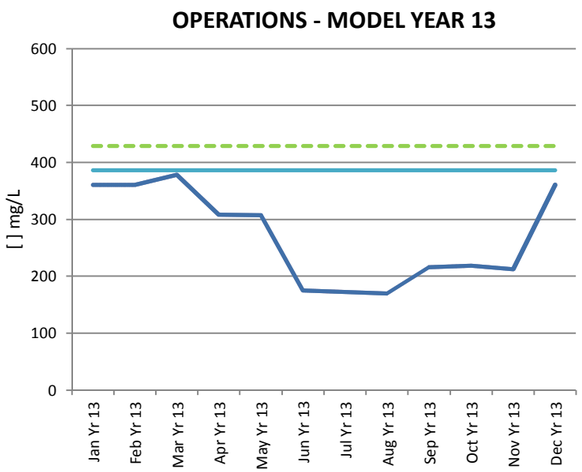
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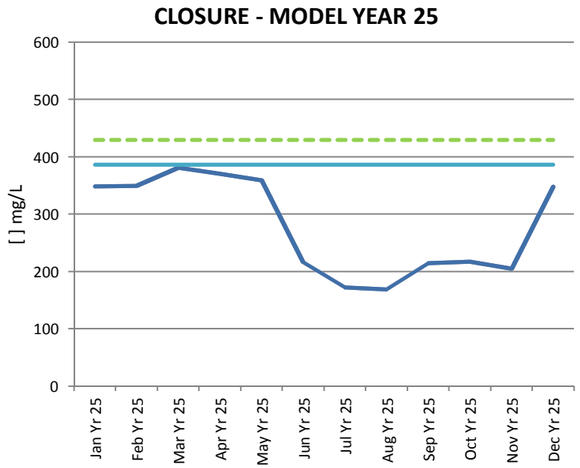
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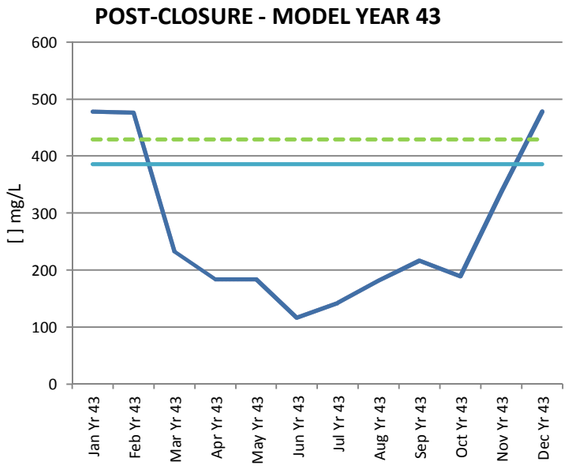
FIGURE H1.3

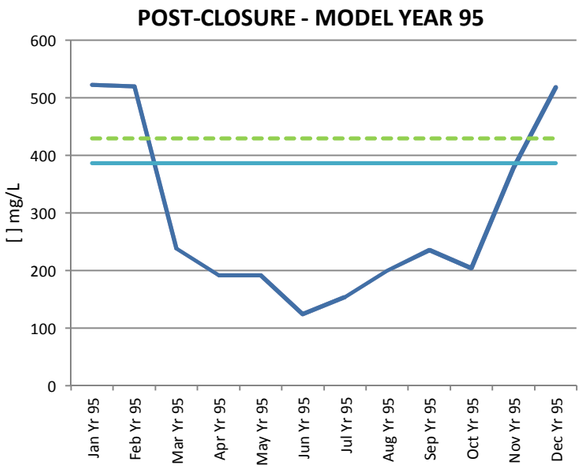
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK DUSTFALL ASSUMPTIONS (DFA) - SULPHATE PREDICTIONS

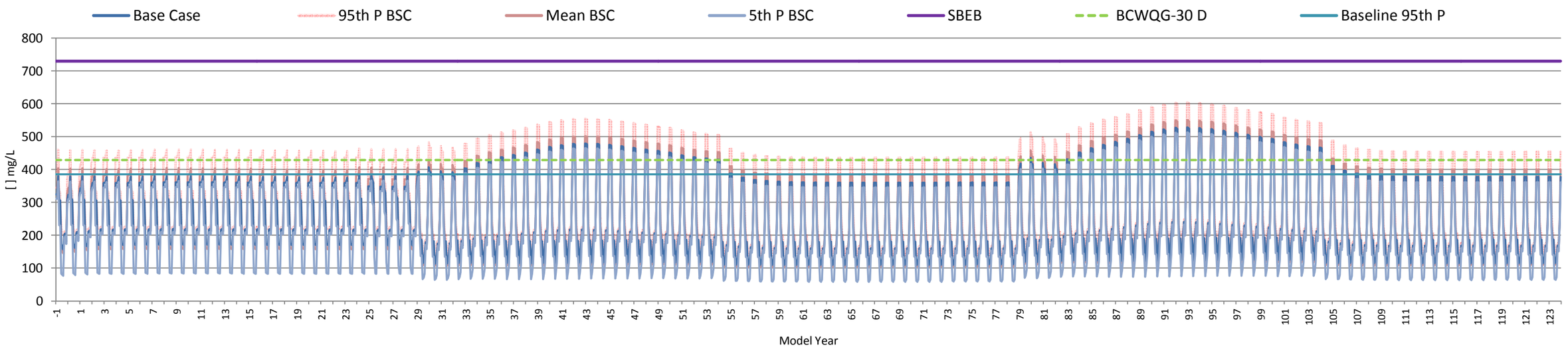
Knight Piésold CONSULTING

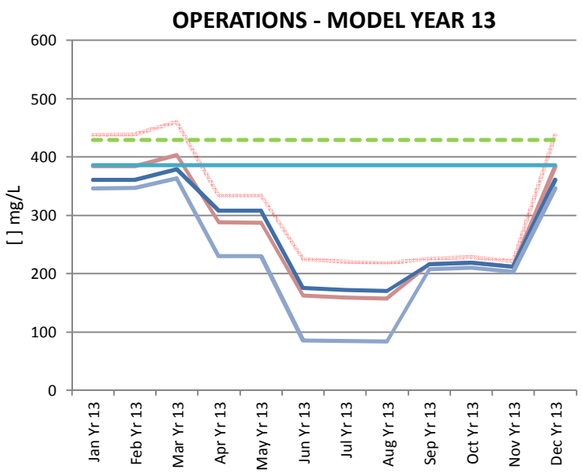
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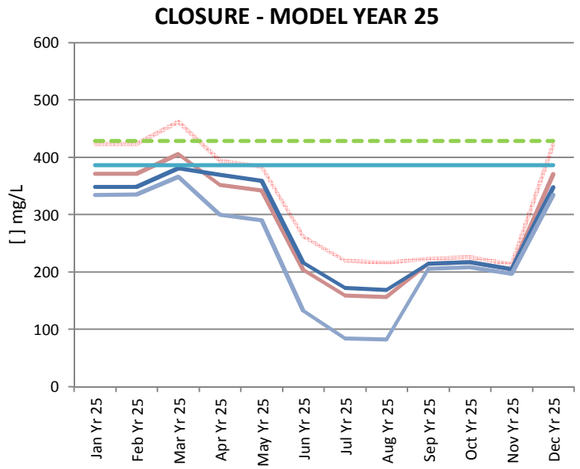
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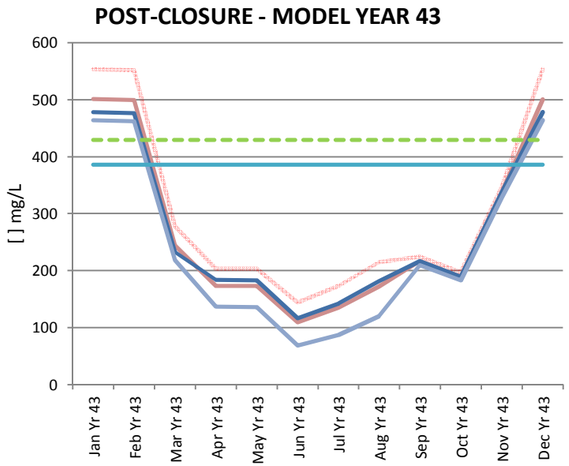
FIGURE H1.4

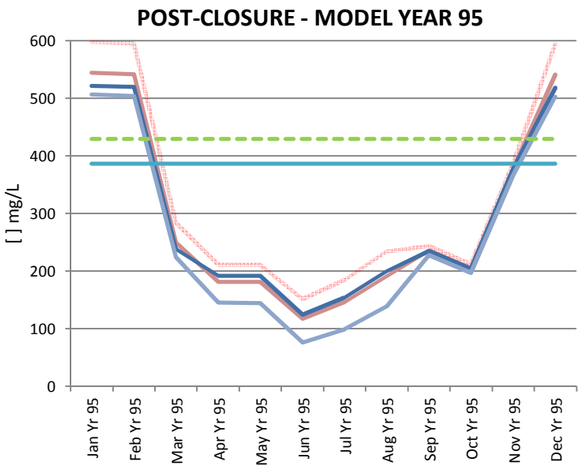
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK BASELINE SENSITIVITY CASE (BSC) - SULPHATE PREDICTIONS

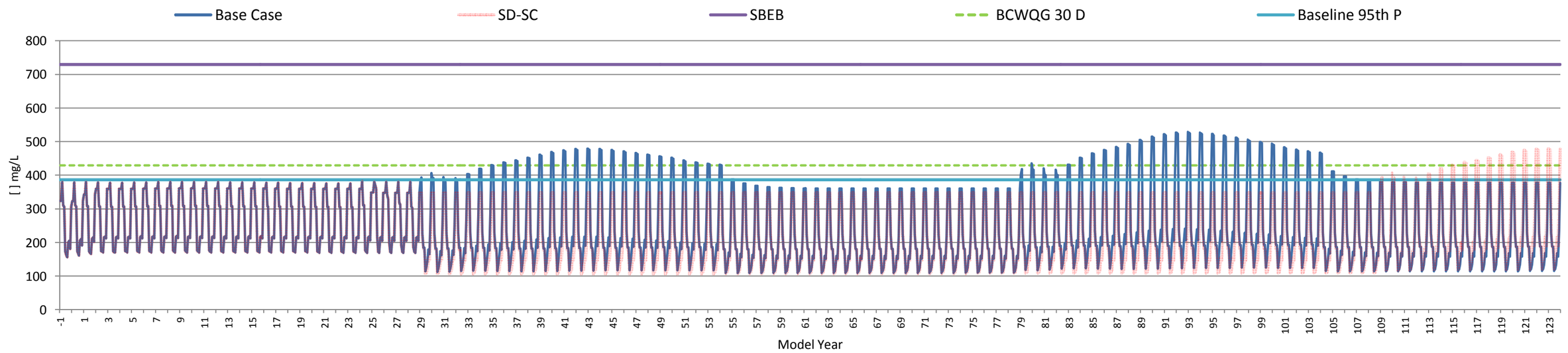
Knight Piésold CONSULTING

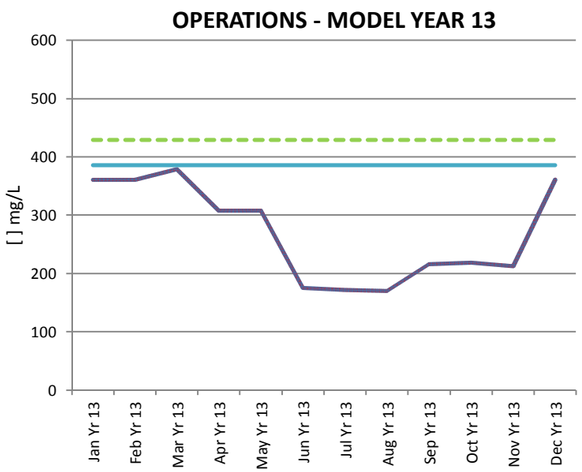
P/A NO. VA101-246/31

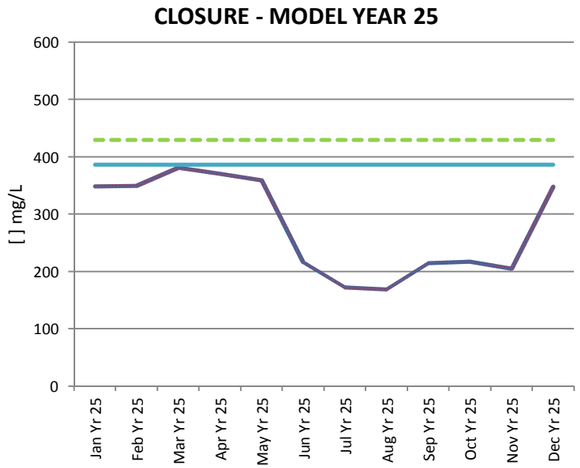
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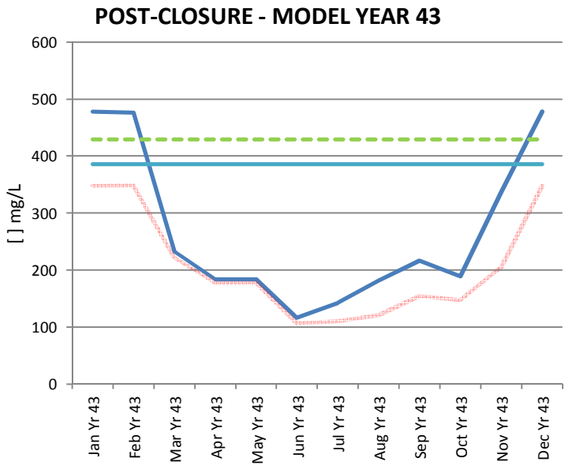
FIGURE H1.5

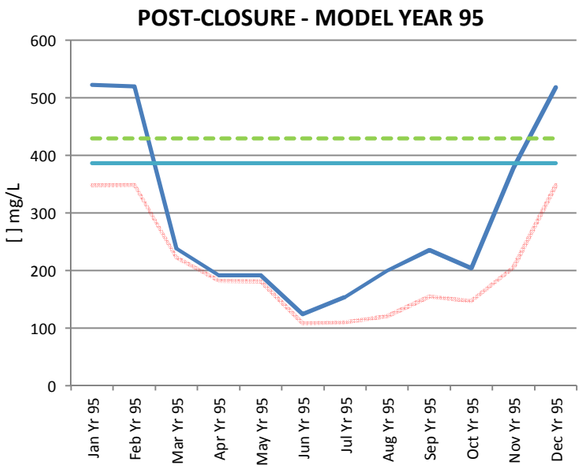
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK TIMING OF SEEPAGE ASSUMPTIONS (SD) - SULPHATE PREDICTIONS

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P/A NO. VA101-246/31

REF. NO. 3

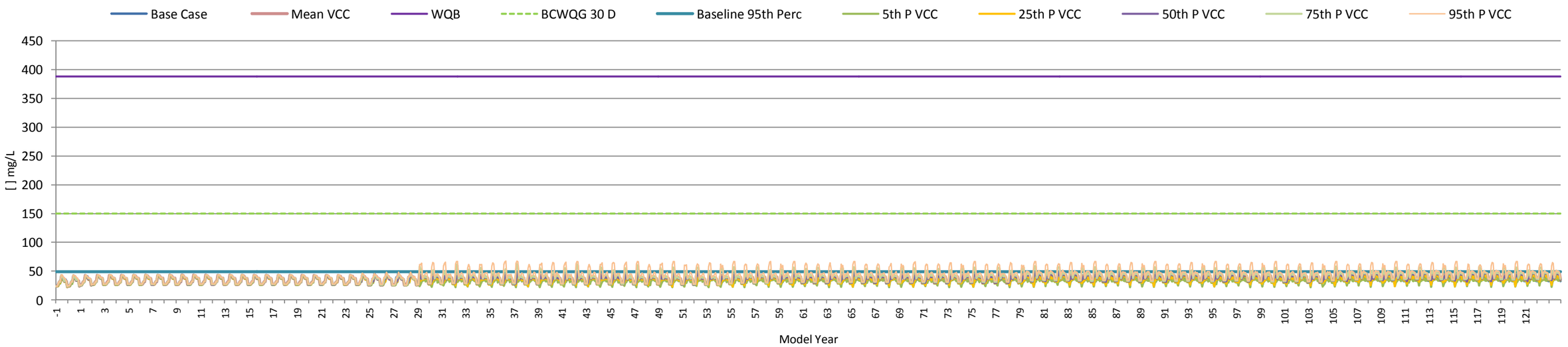
FIGURE H1.6

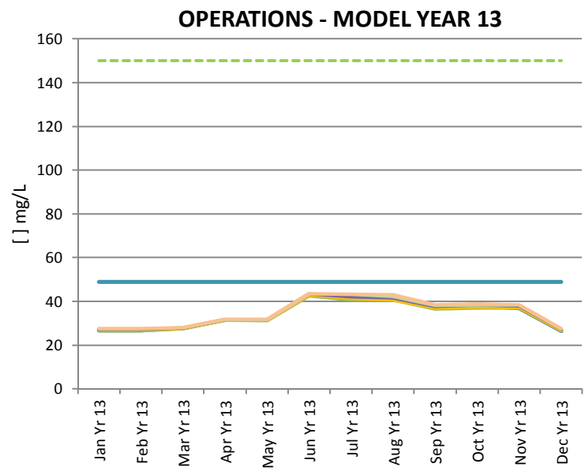
REV 0

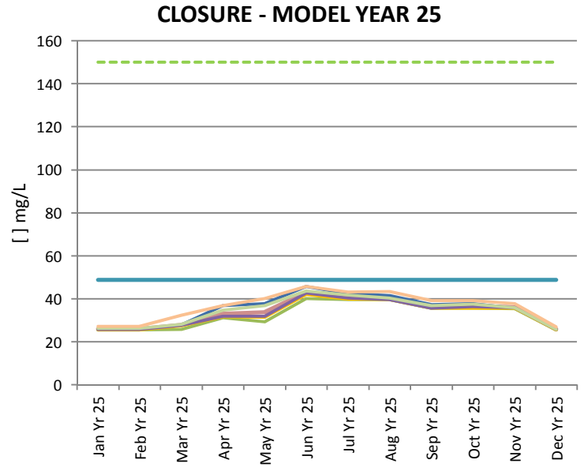
APPENDIX H2

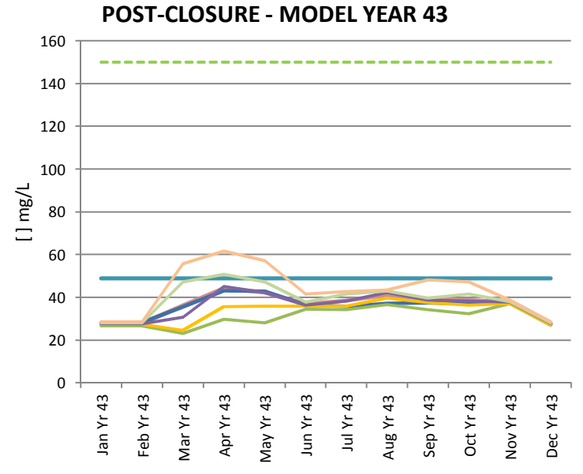
CHLORIDE

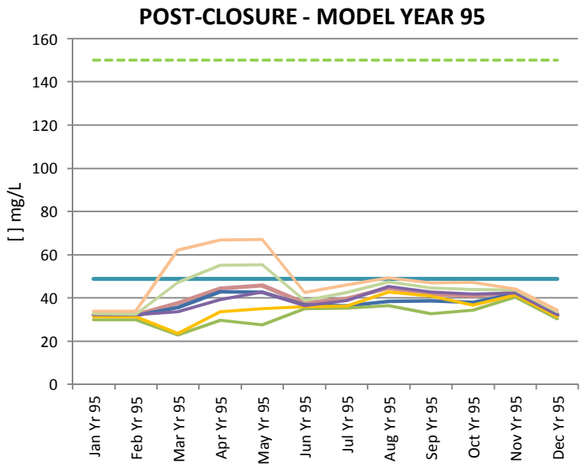
(Figures H2.1 to H2.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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HUMPHREY CREEK VARIABLE CLIMATE CASE (VCC) - CHLORIDE PREDICTIONS

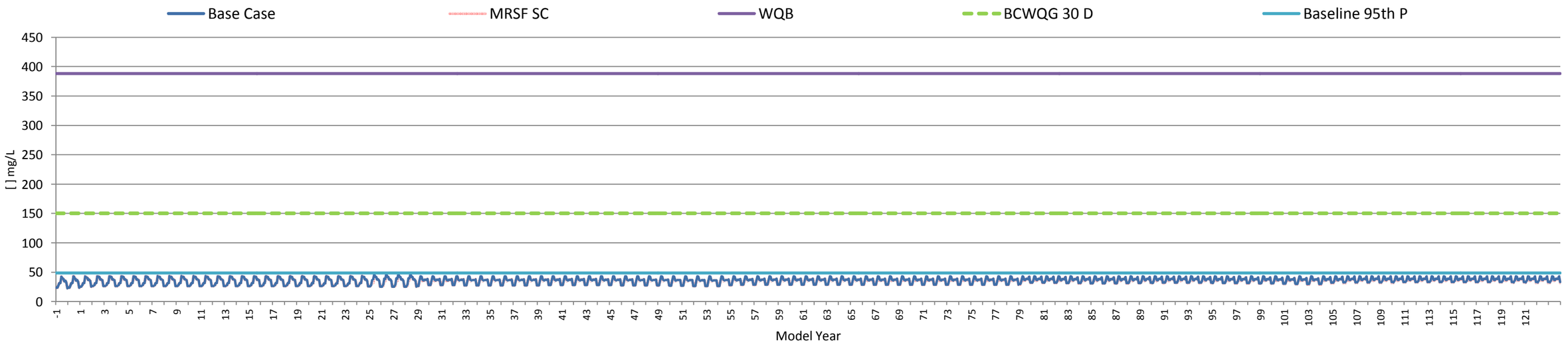
Knight Piésold CONSULTING

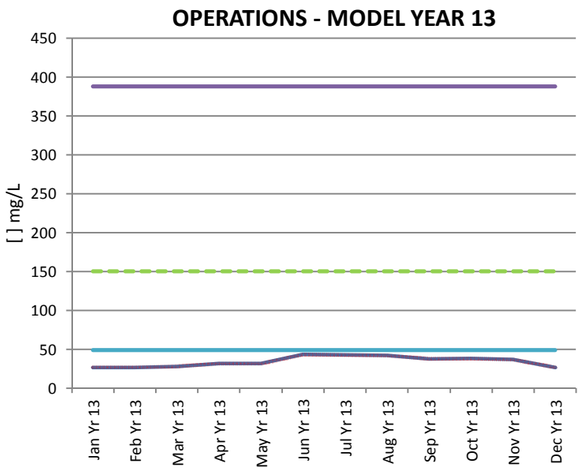
P/A NO. VA101-246/31

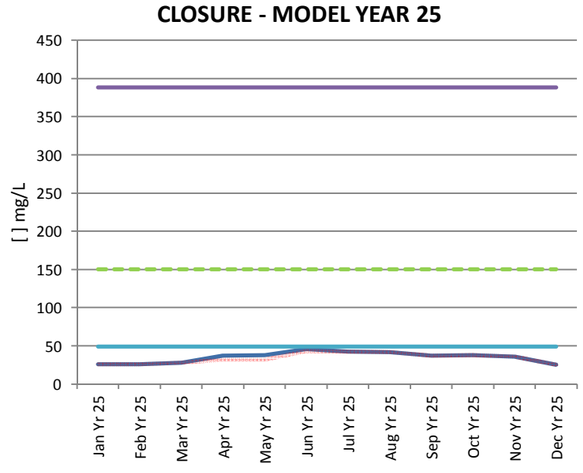
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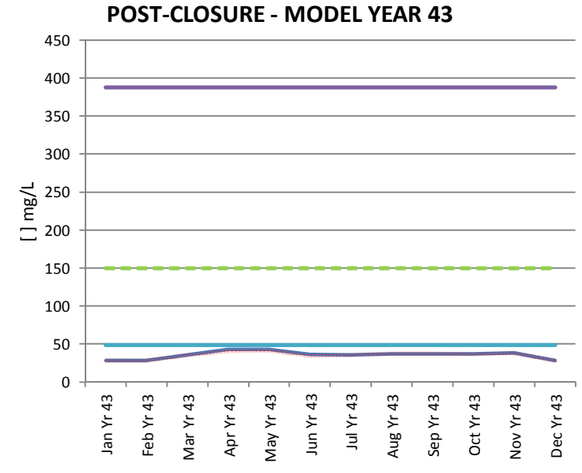
FIGURE H2.1

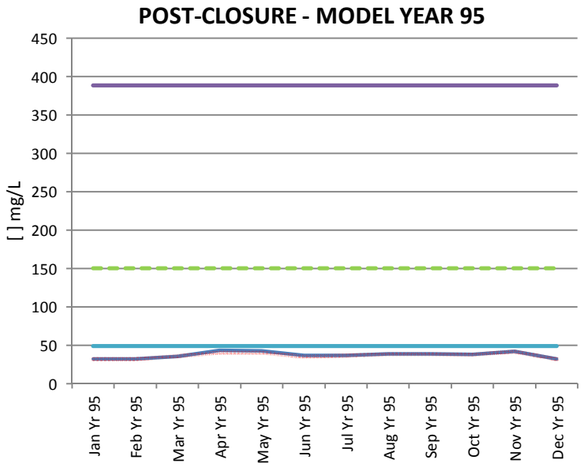
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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HUMPHREY CREEK MRSF RECHARGE ASSUMPTIONS - CHLORIDE PREDICTIONS

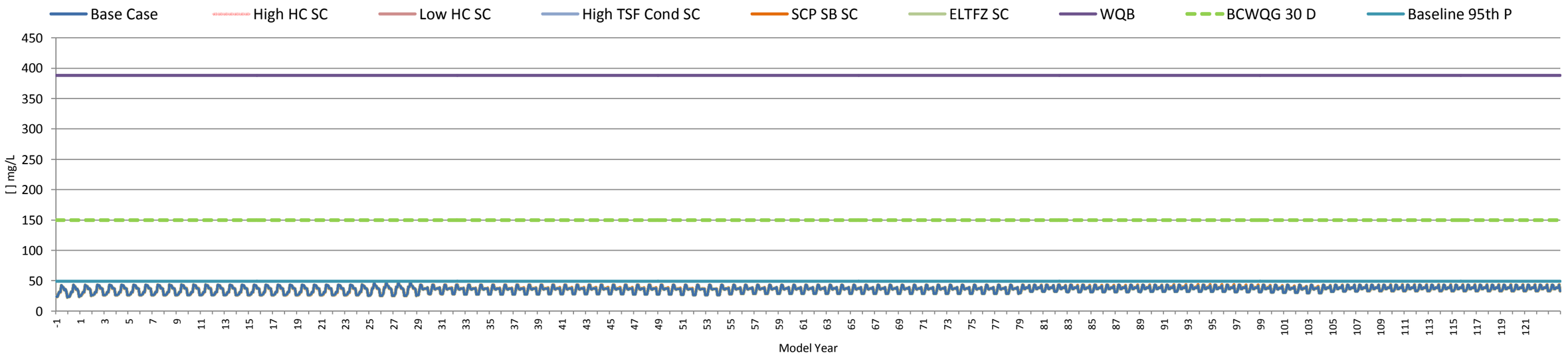
Knight Piésold CONSULTING

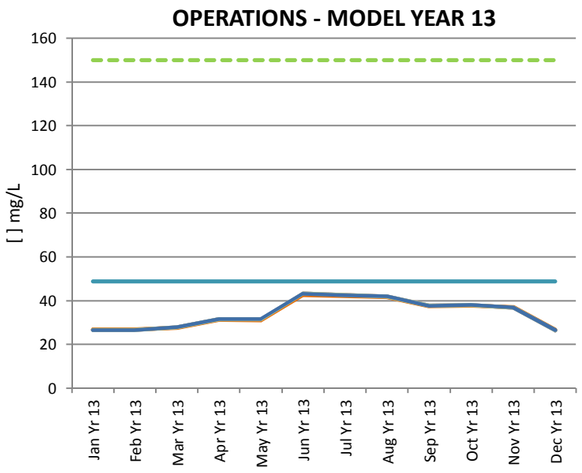
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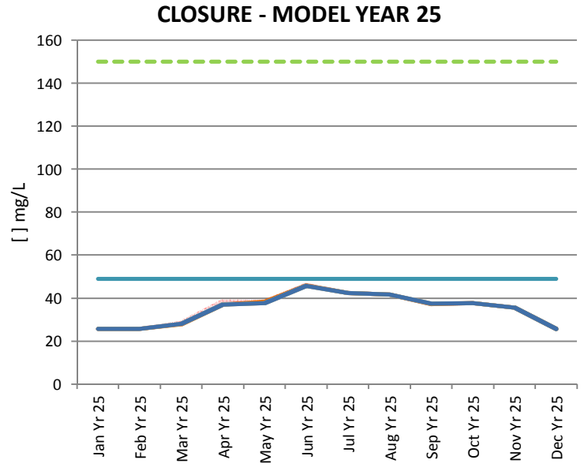
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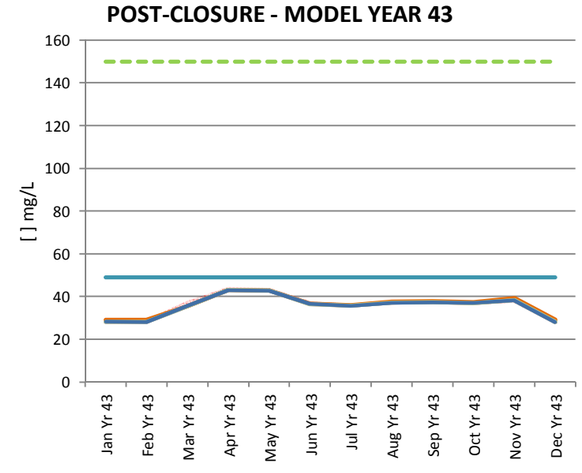
FIGURE H2.2

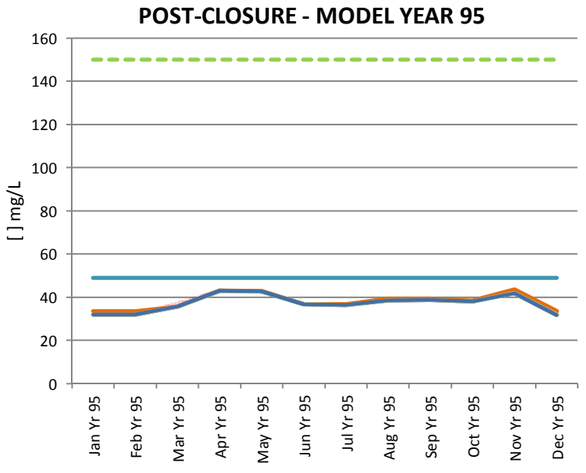
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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HUMPHREY CREEK GROUNDWATER ASSUMPTIONS (GW) - CHLORIDE PREDICTIONS

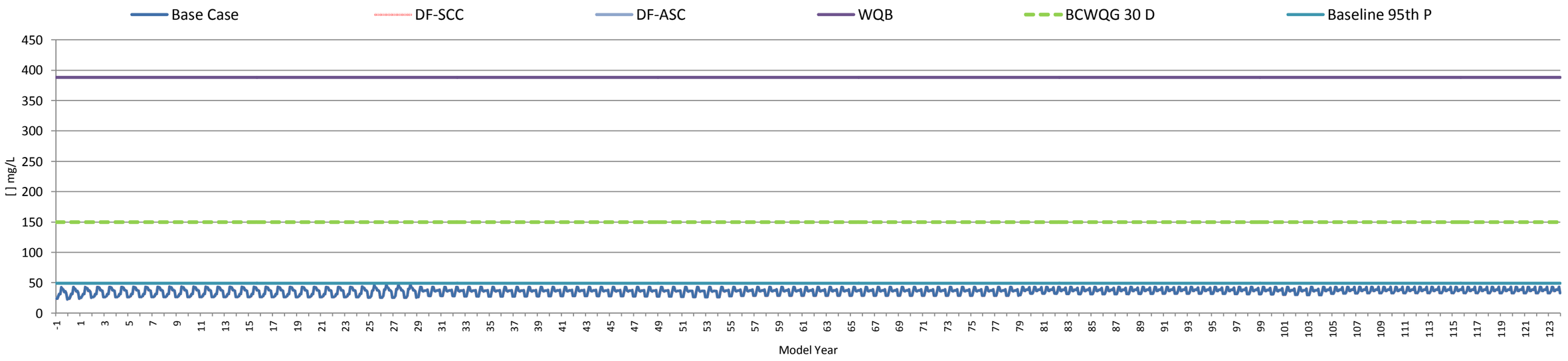
Knight Piésold CONSULTING

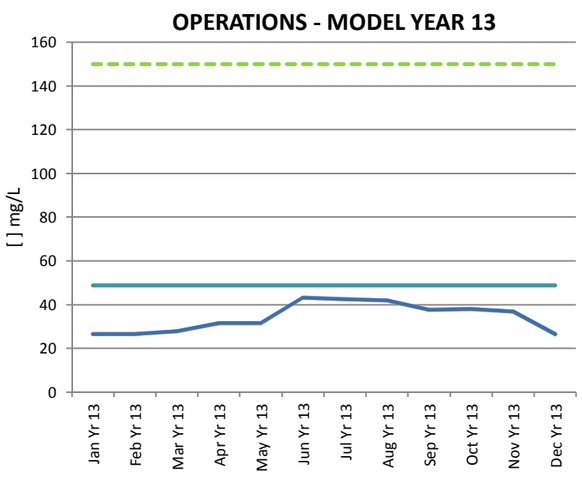
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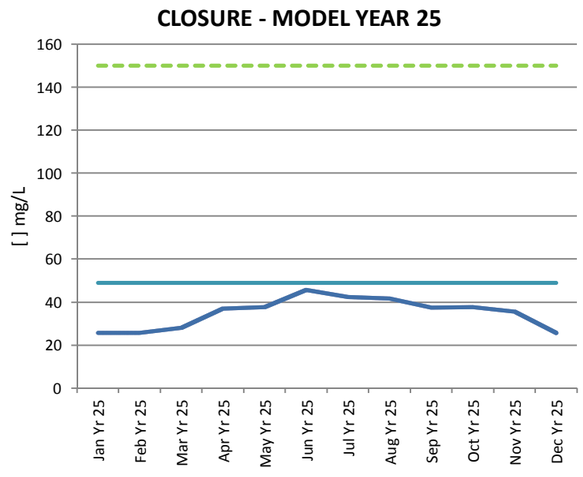
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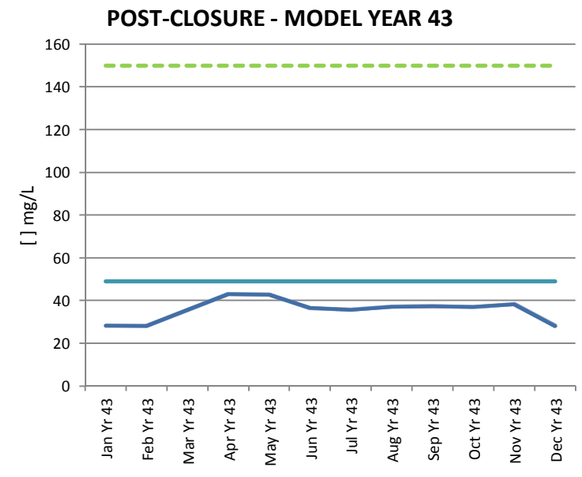
FIGURE H2.3

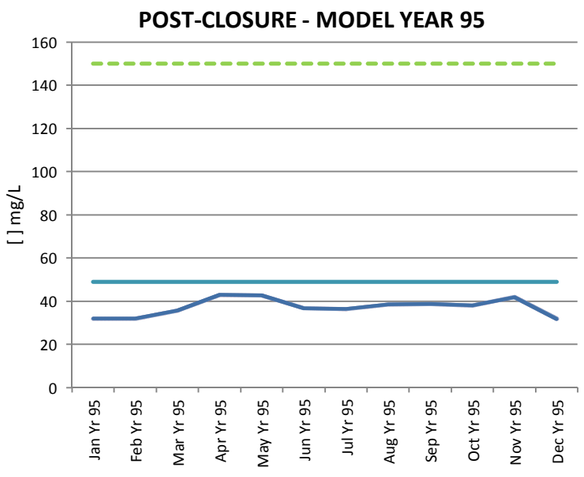
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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HUMPHREY CREEK DUSTFALL ASSUMPTIONS (DFA) - CHLORIDE PREDICTIONS

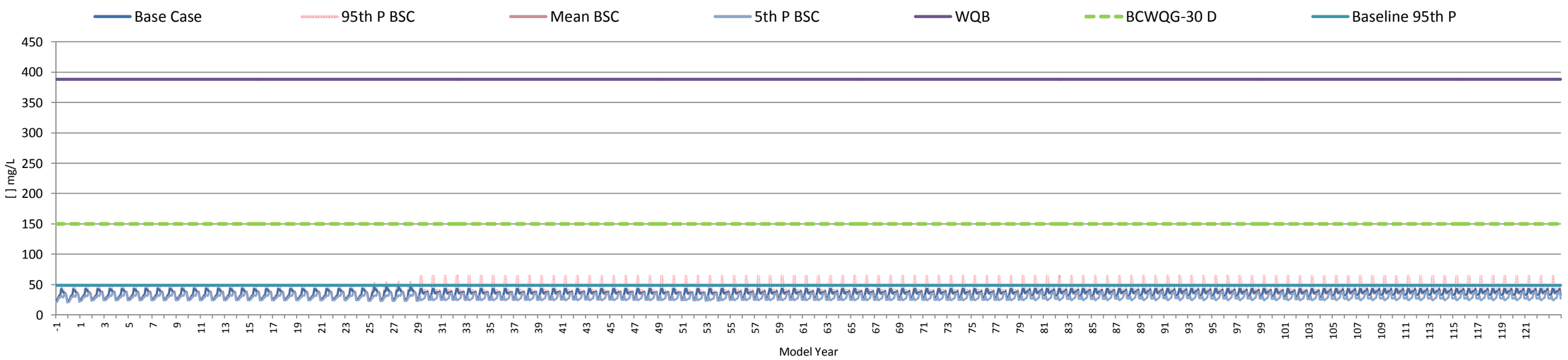
Knight Piésold CONSULTING

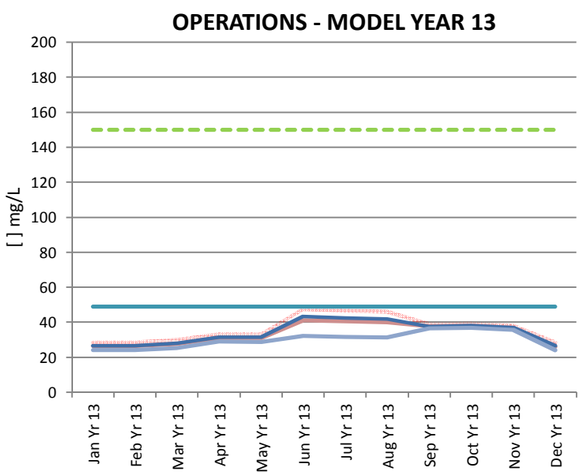
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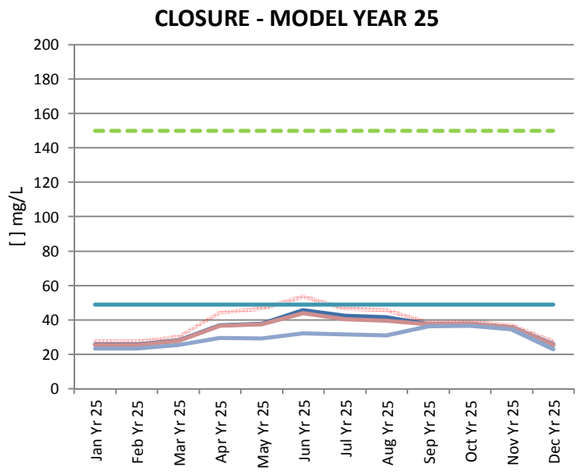
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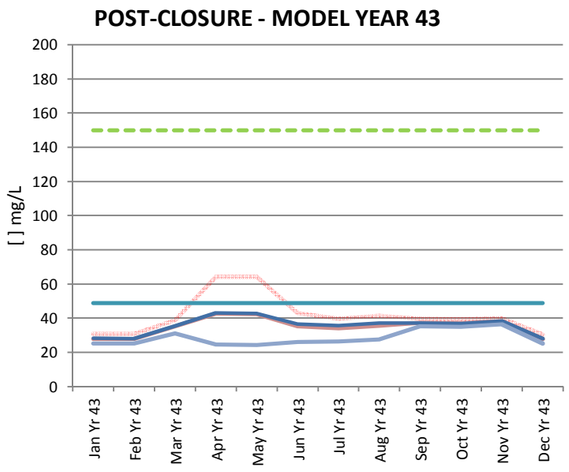
FIGURE H2.4

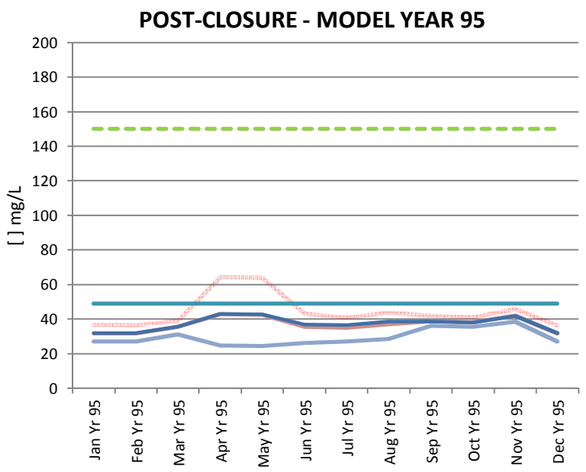
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK BASELINE SENSITIVITY CASE (BSC) - CHLORIDE PREDICTIONS

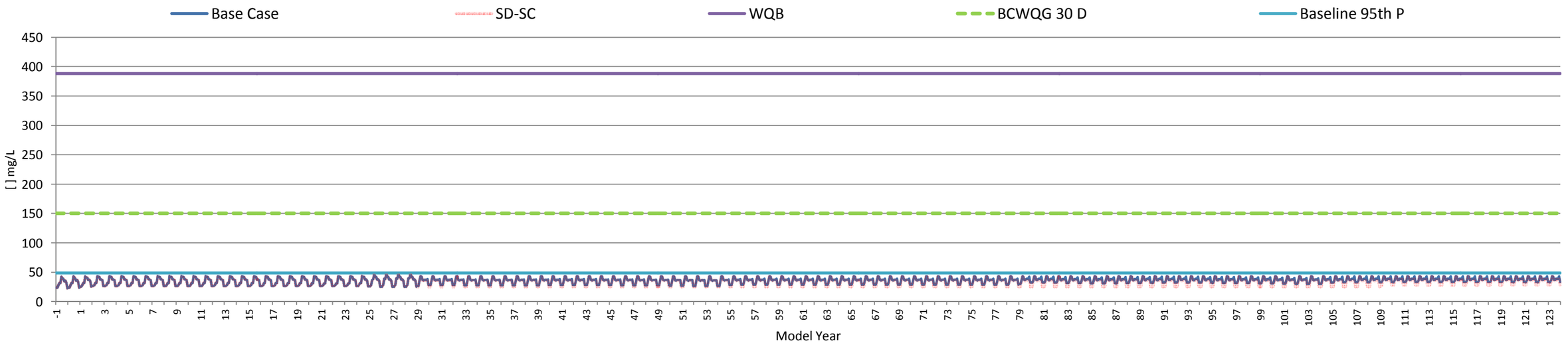
Knight Piésold CONSULTING

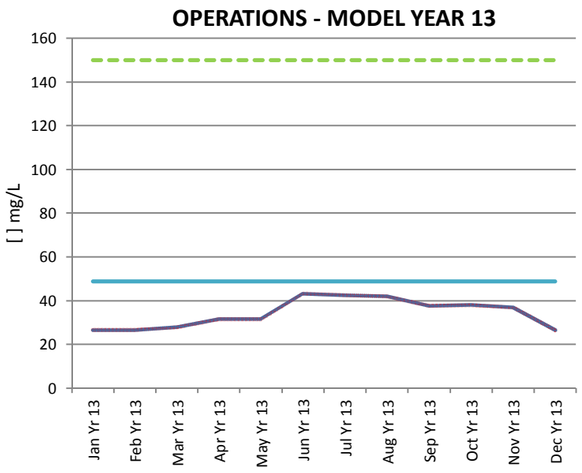
P/A NO. VA101-246/31

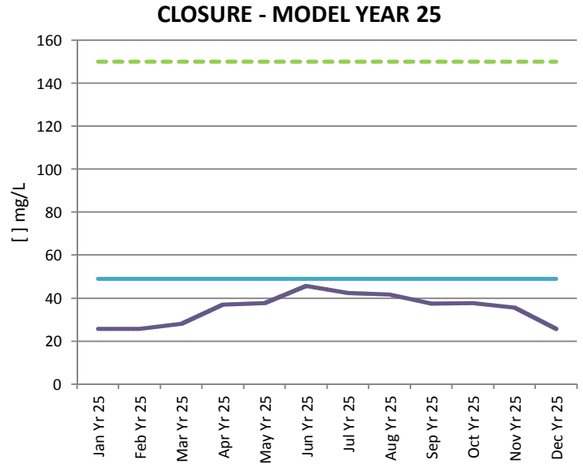
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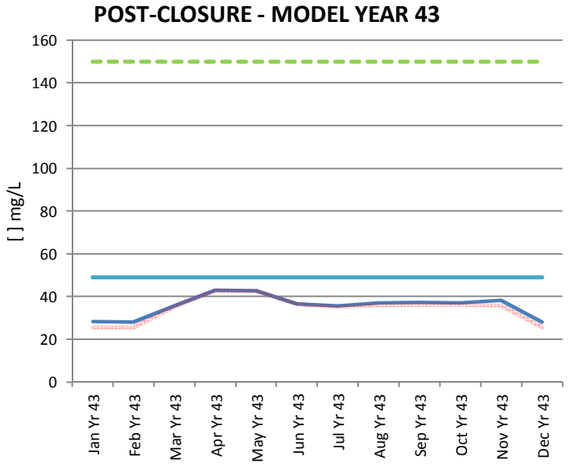
FIGURE H2.5

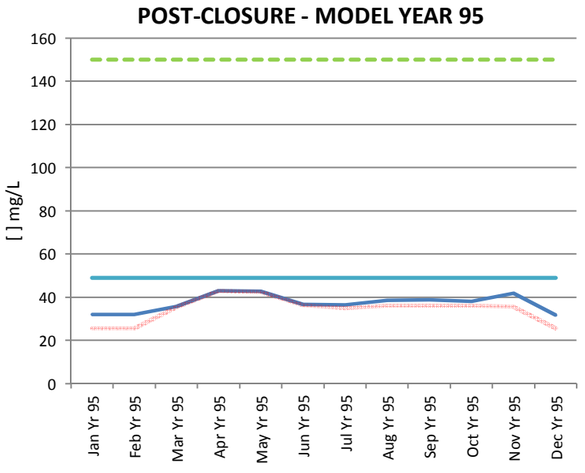
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK TIMING OF SEEPAGE ASSUMPTIONS (SD) - CHLORIDE PREDICTIONS

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 3

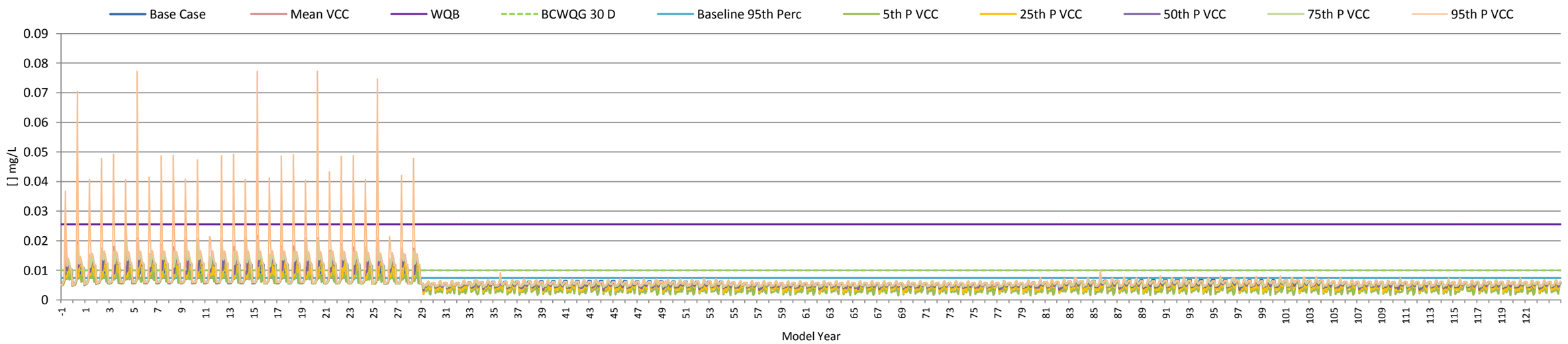
FIGURE H2.6

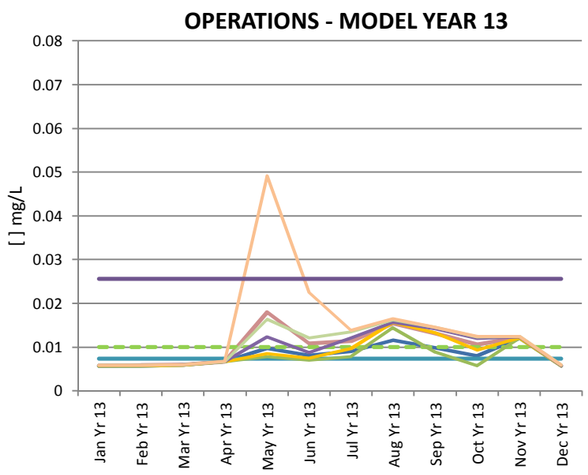
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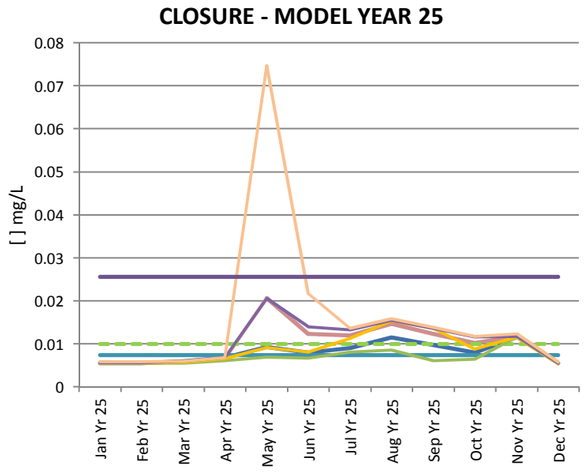
APPENDIX H3

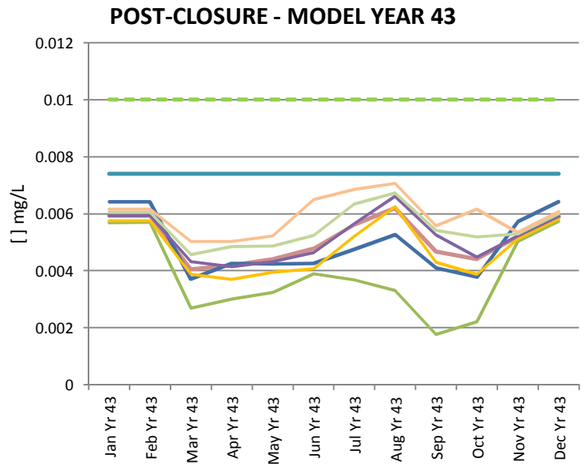
COPPER

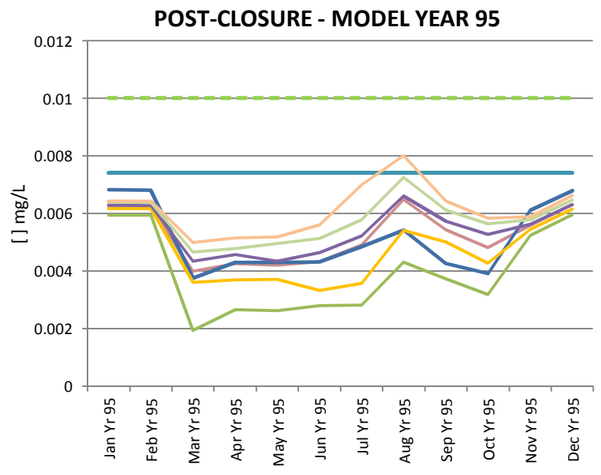
(Figures H3.1 to H3.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

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HUMPHREY CREEK VARIABLE CLIMATE CASE (VCC) - COPPER PREDICTIONS

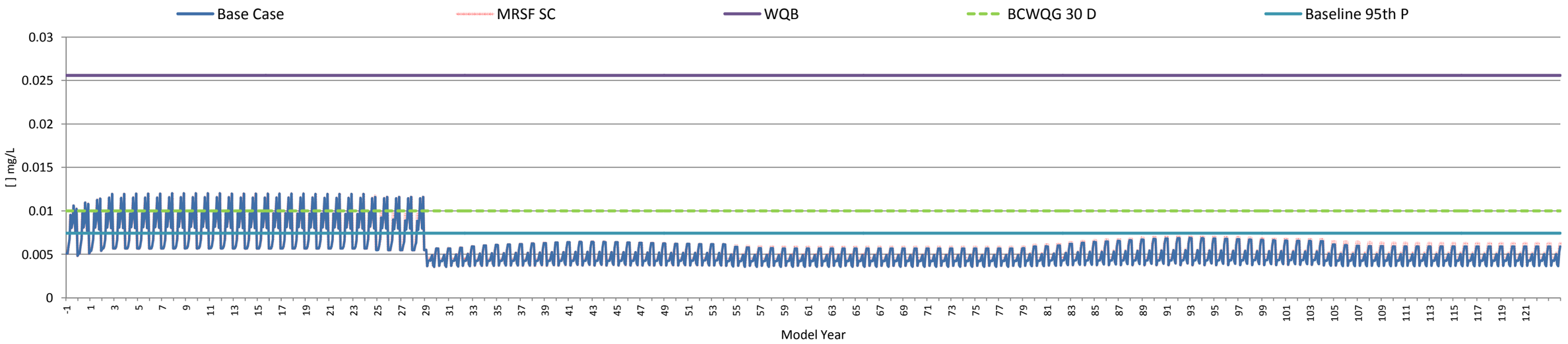
Knight Piésold CONSULTING

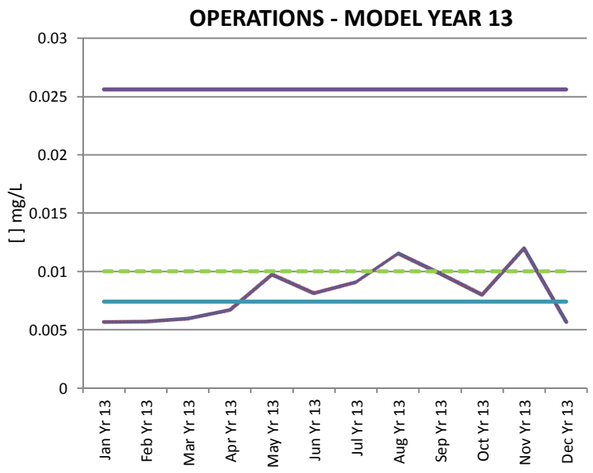
P/A NO. VA101-246/31

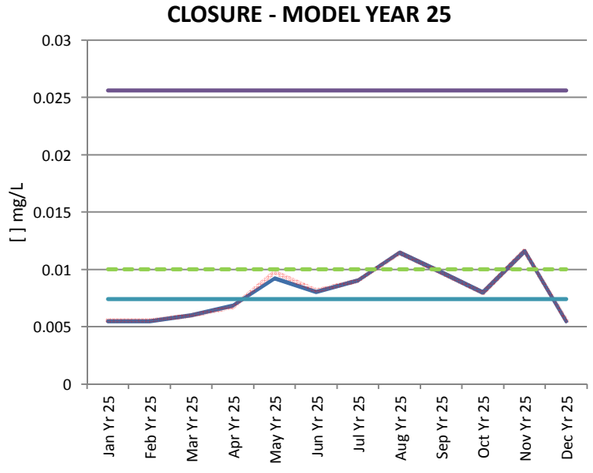
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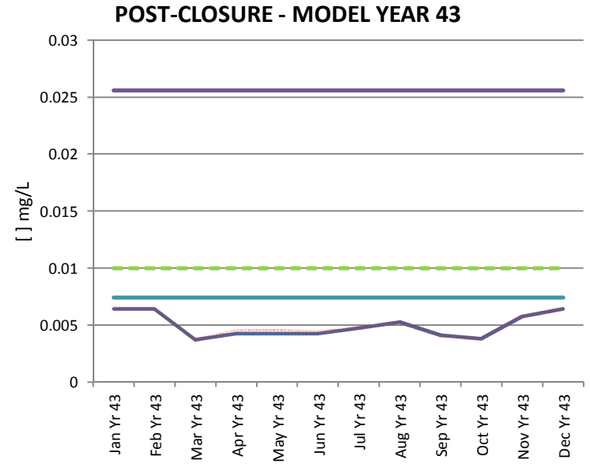
FIGURE H3.1

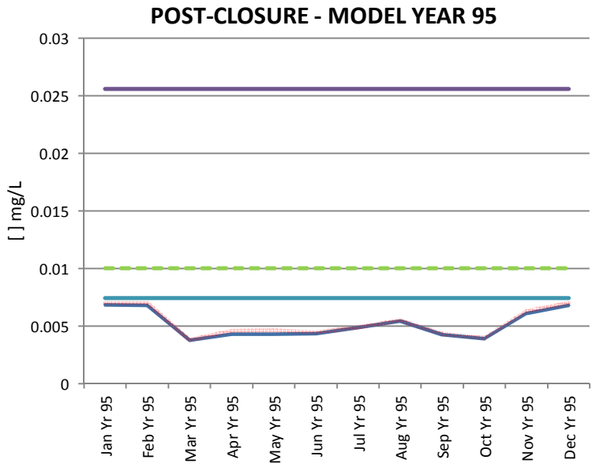
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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HUMPHREY CREEK MRSF RECHARGE ASSUMPTIONS - COPPER PREDICTIONS

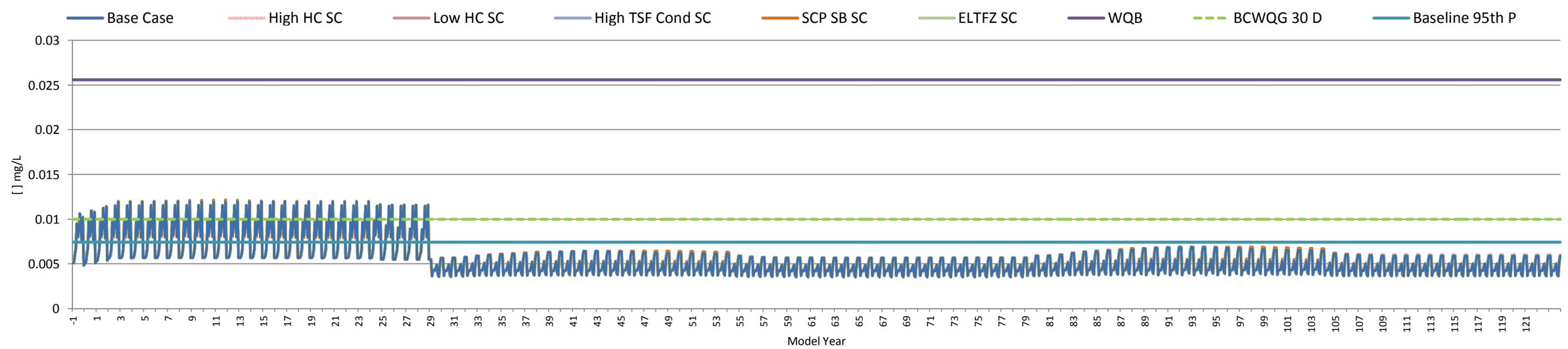
Knight Piésold CONSULTING

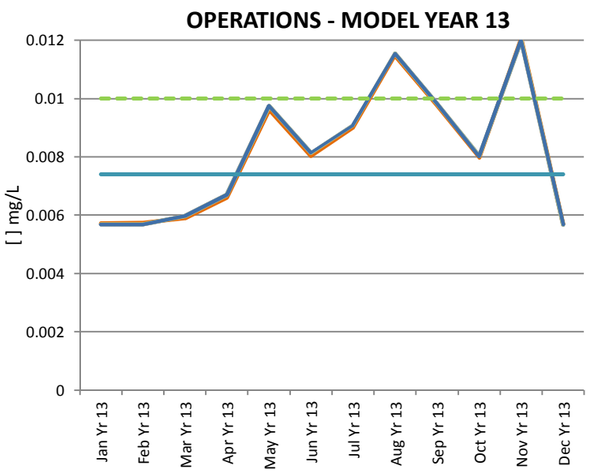
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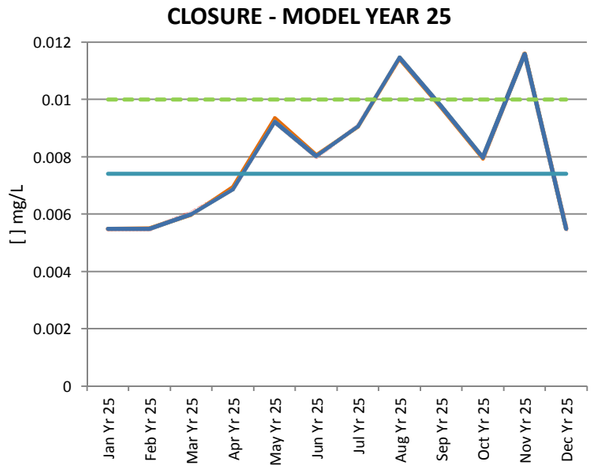
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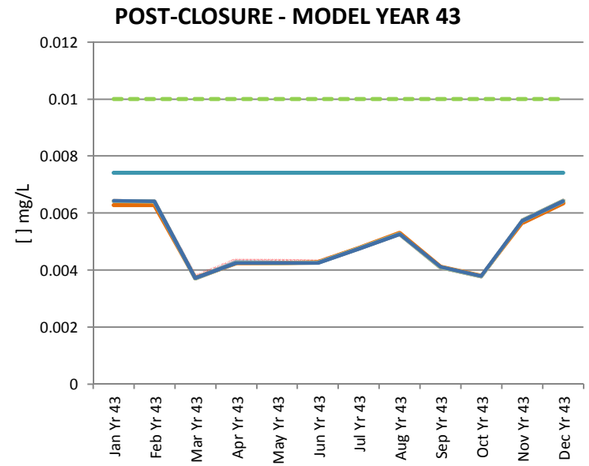
FIGURE H3.2

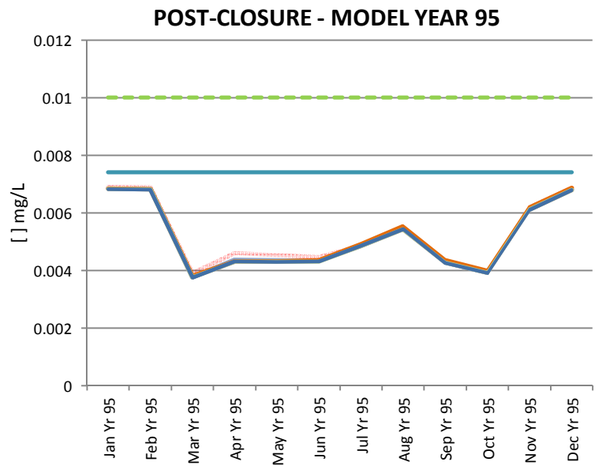
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK GROUNDWATER ASSUMPTIONS (GW) - COPPER PREDICTIONS

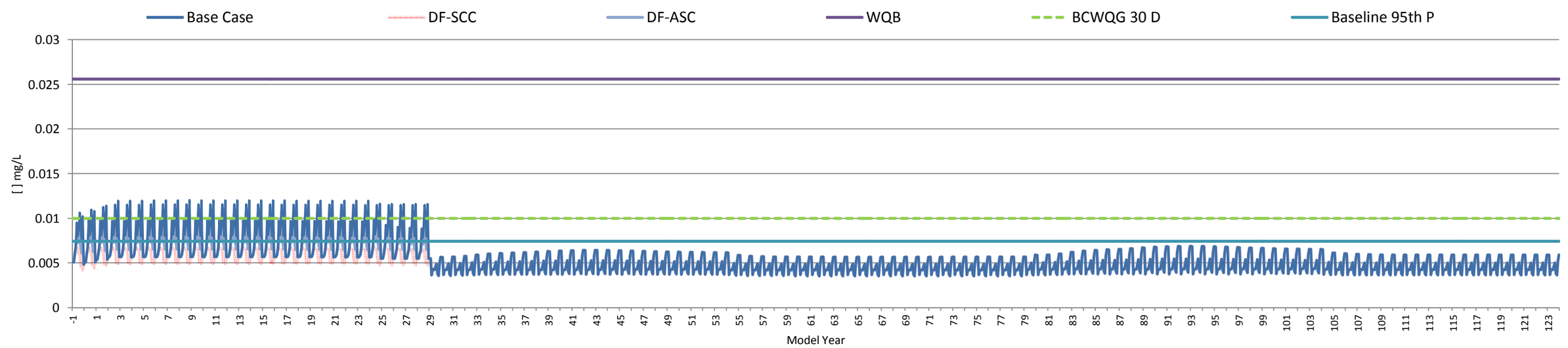
Knight Piésold CONSULTING

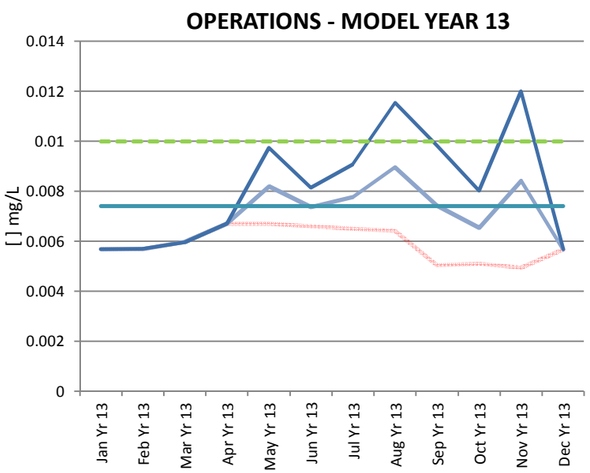
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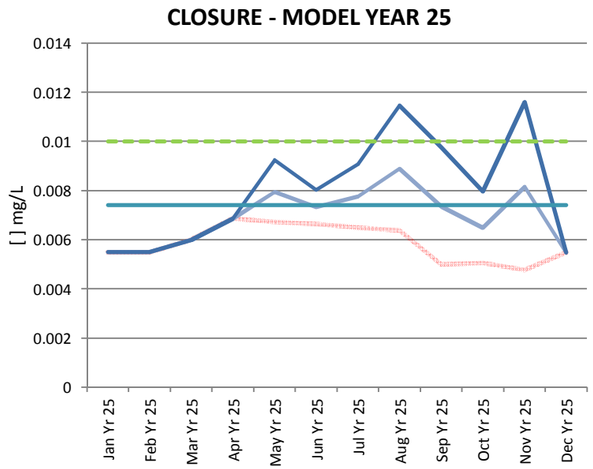
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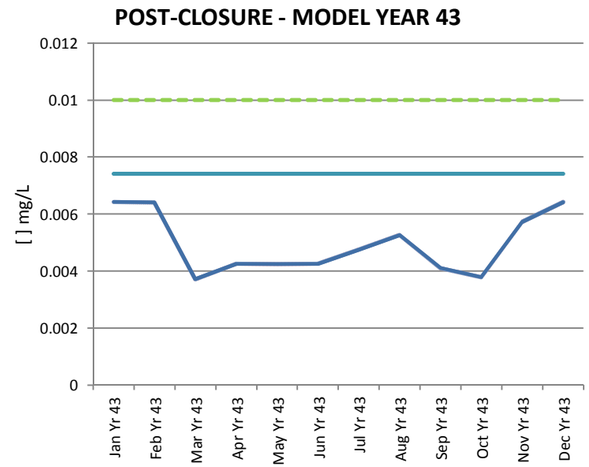
FIGURE H3.3

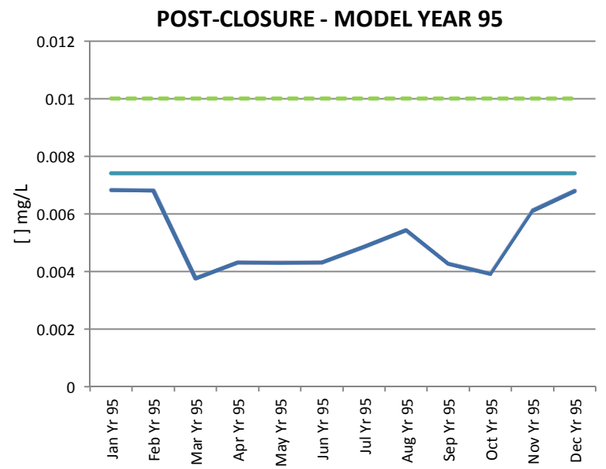
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK DUSTFALL ASSUMPTIONS (DFA) - COPPER PREDICTIONS

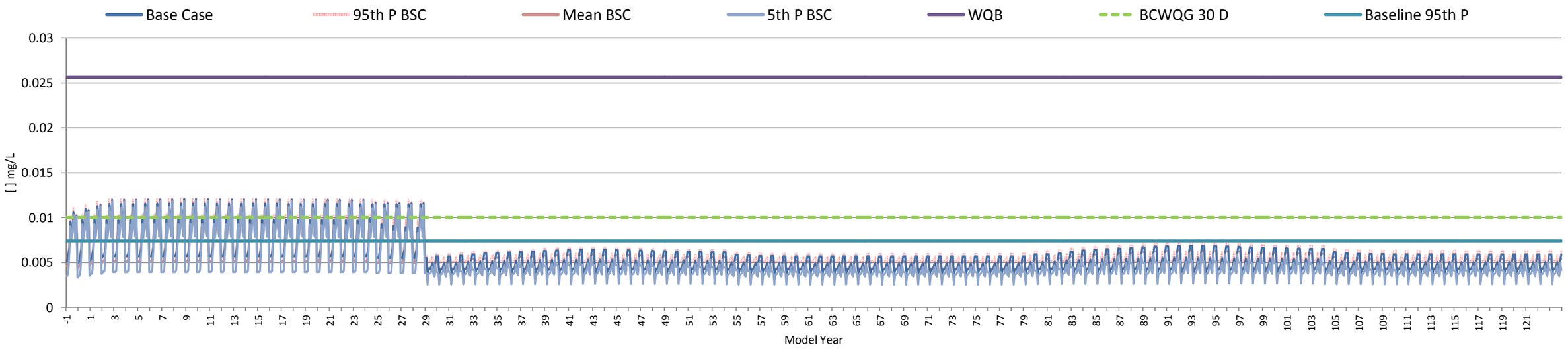
Knight Piésold CONSULTING

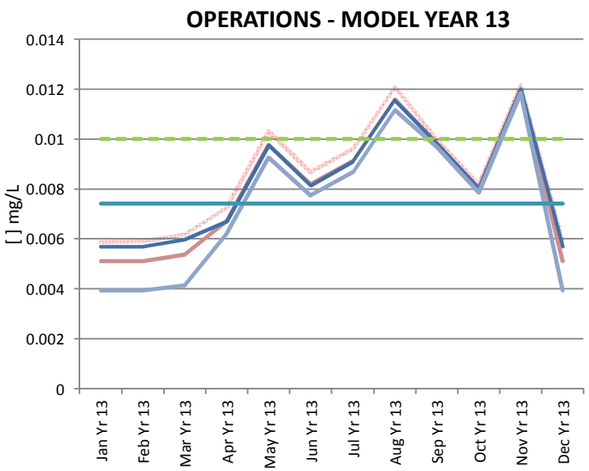
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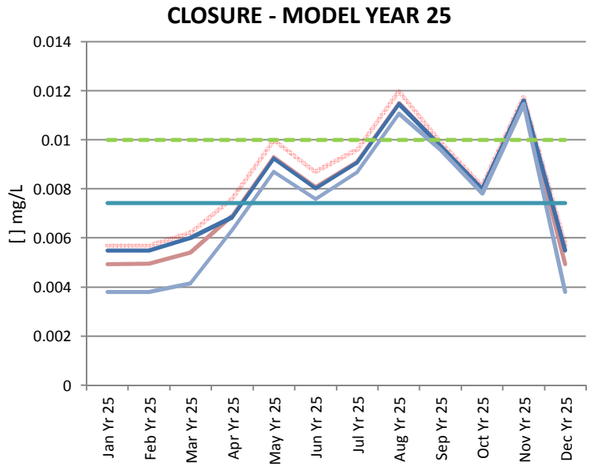
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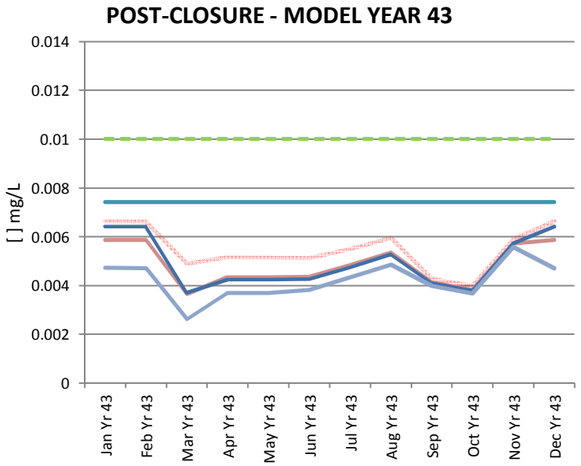
FIGURE H3.4

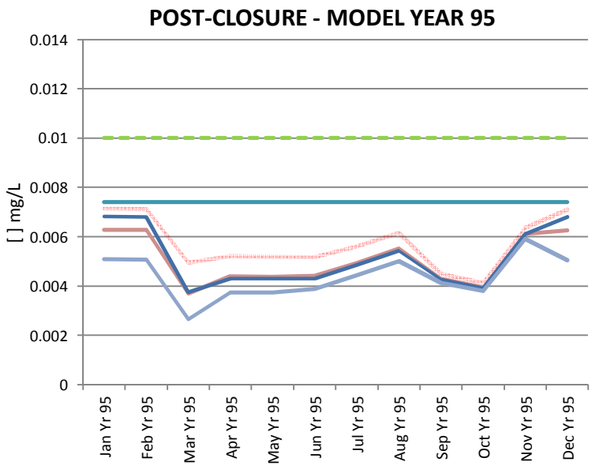
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK BASELINE SENSITIVITY CASE (BSC) - COPPER PREDICTIONS

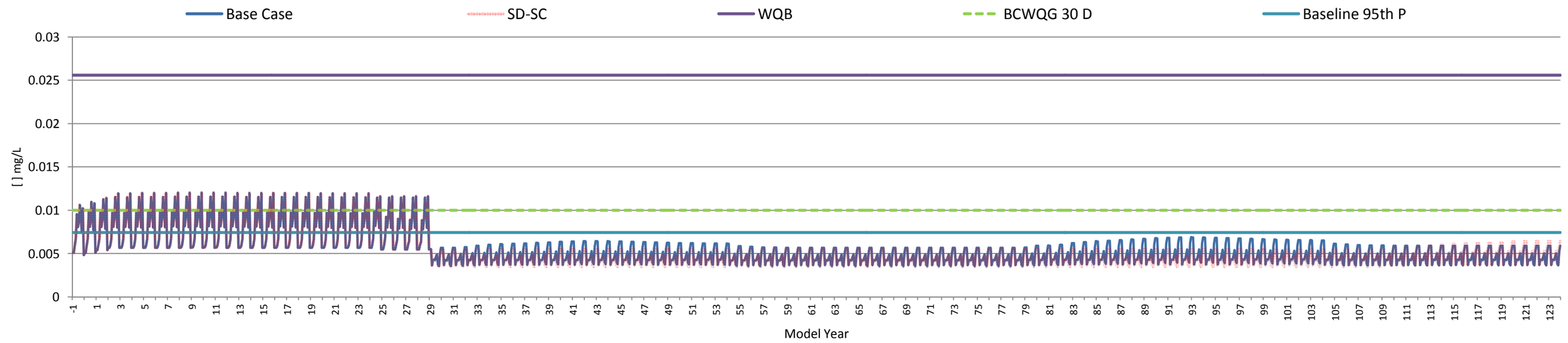
Knight Piésold CONSULTING

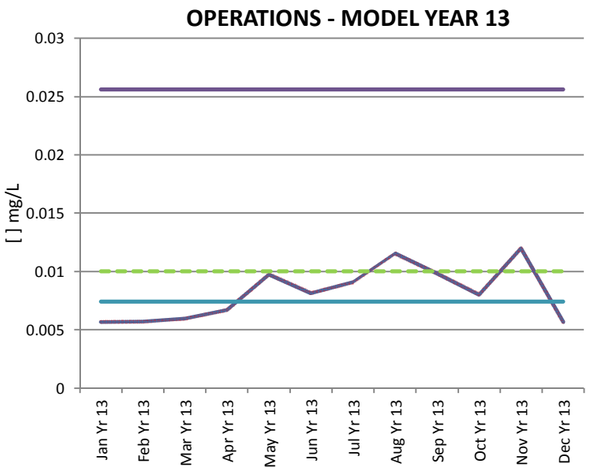
P/A NO. VA101-246/31

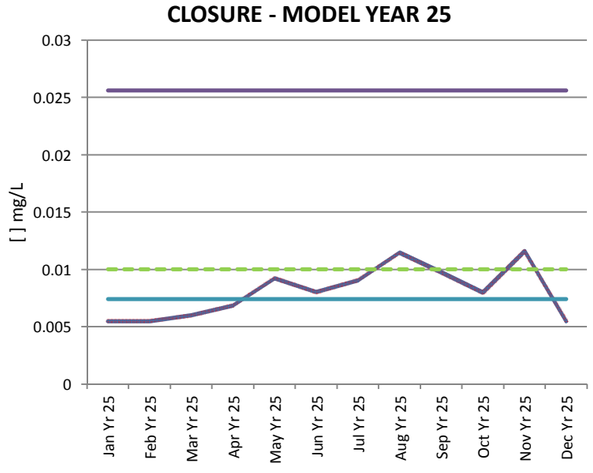
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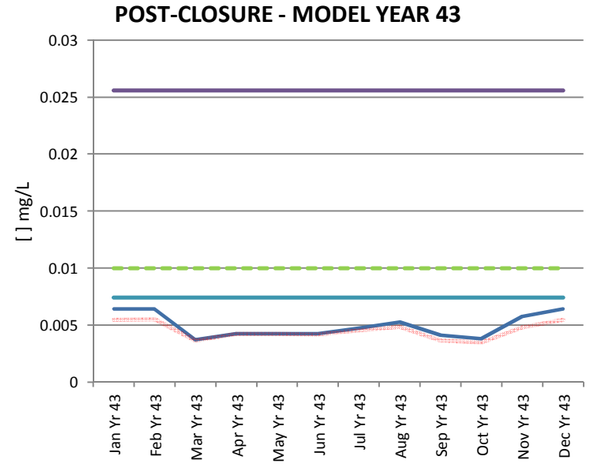
FIGURE H3.5

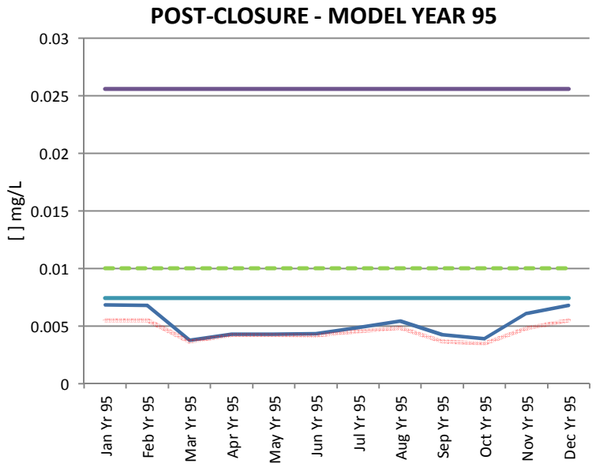
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK TIMING OF SEEPAGE ASSUMPTIONS (SD) - COPPER PREDICTIONS

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 3

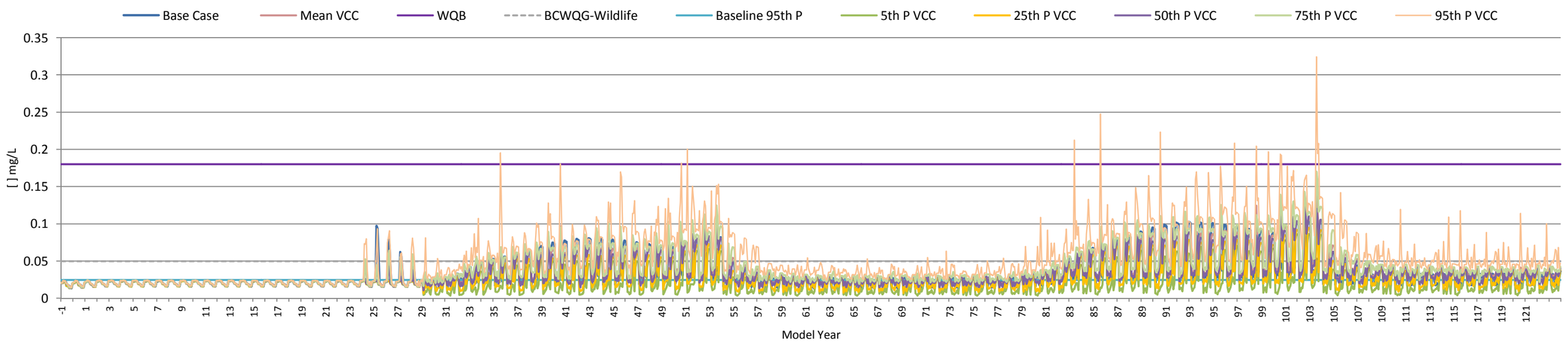
FIGURE H3.6

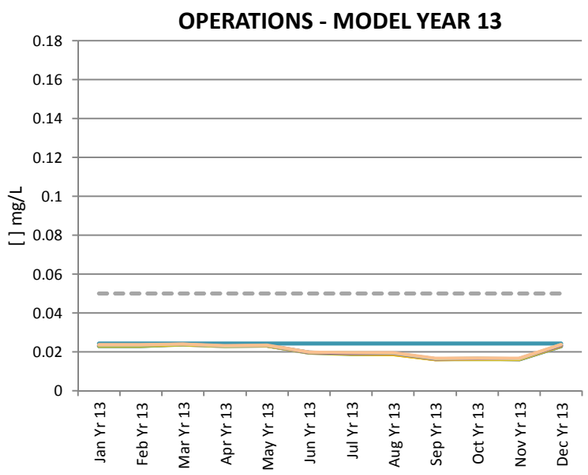
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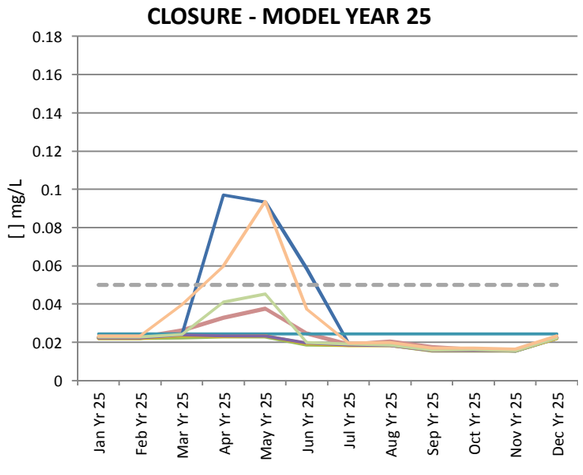
APPENDIX H4

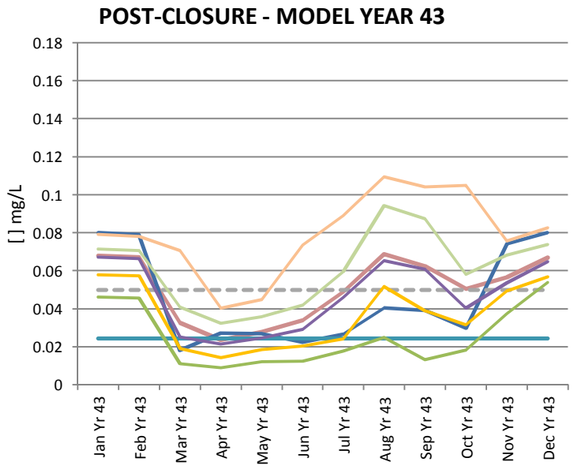
MOLYBDENUM

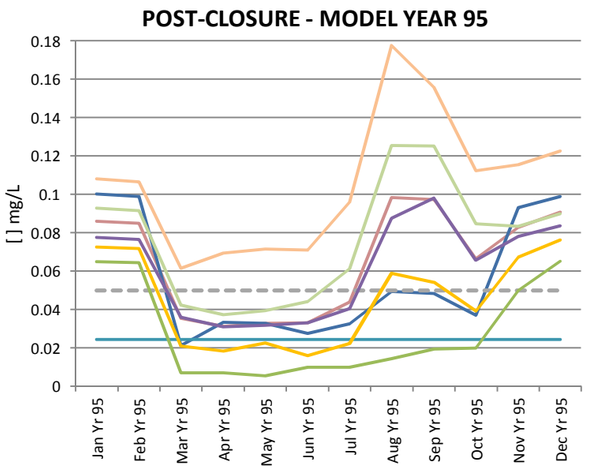
(Figures H4.1 to H4.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

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HUMPHREY CREEK VARIABLE CLIMATE CASE (VCC) - MOLYBDENUM PREDICTIONS

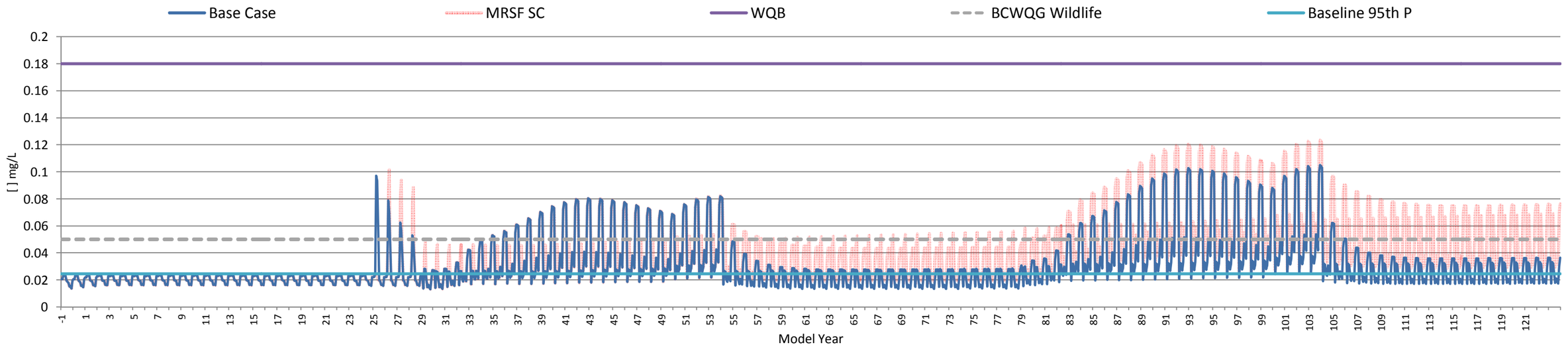
Knight Piésold CONSULTING

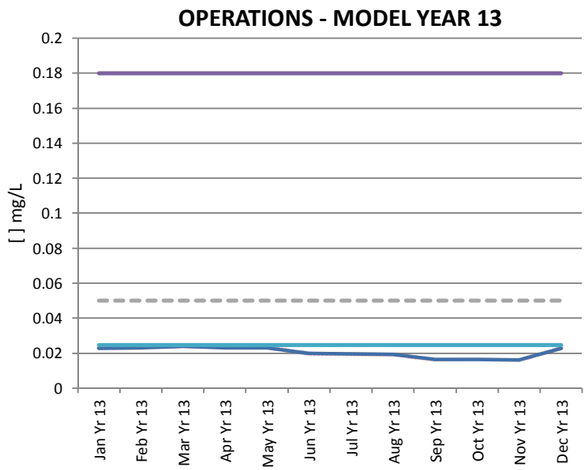
P/A NO. VA101-246/31

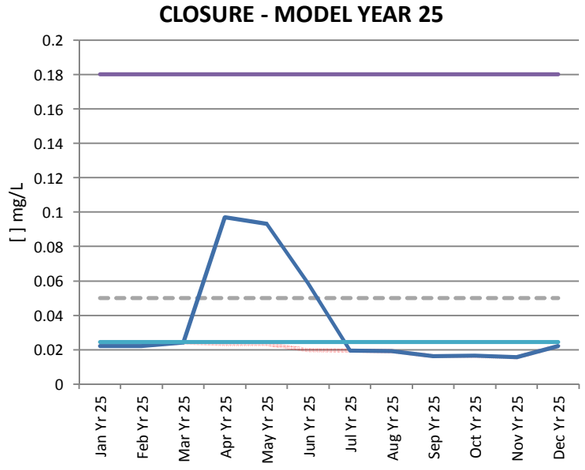
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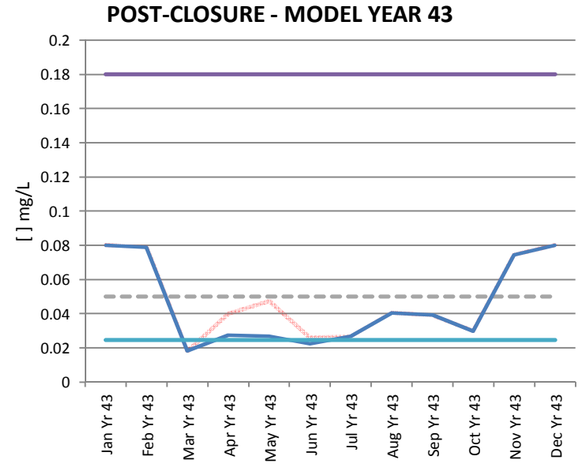
FIGURE H4.1

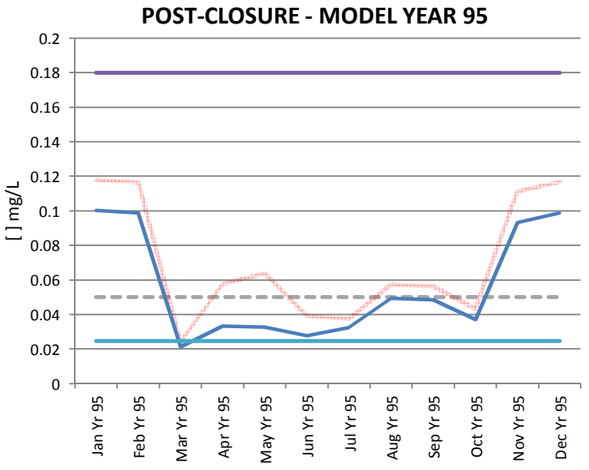
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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HUMPHREY CREEK MRSF RECHARGE ASSUMPTIONS - MOLYBDENUM PREDICTIONS

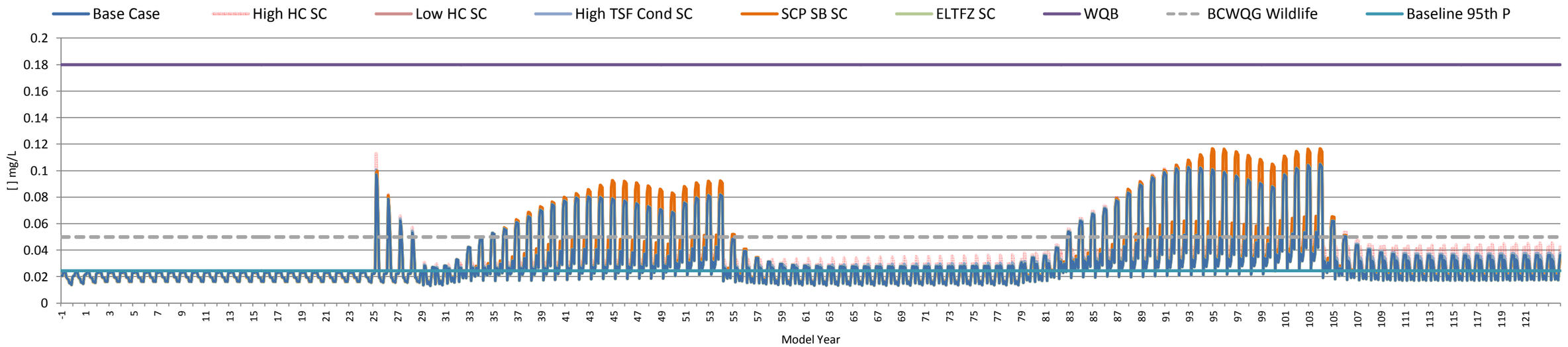
Knight Piésold CONSULTING

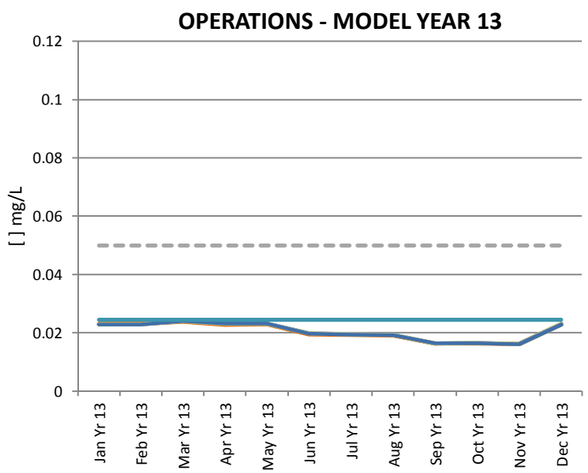
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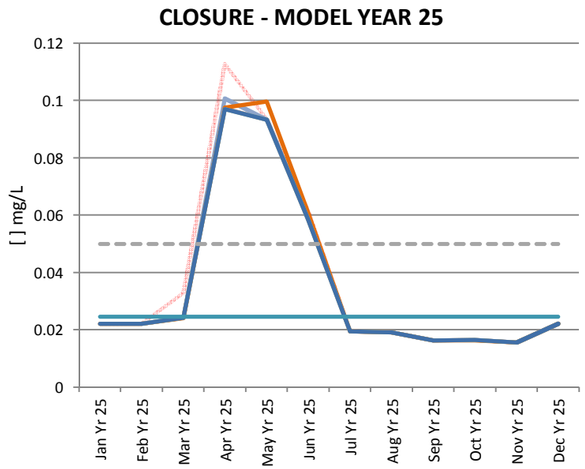
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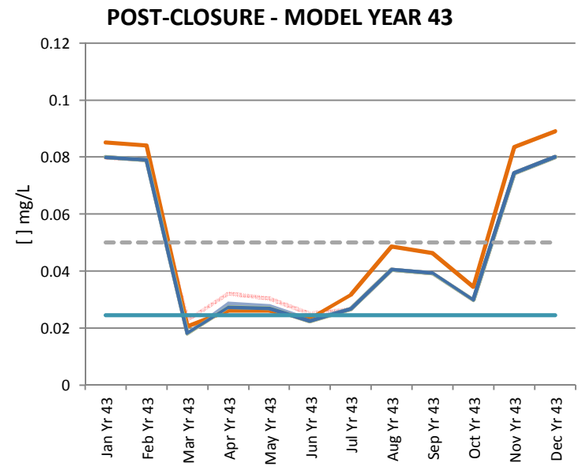
FIGURE H4.2

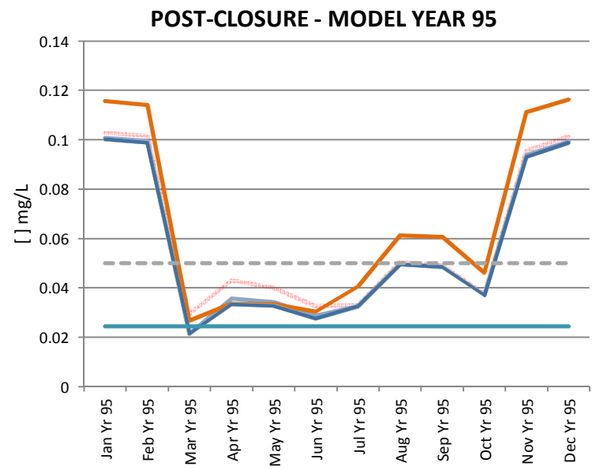
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK GROUNDWATER ASSUMPTIONS (GW) - MOLYBDENUM PREDICTIONS

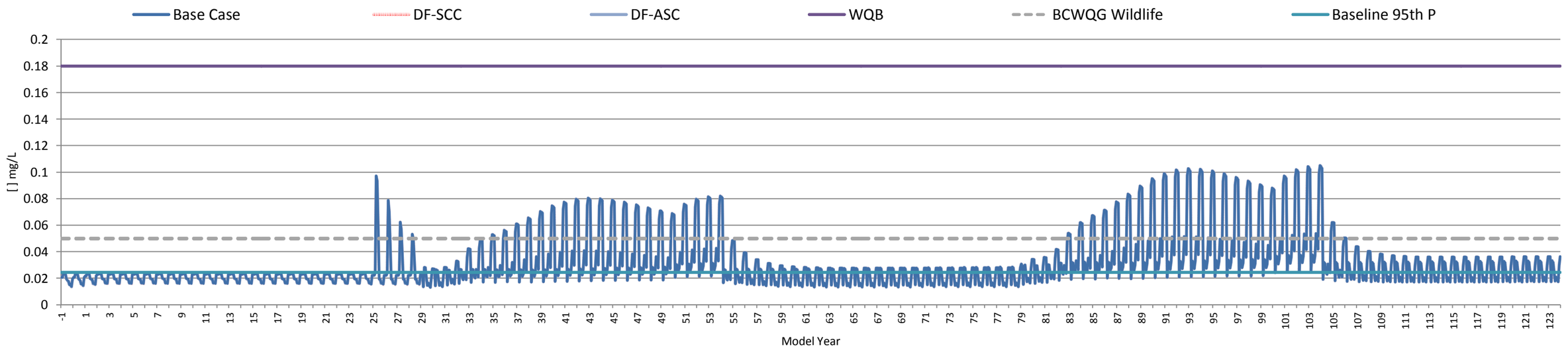
Knight Piésold CONSULTING

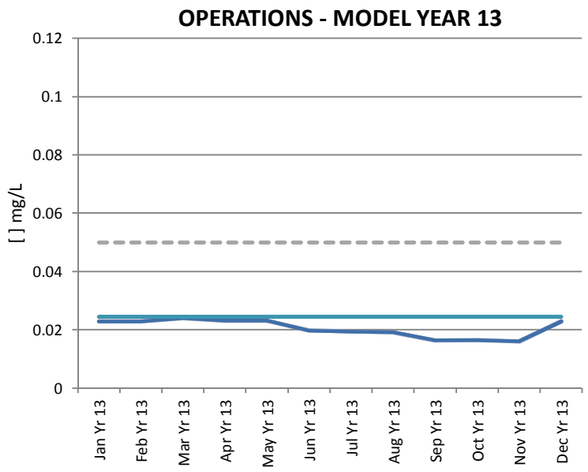
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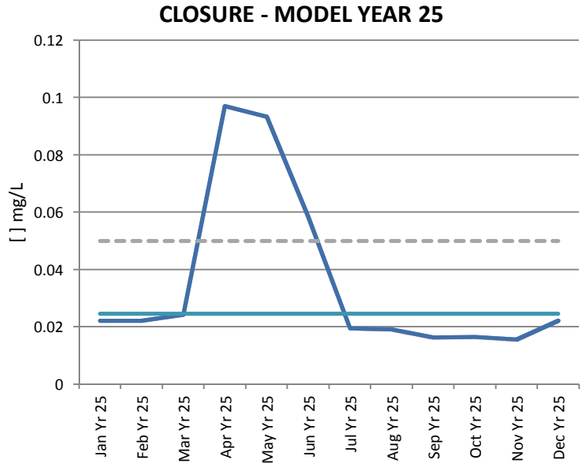
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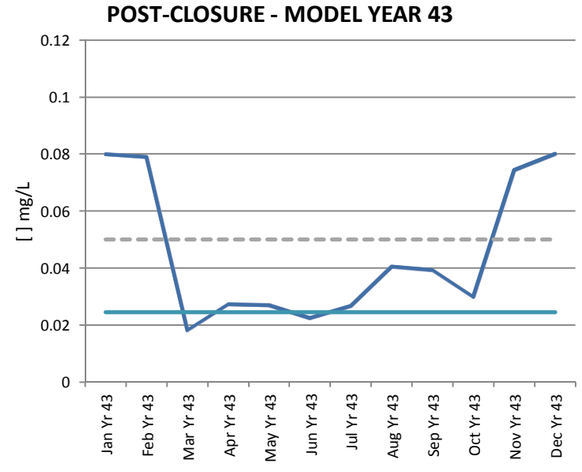
FIGURE H4.3

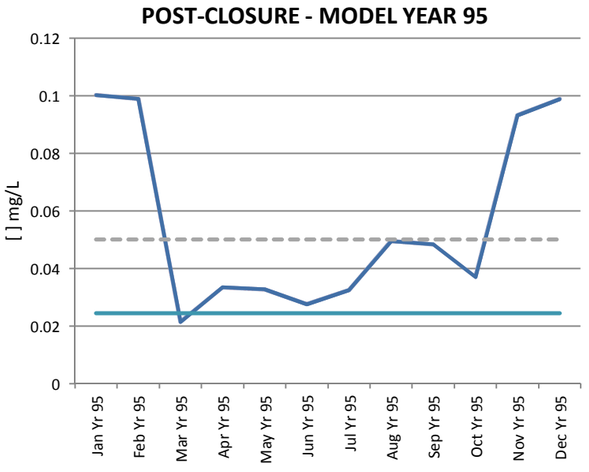
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK DUSTFALL ASSUMPTIONS (DFA) - MOLYBDENUM PREDICTIONS

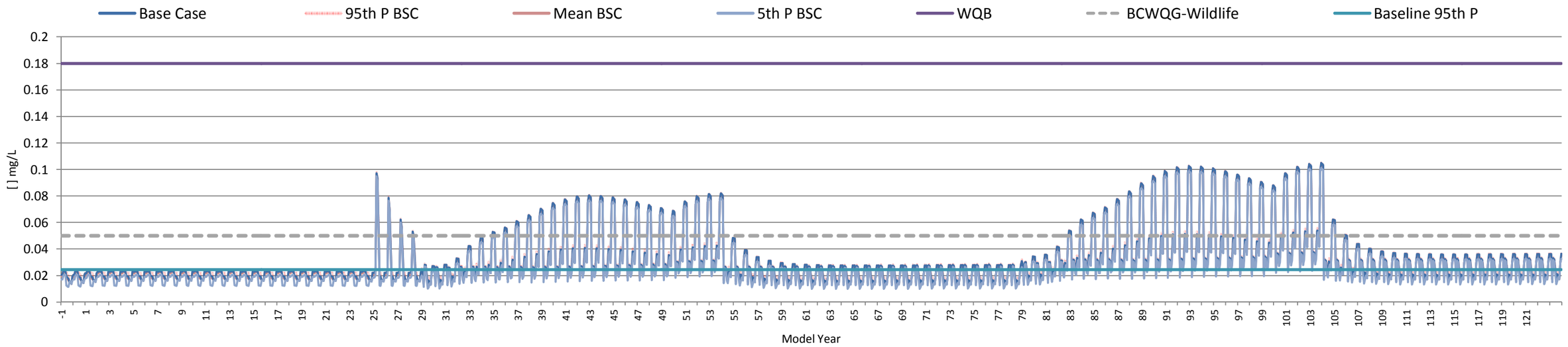
Knight Piésold CONSULTING

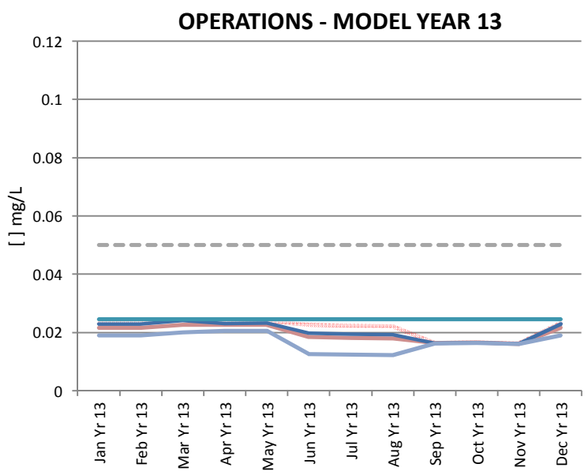
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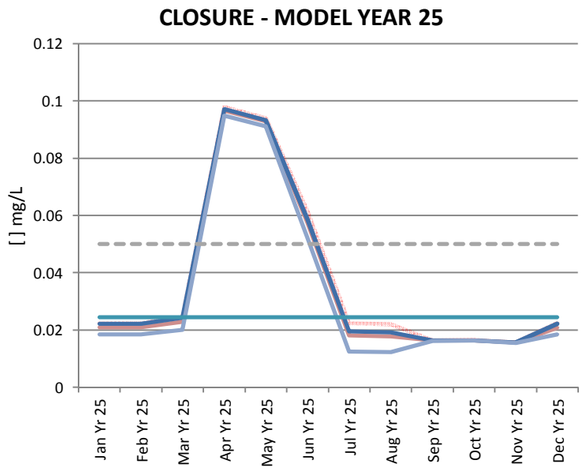
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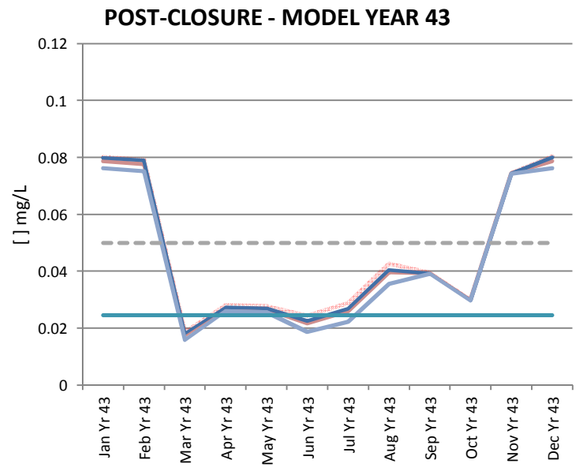
FIGURE H4.4

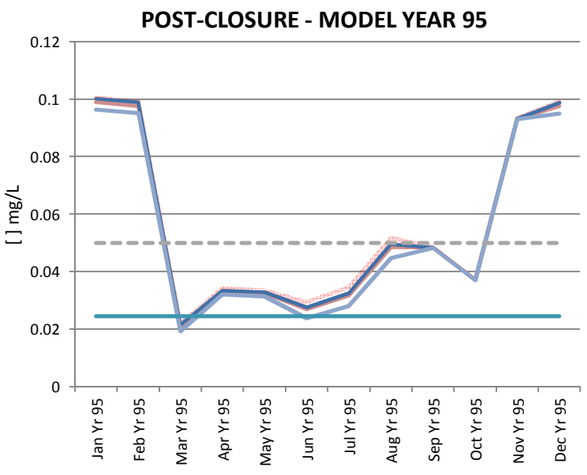
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

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HUMPHREY CREEK BASELINE SENSITIVITY CASE (BSC) - MOLYBDENUM PREDICTIONS

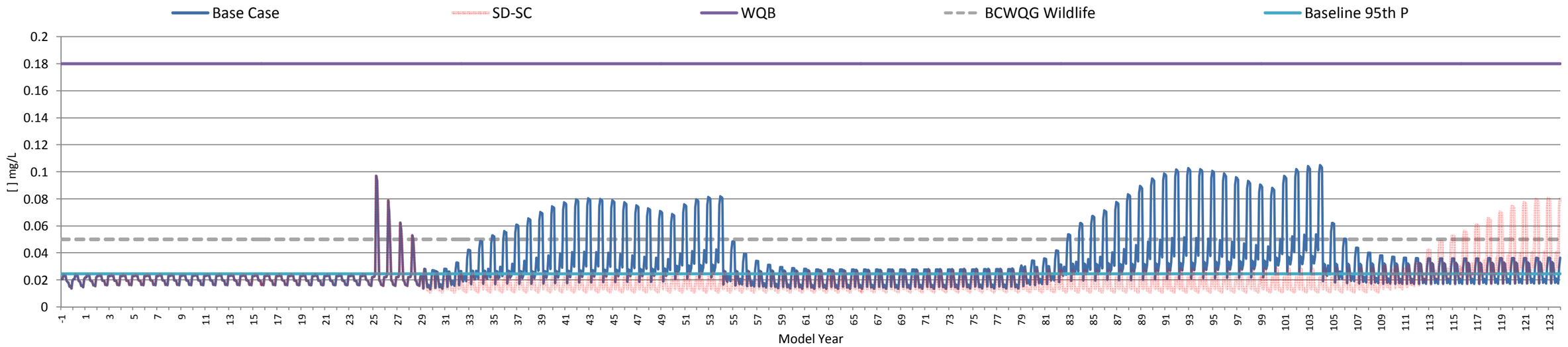
Knight Piésold CONSULTING

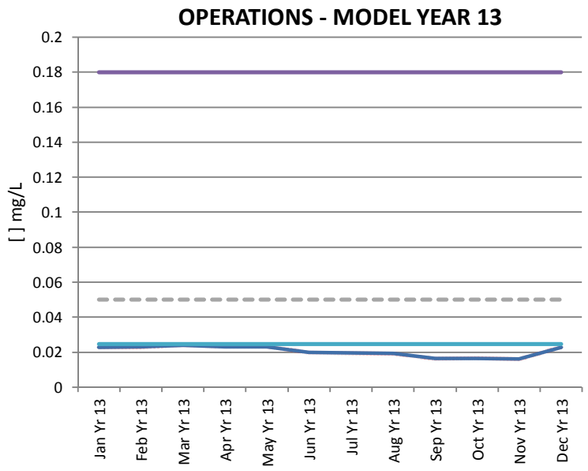
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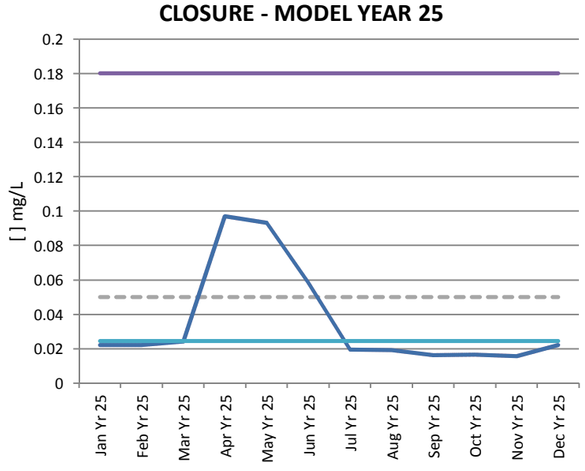
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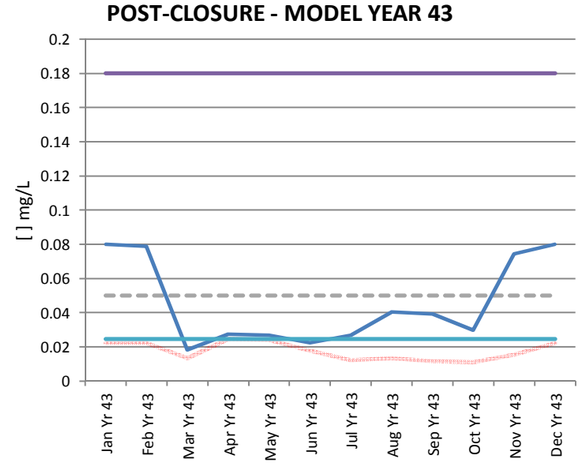
FIGURE H4.5

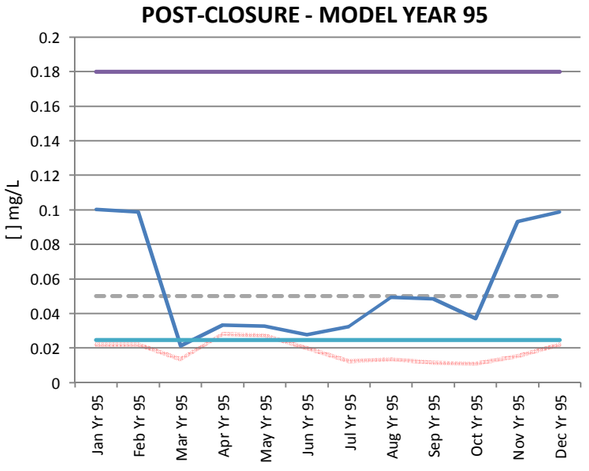
REV 0











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK TIMING OF SEEPAGE ASSUMPTIONS (SD) - MOLYBDENUM PREDICTIONS

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 3

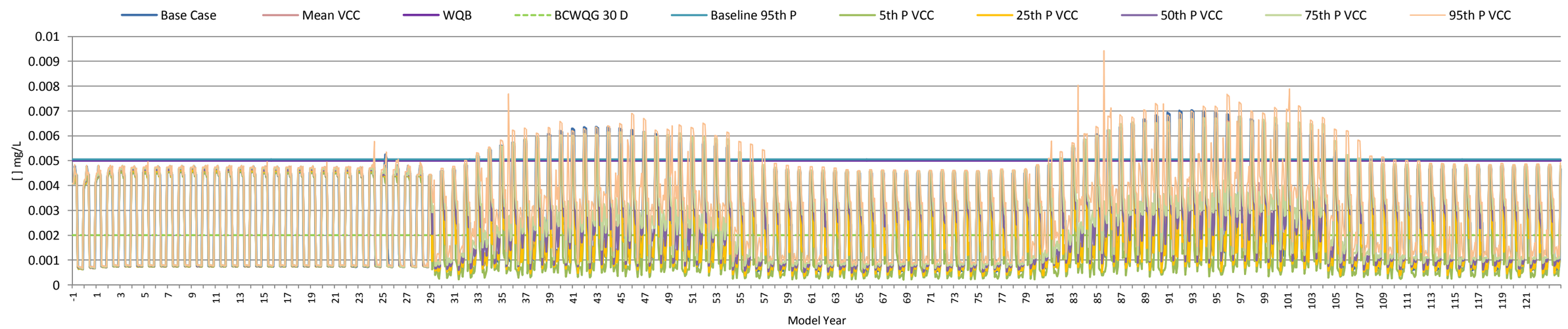
FIGURE H4.6

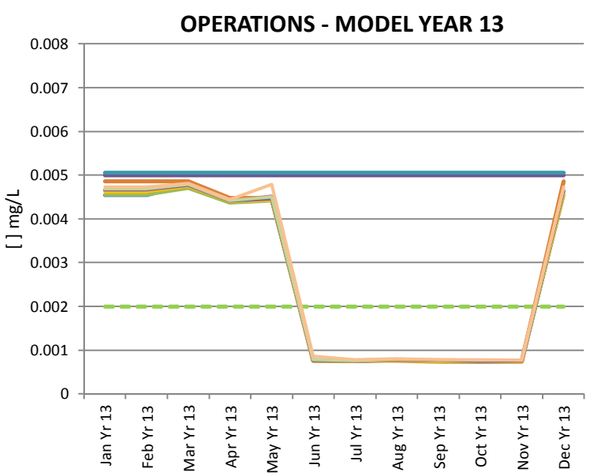
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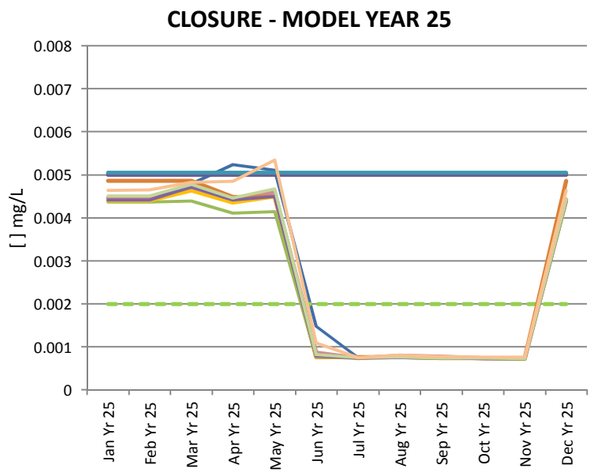
APPENDIX H5

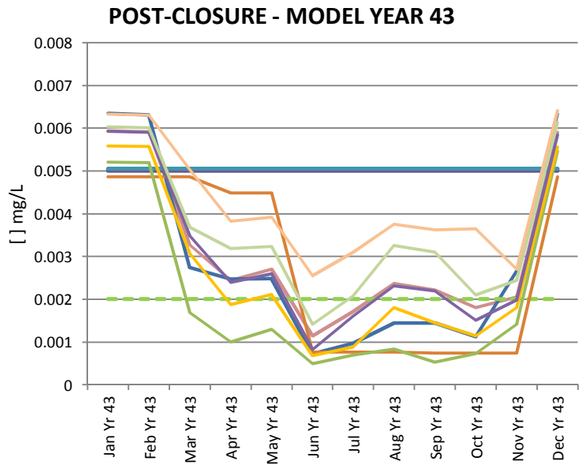
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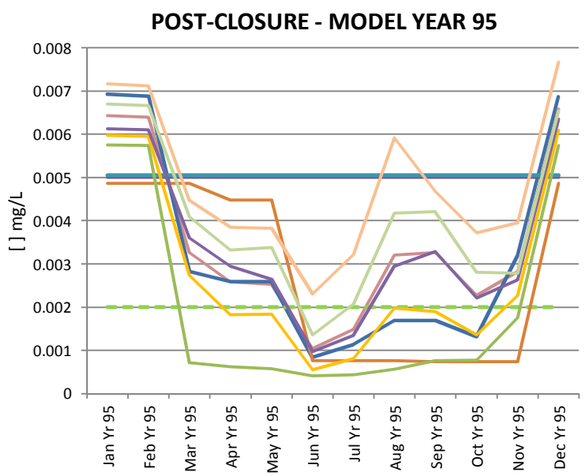
(Figures H5.1 to H5.6)











NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. VARIABLE CLIMATE CASE (VCC): MEDIAN MONTHLY BASELINE WATER QUALITY AND HISTORIC CLIMATE INPUTS TO WATER BALANCE MODEL (STEPPED THROUGH MODEL ON 5 YEAR INCREMENTS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK VARIABLE CLIMATE CASE (VCC) - SELENIUM PREDICTIONS

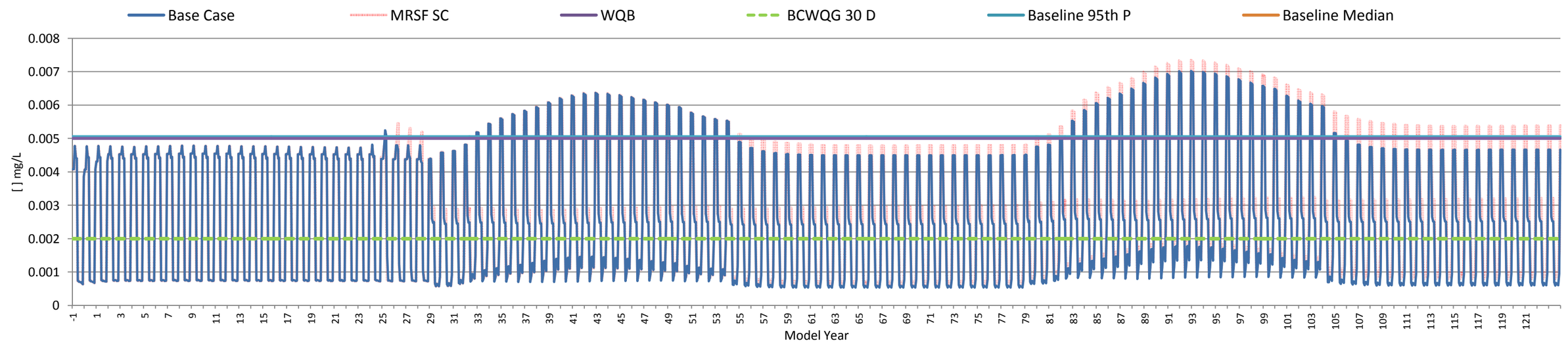
Knight Piésold CONSULTING

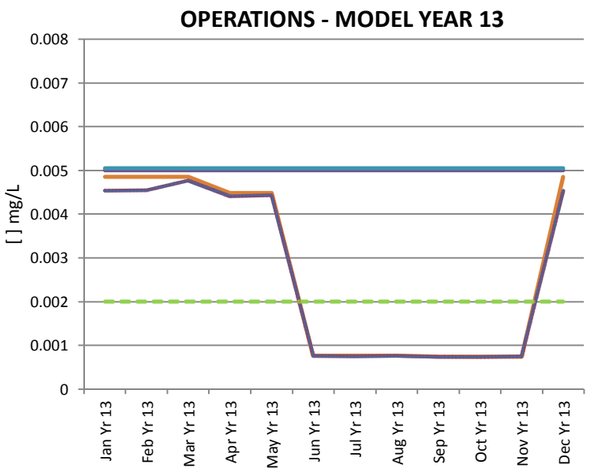
P/A NO. VA101-246/31

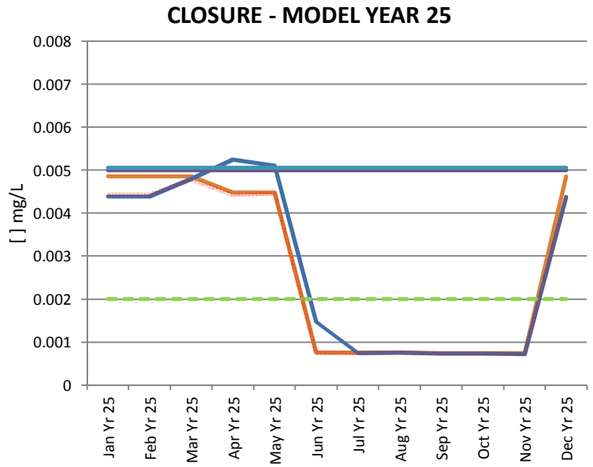
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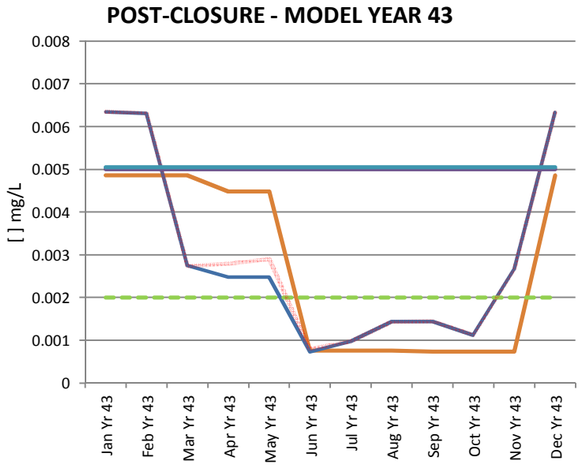
FIGURE H5.1

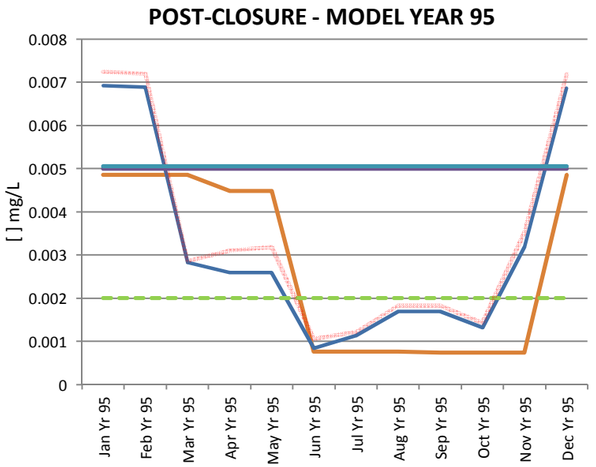
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. MINE ROCK STORAGE FACILITY (MRSF) HIGHER RECHARGE ASSUMPTIONS SENSITIVITY CASE (MRSF SC). MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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AJAX PROJECT

HUMPHREY CREEK MRSF RECHARGE ASSUMPTIONS - SELENIUM PREDICTIONS

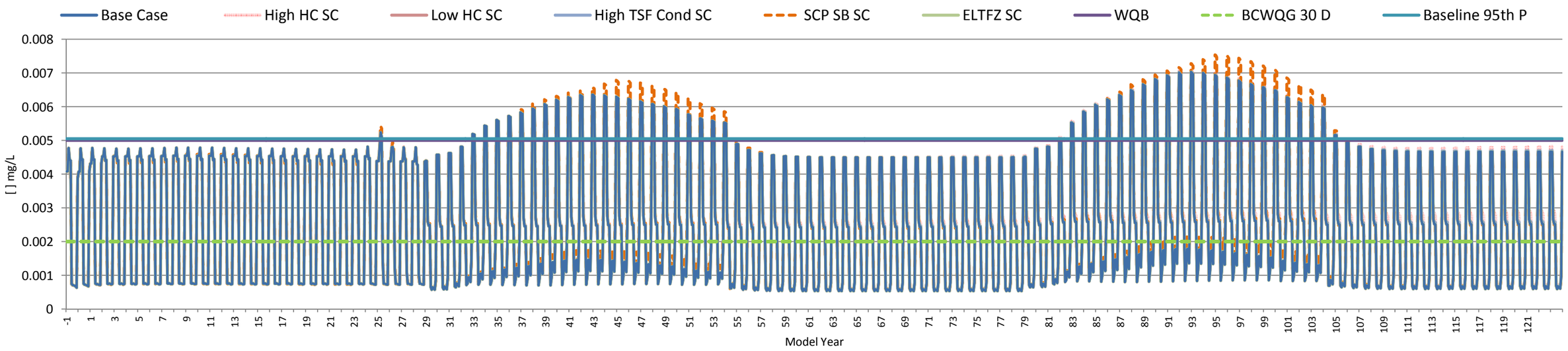
Knight Piésold CONSULTING

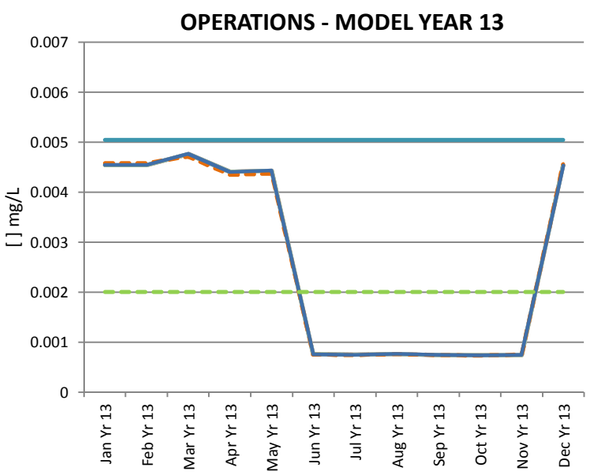
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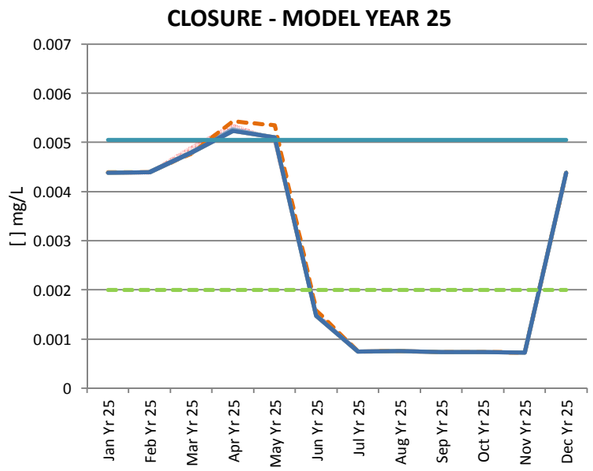
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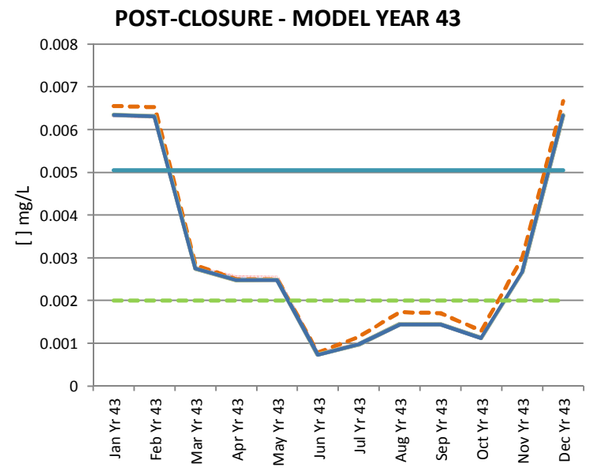
FIGURE H5.2

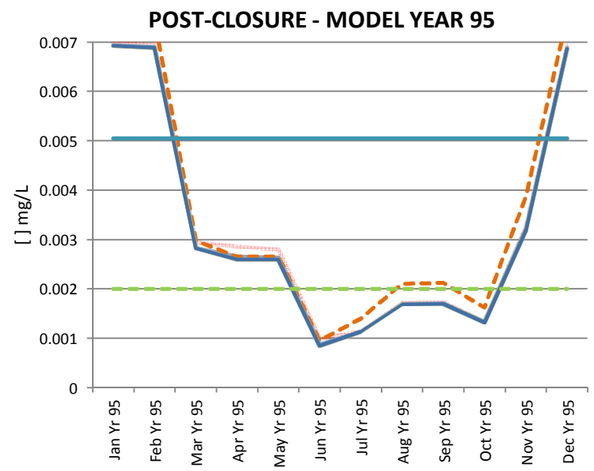
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. GROUNDWATER ASSUMPTIONS SENSTIVITY CASES - HIGHER HYDRAULIC CONDUCTIIVTY SENSITIVITY CASE (High HC SC), LOWER HYDRAULIC CONDUCTIVITY SENSITIVITY CASE (Low HC SC), HIGHER TSF CONDUCTANCE SENSITIVITY CASE (High TSF Cond SC), SEEPAGE BYPASS OF SEEPAGE COLLECTION PONDS SENSITIVITY CASE (SCP SB SC), AND EDITH LAKE THRUST FAULT ZONE SENSITIVITY CASE (ELTFZ SC).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK GROUNDWATER ASSUMPTIONS (GW) - SELENIUM PREDICTIONS

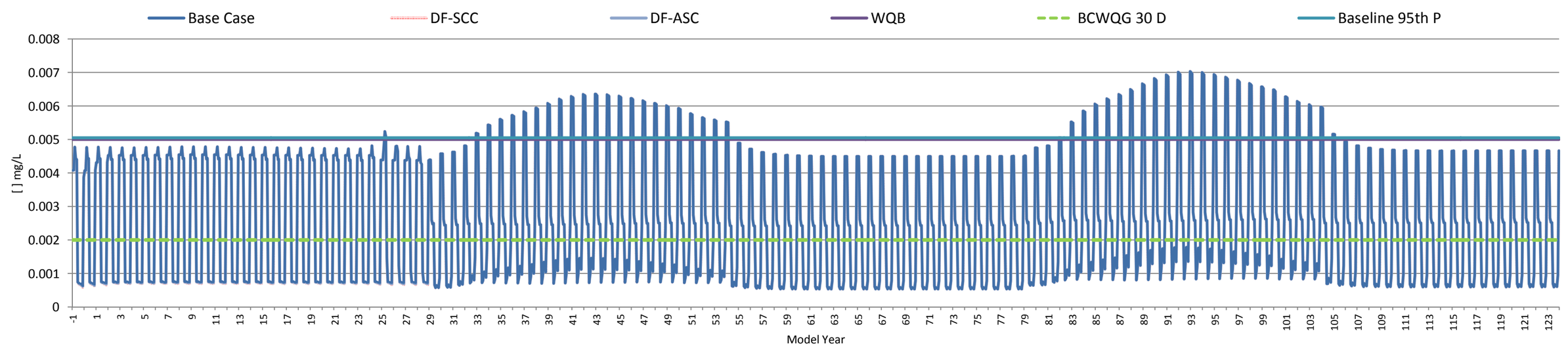
Knight Piésold CONSULTING

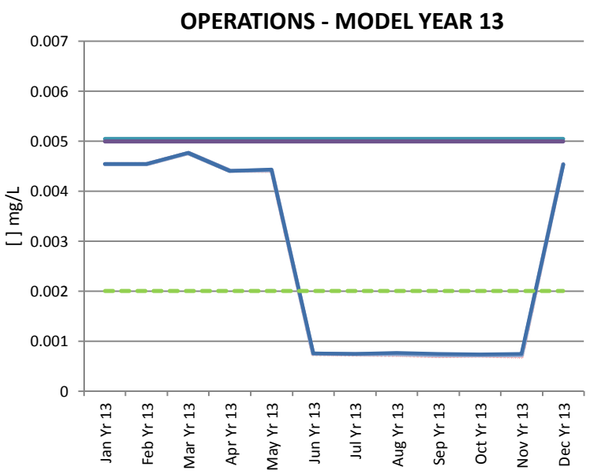
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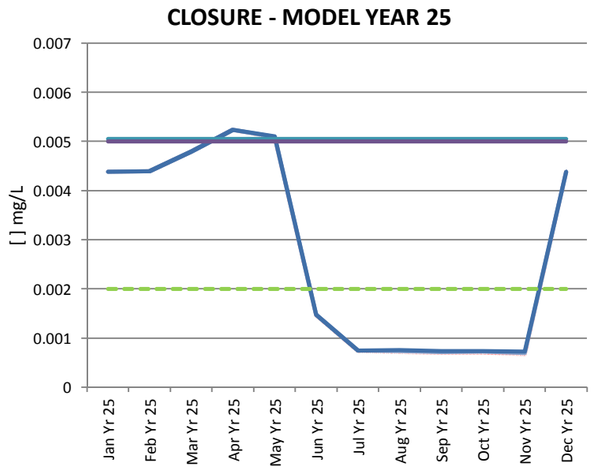
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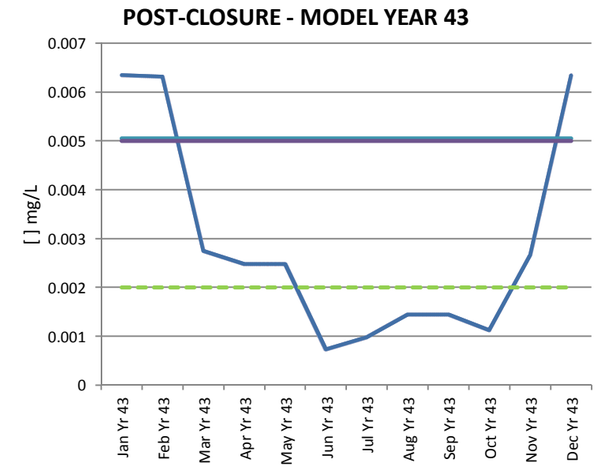
FIGURE H5.3

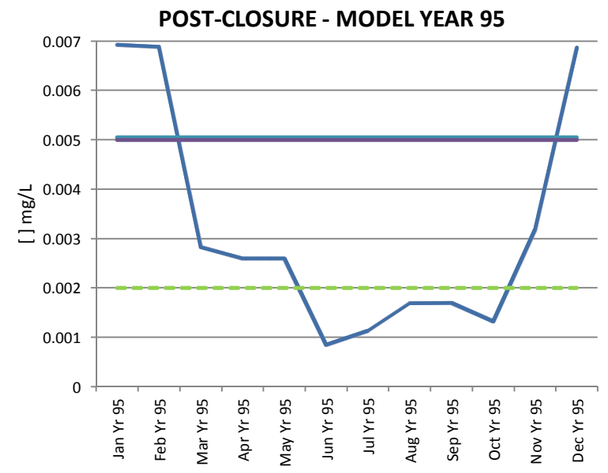
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. DUSTFALL ASSUMPTIONS SENSITIVITY CASES - BASE CASE (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 100 m OF CREEKS (50 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS); DUSTFALL SOLUBILITY/AVAILABILITY SENTIVITY CASE (DF-SSC) (DUSTFALL ASSUMED INSOLUBLE/NOT AVAILABLE AND EXCLUDED FROM SURFACE WATER QUALITY PREDICTIONS); AND DUSTFALL AREA CONTRIBUTION SENSITIVITY CASE (DF-ASC) (100% SOLUBLE/AVAILABLE AND ALL DUSTFALL WITHIN 50 m OF CREEKS (25 m ON EITHER SIDE OF CREEKS) AVAILABLE IN SURFACE WATER QUALITY PREDICTIONS).
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK DUSTFALL ASSUMPTIONS (DFA) - SELENIUM PREDICTIONS

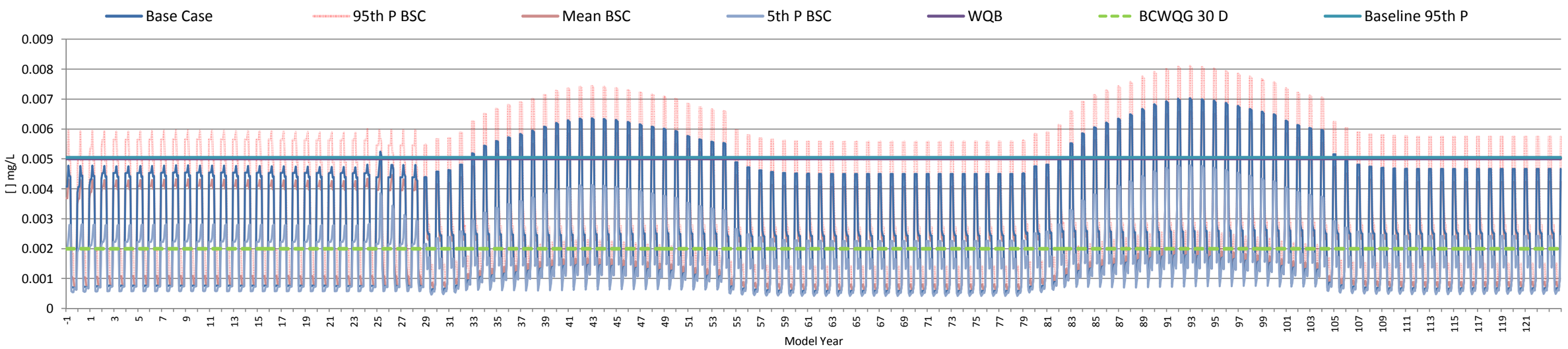
Knight Piésold CONSULTING

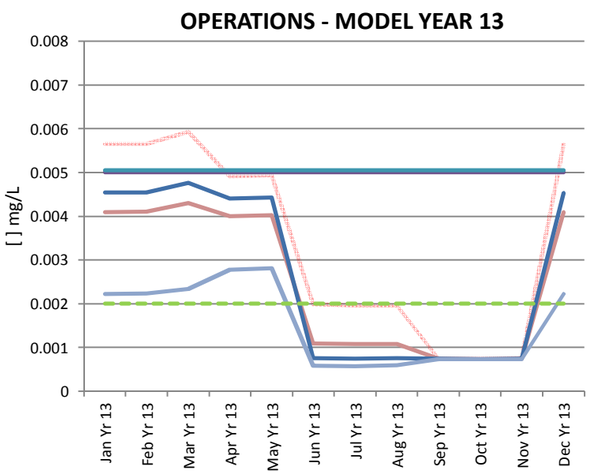
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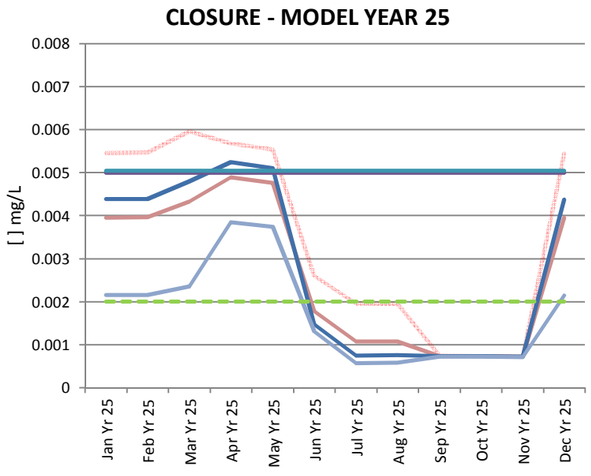
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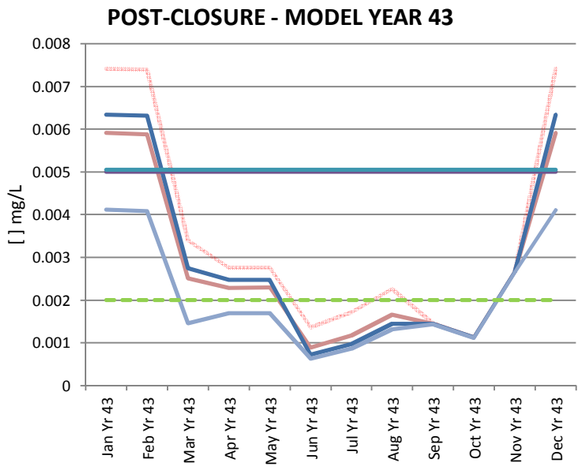
FIGURE H5.4

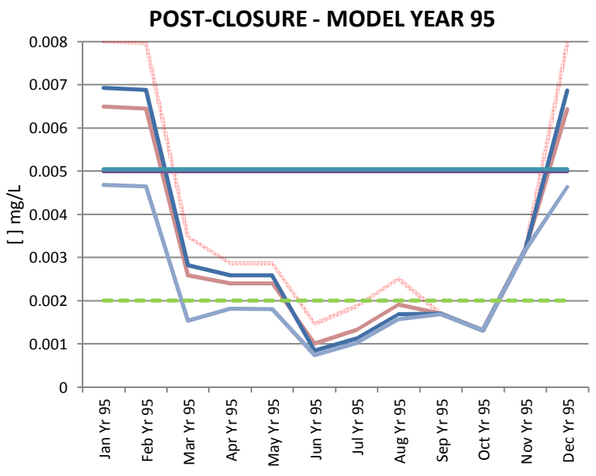
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. WATER QUALITY BENCHMARK (WQB); DISPLAYED IF APPLICABLE.
7. BASELINE SENSITIVITY CASE (BSC): 95TH PERCENTILE (P), MEAN, AND 5TH P REFER TO THE MONTHLY BASELINE WATER QUALITY INPUTS TO THE MODEL. AVERAGE MONTHLY WATER BALANCE INPUTS.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

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KGHM AJAX INC.

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HUMPHREY CREEK BASELINE SENSITIVITY CASE (BSC) - SELENIUM PREDICTIONS

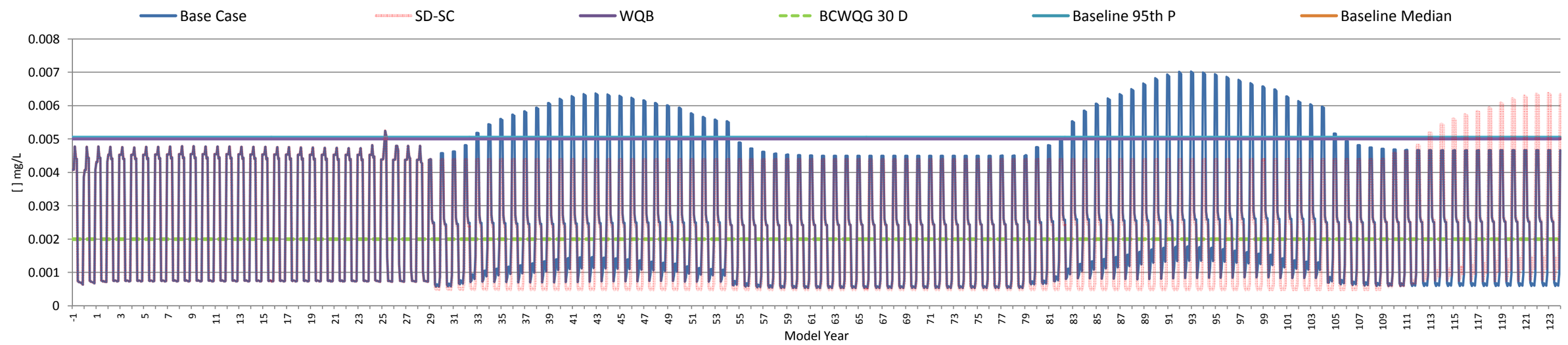
Knight Piésold CONSULTING

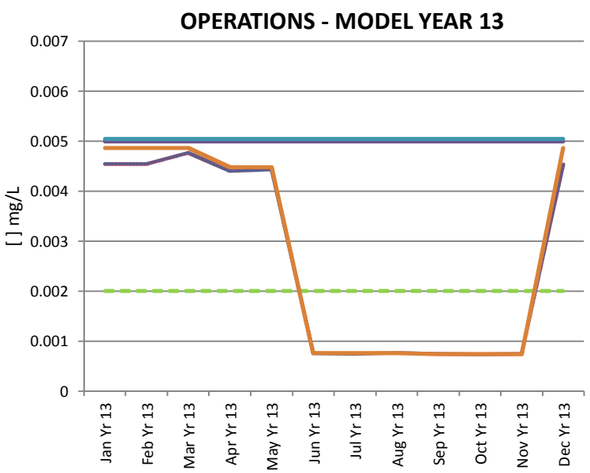
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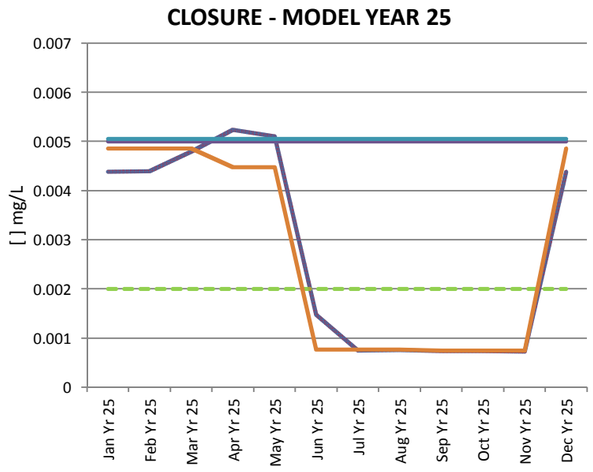
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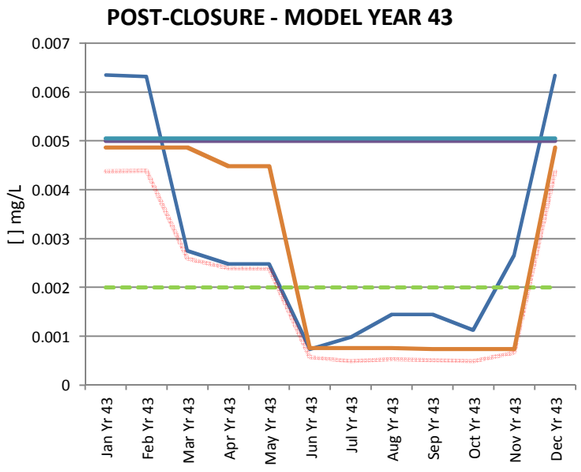
FIGURE H5.5

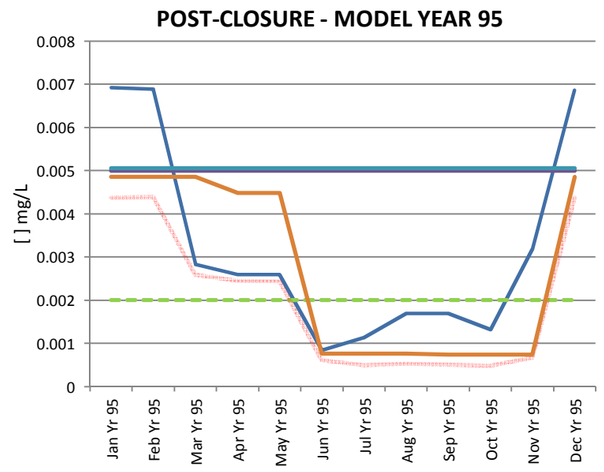
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NOTES:

1. MODEL RESULTS DISPLAYED FOR DISSOLVED CONCENTRATIONS.
2. BASE CASE - MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS.
3. HARDNESS DEPENDENT GUIDELINES HAVE BEEN CALCULATED USING BASELINE MONTHLY HARDNESS.
4. BRITISH COLUMBIA APPROVED AND WORKING WATER QUALITY GUIDELINES (BCWQG): FRESH WATER AQUATIC LIFE (BCWQG 30 D AND BCWQG MAX) AND WILDLIFE (BCWQG WILDLIFE); LOWEST APPLICABLE GUIDELINES LISTED ON GRAPHS. SOME GUIDELINES MAY BE EXCLUDED.
5. BASELINE 95TH PERCENTILE (BASELINE 95TH P) SUMMARY VALUE FOR BASELINE CONDITIONS FOR MODEL NODE OR NEAREST BASELINE MONITORING LOCATION.
6. SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
7. TIMING OF SEEPAGE HAS BEEN COMPRESSED TO FIT WITHIN A SHORTER MODEL TIME FRAME. BASE MODEL TIMING OF SEEPAGE WAS PROVIDED BASED ON PARTICLE TRACKING FROM GROUNDWATER HYDROLOGICAL MODELLING, AS FOLLOWS: 0 YR TIMING DELAY FOR 20 YR FLOW LINES, 30 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND 80 YR TIMING DELAY FOR >200 YR FLOW LINES. SENSITIVITY DELAYS: 10 YR TIMING DELAY FOR 20 YR FLOW LINES, 110 YR TIMING DELAY FOR 20-200 YR FLOW LINES, AND SEEPAGE WITH TIMING >200 YR FLOW LINES EXCLUDED FROM THE MODEL.
8. MEDIAN MONTHLY BASELINE WATER QUALITY AND AVERAGE MONTHLY WATER BALANCE MODEL INPUTS REMAIN UNCHANGED FOR SENSITIVITY MODELS; UNLESS OTHERWISE SPECIFIED.

REV	DATE	DESCRIPTION	PREP'D	APP'D
0	15JUL'15	ISSUED WITH REPORT	MZP	JEM

KGHM AJAX INC.

AJAX PROJECT

HUMPHREY CREEK TIMING OF SEEPAGE ASSUMPTIONS (SD) - SELENIUM PREDICTIONS

Knight Piésold CONSULTING

P/A NO. VA101-246/31

REF. NO. 3

FIGURE H5.6

REV 0

APPENDIX I

MINE SITE WATER QUALITY PREDICTIONS

(Tables I1 to I7)

TABLE I1

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
TSF - BASE CASE MODEL SUMMARY STATISTICS

Print Jul/21/15 8:50:05

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG-30 D	BCWQG-MAX	BCWQG-WILDLIFE	WQB/SBEB
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX				
Conventional Parameters and Major Ions																																			
Hardness - Dissolved	mg/L $CaCO_3$	80	83	98	122	366	853	879	883	500	2,408	2,674	2,708	2,658	2,727	2,740	2,745	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Bromide (Br^-)	mg/L	0.05	0.06	0.07	0.08	0.23	0.53	0.56	0.57	0.11	0.81	1.10	1.16	1.12	1.20	1.23	1.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Chloride (Cl^-)	mg/L	3	3	4	6	19	47	48	49	29	330	**454**	**473**	**454**	**486**	**493**	**495**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	600	600	388
Fluoride (F^-)	mg/L	0.06	0.06	0.06	0.07	0.11	0.19	0.20	0.20	0.15	1.22	1.42	1.42	1.38	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.24		1	
Sulphate (SO_4^{2-})	mg/L	47	49	65	89	307	673	708	714	**913**	**4,946**	**6,579**	**6,842**	**6,585**	**7,015**	**7,115**	**7,145**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	730			429 / 730
Calcium (Ca)	mg/L	17	18	20	23	56	124	126	126	161	653	653	653	650	653	653	653	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Magnesium (Mg)	mg/L	9	9	12	16	55	133	137	138	24	189	254	262	252	267	270	271	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Potassium (K)	mg/L	2	2	2	3	9	21	22	22	10	97	133	138	133	142	145	145	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Sodium (Na)	mg/L	8	8	10	13	43	102	106	107	27	246	334	347	333	355	360	362	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Nutrients																																			
Ammonia	mg/L N	0.010	0.010	0.011	0.013	0.031	0.067	0.069	0.069	0.036	0.083	0.417	0.442	0.401	0.463	0.492	0.497	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.66			
Nitrate	mg/L N	0.299	0.312	0.366	0.510	1.593	3.529	4.093	4.172	0.227	0.533	2.357	2.490	2.269	2.596	2.776	2.805	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.000			
Nitrite	mg/L	0.0021	0.0022	0.0026	0.0034	0.0105	0.0237	0.0261	0.0264	0.0222	0.0598	0.3411	0.3616	0.3272	0.3798	0.3998	0.4014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04	0.12		
Phosphorus	mg/L	0.0042	0.0042	0.0042	0.0042	0.0042	0.0042	0.0042	0.0042	0.0042	0.0042	0.0042	0.0042	0.0042	0.0042	0.0042	0.0042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Dissolved Metals																																			
Aluminum (Al)	mg/L	0.0032	0.0032	0.0033	0.0053	0.0046	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.050	0.100	5.0	
Antimony (Sb)	mg/L	0.00028	0.00030	0.00037	0.00053	0.00185	0.00428	0.00484	0.00492	0.00138	0.01384	0.01906	0.01997	0.01910	0.02053	0.02073	0.02079	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00900			
Arsenic (As)	mg/L	0.0009	0.0009	0.0011	0.0016	0.0054	0.0123	0.0141	0.0143	0.0027	0.0220	0.0220	0.0220	0.0215	0.0220	0.0220	0.0220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		0.0050	0.0250	0.0320
Barium (Ba)	mg/L	0.011	0.011	0.012	0.014	0.027	0.054	0.054	0.054	0.020	0.054	0.054	0.054	0.054	0.054	0.054	0.054	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0			
Boron (B)	mg/L	0.006	0.006	0.007	0.009	0.025	0.057	0.060	0.060	0.030	0.298	0.408	0.425	0.407	0.435	0.442	0.444	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		1.2	5.0	
Cadmium (Cd)	mg/L	0.000012	0.000012	0.000013	0.000014	0.000020	0.000035	0.000035	0.000035	0.000033	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.000179	0.000465		
Chromium (Cr)	mg/L	0.00008	0.00008	0.00009	0.00010	0.00019	0.00035	0.00038	0.00039	0.00018	0.00125	0.00169	0.00177	0.00170	0.00181	0.00185	0.00187	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001/0.0089			
Cobalt (Co)	mg/L	0.00007	0.00007	0.00008	0.00009	0.00020	0.00039	0.00043	0.00044	0.00024	0.00221	0.00298	0.00310	0.00298	0.00316	0.00320	0.00321	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.004	0.110		
Copper (Cu)	mg/L	0.0009	0.0009	0.0010	0.0012	0.0029	0.0061	0.0067	0.0068	0.0024	0.0198	**0.0270**	**0.0281**	**0.0269**	**0.0288**	**0.0292**	**0.0294**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	0.009	0.3000	0.0256
Iron (Fe)	mg/L	0.018	0.018	0.019	0.020	0.027	0.042	0.043	0.043	0.027	0.089	0.089	0.089	0.088	0.089	0.089	0.089	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		0.350		
Lead (Pb)	mg/L	0.000030	0.000030	0.000031	0.000033	0.000046	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.006	0.061	0.10	
Lithium (Li)	mg/L	0.0031	0.0031	0.0033	0.0037	0.0069	0.0128	0.0139	0.0141	0.0048	0.0241	0.0318	0.0328	0.0316	0.0333	0.0337	0.0339	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Manganese (Mn)	mg/L	0.007	0.007	0.009	0.012	0.035	0.080	0.086	0.086	0.028	0.328	0.388	0.396	0.401	0.420	0.510	0.564	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	1.42		
Molybdenum (Mo)	mg/L	0.025	0.026	0.033	0.049	0.175	**0.405**	**0.465**	**0.473**	0.077	**0.678**	**0.934**	**0.988**	**0.948**	**1.026**	**1.052**	**1.059**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	2.00	0.05	0.180
Nickel (Ni)	mg/L	0.0006	0.0006	0.0006	0.0007	0.0012	0.0024	0.0025	0.0025	0.0019	0.0177	0.0242	0.0252	0.0242	0.0258	0.0262	0.0263	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		0.0803		
Selenium (Se)	mg/L	0.00028	0.00030	0.00036	0.00048	0.00157	0.00356	0.00403	0.00409	0.00078	**0.00633**	**0.00871**	**0.00915**	**0.00878**	**0.00947**	**0.00961**	**0.00970**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0020		0.0020	0.0025 / 0.005
Silicon (Si)		2.7	2.8	2.8	3.0	4.4	7.3	7.3	7.3	4.5	23.1	23.1	23.1	22.7	23.1	23.1	23.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Silver (Ag)	mg/L	0.000005	0.000005	0.000005	0.000006	0.000007	0.000009	0.000010	0.000010	0.000046	0.000046	0.000046	0.000046	0.000046	0.000046	0.000046	0.000046	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.000050			
Strontium (Sr)	mg/L	0.14	0.14	0.17	0.20	0.57	1.29	1.36	1.37	0.89	9.41	12.90	13.44	12.89	13.79	14.00	14.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Thallium (Tl)	mg/L	0.000027	0.000027	0.000027	0.000028	0.000037	0.000050	0.000057	0.000058	0.000032	0.000088	0.000110	0.000111	0.000108	0.000112	0.000113	0.000114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.000800			
Tin (Sn)		0.00007	0.00007	0.00008	0.00008	0.00011	0.00016	0.00018	0.00018	0.00014	0.00084	0.00084	0.00084	0.00082	0.00084	0.00084	0.00084	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Uranium (U)	mg/L	0.0005	0.0005	0.0006	0.0007	0.0020	0.0046	0.0048	0.0048	0.0026	0.0268	0.0366	0.0381	0.0366	0.0391	0.0397	0.0399	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00850			
Vanadium (V)	mg/L	0.0006	0.0006	0.0007	0.0009	0.0023	0.0053	0.0053	0.0053	0.0017	0.0053	0.0053	0.0053	0.0052	0.0053	0.0053	0.0053	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Zinc (Zn)	mg/L	0.0016	0.0016	0.0016	0.0017	0.0021	0.0031	0.0032	0.0032	0.0051	0.0455	0.0621	0.0646	0.0620	0.0662	0.0672	0.0675	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.008	0.033		

\\ivan11\prj_file\1\0100246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Ajax_LOM_WQM_Base Case WMPs Summary Stats.xlsx]TI7 EMRSF WMP SUMM STATS

NOTES:
1. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - 30 DAY AVERAGE (BCWQG-30 D) - FRESHWATER AQUATIC LIFE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
3. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - WILDLIFE (WILDLIFE).
4. WATER QUALITY BENCHMARKS (WQB) AND SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
5. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS AN AQUATIC LIFE GUIDELINE.
6. GREEN HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG-WILDLIFE.
7. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS A WATER QUALITY BENCHMARK (WQB) OR SCIENCE BASED ENVIRONMENTAL BENCHARK (WQB).
8. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
9. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELCIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
10. SULPHATE SBEB IS 429 mg/L FOR WATER HARDNESS UP TO 800 mg/L CaCO3 AND IS INTENDED FOR LAKES AND CREEKS WHERE EARLY LIFESTAGES OF TROUT ARE PRESENT; SBEB OF 730 mg/L FOR HARDNESS UP TO 1377 mg/L CaCO3 FOR CREEKS WHERE FISH ARE ABSENT OR PERIODS OF THE YEAR WHEN EARLY LIFESTAGES OF TROUT ARE ABSENT.
11. SULPHATE GUIDELINE EXCEEDANCE HIGHLIGHTING IN THIS TABLE DOES NOT ACCOUNT FOR THE TIMING OF THE OCCURANCE OF THE PREDICTED CONCENTRATIONS; THEREFORE IT MAY NOT BE A TRUE EXCEEDANCE.
12. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
13. SELENIUM WQB IS 0.0025 mg/L FOR LENTIC SYSTEMS AND 0.005 mg/L FOR LOTIC SYSTEMS.
14. THE TSF POND IS DRAINED IN EARLY CLOSURE AND THE SURFACE RECLAIMED. THERE IS NO POND PLANNED FOR THAT FACILITY IN CLOSURE AND POST-CLOSURE.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	06JUN15	ISSUED WITH REPORT	MZP	JEM

TABLE I2

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
WEST MINE ROCK STORAGE FACILITY WATER MANAGEMENT POND 1 - BASE CASE MODEL SUMMARY STATISTICS

Print Jul/21/15 8:50:05

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG-30 D	BCWQG-MAX	BCWQG-WILDLIFE	WQB/SBEB
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX				
Conventional Parameters and Major Ions																																			
Hardness - Dissolved	mg/L $CaCO_3$	384	387	403	420	414	422	434	434	388	450	778	852	833	916	1,042	1,081	592	603	659	683	698	712	768	1,083	580	591	624	665	653	679	693	697				
Bromide (Br^-)	mg/L	0.13	0.13	0.14	0.15	0.14	0.15	0.15	0.16	0.13	0.17	0.40	0.45	0.44	0.51	0.59	0.62	0.25	0.26	0.28	0.31	0.32	0.33	0.41	0.61	0.23	0.24	0.26	0.27	0.27	0.29	0.30	0.31				
Chloride (Cl^-)	mg/L	66	67	70	72	71	72	73	73	48	54	64	68	67	72	74	74	54	59	68	76	75	82	88	88	78	80	83	88	87	90	92	92	150	600	600	388
Fluoride (F^-)	mg/L	0.19	0.20	0.22	0.22	0.22	0.23	0.23	0.24	0.19	0.24	0.32	0.35	0.34	0.37	0.40	0.40	0.27	0.27	0.29	0.31	0.31	0.31	0.32	0.40	0.27	0.28	0.30	0.32	0.31	0.32	0.33	0.33	1.57		1	
Sulphate (SO_4^{2-})	mg/L	49	51	53	54	53	54	55	57	49	79	494	588	552	671	**764**	**782**	203	217	247	280	314	334	463	**784**	171	181	199	213	213	228	244	250	730			429 / 730
Calcium (Ca)	mg/L	97	98	102	106	105	107	110	110	98	115	230	256	248	277	311	322	161	164	179	187	194	199	222	323	155	158	167	178	175	182	186	187				
Magnesium (Mg)	mg/L	34	34	36	38	37	38	39	39	34	39	48	53	52	55	64	67	46	46	49	52	52	53	54	67	47	48	50	54	52	55	55	56				
Potassium (K)	mg/L	10	10	10	11	11	11	11	11	10	12	21	23	23	25	27	28	15	15	17	17	18	18	20	28	15	15	16	17	17	17	18	18				
Sodium (Na)	mg/L	36	36	38	39	39	39	40	40	36	41	68	82	77	90	98	102	39	40	43	45	45	48	50	50	45	46	47	51	50	52	52	52				
Nutrients																																					
Ammonia	mg/L N	0.028	0.028	0.031	0.031	0.031	0.031	0.032	0.036	0.028	0.031	0.340	0.956	1.040	1.804	2.239	2.292	0.140	0.153	0.190	0.238	0.294	0.336	0.517	0.930	0.033	0.033	0.036	0.037	0.041	0.038	0.076	0.156	0.66			
Nitrate	mg/L N	0.086	0.088	0.093	0.094	0.093	0.094	0.097	0.106	0.085	0.099	2.544	7.419	8.096	14.156	17.581	17.998	0.951	1.038	1.328	1.715	2.168	2.516	3.963	7.247	0.101	0.102	0.109	0.114	0.148	0.116	0.420	1.054	3.000			
Nitrite	mg/L	0.0046	0.0047	0.0049	0.0050	0.0050	0.0050	0.0051	0.0051	0.0046	0.0051	0.0614	0.1733	0.1887	0.3277	0.4067	0.4162	0.0250	0.0273	0.0340	0.0427	0.0529	0.0606	0.0936	0.1690	0.0055	0.0056	0.0058	0.0061	0.0069	0.0063	0.0132	0.0278	0.2	0.60		
Phosphorus	mg/L	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004				
Dissolved Metals																																					
Aluminum (Al)	mg/L	0.0031	0.0031	0.0033	0.0034	0.0034	0.0036	0.0036	0.0037	0.0032	0.0035	0.0038	0.0041	0.0040	0.0043	0.0044	0.0044	0.0034	0.0035	0.0038	0.0040	0.0040	0.0042	0.0044	0.0044	0.0039	0.0040	0.0041	0.0045	0.0044	0.0045	0.0046	0.0046	0.050	0.100	5.0	
Antimony (Sb)	mg/L	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00005	0.00080	0.01083	0.01424	0.01331	0.01662	0.01947	0.02080	0.00152	0.00165	0.00196	0.00236	0.00285	0.00316	0.00478	0.00857	0.00108	0.00118	0.00134	0.00152	0.00153	0.00170	0.00189	0.00196	0.00900			
Arsenic (As)	mg/L	0.0012	0.0012	0.0014	0.0014	0.0014	0.0015	0.0015	0.0015	0.0012	0.0027	0.0210	0.0220	0.0199	0.0220	0.0220	0.0220	0.0072	0.0076	0.0083	0.0093	0.0101	0.0105	0.0135	0.0219	0.0066	0.0072	0.0082	0.0093	0.0093	0.0104	0.0115	0.0119		0.0050	0.0250	0.0320
Barium (Ba)	mg/L	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	1.0			
Boron (B)	mg/L	0.007	0.007	0.009	0.009	0.009	0.009	0.010	0.010	0.007	0.016	0.116	0.140	0.134	0.164	0.200	0.213	0.046	0.049	0.058	0.067	0.078	0.084	0.121	0.213	0.036	0.040	0.045	0.051	0.052	0.058	0.064	0.067		1.2	5.0	
Cadmium (Cd)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000009	0.000035	0.000035	0.000033	0.000035	0.000035	0.000035	0.000019	0.000019	0.000021	0.000022	0.000022	0.000023	0.000024	0.000035	0.000019	0.000021	0.000023	0.000027	0.000027	0.000030	0.000033	0.000035	0.000457	0.002353		
Chromium (Cr)	mg/L	0.00013	0.00013	0.00014	0.00015	0.00014	0.00015	0.00015	0.00015	0.00014	0.00020	0.00109	0.00133	0.00140	0.00155	0.00271	0.00306	0.00068	0.00073	0.00085	0.00098	0.00113	0.00122	0.00176	0.00305	0.00055	0.00059	0.00067	0.00075	0.00076	0.00084	0.00093	0.00097	0.001/0.0089			
Cobalt (Co)	mg/L	0.00015	0.00015	0.00016	0.00017	0.00017	0.00017	0.00018	0.00019	0.00015	0.00024	0.00114	0.00168	0.00167	0.00226	0.00269	0.00290	0.00035	0.00037	0.00041	0.00046	0.00051	0.00053	0.00071	0.00115	0.00031	0.00033	0.00037	0.00041	0.00041	0.00045	0.00049	0.00051	0.004	0.110		
Copper (Cu)	mg/L	0.0024	0.0024	0.0025	0.0026	0.0026	0.0027	0.0028	0.0028	0.0025	0.0029	0.0054	0.0061	0.0059	0.0067	0.0076	0.0079	0.0039	0.0040	0.0043	0.0045	0.0047	0.0048	0.0053	0.0079	0.0038	0.0039	0.0043	0.0045	0.0045	0.0048	0.0051	0.0053	0.010	0.026	0.3000	0.0256
Iron (Fe)	mg/L	0.049	0.050	0.053	0.055	0.055	0.057	0.059	0.064	0.036	0.041	0.047	0.052	0.051	0.055	0.058	0.066	0.042	0.046	0.052	0.058	0.058	0.063	0.067	0.068	0.059	0.061	0.065	0.069	0.067	0.070	0.071	0.073		0.350		
Lead (Pb)	mg/L	0.000027	0.000027	0.000028	0.000029	0.000029	0.000030	0.000031	0.000031	0.000027	0.000050	0.000074	0.000074	0.000072	0.000074	0.000074	0.000074	0.000055	0.000057	0.000062	0.000065	0.000065	0.000068	0.000071	0.000074	0.000061	0.000065	0.000068	0.000074	0.000071	0.000074	0.000074	0.000074	0.016	0.330	0.10	
Lithium (Li)	mg/L	0.0039	0.0040	0.0042	0.0044	0.0044	0.0045	0.0047	0.0047	0.0040	0.0051	0.0131	0.0149	0.0146	0.0169	0.0197	0.0207	0.0077	0.0081	0.0088	0.0097	0.0103	0.0106	0.0132	0.0207	0.0071	0.0075	0.0082	0.0086	0.0087	0.0092	0.0098	0.0100				
Manganese (Mn)	mg/L	0.037	0.037	0.040	0.044	0.043	0.045	0.047	0.054	0.037	0.046	0.058	0.066	0.065	0.073	0.080	0.082	0.046	0.047	0.051	0.055	0.054	0.057	0.059	0.066	0.051	0.052	0.056	0.060	0.059	0.062	0.063	0.065	1.90	3.80		
Molybdenum (Mo)	mg/L	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.002	0.009	0.159	**0.254**	**0.260**	**0.322**	**0.566**	**0.639**	0.120	0.129	0.153	**0.182**	**0.217**	**0.239**	**0.358**	**0.639**	0.089	0.097	0.111	0.128	0.128	0.144	0.161	0.168	1.00	2.00	0.05	0.180
Nickel (Ni)	mg/L	0.0011	0.0011	0.0012	0.0013	0.0013	0.0013	0.0014	0.0014	0.0011	0.0026	0.0239	0.0263	0.0233	0.0263	0.0263	0.0263	0.0062	0.0066	0.0076	0.0087	0.0100	0.0107	0.0153	0.0263	0.0050	0.0054	0.0060	0.0067	0.0067	0.0073	0.0080	0.0082		0.1500		
Selenium (Se)	mg/L	0.00032	0.00033	0.00034	0.00034	0.00034	0.00035	0.00035	0.00036	0.00033	0.00149	**0.02124**	**0.02442**	**0.02321**	**0.02806**	**0.03271**	**0.03532**	0.00451	0.00485	**0.00573**	**0.00684**	**0.00819**	**0.00905**	**0.01357**	**0.02415**	0.00332	0.00362	0.00409	0.00470	0.00472	**0.00529**	**0.00591**	**0.00615**	0.0020		0.0020	0.0025 / 0.005
Silicon (Si)		8.9	9.2	9.9	10.2	10.1	10.4	10.8	10.8	9.1	9.8	10.6	11.3	11.2	11.8	12.1	12.1	9.3	9.9	10.8	11.4	11.4	12.2	12.8	12.8	11.2	11.4	12.0	13.0	12.7	13.2	13.3	13.3				
Silver (Ag)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000006	0.000012	0.000013	0.000013	0.000015	0.000016	0.000017	0.000010	0.000010	0.000011	0.000012	0.000012	0.000012	0.000013	0.000018	0.000009	0.000010	0.000010	0.000011	0.000011	0.000012	0.000012	0.000012	0.001500			
Strontium (Sr)	mg/L	0.40	0.41	0.42	0.44	0.44	0.44	0.46	0.46	0.41	0.50	1.37	1.56	1.53	1.77	2.08	2.18	0.82	0.86	0.94	1.03	1.09	1.13	1.39	2.18	0.76	0.79	0.87	0.91	0.91	0.97	1.02	1.04				
Thallium (Tl)	mg/L	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000005	0.000010	0.000071	0.000085	0.000081	0.000099	0.000121	0.000129	0.000028	0.000030	0.000035	0.000041	0.000047	0.000051	0.000074	0.000129	0.000022	0.000024	0.000027	0.000031	0.000031	0.000034	0.000038	0.000040	0.000800			
Tin (Sn)		0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00005	0.00006	0.00012	0.00013	0.00013	0.00014	0.00016	0.00017	0.00009	0.00009	0.00010	0.00010	0.00011	0.00011	0.00012	0.00017	0.00009	0.00011	0.00014	0.00019	0.00019	0.00023	0.00028	0.00031				
Uranium (U)	mg/L	0.0015	0.0015	0.0016	0.0016	0.0016	0.0016	0.0016	0.0017	0.0015	0.0017	0.0036	0.0044	0.0043	0.0052	0.0058	0.0062	0.0023	0.0024	0.0026	0.0027	0.0027	0.0028	0.0031	0.0043	0.0023	0.0023	0.0025	0.0026	0.0026	0.0027	0.0027	0.0028	0.00850			
Vanadium (V)	mg/L	0.0027	0.0027	0.0029	0.0030	0.0030	0.0031	0.0031	0.0032	0.0027	0.0047	0.0053	0.0053	0.0052	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053				
Zinc (Zn)	mg/L	0.0016	0.0016	0.0017	0.0017	0.0017	0.0017	0.0018	0.0018	0.0016	0.0022	0.0096	0.0125	0.0116	0.0142	0.0158	0.0168	0.0043	0.0046	0.0052	0.0058	0.0064	0.0068	0.0091	0.0150	0.0038	0.0040	0.0044	0.0047	0.0047	0.0050	0.0053	0.0055	0.228	0.254		

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Ajax_LOM_WQM_Base Case WMPs Summary Stats.xlsx]TI7 EMRSF WMP SUMM STATS

NOTES:
1. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - 30 DAY AVERAGE (BCWQG-30 D) - FRESHWATER AQUATIC LIFE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
3. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - WILDLIFE (WILDLIFE).
4. WATER QUALITY BENCHMARKS (WQB) AND SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
5. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS AN AQUATIC LIFE GUIDELINE.
6. GREEN HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG-WILDLIFE.
7. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS A WATER QUALITY BENCHMARK (WQB) OR SCIENCE BASED ENVIRONMENTAL BENCHARK (WQB).
8. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
9. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELCIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
10. SULPHATE SBEB IS 429 mg/L FOR WATER HARDNESS UP TO 800 mg/L CaCO3 AND IS INTENDED FOR LAKES AND CREEKS WHERE EARLY LIFESTAGES OF TROUT ARE PRESENT; SBEB OF 730 mg/L FOR HARDNESS UP TO 1377 mg/L CaCO3 FOR CREEKS WHERE FISH ARE ABSENT OR PERIODS OF THE YEAR WHEN EARLY LIFESTAGES OF TROUT ARE ABSENT.
11. SULPHATE GUIDELINE EXCEEDANCE HIGHLIGHTING IN THIS TABLE DOES NOT ACCOUNT FOR THE TIMING OF THE OCCURANCE OF THE PREDICTED CONCENTRATIONS; THEREFORE IT MAY NOT BE A TRUE EXCEEDANCE.
12. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
13. SELENIUM WQB IS 0.0025 mg/L FOR LENTIC SYSTEMS AND 0.005 mg/L FOR LOTIC SYSTEMS.

REV	DATE	DESCRIPTION	PREP'D	RVWD
0	06JUN15	ISSUED WITH REPORT	MZP	JEM

TABLE I3

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
WEST MINE ROCK STORAGE FACILITY WATER MANAGEMENT POND 2 - BASE CASE MODEL SUMMARY STATISTICS

Print Jul/21/15 8:50:05

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG-30 D	BCWQG-MAX	BCWQG-WILDLIFE	WQB/SBEB
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX				
Conventional Parameters and Major Ions																																			
Hardness - Dissolved	mg/L $CaCO_3$	369	370	376	378	379	383	385	385	373	399	780	921	866	1,001	1,102	1,143	592	607	637	669	712	749	908	1,143	518	526	541	552	552	564	577	615				
Bromide (Br^-)	mg/L	0.13	0.13	0.13	0.13	0.13	0.14	0.14	0.15	0.13	0.15	0.43	0.54	0.49	0.60	0.67	0.70	0.28	0.29	0.31	0.34	0.37	0.41	0.53	0.70	0.22	0.22	0.23	0.24	0.24	0.25	0.26	0.29				
Chloride (Cl^-)	mg/L	65	65	66	66	66	66	67	67	36	39	48	53	53	57	65	67	37	46	53	59	58	64	66	66	66	69	71	72	72	73	74	74	150	600	600	388
Fluoride (F^-)	mg/L	0.19	0.19	0.20	0.20	0.20	0.20	0.20	0.21	0.19	0.21	0.31	0.35	0.33	0.37	0.39	0.40	0.26	0.26	0.27	0.28	0.29	0.29	0.34	0.40	0.24	0.25	0.25	0.26	0.26	0.26	0.27	0.27	1.57		1	
Sulphate (SO_4^{2-})	mg/L	49	49	50	50	50	50	52	53	48	67	568	**758**	679	**882**	**943**	**955**	271	278	315	362	421	481	680	**955**	159	164	173	187	188	201	213	279	730			429 / 730
Calcium (Ca)	mg/L	94	94	96	96	96	96	97	97	95	102	238	288	266	317	341	351	165	169	179	191	205	219	273	351	138	141	145	148	149	152	156	171				
Magnesium (Mg)	mg/L	33	33	34	34	34	34	35	35	33	35	45	49	49	51	62	65	44	44	46	47	48	49	55	65	42	42	44	44	44	45	45	46				
Potassium (K)	mg/L	9	9	10	10	10	10	10	10	9	10	22	26	24	28	29	30	15	16	16	17	18	19	24	30	13	13	14	14	14	14	15	16				
Sodium (Na)	mg/L	34	35	35	35	35	35	36	36	35	37	69	87	82	99	107	110	40	40	41	42	42	42	45	50	39	39	40	41	41	41	41	42				
Nutrients																																					
Ammonia	mg/L N	0.027	0.028	0.028	0.028	0.028	0.028	0.030	0.032	0.027	0.028	0.295	1.212	1.273	2.246	2.742	2.775	0.325	0.333	0.407	0.499	0.612	0.732	1.101	1.606	0.029	0.030	0.031	0.031	0.045	0.032	0.137	0.334	0.66			
Nitrate	mg/L N	0.084	0.085	0.086	0.086	0.087	0.086	0.091	0.095	0.084	0.090	2.219	9.488	9.795	17.427	20.700	20.700	2.380	2.442	3.011	3.726	4.599	5.527	8.376	12.286	0.089	0.091	0.093	0.094	0.200	0.103	0.917	2.444	3.000			
Nitrite	mg/L	0.0045	0.0045	0.0046	0.0046	0.0047	0.0047	0.0048	0.0048	0.0045	0.0047	0.0533	0.2200	0.2311	0.4081	0.4983	0.5044	0.0586	0.0602	0.0736	0.0904	0.1109	0.1327	0.1998	0.2921	0.0048	0.0049	0.0050	0.0051	0.0076	0.0053	0.0244	0.0603	0.2	0.60		
Phosphorus	mg/L	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004				
Dissolved Metals																																					
Aluminum (Al)	mg/L	0.0029	0.0030	0.0031	0.0031	0.0031	0.0032	0.0032	0.0032	0.0030	0.0032	0.0035	0.0036	0.0035	0.0037	0.0037	0.0037	0.0032	0.0032	0.0033	0.0034	0.0034	0.0034	0.0035	0.0035	0.0034	0.0035	0.0035	0.0036	0.0036	0.0037	0.0037	0.0037	0.050	0.100	5.0	
Antimony (Sb)	mg/L	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00059	0.01322	0.01815	0.01608	0.02080	0.02080	0.02080	0.00276	0.00283	0.00335	0.00400	0.00483	0.00567	0.00838	0.01214	0.00115	0.00120	0.00130	0.00145	0.00147	0.00160	0.00173	0.00284	0.00900			
Arsenic (As)	mg/L	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	0.0013	0.0012	0.0021	0.0220	0.0220	0.0198	0.0220	0.0220	0.0220	0.0087	0.0090	0.0097	0.0105	0.0116	0.0126	0.0164	0.0220	0.0070	0.0073	0.0077	0.0086	0.0086	0.0094	0.0101	0.0103		0.0050	0.0250	0.0320
Barium (Ba)	mg/L	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	1.0			
Boron (B)	mg/L	0.007	0.007	0.007	0.008	0.008	0.008	0.008	0.008	0.007	0.013	0.134	0.182	0.166	0.214	0.247	0.257	0.068	0.071	0.081	0.094	0.110	0.126	0.181	0.257	0.037	0.039	0.041	0.046	0.046	0.049	0.053	0.071		1.2	5.0	
Cadmium (Cd)	mg/L	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000007	0.000035	0.000035	0.000033	0.000035	0.000035	0.000035	0.000019	0.000020	0.000021	0.000022	0.000023	0.000024	0.000028	0.000035	0.000018	0.000019	0.000020	0.000022	0.000022	0.000024	0.000025	0.000026	0.000457	0.002257		
Chromium (Cr)	mg/L	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00013	0.00017	0.00124	0.00170	0.00167	0.00200	0.00326	0.00349	0.00098	0.00100	0.00114	0.00131	0.00153	0.00175	0.00247	0.00349	0.00057	0.00059	0.00062	0.00069	0.00069	0.00074	0.00079	0.00101	0.001/0.0089			
Cobalt (Co)	mg/L	0.00014	0.00014	0.00015	0.00015	0.00015	0.00015	0.00016	0.00017	0.00014	0.00020	0.00145	0.00223	0.00208	0.00284	0.00341	0.00355	0.00050	0.00051	0.00058	0.00066	0.00077	0.00088	0.00124	0.00173	0.00029	0.00030	0.00031	0.00033	0.00033	0.00034	0.00036	0.00052	0.004	0.110		
Copper (Cu)	mg/L	0.0023	0.0023	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0023	0.0025	0.0055	0.0067	0.0063	0.0074	0.0082	0.0085	0.0040	0.0041	0.0044	0.0046	0.0050	0.0053	0.0066	0.0085	0.0034	0.0034	0.0036	0.0036	0.0036	0.0037	0.0038	0.0042	0.010	0.026	0.3000	0.0256
Iron (Fe)	mg/L	0.047	0.047	0.048	0.048	0.049	0.051	0.051	0.055	0.026	0.028	0.033	0.038	0.038	0.043	0.049	0.057	0.027	0.036	0.041	0.046	0.044	0.049	0.051	0.051	0.050	0.053	0.055	0.056	0.056	0.057	0.058	0.059		0.350		
Lead (Pb)	mg/L	0.000026	0.000026	0.000026	0.000026	0.000026	0.000027	0.000027	0.000027	0.000026	0.000041	0.000074	0.000074	0.000072	0.000074	0.000074	0.000074	0.000054	0.000055	0.000057	0.000057	0.000059	0.000059	0.000064	0.000074	0.000054	0.000056	0.000059	0.000064	0.000063	0.000068	0.000071	0.000072	0.016	0.330	0.10	
Lithium (Li)	mg/L	0.0038	0.0038	0.0039	0.0039	0.0039	0.0040	0.0040	0.0040	0.0038	0.0044	0.0141	0.0179	0.0165	0.0203	0.0226	0.0235	0.0089	0.0092	0.0100	0.0109	0.0121	0.0133	0.0175	0.0235	0.0067	0.0069	0.0071	0.0074	0.0075	0.0077	0.0080	0.0093				
Manganese (Mn)	mg/L	0.036	0.037	0.038	0.040	0.039	0.040	0.042	0.046	0.037	0.041	0.055	0.064	0.063	0.073	0.079	0.081	0.046	0.046	0.048	0.049	0.049	0.049	0.053	0.062	0.046	0.046	0.047	0.049	0.048	0.049	0.051	0.051	1.90	3.80		
Molybdenum (Mo)	mg/L	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.007	0.174	**0.326**	**0.317**	**0.419**	**0.693**	**0.743**	**0.186**	**0.191**	**0.222**	**0.260**	**0.309**	**0.358**	**0.519**	**0.743**	0.095	0.098	0.106	0.120	0.120	0.132	0.143	**0.192**	1.00	2.00	0.05	0.180
Nickel (Ni)	mg/L	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0012	0.0012	0.0011	0.0021	0.0263	0.0263	0.0234	0.0263	0.0263	0.0263	0.0081	0.0083	0.0093	0.0105	0.0121	0.0136	0.0189	0.0263	0.0053	0.0055	0.0058	0.0064	0.0064	0.0070	0.0074	0.0084		0.1500		
Selenium (Se)	mg/L	0.00031	0.00031	0.00032	0.00032	0.00032	0.00032	0.00032	0.00033	0.00031	0.00115	**0.02549**	**0.03338**	**0.02987**	**0.03754**	**0.04282**	**0.04444**	**0.00780**	**0.00802**	**0.00937**	**0.01108**	**0.01326**	**0.01546**	**0.02262**	**0.03256**	0.00363	0.00377	0.00405	0.00450	0.00454	0.00495	**0.00533**	**0.00804**	0.0020		0.0020	0.0025 / 0.005
Silicon (Si)		8.7	8.7	8.9	9.0	9.0	9.2	9.3	9.3	8.5	8.9	9.2	9.5	9.5	9.7	9.9	9.9	8.6	8.9	9.2	9.4	9.5	9.7	10.1	10.1	9.7	10.1	10.3	10.6	10.4	10.6	10.7	10.7				
Silver (Ag)	mg/L	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000006	0.000012	0.000015	0.000014	0.000016	0.000018	0.000018	0.000009	0.000009	0.000010	0.000010	0.000011	0.000012	0.000014	0.000018	0.000007	0.000008	0.000008	0.000008	0.000008	0.000008	0.000008	0.000009	0.001500			
Strontium (Sr)	mg/L	0.39	0.39	0.40	0.40	0.40	0.40	0.40	0.41	0.39	0.44	1.48	1.89	1.74	2.14	2.39	2.49	0.93	0.96	1.04	1.14	1.27	1.40	1.85	2.49	0.69	0.71	0.74	0.77	0.77	0.80	0.83	0.97				
Thallium (Tl)	mg/L	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000008	0.000082	0.000110	0.000101	0.000130	0.000150	0.000156	0.000042	0.000043	0.000049	0.000057	0.000067	0.000077	0.000110	0.000156	0.000023	0.000024	0.000026	0.000028	0.000028	0.000031	0.000033	0.000043	0.000800			
Tin (Sn)		0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00006	0.00012	0.00015	0.00014	0.00016	0.00018	0.00018	0.00009	0.00009	0.00009	0.00010	0.00011	0.00011	0.00014	0.00018	0.00007	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00009				
Uranium (U)	mg/L	0.0014	0.0014	0.0015	0.0015	0.0015	0.0015	0.0015	0.0016	0.0014	0.0016	0.0037	0.0052	0.0048	0.0060	0.0068	0.0070	0.0024	0.0025	0.0026	0.0028	0.0030	0.0032	0.0040	0.0050	0.0020	0.0020	0.0021	0.0021	0.0021	0.0022	0.0022	0.0025	0.00850			
Vanadium (V)	mg/L	0.0026	0.0026	0.0026	0.0027	0.0027	0.0027	0.0027	0.0028	0.0026	0.0039	0.0053	0.0053	0.0051	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053				
Zinc (Zn)	mg/L	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0016	0.0016	0.0015	0.0019	0.0109	0.0158	0.0140	0.0183	0.0197	0.0204	0.0057	0.0058	0.0065	0.0074	0.0085	0.0096	0.0133	0.0184	0.0036	0.0037	0.0039	0.0041	0.0042	0.0044	0.0046	0.0059	0.217	0.242		

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Ajax_LOM_WQM_Base Case WMPs Summary Stats.xlsx]TI7 EMRSF WMP SUMM STATS

NOTES:
1. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - 30 DAY AVERAGE (BCWQG-30 D) - FRESHWATER AQUATIC LIFE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
3. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - WILDLIFE (WILDLIFE).
4. WATER QUALITY BENCHMARKS (WQB) AND SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
5. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS AN AQUATIC LIFE GUIDELINE.
6. GREEN HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG-WILDLIFE.
7. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS A WATER QUALITY BENCHMARK (WQB) OR SCIENCE BASED ENVIRONMENTAL BENCHARK (WQB).
8. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
9. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELCIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
10. SULPHATE SBEB IS 429 mg/L FOR WATER HARDNESS UP TO 800 mg/L CaCO3 AND IS INTENDED FOR LAKES AND CREEKS WHERE EARLY LIFESTAGES OF TROUT ARE PRESENT; SBEB OF 730 mg/L FOR HARDNESS UP TO 1377 mg/L CaCO3 FOR CREEKS WHERE FISH ARE ABSENT OR PERIODS OF THE YEAR WHEN EARLY LIFESTAGES OF TROUT ARE ABSENT.
11. SULPHATE GUIDELINE EXCEEDANCE HIGHLIGHTING IN THIS TABLE DOES NOT ACCOUNT FOR THE TIMING OF THE OCCURANCE OF THE PREDICTED CONCENTRATIONS; THEREFORE IT MAY NOT BE A TRUE EXCEEDANCE.
12. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
13. SELENIUM WQB IS 0.0025 mg/L FOR LENTIC SYSTEMS AND 0.005 mg/L FOR LOTIC SYSTEMS.

REV	DATE	DESCRIPTION	PREP'D	REVW'D
0	06JUN'15	ISSUED WITH REPORT	MZP	JEM

TABLE I4

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
TSF SOUTH EMBANKMENT WATER MANAGEMENT POND - BASE CASE MODEL SUMMARY STATISTICS

Print Jul/21/15 8:50:05

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG-30 D	BCWQG-MAX	BCWQG-WILDLIFE	WQB/SBEB
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX				
Conventional Parameters and Major Ions																																			
Hardness - Dissolved	mg/L $CaCO_3$	0	0	0	0	0	0	0	0	0	0	0	446	352	512	563	584	587	591	627	665	667	710	735	742	735	837	1,078	1,311	1,293	1,522	1,682	1,728				
Bromide (Br^-)	mg/L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.14	0.20	0.22	0.26	0.22	0.22	0.23	0.24	0.24	0.25	0.25	0.25	0.25	0.27	0.36	0.47	0.48	0.60	0.71	0.74				
Chloride (Cl^-)	mg/L	0	0	0	0	0	0	0	0	0	0	0	72	56	80	84	86	85	86	88	89	90	92	93	94	93	99	115	132	131	148	159	163	150	600	600	388
Fluoride (F^-)	mg/L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.18	0.25	0.27	0.31	0.27	0.28	0.29	0.29	0.29	0.30	0.31	0.31	0.30	0.33	0.40	0.50	0.50	0.60	0.68	0.70	1.57		1	
Sulphate (SO_4^{2-})	mg/L	0	0	0	0	0	0	0	0	0	0	0	92	81	124	155	170	174	180	216	252	252	291	314	322	321	409	608	778	760	930	1,045	1,077	730			429 / 730
Calcium (Ca)	mg/L	0	0	0	0	0	0	0	0	0	0	0	116	93	135	151	158	159	160	175	189	189	205	214	217	215	252	332	401	391	458	498	510				
Magnesium (Mg)	mg/L	0	0	0	0	0	0	0	0	0	0	0	38	30	42	45	46	45	46	47	47	47	48	49	49	48	51	61	75	77	92	106	110				
Potassium (K)	mg/L	0	0	0	0	0	0	0	0	0	0	0	11	9	13	14	15	15	15	16	16	16	17	18	18	17	19	24	29	29	33	37	38				
Sodium (Na)	mg/L	0	0	0	0	0	0	0	0	0	0	0	42	33	48	50	51	51	51	52	54	54	55	56	56	56	60	73	90	90	107	122	126				
Nutrients																																					
Ammonia	mg/L N	-	-	-	-	-	-	-	-	-	-	-	0.092	0.098	0.174	0.208	0.215	0.156	0.157	0.164	0.172	0.175	0.184	0.194	0.202	0.082	0.082	0.083	0.085	0.093	0.095	0.132	0.157	0.66			
Nitrate	mg/L N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.577	0.662	1.208	1.476	1.526	1.071	1.079	1.131	1.197	1.217	1.290	1.367	1.428	0.423	0.428	0.439	0.476	0.541	0.586	0.886	1.077	3.000			
Nitrite	mg/L	-	-	-	-	-	-	-	-	-	-	-	0.0162	0.0174	0.0309	0.0373	0.0384	0.0278	0.0280	0.0292	0.0308	0.0312	0.0329	0.0347	0.0362	0.0142	0.0143	0.0144	0.0147	0.0162	0.0168	0.0235	0.0279	0.02		0.06	
Phosphorus	mg/L	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004				
Dissolved Metals																																					
Aluminum (Al)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0034	0.0026	0.0038	0.0040	0.0041	0.0040	0.0040	0.0040	0.0040	0.0040	0.0041	0.0041	0.0041	0.0040	0.0041	0.0046	0.0053	0.0050	0.0053	0.0053	0.0053	0.050	0.100	5.0	
Antimony (Sb)	mg/L	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00107	0.00096	0.00164	0.00181	0.00185	0.00172	0.00175	0.00180	0.00184	0.00184	0.00188	0.00192	0.00194	0.00189	0.00208	0.00275	0.00377	0.00390	0.00498	0.00608	0.00640	0.00900			
Arsenic (As)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0030	0.0026	0.0041	0.0051	0.0053	0.0051	0.0051	0.0052	0.0053	0.0053	0.0053	0.0054	0.0054	0.0053	0.0059	0.0092	0.0148	0.0148	0.0218	0.0220	0.0220		0.0050	0.0250	0.0320
Barium (Ba)	mg/L	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.054	0.039	0.054	0.054	0.054	0.053	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	1.0			
Boron (B)	mg/L	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.015	0.023	0.028	0.030	0.029	0.030	0.031	0.033	0.033	0.035	0.037	0.038	0.037	0.045	0.078	0.130	0.139	0.196	0.257	0.275		1.2	5.0	
Cadmium (Cd)	mg/L	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000011	0.0000009	0.0000015	0.0000018	0.0000019	0.0000019	0.0000019	0.0000021	0.0000023	0.0000023	0.0000026	0.0000027	0.0000028	0.0000027	0.0000034	0.0000035	0.0000035	0.0000035	0.0000035	0.0000035	0.0000035	0.0000018	0.0000038		
Chromium (Cr)	mg/L	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00022	0.00019	0.00028	0.00035	0.00037	0.00036	0.00036	0.00037	0.00037	0.00037	0.00038	0.00039	0.00039	0.00039	0.00044	0.00079	0.00139	0.00152	0.00218	0.00295	0.00317	0.001/0.0089			
Cobalt (Co)	mg/L	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00029	0.00024	0.00038	0.00041	0.00041	0.00040	0.00040	0.00041	0.00042	0.00042	0.00043	0.00044	0.00045	0.00044	0.00050	0.00082	0.00134	0.00144	0.00202	0.00267	0.00286	0.004	0.110		
Copper (Cu)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0028	0.0022	0.0032	0.0035	0.0036	0.0036	0.0036	0.0038	0.0039	0.0039	0.0041	0.0042	0.0043	0.0042	0.0048	0.0074	0.0114	0.0121	0.0164	0.0211	0.0224	0.002	0.002	0.3000	0.0256
Iron (Fe)	mg/L	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.056	0.042	0.061	0.064	0.089	0.060	0.060	0.061	0.061	0.062	0.062	0.063	0.064	0.059	0.059	0.063	0.071	0.072	0.081	0.088	0.089		0.350		
Lead (Pb)	mg/L	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000053	0.0000044	0.0000071	0.0000074	0.0000074	0.0000074	0.0000074	0.0000074	0.0000074	0.0000074	0.0000074	0.0000074	0.0000074	0.0000074	0.0000074	0.0000074	0.0000074	0.0000074	0.0000074	0.0000074	0.0000074	n/a	0.003	0.10	
Lithium (Li)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0050	0.0040	0.0058	0.0064	0.0066	0.0064	0.0065	0.0066	0.0067	0.0067	0.0067	0.0069	0.0069	0.0068	0.0073	0.0101	0.0146	0.0154	0.0204	0.0258	0.0274				
Manganese (Mn)	mg/L	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.035	0.051	0.054	0.097	0.055	0.056	0.057	0.059	0.059	0.060	0.062	0.062	0.062	0.068	0.089	0.119	0.122	0.154	0.185	0.194	0.61	0.54		
Molybdenum (Mo)	mg/L	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019	0.020	0.031	0.048	0.054	0.055	0.056	0.064	0.072	0.072	0.081	0.087	0.089	0.089	0.114	**0.198**	**0.309**	**0.323**	**0.443**	**0.565**	**0.600**	1.00	2.00	0.05	0.180
Nickel (Ni)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0034	0.0030	0.0048	0.0054	0.0055	0.0050	0.0051	0.0052	0.0052	0.0052	0.0053	0.0054	0.0055	0.0050	0.0051	0.0058	0.0073	0.0076	0.0092	0.0109	0.0114		0.0250		
Selenium (Se)	mg/L	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00200	0.00178	0.00295	0.00336	0.00342	0.00298	0.00301	0.00306	0.00313	0.00315	0.00321	0.00330	0.00341	0.00295	0.00306	0.00441	**0.00732**	**0.00805**	**0.01131**	**0.01516**	**0.01628**	0.0020		0.0020	0.0025 / 0.005
Silicon (Si)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	7.7	11.0	11.6	11.8	11.5	11.5	11.6	11.7	11.7	11.8	11.8	11.8	11.6	12.0	13.4	15.7	15.8	18.1	20.2	20.8				
Silver (Ag)	mg/L	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000007	0.000006	0.000009	0.000011	0.000013	0.000013	0.000014	0.000020	0.000025	0.000025	0.000030	0.000034	0.000035	0.000035	0.000045	0.000046	0.000046	0.000046	0.000046	0.000046	0.000046	0.000050			
Strontium (Sr)	mg/L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.42	0.62	0.70	0.74	0.75	0.75	0.82	0.89	0.90	0.98	1.03	1.04	1.03	1.24	1.80	2.44	2.47	3.14	3.74	3.91				
Thallium (Tl)	mg/L	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000011	0.000009	0.000014	0.000017	0.000018	0.000017	0.000017	0.000018	0.000018	0.000018	0.000018	0.000018	0.000018	0.000018	0.000020	0.000034	0.000058	0.000063	0.000090	0.000120	0.000129	0.000800			
Tin (Sn)		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00006	0.00005	0.00007	0.00008	0.00008	0.00008	0.00008	0.00009	0.00011	0.00011	0.00013	0.00014	0.00015	0.00015	0.00025	0.00080	0.00084	0.00074	0.00084	0.00084	0.00084				
Uranium (U)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0019	0.0015	0.0022	0.0024	0.0025	0.0025	0.0025	0.0027	0.0029	0.0029	0.0031	0.0033	0.0033	0.0033	0.0038	0.0052	0.0066	0.0066	0.0080	0.0091	0.0094	0.00850			
Vanadium (V)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0052	0.0036	0.0053	0.0053	0.0053	0.0052	0.0052	0.0052	0.0053	0.0053	0.0053	0.0053	0.0053	0.0052	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053				
Zinc (Zn)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0024	0.0020	0.0031	0.0036	0.0037	0.0038	0.0038	0.0041	0.0044	0.0044	0.0048	0.0050	0.0051	0.0050	0.0059	0.0083	0.0110	0.0110	0.0138	0.0162	0.0168	0.008	0.033		

\\van11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Ajax_LOM_WQM_Base Case WMPs Summary Stats.xlsx]TI7 EMRSF WMP SUMM STATS

NOTES:
1. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - 30 DAY AVERAGE (BCWQG-30 D) - FRESHWATER AQUATIC LIFE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
3. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - WILDLIFE (WILDLIFE).
4. WATER QUALITY BENCHMARKS (WQB) AND SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
5. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS AN AQUATIC LIFE GUIDELINE.
6. GREEN HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG-WILDLIFE.
7. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS A WATER QUALITY BENCHMARK (WQB) OR SCIENCE BASED ENVIRONMENTAL BENCHARK (WQB).
8. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
9. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELCIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
10. SULPHATE SBEB IS 429 mg/L FOR WATER HARDNESS UP TO 800 mg/L CaCO3 AND IS INTENDED FOR LAKES AND CREEKS WHERE EARLY LIFESTAGES OF TROUT ARE PRESENT; SBEB OF 730 mg/L FOR HARDNESS UP TO 1377 mg/L CaCO3 FOR CREEKS WHERE FISH ARE ABSENT OR PERIODS OF THE YEAR WHEN EARLY LIFESTAGES OF TROUT ARE ABSENT.
11. SULPHATE GUIDELINE EXCEEDANCE HIGHLIGHTING IN THIS TABLE DOES NOT ACCOUNT FOR THE TIMING OF THE OCCURANCE OF THE PREDICTED CONCENTRATIONS; THEREFORE IT MAY NOT BE A TRUE EXCEEDANCE.
12. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
13. SELENIUM WQB IS 0.0025 mg/L FOR LENTIC SYSTEMS AND 0.005 mg/L FOR LOTIC SYSTEMS.

REV	DATE	DESCRIPTION	PREP'D	REVW'D
0	06JUN15	ISSUED WITH REPORT	MZP	JEM

TABLE I5

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
TSF SOUTHEAST EMBANKMENT WATER MANAGEMENT POND - BASE CASE MODEL SUMMARY STATISTICS

Print Jul/21/15 8:50:05

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG-30 D	BCWQG-MAX	BCWQG-WILDLIFE	WQB/SBEB
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX				
Conventional Parameters and Major Ions																																			
Hardness - Dissolved	mg/L $CaCO_3$	0	0	0	0	0	0	0	0	0	0	0	456	346	647	781	841	796	831	888	940	943	989	1,068	1,075	1,016	1,247	2,043	2,475	2,370	2,806	3,103	3,222				
Bromide (Br^-)	mg/L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.13	0.25	0.30	0.33	0.31	0.32	0.34	0.35	0.35	0.36	0.38	0.39	0.36	0.44	0.71	1.12	1.16	1.60	1.99	2.00				
Chloride (Cl^-)	mg/L	0	0	0	0	0	0	0	0	0	0	0	77	56	104	123	132	124	128	134	140	140	145	153	154	145	172	263	384	387	**509**	**607**	**644**	150	600	600	388
Fluoride (F^-)	mg/L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.18	0.33	0.39	0.42	0.39	0.41	0.43	0.45	0.45	0.46	0.49	0.49	0.46	0.55	0.87	1.31	1.14	1.42	1.42	1.42	1.57		1	
Sulphate (SO_4^{2-})	mg/L	0	0	0	0	0	0	0	0	0	0	0	76	70	131	174	189	188	193	228	265	267	306	339	346	329	451	855	1,356	1,367	1,879	2,289	2,443	730			429 / 730
Calcium (Ca)	mg/L	0	0	0	0	0	0	0	0	0	0	0	117	90	168	204	219	209	218	237	254	255	272	295	297	281	352	590	641	592	653	653	653				
Magnesium (Mg)	mg/L	0	0	0	0	0	0	0	0	0	0	0	40	30	55	66	71	66	68	72	75	74	77	81	81	76	90	139	211	217	293	362	388				
Potassium (K)	mg/L	0	0	0	0	0	0	0	0	0	0	0	12	9	17	20	22	20	21	23	24	24	25	26	26	25	30	48	72	73	97	116	124				
Sodium (Na)	mg/L	0	0	0	0	0	0	0	0	0	0	0	43	32	61	72	76	71	74	77	81	81	84	89	89	84	100	156	235	241	324	396	423				
Nutrients																																			
Ammonia	mg/L N	-	-	-	-	-	-	-	-	-	-	-	0.066	0.100	0.204	0.285	0.289	0.224	0.230	0.242	0.252	0.252	0.262	0.274	0.284	0.200	0.208	0.221	0.251	0.260	0.296	0.335	0.351	0.66			
Nitrate	mg/L N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.339	0.675	1.395	1.980	2.034	1.499	1.546	1.617	1.716	1.716	1.796	1.886	1.975	1.188	1.217	1.282	1.353	1.373	1.459	1.569	1.617	3.000			
Nitrite	mg/L	-	-	-	-	-	-	-	-	-	-	-	0.0108	0.0178	0.0364	0.0509	0.0518	0.0398	0.0409	0.0430	0.0449	0.0449	0.0467	0.0488	0.0508	0.0352	0.0365	0.0387	0.0433	0.0449	0.0507	0.0572	0.0598	0.02		0.06	
Phosphorus	mg/L	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.002	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004				
Dissolved Metals																																			
Aluminum (Al)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0036	0.0026	0.0050	0.0053	0.0053	0.0050	0.0050	0.0051	0.0053	0.0052	0.0053	0.0053	0.0053	0.0051	0.0051	0.0052	0.0053	0.0053	0.0053	0.0053	0.0053	0.050	0.100	5.0	
Antimony (Sb)	mg/L	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00052	0.00076	0.00159	0.00201	0.00203	0.00184	0.00189	0.00199	0.00206	0.00205	0.00211	0.00218	0.00221	0.00204	0.00242	0.00388	0.00642	0.00688	0.00964	0.01269	0.01375	0.00900			
Arsenic (As)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0022	0.0024	0.0045	0.0065	0.0071	0.0065	0.0066	0.0069	0.0071	0.0071	0.0073	0.0076	0.0076	0.0071	0.0084	0.0150	0.0211	0.0185	0.0220	0.0220	0.0220		0.0050	0.0250	0.0320
Barium (Ba)	mg/L	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.054	0.030	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	1.0			
Boron (B)	mg/L	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.013	0.025	0.035	0.038	0.035	0.037	0.040	0.042	0.042	0.044	0.047	0.048	0.045	0.057	0.117	0.232	0.261	0.388	0.546	0.602		1.2	5.0	
Cadmium (Cd)	mg/L	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000009	0.000008	0.000016	0.000021	0.000023	0.000022	0.000023	0.000025	0.000027	0.000027	0.000030	0.000032	0.000033	0.000031	0.000034	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000018	0.000038		
Chromium (Cr)	mg/L	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00019	0.00018	0.00033	0.00048	0.00053	0.00049	0.00050	0.00053	0.00054	0.00054	0.00055	0.00058	0.00058	0.00055	0.00066	0.00130	0.00265	0.00304	0.00455	0.00650	0.00720	0.001/0.0089			
Cobalt (Co)	mg/L	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00025	0.00022	0.00044	0.00053	0.00055	0.00050	0.00052	0.00055	0.00057	0.00057	0.00058	0.00061	0.00062	0.00058	0.00070	0.00132	0.00255	0.00286	0.00422	0.00592	0.00652	0.004	0.110		
Copper (Cu)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0029	0.0022	0.0041	0.0050	0.0054	0.0051	0.0053	0.0055	0.0058	0.0058	0.0060	0.0065	0.0065	0.0061	0.0075	0.0136	0.0245	0.0252	**0.0384**	**0.0419**	**0.0419**	0.002	0.002	0.3000	0.0256
Iron (Fe)	mg/L	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.058	0.042	0.081	0.089	0.089	0.083	0.083	0.086	0.088	0.087	0.088	0.089	0.089	0.084	0.085	0.087	0.088	0.088	0.089	0.089	0.089		0.350		
Lead (Pb)	mg/L	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000041	0.000035	0.000071	0.000074	0.000074	0.000072	0.000072	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000072	0.000073	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	n/a	0.003	0.10	
Lithium (Li)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0049	0.0039	0.0073	0.0090	0.0098	0.0091	0.0093	0.0098	0.0102	0.0101	0.0104	0.0109	0.0110	0.0103	0.0122	0.0202	0.0344	0.0369	0.0521	0.0692	0.0751				
Manganese (Mn)	mg/L	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.035	0.066	0.079	0.098	0.078	0.081	0.086	0.089	0.089	0.092	0.098	0.099	0.093	0.112	0.183	0.293	0.307	0.423	0.540	0.581	0.61	0.54		
Molybdenum (Mo)	mg/L	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.017	0.030	0.057	0.064	0.061	0.064	0.071	0.079	0.079	0.087	0.096	0.098	0.092	0.125	**0.267**	**0.514**	**0.564**	**0.833**	**1.148**	**1.258**	1.00	2.00	0.05	0.180
Nickel (Ni)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0024	0.0026	0.0052	0.0067	0.0072	0.0065	0.0065	0.0068	0.0071	0.0069	0.0071	0.0072	0.0072	0.0066	0.0074	0.0105	0.0159	0.0165	0.0226	0.0263	0.0263		0.0250		
Selenium (Se)	mg/L	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00114	0.00152	0.00302	0.00406	0.00435	0.00377	0.00380	0.00394	0.00410	0.00406	0.00416	0.00424	0.00435	0.00379	0.00426	**0.00702**	**0.01351**	**0.01552**	**0.02287**	**0.03258**	**0.03605**	0.0020		0.0020	0.0025 / 0.005
Silicon (Si)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	7.8	14.4	17.2	18.4	17.1	17.5	18.3	19.0	18.9	19.5	20.4	20.4	19.2	21.9	22.4	23.0	22.7	23.1	23.1	23.1				
Silver (Ag)	mg/L	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000006	0.000005	0.000009	0.000011	0.000012	0.000012	0.000013	0.000018	0.000023	0.000023	0.000029	0.000033	0.000034	0.000033	0.000044	0.000044	0.000046	0.000045	0.000046	0.000046	0.000046	0.000050			
Strontium (Sr)	mg/L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.40	0.75	0.93	1.00	0.96	1.00	1.08	1.17	1.17	1.26	1.37	1.38	1.31	1.66	2.99	4.92	5.13	7.17	9.18	9.87				
Thallium (Tl)	mg/L	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000008	0.000009	0.000016	0.000023	0.000025	0.000022	0.000023	0.000024	0.000025	0.000025	0.000025	0.000026	0.000026	0.000025	0.000029	0.000055	0.000110	0.000112	0.000177	0.000186	0.000186	0.000800			
Tin (Sn)		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00006	0.00005	0.00009	0.00011	0.00012	0.00011	0.00012	0.00013	0.00014	0.00015	0.00017	0.00019	0.00019	0.00018	0.00030	0.00081	0.00084	0.00076	0.00084	0.00084	0.00084				
Uranium (U)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0019	0.0014	0.0027	0.0032	0.0034	0.0033	0.0034	0.0037	0.0039	0.0039	0.0042	0.0045	0.0046	0.0043	0.0054	0.0092	0.0143	0.0146	0.0199	0.0244	0.0261	0.00850			
Vanadium (V)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0042	0.0028	0.0053	0.0053	0.0053	0.0050	0.0051	0.0052	0.0053	0.0052	0.0053	0.0053	0.0053	0.0051	0.0052	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053				
Zinc (Zn)	mg/L	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0022	0.0019	0.0036	0.0045	0.0049	0.0046	0.0049	0.0052	0.0056	0.0056	0.0060	0.0065	0.0065	0.0062	0.0077	0.0135	0.0217	0.0225	0.0312	0.0392	0.0422	0.008	0.033		

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1. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - 30 DAY AVERAGE (BCWQG-30 D) - FRESHWATER AQUATIC LIFE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
3. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - WILDLIFE (WILDLIFE).
4. WATER QUALITY BENCHMARKS (WQB) AND SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
5. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS AN AQUATIC LIFE GUIDELINE.
6. GREEN HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG-WILDLIFE.
7. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS A WATER QUALITY BENCHMARK (WQB) OR SCIENCE BASED ENVIRONMENTAL BENCHARK (WQB).
8. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
9. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELCIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
10. SULPHATE SBEB IS 429 mg/L FOR WATER HARDNESS UP TO 800 mg/L CaCO3 AND IS INTENDED FOR LAKES AND CREEKS WHERE EARLY LIFESTAGES OF TROUT ARE PRESENT; SBEB OF 730 mg/L FOR HARDNESS UP TO 1377 mg/L CaCO3 FOR CREEKS WHERE FISH ARE ABSENT OR PERIODS OF THE YEAR WHEN EARLY LIFESTAGES OF TROUT ARE ABSENT.
11. SULPHATE GUIDELINE EXCEEDANCE HIGHLIGHTING IN THIS TABLE DOES NOT ACCOUNT FOR THE TIMING OF THE OCCURANCE OF THE PREDICTED CONCENTRATIONS; THEREFORE IT MAY NOT BE A TRUE EXCEEDANCE.
12. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
13. SELENIUM WQB IS 0.0025 mg/L FOR LENTIC SYSTEMS AND 0.005 mg/L FOR LOTIC SYSTEMS.

0	06JUN'15	ISSUED WITH REPORT	MZP	JEM
REV	DATE	DESCRIPTION	PREP'D	RVWD

TABLE I6

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
SOUTH MINE ROCK STORAGE FACILITY WATER MANAGEMENT POND - BASE CASE MODEL SUMMARY STATISTICS

Print Jul/21/15 8:50:05

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG-30 D	BCWQG-MAX	BCWQG-WILDLIFE	WQB/SBEB
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX				
Conventional Parameters and Major Ions																																			
Hardness - Dissolved	mg/L $CaCO_3$	668	673	776	856	855	939	1,046	1,046	905	1,484	2,018	2,311	2,228	2,509	2,636	2,665	613	644	718	799	894	906	1,180	2,537	581	596	636	688	674	709	728	733				
Bromide (Br^-)	mg/L	0.34	0.34	0.40	0.43	0.44	0.48	0.54	0.54	0.50	0.85	1.51	1.88	1.73	2.00	2.00	2.00	0.29	0.31	0.36	0.42	0.52	0.55	0.84	2.00	0.25	0.27	0.29	0.30	0.30	0.32	0.33	0.34				
Chloride (Cl^-)	mg/L	66	66	75	82	81	86	95	95	19	28	59	76	74	89	110	113	28	50	65	74	71	80	84	84	71	73	76	82	80	84	86	86	150	600	600	388
Fluoride (F^-)	mg/L	0.28	0.30	0.35	0.38	0.38	0.41	0.45	0.45	0.37	0.59	0.92	1.13	1.09	1.35	1.42	1.42	0.28	0.30	0.34	0.37	0.41	0.41	0.52	1.09	0.27	0.27	0.29	0.32	0.31	0.33	0.33	0.34	1.57		1	
Sulphate (SO_4^{2-})	mg/L	376	395	449	502	514	581	651	651	624	**1,158**	**2,888**	**3,657**	**3,650**	**4,589**	**5,477**	**5,606**	265	291	359	459	660	723	**1,231**	**3,241**	205	219	243	260	261	281	302	308	730			429 / 730
Calcium (Ca)	mg/L	191	193	220	245	246	271	302	302	266	447	567	653	605	653	653	653	161	169	188	209	233	236	305	653	153	158	168	181	179	188	194	195				
Magnesium (Mg)	mg/L	45	47	55	59	59	64	71	71	56	89	138	178	174	216	245	252	51	54	60	68	76	77	102	221	48	49	52	57	56	58	59	60				
Potassium (K)	mg/L	17	17	21	22	22	25	27	27	24	39	72	89	90	111	133	137	15	16	18	21	24	24	33	75	14	14	16	17	16	17	18	18				
Sodium (Na)	mg/L	68	68	78	87	87	96	107	107	78	115	246	368	356	471	567	581	44	45	50	53	56	57	63	115	43	43	46	50	48	50	51	52				
Nutrients																																			
Ammonia	mg/L N	0.026	0.027	0.031	0.034	0.033	0.036	0.038	0.038	0.026	0.037	2.127	6.680	6.901	11.315	14.837	15.447	0.192	0.214	0.302	0.443	0.718	0.825	1.499	4.115	0.030	0.030	0.033	0.035	0.040	0.036	0.082	0.219	0.66			
Nitrate	mg/L N	0.081	0.081	0.094	0.100	0.100	0.108	0.114	0.115	0.078	0.118	12.962	20.700	16.286	20.700	20.700	20.700	1.041	1.164	1.568	2.182	3.318	3.758	6.590	17.702	0.092	0.093	0.101	0.107	0.143	0.109	0.456	1.193	3.000			
Nitrite	mg/L	0.0043	0.0043	0.0049	0.0054	0.0053	0.0056	0.0061	0.0061	0.0042	0.0060	0.3864	1.2130	1.2508	2.0531	2.6979	2.7700	0.0344	0.0383	0.0544	0.0800	0.1299	0.1494	0.2720	0.7480	0.0049	0.0051	0.0054	0.0057	0.0066	0.0059	0.0143	0.0392	0.2	0.60		
Phosphorus	mg/L	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004				
Dissolved Metals																																			
Aluminum (Al)	mg/L	0.0036	0.0036	0.0040	0.0046	0.0045	0.0050	0.0053	0.0053	0.0037	0.0040	0.0046	0.0053	0.0050	0.0053	0.0053	0.0053	0.0035	0.0036	0.0038	0.0042	0.0042	0.0044	0.0044	0.0053	0.0037	0.0038	0.0040	0.0044	0.0042	0.0044	0.0045	0.0045	0.050	0.100	5.0	
Antimony (Sb)	mg/L	0.01520	0.01624	0.01880	0.02080	0.01966	0.02080	0.02080	0.02080	0.01906	0.02080	0.02080	0.02080	0.02074	0.02080	0.02080	0.02080	0.00248	0.00266	0.00320	0.00380	0.00496	0.00521	0.00826	0.02080	0.00215	0.00234	0.00265	0.00291	0.00293	0.00320	0.00350	0.00359	0.00900			
Arsenic (As)	mg/L	0.0166	0.0178	0.0208	0.0220	0.0210	0.0220	0.0220	0.0220	0.0220	0.0220	0.0220	0.0220	0.0220	0.0220	0.0220	0.0220	0.0095	0.0097	0.0106	0.0114	0.0116	0.0119	0.0128	0.0220	0.0094	0.0104	0.0117	0.0128	0.0128	0.0140	0.0151	0.0155		0.0050	0.0250	0.0320
Barium (Ba)	mg/L	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.047	0.048	0.054	0.054	0.053	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	1.0			
Boron (B)	mg/L	0.089	0.094	0.109	0.122	0.125	0.141	0.159	0.159	0.152	0.286	0.732	0.930	0.925	1.152	1.374	1.405	0.067	0.074	0.094	0.122	0.179	0.196	0.338	0.904	0.050	0.055	0.062	0.067	0.067	0.073	0.079	0.080		1.2	5.0	
Cadmium (Cd)	mg/L	0.000032	0.000033	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000035	0.000022	0.000022	0.000024	0.000026	0.000026	0.000027	0.000027	0.000035	0.000023	0.000025	0.000028	0.000030	0.000030	0.000033	0.000035	0.000035	0.000457	0.002800		
Chromium (Cr)	mg/L	0.00110	0.00115	0.00132	0.00148	0.00152	0.00171	0.00192	0.00192	0.00184	0.00343	0.00959	0.01196	0.01158	0.01460	0.01636	0.01674	0.00122	0.00134	0.00169	0.00218	0.00318	0.00350	0.00601	0.01601	0.00092	0.00100	0.00112	0.00121	0.00121	0.00132	0.00142	0.00146	0.001/0.0089			
Cobalt (Co)	mg/L	0.00116	0.00120	0.00139	0.00155	0.00158	0.00178	0.00201	0.00201	0.00192	0.00356	0.00774	0.01012	0.01004	0.01350	0.01350	0.01350	0.00049	0.00054	0.00066	0.00083	0.00117	0.00127	0.00213	0.00554	0.00038	0.00041	0.00046	0.00048	0.00048	0.00052	0.00054	0.00057	0.004	0.110		
Copper (Cu)	mg/L	0.0047	0.0047	0.0053	0.0061	0.0061	0.0068	0.0075	0.0075	0.0065	0.0110	0.0218	**0.0277**	**0.0275**	**0.0336**	**0.0404**	**0.0415**	0.0044	0.0047	0.0054	0.0062	0.0075	0.0077	0.0113	**0.0271**	0.0039	0.0041	0.0044	0.0047	0.0046	0.0049	0.0050	0.0051	0.010	0.026	0.3000	0.0256
Iron (Fe)	mg/L	0.046	0.048	0.056	0.061	0.061	0.066	0.071	0.071	0.010	0.014	0.022	0.031	0.032	0.039	0.055	0.071	0.015	0.039	0.048	0.057	0.055	0.062	0.066	0.068	0.054	0.055	0.060	0.065	0.063	0.066	0.068	0.070		0.350		
Lead (Pb)	mg/L	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.000069	0.000071	0.000073	0.000074	0.000073	0.000074	0.000074	0.000074	0.000072	0.000073	0.000074	0.000074	0.000074	0.000074	0.000074	0.000074	0.016	0.330	0.10	
Lithium (Li)	mg/L	0.0109	0.0110	0.0129	0.0144	0.0145	0.0161	0.0181	0.0181	0.0164	0.0287	0.0635	0.0796	0.0801	0.0991	0.1187	0.1216	0.0093	0.0101	0.0120	0.0143	0.0186	0.0195	0.0309	0.0773	0.0079	0.0084	0.0092	0.0098	0.0097	0.0103	0.0108	0.0110				
Manganese (Mn)	mg/L	0.055	0.055	0.065	0.075	0.073	0.078	0.088	0.088	0.071	0.114	0.180	0.231	0.238	0.306	0.368	0.376	0.052	0.054	0.061	0.067	0.071	0.072	0.089	0.169	0.050	0.051	0.055	0.061	0.058	0.061	0.064	0.065	1.90	3.80		
Molybdenum (Mo)	mg/L	0.130	0.138	0.160	0.178	**0.183**	**0.208**	**0.233**	**0.233**	**0.224**	**0.433**	**1.370**	**1.779**	**1.719**	**2.227**	**2.497**	**2.535**	0.167	**0.184**	**0.235**	**0.310**	**0.465**	**0.516**	**0.903**	**2.430**	0.120	0.131	0.148	0.162	0.163	0.178	**0.194**	**0.199**	1.00	2.00	0.05	0.180
Nickel (Ni)	mg/L	0.0179	0.0189	0.0218	0.0244	0.0236	0.0260	0.0263	0.0263	0.0260	0.0263	0.0263	0.0263	0.0263	0.0263	0.0263	0.0263	0.0068	0.0071	0.0081	0.0088	0.0097	0.0098	0.0123	0.0263	0.0066	0.0072	0.0080	0.0087	0.0088	0.0095	0.0103	0.0105		0.1500		
Selenium (Se)	mg/L	**0.00536**	**0.00569**	**0.00654**	**0.00728**	**0.00747**	**0.00849**	**0.00951**	**0.00951**	**0.00911**	**0.01740**	**0.04356**	**0.05633**	**0.05584**	**0.07069**	**0.08435**	**0.08636**	0.00336	0.00370	0.00467	**0.00612**	**0.00907**	**0.01003**	**0.01739**	**0.04655**	0.00247	0.00267	0.00299	0.00323	0.00325	0.00352	0.00382	0.00391	0.0020		0.0020	0.0025 / 0.005
Silicon (Si)		9.8	10.4	12.1	13.3	13.0	14.0	15.5	15.5	11.0	12.5	15.9	18.7	18.6	21.9	23.1	23.1	10.3	10.7	11.4	12.6	12.4	12.9	13.1	17.1	10.6	10.7	11.5	12.7	12.2	12.9	13.0	13.1				
Silver (Ag)	mg/L	0.000010	0.000010	0.000012	0.000013	0.000013	0.000015	0.000017	0.000017	0.000014	0.000024	0.000036	0.000046	0.000041	0.000046	0.000046	0.000046	0.000009	0.000010	0.000011	0.000012	0.000014	0.000015	0.000020	0.000046	0.000008	0.000009	0.000009	0.000010	0.000010	0.000011	0.000011	0.000011	0.001500			
Strontium (Sr)	mg/L	1.14	1.16	1.33	1.49	1.50	1.67	1.87	1.87	1.71	3.01	6.75	8.46	8.51	10.54	12.61	12.92	0.97	1.05	1.25	1.49	1.95	2.06	3.28	8.22	0.83	0.87	0.95	1.01	1.00	1.06	1.12	1.13				
Thallium (Tl)	mg/L	0.000054	0.000058	0.000066	0.000074	0.000076	0.000086	0.000096	0.000096	0.000092	0.000173	0.000186	0.000186	0.000183	0.000186	0.000186	0.000186	0.000033	0.000036	0.000040	0.000046	0.000055	0.000056	0.000080	0.000186	0.000031	0.000033	0.000038	0.000041	0.000041	0.000044	0.000048	0.000049	0.000800			
Tin (Sn)		0.00010	0.00010	0.00012	0.00013	0.00013	0.00015	0.00016	0.00016	0.00014	0.00024	0.00047	0.00058	0.00058	0.00071	0.00084	0.00084	0.00009	0.00010	0.00011	0.00013	0.00016	0.00016	0.00024	0.00056	0.00008	0.00009	0.00009	0.00010	0.00010	0.00011	0.00011	0.00011				
Uranium (U)	mg/L	0.0035	0.0035	0.0041	0.0044	0.0045	0.0050	0.0055	0.0055	0.0050	0.0086	0.0179	0.0239	0.0244	0.0321	0.0382	0.0389	0.0026	0.0028	0.0032	0.0037	0.0045	0.0047	0.0070	0.0165	0.0024	0.0024	0.0026	0.0028	0.0027	0.0029	0.0029	0.0030	0.00850			
Vanadium (V)	mg/L	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053				
Zinc (Zn)	mg/L	0.0101	0.0106	0.0121	0.0136	0.0139	0.0157	0.0176	0.0176	0.0168	0.0309	0.0770	0.0958	0.0957	0.1203	0.1362	0.1362	0.0073	0.0080	0.0098	0.0125	0.0178	0.0194	0.0328	0.0862	0.0057	0.0061	0.0068	0.0072	0.0072	0.0078	0.0083	0.0085	0.240	0.265		

\\ivan11\prj_file\1\01\00246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Ajax_LOM_WQM_Base Case WMPs Summary Stats.xlsx]TI7 EMRSF WMP SUMM STATS

NOTES:
1. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - 30 DAY AVERAGE (BCWQG-30 D) - FRESHWATER AQUATIC LIFE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
3. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - WILDLIFE (WILDLIFE).
4. WATER QUALITY BENCHMARKS (WQB) AND SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
5. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS AN AQUATIC LIFE GUIDELINE.
6. GREEN HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG-WILDLIFE.
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9. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELCIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
10. SULPHATE SBEB IS 429 mg/L FOR WATER HARDNESS UP TO 800 mg/L CaCO3 AND IS INTENDED FOR LAKES AND CREEKS WHERE EARLY LIFESTAGES OF TROUT ARE PRESENT; SBEB OF 730 mg/L FOR HARDNESS UP TO 1377 mg/L CaCO3 FOR CREEKS WHERE FISH ARE ABSENT OR PERIODS OF THE YEAR WHEN EARLY LIFESTAGES OF TROUT ARE ABSENT.
11. SULPHATE GUIDELINE EXCEEDANCE HIGHLIGHTING IN THIS TABLE DOES NOT ACCOUNT FOR THE TIMING OF THE OCCURANCE OF THE PREDICTED CONCENTRATIONS; THEREFORE IT MAY NOT BE A TRUE EXCEEDANCE.
12. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
13. SELENIUM WQB IS 0.0025 mg/L FOR LENTIC SYSTEMS AND 0.005 mg/L FOR LOTIC SYSTEMS.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	06JUN15	ISSUED WITH REPORT	MZP	JEM

TABLE I7

KGHM AJAX INC.
AJAX PROJECT

WATER QUALITY MODEL REPORT
EAST MINE ROCK STORAGE FACILITY WATER MANAGEMENT POND - BASE CASE MODEL SUMMARY STATISTICS

Print Jul/21/15 8:50:05

		Construction (Year -2 through 1)								Operations (Year 1 through 23)								Decommissioning and Closure (Year 24 through 29)								Post-Closure (Year 29+)								BCWQG-30 D	BCWQG-MAX	BCWQG-WILDLIFE	WQB/SBEB
		MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX	MIN	5TH P	25TH P	MEDIAN	MEAN	75TH P	95TH P	MAX				
Conventional Parameters and Major Ions																																			
Hardness - Dissolved	mg/L $CaCO_3$	353	361	375	385	380	386	388	399	386	439	557	678	656	751	847	863	449	454	476	491	503	496	549	863	449	461	478	496	491	505	511	513				
Bromide (Br^-)	mg/L	0.10	0.10	0.11	0.12	0.12	0.12	0.14	0.16	0.12	0.18	0.27	0.37	0.35	0.43	0.47	0.49	0.18	0.18	0.19	0.20	0.21	0.21	0.27	0.48	0.18	0.18	0.20	0.20	0.20	0.21	0.23	0.23				
Chloride (Cl^-)	mg/L	60	60	62	62	62	62	67	68	35	36	45	49	49	54	60	67	36	56	60	62	60	62	63	64	58	58	61	61	61	62	63	64	150	600	600	388
Fluoride (F^-)	mg/L	0.18	0.19	0.21	0.22	0.21	0.22	0.22	0.25	0.18	0.22	0.26	0.29	0.28	0.31	0.33	0.34	0.20	0.20	0.23	0.24	0.24	0.24	0.27	0.33	0.20	0.21	0.23	0.24	0.24	0.24	0.26	0.26	1.57		1	
Sulphate (SO_4^{2-})	mg/L	43	43	44	45	46	45	51	54	44	137	323	484	438	573	618	634	143	146	153	156	183	170	254	620	143	152	160	167	167	174	180	182	730			429 / 730
Calcium (Ca)	mg/L	89	91	95	96	95	97	97	97	97	115	158	199	191	223	258	263	121	123	129	132	138	134	155	263	122	126	131	134	134	137	139	140				
Magnesium (Mg)	mg/L	32	32	34	35	35	35	36	38	33	36	40	44	43	47	49	51	35	35	37	39	39	39	42	50	35	36	37	39	38	39	41	41				
Potassium (K)	mg/L	9	9	10	10	10	10	10	11	10	11	14	17	17	20	24	24	12	12	13	13	13	13	15	24	12	12	13	13	13	14	14	14				
Sodium (Na)	mg/L	33	34	35	36	35	36	36	36	26	28	47	62	58	74	81	83	28	32	34	35	35	36	36	36	33	33	34	36	35	36	36	36				
Nutrients																																			
Ammonia	mg/L N	0.024	0.025	0.026	0.026	0.027	0.027	0.030	0.037	0.022	0.023	0.117	0.396	0.342	0.494	0.539	0.556	0.034	0.036	0.038	0.040	0.044	0.046	0.059	0.105	0.023	0.024	0.025	0.025	0.026	0.026	0.032	0.043	0.66			
Nitrate	mg/L N	0.075	0.075	0.077	0.078	0.080	0.081	0.091	0.107	0.065	0.066	0.809	3.041	2.609	3.812	4.171	4.302	0.157	0.167	0.178	0.191	0.226	0.225	0.332	0.756	0.072	0.073	0.075	0.076	0.081	0.078	0.114	0.180	3.000			
Nitrite	mg/L	0.0039	0.0039	0.0040	0.0041	0.0042	0.0042	0.0048	0.0049	0.0033	0.0036	0.0206	0.0719	0.0616	0.0893	0.0974	0.1005	0.0059	0.0061	0.0065	0.0068	0.0075	0.0076	0.0099	0.0187	0.0039	0.0039	0.0041	0.0041	0.0042	0.0043	0.0051	0.0063	0.2	0.60		
Phosphorus	mg/L	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004				
Dissolved Metals																																			
Aluminum (Al)	mg/L	0.0027	0.0030	0.0032	0.0032	0.0032	0.0033	0.0034	0.0034	0.0026	0.0027	0.0031	0.0032	0.0031	0.0032	0.0033	0.0034	0.0024	0.0030	0.0032	0.0033	0.0033	0.0034	0.0034	0.0035	0.0030	0.0030	0.0032	0.0034	0.0033	0.0034	0.0034	0.0035	0.050	0.100	5.0	
Antimony (Sb)	mg/L	0.00005	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00403	0.00782	0.01741	0.01437	0.02080	0.02080	0.02080	0.00082	0.00083	0.00089	0.00091	0.00113	0.00100	0.00167	0.00466	0.00082	0.00088	0.00095	0.00100	0.00100	0.00106	0.00111	0.00112	0.00900			
Arsenic (As)	mg/L	0.0011	0.0012	0.0014	0.0014	0.0014	0.0015	0.0015	0.0015	0.0015	0.0059	0.0153	0.0220	0.0182	0.0220	0.0220	0.0220	0.0065	0.0067	0.0072	0.0074	0.0081	0.0077	0.0098	0.0220	0.0066	0.0071	0.0076	0.0080	0.0080	0.0085	0.0089	0.0090		0.0050	0.0250	0.0320
Barium (Ba)	mg/L	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	1.0			
Boron (B)	mg/L	0.006	0.007	0.010	0.011	0.010	0.011	0.011	0.011	0.011	0.033	0.079	0.124	0.110	0.146	0.157	0.162	0.031	0.032	0.036	0.037	0.043	0.040	0.059	0.157	0.031	0.034	0.037	0.040	0.039	0.042	0.044	0.044		1.2	5.0	
Cadmium (Cd)	mg/L	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000010	0.000018	0.000023	0.000023	0.000029	0.000033	0.000034	0.000008	0.000008	0.000009	0.000009	0.000010	0.000009	0.000012	0.000024	0.000008	0.000009	0.000009	0.000009	0.000009	0.000010	0.000010	0.000010	0.000457	0.002157		
Chromium (Cr)	mg/L	0.00013	0.00013	0.00013	0.00014	0.00014	0.00014	0.00014	0.00014	0.00014	0.00039	0.00093	0.00142	0.00125	0.00161	0.00177	0.00185	0.00039	0.00039	0.00041	0.00043	0.00050	0.00046	0.00067	0.00168	0.00039	0.00041	0.00044	0.00045	0.00045	0.00048	0.00050	0.00050	0.001/0.0089			
Cobalt (Co)	mg/L	0.00013	0.00013	0.00014	0.00015	0.00015	0.00016	0.00017	0.00021	0.00016	0.00026	0.00045	0.00054	0.00055	0.00070	0.00080	0.00082	0.00020	0.00020	0.00022	0.00023	0.00024	0.00024	0.00029	0.00052	0.00020	0.00020	0.00022	0.00023	0.00023	0.00024	0.00026	0.00027	0.004	0.110		
Copper (Cu)	mg/L	0.0022	0.0023	0.0025	0.0025	0.0025	0.0025	0.0026	0.0026	0.0022	0.0030	0.0040	0.0050	0.0048	0.0056	0.0061	0.0063	0.0030	0.0030	0.0032	0.0033	0.0034	0.0033	0.0036	0.0062	0.0030	0.0031	0.0032	0.0033	0.0033	0.0034	0.0035	0.0035	0.010	0.026	0.3000	0.0256
Iron (Fe)	mg/L	0.044	0.046	0.050	0.052	0.052	0.052	0.055	0.070	0.026	0.030	0.034	0.038	0.039	0.044	0.054	0.074	0.033	0.043	0.046	0.049	0.049	0.050	0.062	0.066	0.043	0.043	0.047	0.049	0.049	0.050	0.061	0.062		0.350		
Lead (Pb)	mg/L	0.000025	0.000026	0.000027	0.000028	0.000028	0.000028	0.000028	0.000028	0.000028	0.000073	0.000074	0.000074	0.000073	0.000074	0.000074	0.000074	0.000048	0.000048	0.000051	0.000053	0.000053	0.000053	0.000055	0.000074	0.000048	0.000050	0.000053	0.000055	0.000055	0.000058	0.000059	0.000060	0.016	0.330	0.10	
Lithium (Li)	mg/L	0.0037	0.0038	0.0040	0.0043	0.0042	0.0043	0.0044	0.0045	0.0044	0.0060	0.0094	0.0128	0.0120	0.0149	0.0163	0.0168	0.0059	0.0060	0.0064	0.0067	0.0071	0.0068	0.0083	0.0168	0.0059	0.0061	0.0065	0.0068	0.0068	0.0071	0.0072	0.0073				
Manganese (Mn)	mg/L	0.032	0.032	0.034	0.042	0.040	0.044	0.047	0.061	0.030	0.032	0.035	0.042	0.042	0.046	0.062	0.065	0.034	0.034	0.036	0.042	0.041	0.043	0.054	0.067	0.034	0.034	0.036	0.042	0.041	0.042	0.054	0.054	1.90	3.80		
Molybdenum (Mo)	mg/L	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.014	0.040	0.062	0.066	0.077	0.142	0.148	0.026	0.027	0.028	0.029	0.036	0.032	0.053	0.147	0.026	0.028	0.030	0.032	0.032	0.034	0.036	0.036	1.00	2.00	0.05	0.180
Nickel (Ni)	mg/L	0.0010	0.0011	0.0011	0.0013	0.0012	0.0013	0.0013	0.0014	0.0013	0.0030	0.0061	0.0091	0.0082	0.0105	0.0113	0.0118	0.0027	0.0028	0.0030	0.0031	0.0035	0.0033	0.0046	0.0112	0.0027	0.0029	0.0031	0.0033	0.0033	0.0034	0.0035	0.0036		0.1500		
Selenium (Se)	mg/L	0.00029	0.00029	0.00030	0.00030	0.00030	0.00030	0.00032	0.00033	0.00030	0.00386	**0.00653**	**0.01404**	**0.01343**	**0.01991**	**0.02309**	**0.02415**	0.00119	0.00120	0.00127	0.00129	0.00154	0.00140	0.00215	**0.00553**	0.00120	0.00125	0.00133	0.00140	0.00139	0.00146	0.00152	0.00154	0.0020		0.0020	0.0025 / 0.005
Silicon (Si)		8.5	8.8	9.6	10.1	9.8	10.2	10.3	10.3	7.7	7.9	8.7	9.3	9.1	9.6	10.0	10.3	8.3	8.6	9.2	9.8	9.6	10.1	10.1	10.1	8.6	8.6	9.3	9.9	9.7	10.1	10.1	10.1				
Silver (Ag)	mg/L	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000007	0.000009	0.000011	0.000011	0.000012	0.000013	0.000014	0.000007	0.000007	0.000007	0.000007	0.000007	0.000007	0.000008	0.000014	0.000007	0.000007	0.000007	0.000007	0.000007	0.000008	0.000008	0.000008	0.001500			
Strontium (Sr)	mg/L	0.37	0.38	0.40	0.41	0.40	0.41	0.41	0.43	0.41	0.60	0.97	1.33	1.24	1.55	1.69	1.74	0.61	0.62	0.65	0.67	0.72	0.69	0.87	1.74	0.61	0.63	0.67	0.69	0.69	0.71	0.73	0.73				
Thallium (Tl)	mg/L	0.000005	0.000005	0.000005	0.000006	0.000006	0.000006	0.000006	0.000006	0.000006	0.000017	0.000042	0.000064	0.000061	0.000078	0.000100	0.000104	0.000021	0.000022	0.000023	0.000024	0.000028	0.000026	0.000040	0.000104	0.000022	0.000023	0.000025	0.000026	0.000026	0.000027	0.000028	0.000028	0.000800			
Tin (Sn)		0.00005	0.00005	0.00005	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00007	0.00009	0.00011	0.00010	0.00012	0.00013	0.00014	0.00007	0.00007	0.00007	0.00007	0.00007	0.00007	0.00008	0.00014	0.00007	0.00007	0.00007	0.00007	0.00007	0.00007	0.00008	0.00008				
Uranium (U)	mg/L	0.0013	0.0013	0.0013	0.0014	0.0014	0.0014	0.0015	0.0016	0.0013	0.0016	0.0017	0.0021	0.0021	0.0025	0.0027	0.0029	0.0014	0.0014	0.0015	0.0015	0.0015	0.0016	0.0017	0.0020	0.0014	0.0014	0.0015	0.0015	0.0015	0.0015	0.0017	0.0017	0.00850			
Vanadium (V)	mg/L	0.0026	0.0026	0.0028	0.0029	0.0028	0.0029	0.0030	0.0030	0.0029	0.0053	0.0053	0.0053	0.0052	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053				
Zinc (Zn)	mg/L	0.0014	0.0015	0.0015	0.0016	0.0016	0.0016	0.0016	0.0017	0.0016	0.0038	0.0083	0.0099	0.0102	0.0134	0.0153	0.0160	0.0028	0.0028	0.0030	0.0031	0.0034	0.0033	0.0043	0.0095	0.0028	0.0030	0.0031	0.0032	0.0032	0.0034	0.0035	0.0035	0.205	0.230		

\\ivan11\prj_file\1\01100246\31\A\Data\500 - WQ Modeling\LOM WQM\WQM\Results\[Ajax_LOM_WQM_Base Case WMPs Summary Stats.xlsx]TI7 EMRSF WMP SUMM STATS

NOTES:
1. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - 30 DAY AVERAGE (BCWQG-30 D) - FRESHWATER AQUATIC LIFE.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
3. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - WILDLIFE (WILDLIFE).
4. WATER QUALITY BENCHMARKS (WQB) AND SCIENCE BASED ENVIRONMENTAL BENCHMARK (SBEB).
5. RED HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS AN AQUATIC LIFE GUIDELINE.
6. GREEN HIGHLIGHTING INDICATES THAT THE VALUE EXCEEDS THE BCWQG-WILDLIFE.
7. BOLD NUMBERS INDICATE THAT THE VALUE EXCEEDS A WATER QUALITY BENCHMARK (WQB) OR SCIENCE BASED ENVIRONMENTAL BENCHARK (WQB).
8. GUIDELINES THAT ARE HARDNESS DEPENDENT WERE CALCULATED USING BASELINE HARDNESS; BASELINE HARDNESS EXCEEDS THE UPPER HARDNESS THRESHOLD FOR ALL HARDNESS DEPENDENT GUIDELINES SO GUIDELINES ARE AT THEIR MAXIMUM VALUES.
9. THE AMMONIA GUIDELINE IS TEMPERATURE AND pH DEPENDENT; pH 8.25 AND TEMPERATURE 6.35 DEGREES CELCIUS ASSUMED, BASED ON BASELINE OBSERVATIONS IN THE WATERSHED.
10. SULPHATE SBEB IS 429 mg/L FOR WATER HARDNESS UP TO 800 mg/L CaCO3 AND IS INTENDED FOR LAKES AND CREEKS WHERE EARLY LIFESTAGES OF TROUT ARE PRESENT; SBEB OF 730 mg/L FOR HARDNESS UP TO 1377 mg/L CaCO3 FOR CREEKS WHERE FISH ARE ABSENT OR PERIODS OF THE YEAR WHEN EARLY LIFESTAGES OF TROUT ARE ABSENT.
11. SULPHATE GUIDELINE EXCEEDANCE HIGHLIGHTING IN THIS TABLE DOES NOT ACCOUNT FOR THE TIMING OF THE OCCURANCE OF THE PREDICTED CONCENTRATIONS; THEREFORE IT MAY NOT BE A TRUE EXCEEDANCE.
12. THE TRIVALENT CHROMIUM GUIDELINE HAS BEEN APPLIED TO THE MODEL RESULTS AS THIS IS THE FORM IDENTIFIED IN THE DUSTFALL FROM MINE SOURCES.
13. SELENIUM WQB IS 0.0025 mg/L FOR LENTIC SYSTEMS AND 0.005 mg/L FOR LOTIC SYSTEMS.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	06JUN'15	ISSUED WITH REPORT	MZP	JEM