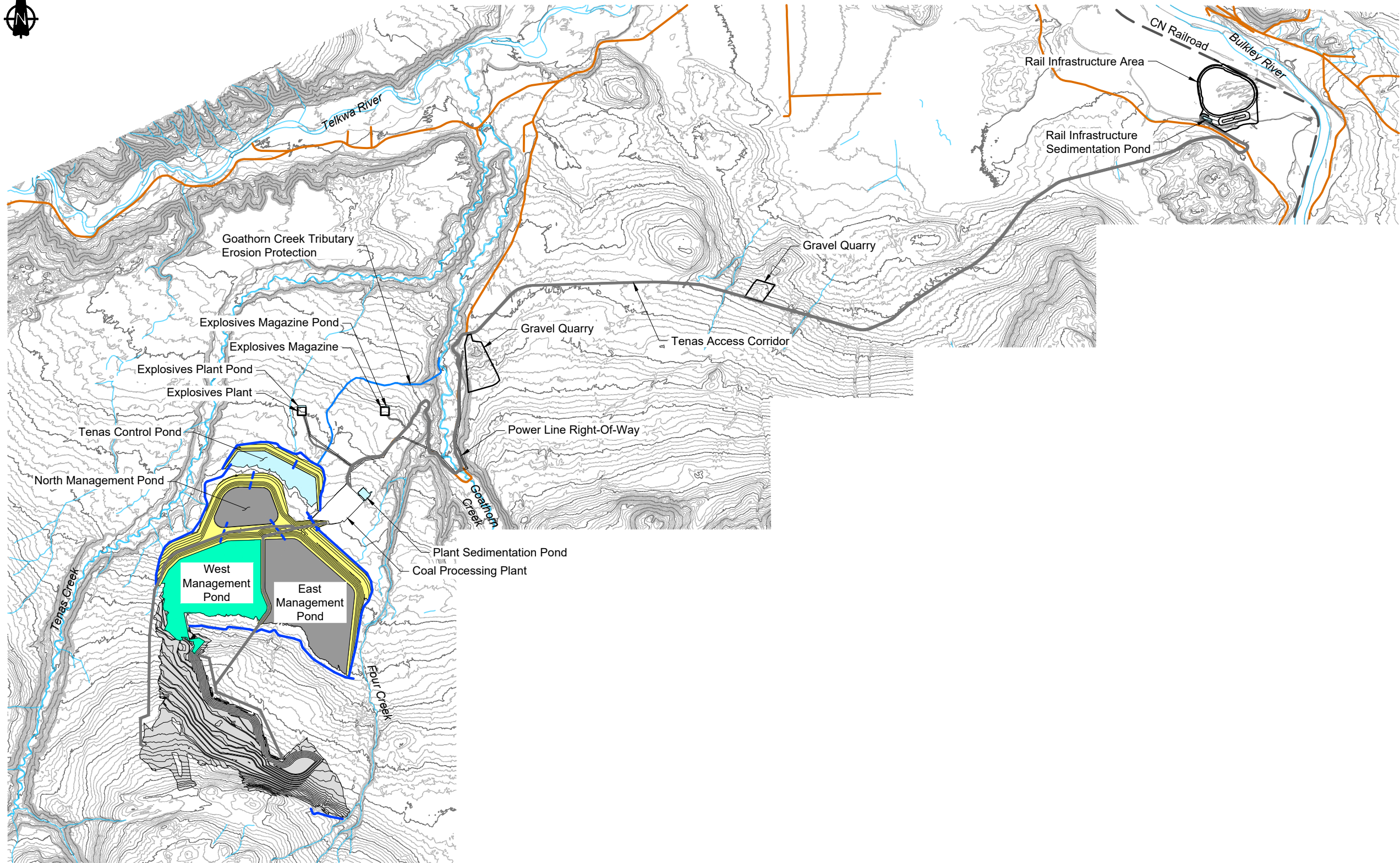




LEGEND

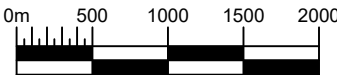
- Water Management Feature
- Spillway
- Existing Watercourse
- Existing Road
- Proposed Road
- Dams and Buttresses
- Sedimentation Pond
- Active Management Pond
- Backfill / NAG Pile
- Covered Inactive Management Pond

NOTES

- Contours shown at 5.0m intervals.
- All dimensions shown in meters unless otherwise stated.
- Pile designs by SRK Consulting Ltd.

REFERENCE

NAD83 UTM Zone 9.



SRK JOB NO.: 1CT027.007
FILE NAME: 1CT027.003 Overview.dwg



Telkwa Coal

Environmental Assessment

Mine Site Facilities

DATE:
2021/05/12

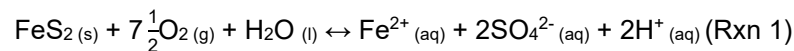
APPROVED:
MKH

FIGURE:
3-1

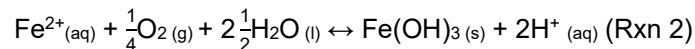
3 Conceptual Model

3.1 Saturated Mine Rock & Processed Rock

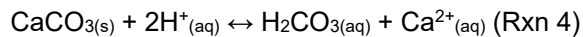
Pyrite (FeS_2) is the main sulfide mineral in PAG rock and processed rock at the project (SRK 2022). Under natural conditions, the pyrite is stable in bedrock where it is isolated from atmospheric oxygen. However, following blasting and excavation of the bedrock, pyrite in the rock mined at the project will be exposed to atmospheric oxygen prior to being placed in the management ponds and will begin to oxidize producing sulfate, ferrous iron and acidity (Rxn1).



Under oxidizing conditions, ferrous iron liberated during sulfide oxidation will subsequently oxidize to ferric iron in neutral pH producing additional acidity according to the following reaction:



Although oxidation of mine rock and processed rock for the Project will release acidity, acidic conditions are not predicted to occur immediately since these materials also contain carbonate minerals that will neutralize the acid according to the following reactions:



Depletion calculations (SRK 2022) indicate that the lag times to acid generation are on the orders of years (>5 years based on the average bulk rock properties). TCL proposes to place all PAG rock and processed rock in the management ponds under saturated conditions within an average of six months after blasting but no more than 12 months. Theoretically, this will limit sulfide oxidation (i.e., oxygen becomes a limited reactant in reaction 1) and sterilize the PAG rock and coarse and fine rock precluding acidic conditions at the Project. However, any oxidation products that are produced prior to placement of PAG rock and processed rock underwater will be flushed and dissolve in water stored in the management ponds.

At closure TCL will cap saturated PAG rock and coarse and fine processed rock in the management ponds with NAG rock. The NAG rock will be below the active water level in the management ponds and will be saturated. Any oxidation products that have accumulated on NAG rock surfaces will also be flushed when the rock is placed in the management pond.

3.2 Unsaturated NAG Rock

NAG rock that is not used in the management pond cover will be used to backfill the open pit and used in portions of the embankments and buttresses with approximately 50% remaining unsaturated in post-closure. Under these conditions, the rock will continually oxidize according to Reaction 1 (see Section 3.1) producing oxidation products that will be dissolved in meteoric water contacting the rock. However,

NAG rock contains more neutralization potential than acid generating potential and the sulfide is predicted to be consumed prior to the neutralization potential (SRK 2022) and acidic drainage from exposed NAG rock will not occur. The NAG rock will provide a continuous source of element load that is soluble under neutral conditions.

3.3 Open Pit Wall Rock Runoff

Mining of the Tenas project will result in open pit walls that are exposed to atmospheric oxygen until the Decommissioning and Reclamation Phase where the majority of the open pit walls will be covered with NAG rock and/or overburden. Sulfides that are present in the wall rock will oxidize according to reaction 1 (Section 3.1) producing sulfate, acidity, ferrous iron and release of trace chalcophile elements. Soluble oxidation products will be flushed from exposed open pit wall surfaces in meteoric water contacting the wall rock.

The open pit will progressively be backfilled during operations reducing the exposure of open pit wall to atmospheric oxygen. Oxidation of wall rock that is covered with backfill will be limited by limiting oxygen ingress.

At closure, two end pit lakes will form in the backfilled open pit. A footwall will exist above the end pit lakes composed mainly of Zone 6 sedimentary rock. Based on the site specific NPR criterion (1.2), this unit is NAG. The end pit lake will be a mixture of wall rock runoff, direct precipitation and runoff from NAG backfill.

The pit lake will drain by gravity and mix with the Management Pond before being discharged during closure.

3.4 Processed Coal Stockpile Runoff

Processed coal will be temporarily stored at the Rail Infrastructure area in two stockpiles prior to be transported from the site to Ridley terminals. While the processed coal is stored, it will oxidize but long-term oxidation is not a concern since coal will only be stored for short durations prior to being loaded into rail cars. Soluble load from the processed coal stockpiles will be collected in the Rail Infrastructure Sedimentation Pond to allow suspended solids to settle. If the quality of the sedimentation pond water meets the regulatory effluent quality criteria, water stored in the sedimentation pond will be directly discharged to the Bulkley River.

4 Source Term Derivation Methods

Source terms were developed in two ways: concentrations and load flushing rates. Unsaturated mine rock and wall rock runoff were expressed as concentrations. Concentrations were estimated by scaling humidity cell testing (HCT) results to field conditions and mixing released mass in predicted annual volumes of water and evaluating if the predicted concentrations would be limited by secondary mineral precipitation. PAG rock, coarse and fine processed rock and some NAG rock will be stored permanently underwater in the management ponds. Solute produced through oxidative weathering once these materials have been exposed will be flushed from rock surfaces when they are placed in the management ponds. The source term for these materials is therefore represented by a flushing term in milligrams per bank cubic metre (mg/bcm) of rock, also estimated using scaled HCT results. The following subsections provide the inputs and assumptions for each of the source terms.

4.1 Mine Rock Solute Release Rates

A key input into the source term calculations is the mine rock solute release rates. Solute release rates were estimated by scaling stable humidity cell test (HCT) loading rates to field conditions. As part of the baseline geochemical characterization (SRK 2022), HCTs were initiated for each rock zone. The objective of the HCT sample selection was to bracket the full extent of geochemical conditions (e.g., minimum times to acid onset) of mine rock and not all HCTs were representative of the bulk geochemical properties of the zone the sample was selected from. In the source term calculations, HCTs were assigned to each zone by first ranking them by sulfide concentrations (Table 4-1) and assigning an HCT to each zone based on the average weighted sulfide concentration for that zone (Table 4-2). HCTs were assigned with the closest, but higher than or equal sulfide concentration.

Assigning HCTs from different zones was done for two reasons:

- Several of the HCTs had high sulfur percent ranks and lower neutralization percent ranks to conservatively evaluate the onset to acid generation in PAG samples. For example, the Zone 2/3 HCT sample contained the 95th percentile sulfide concentration and the 5th percentile neutralization potential. This sample was selected to determine how quickly mine rock could become acid generating but it is not representative of the bulk properties of that zone.
- Each zone has similar sedimentary units formed in the same environment and the HCTs from one zone can reasonably be used to represent the release rates from other zones with similar sulfur content.

Table 4-1. Tenas Project Humidity Cell Test Sulfide Concentrations

Zone	HCT	Sulfide (%)
55	HC-09	0.18
1	HC-04	0.71
4	HC-07	1.43
5	HC-08	1.8
6	HC-10	2.1
1a	HC-05	2.3
2/3	HC-06	3.3

Table 4-2. Weighted Average Zone Sulfide Concentrations and Selected HCT

Zone	Sulfide (%)	Selected HCT
1	0.4	HC-12
1a	1.6	HC-11
2/3	0.9	HC-04
4 (PAG)	0.6	HC-12
4 (non-PAG)	0.3	HC-12
5	1.1	HC-04
55	0.9	HC-04
6	1.0	HC-04

Note: Weighted average zone sulfide concentrations from SRK (2022)

The average of the last 10 weeks of testing, when rates had stabilized, was used to calculate solute release rates from HCTs. For PAG samples that became acid generating during the testing period, the average of the stable rates when the pH was near neutral were included in the flushing solute release rate calculations since the conceptual model (Section 3) is that all PAG material will be inundated in the management ponds prior to the onset of acidic conditions. This only applied to the zone 2/3 HCT (HC-06), which became acidic after 13 weeks of testing. This does not influence the input release rate calculations since this HCT was not selected to represent the zone loadings (Table 4-2).

Laboratory solute release rates are not representative of release rates under ambient conditions due to several factors (e.g., temperature, grain size, water to rock ratio, etc.). Scaling factors are applied to correct for laboratory and field release rate differences. The scaling factors are dependent of storage of mine rock. Scaling factors are discussed in the following subsections.

4.2 Unsaturated Mine Rock

4.2.1 Base Case Source Term

Unsaturated NAG rock and overburden will be used as backfill in the open pit. The backfill will become partially saturated as the open pit floods at closure. Unsaturated portions of the backfill will continue to oxidize and produce soluble load that will be mobilized in meteoric water interacting with the mine rock.

Annual unsaturated mine rock concentrations were estimated as follows:

$$C_j = \frac{L_{j,annual}}{Q_{annual}} \quad (\text{Eq 1})$$

Where: C_j is the concentration of constituent j

$L_{j,annual}$ is the annual load of constituent j released from exposed mine rock

Q_{annual} is the annual average flow contacting exposed mine rock

Source term concentrations were only estimated at the end of the Operation Phase prior to flooding of the open pit (i.e., when all of the NAG rock produced during operations is unsaturated). This provides a conservative estimate of the unsaturated NAG rock drainage water quality since this timing corresponds to the maximum mining disturbance (i.e., the maximum of amount of exposed unsaturated NAG rock) and prior to rock becoming saturated reducing the total load from the backfill. In addition, all of the mine rock was assumed to be unsaturated and produce soluble load in the calculation.

The mine plan indicates approximately 29.7 million bank cubic metres cubed (Mbcm) of NAG rock will be used as backfill. At an assumed density of 2.55 grams per bank cubic centimetre (g/bcc) this results in approximately 74.2 million tonnes (Mt) of NAG rock that will be used to backfill the open pit. Unsaturated mine rock will be non-PAG and the mine plan (TCL 2020, pers. comm) indicates approximately 77% will originate from zone 1 and the remaining 23% from zone 4. The HCTs assigned to these zones (Table 4-2) were prorated in these proportions to estimate the unit solute release rates for the backfill. This rate was multiplied by the total mass to estimate the annual load produced.

As noted in Section 4.1, scaling factors were applied to the HCT solute release rates to account for laboratory and field differences. Table 4-3 provides a summary and a rationale of the scaling factors that were used in the unsaturated mine rock source term calculations.

Table 4-3. Humidity Cell Release Rate Scaling Factors

Scaling Factor	Value	Rationale
Channelization Factor	0.5	Factor to account for preferential flow through unsaturated mine rock. A component of the mine rock will not be contacted and soluble load produced from oxidation of this rock will not be mobilized
Grain Size Factor	0.2	Factor to account for grain size differences between the HCT (i.e., <1/4") and the grain size of the pit backfill, which will be variable.
Temperature Factor	0.15	Accounts for the difference in lab and field temperatures. The factor is calculated using the Arrhenius equation assuming an activation energy of 88,000 J/mol (Nicholson et. al., 1988) and an internal mine rock temperature of 10°C. The internal temperature is higher than the average annual temperature to account for internal heating through oxidation of sulfide and carbonaceous rock.

The annual scaled release rate was divided by the annual average volume of water contacting unsaturated mine rock (SRK 2022) using Equation 1 to estimate the annual average constituent concentrations in drainage from unsaturated mine rock. Predicted water qualities were entered into the publicly available speciation and mass transfer code PHREEQC v.3 (Parkhurst and Appelo 1999), developed by the United States Geological Survey (USGS), to evaluate mineral and gas phases that were supersaturated in solution. The mineral and gas phases included in the model are presented in Table 4-4. Supersaturated mineral phases were allowed to precipitate from solution and sorption to ferrihydrite was also considered using the default values of Dzombak and Morel (1990). Sorption to ferrihydrite will limit parameters that form oxyanions (e.g., arsenic) and other ligands from remaining in solution.

Table 4-4. Model Equilibrium Phases

Mineral	Empirical Formula	Mineral	Empirical Formula	Mineral	Empirical Formula
Carbon Dioxide	CO ₂ (g)	Azurite	Cu ₃ (CO ₃) ₂ (OH) ₂	Lead Molybdenum Oxide	PbMoO ₄
Gibbsite	Al(OH) ₃	Chalcanthite	CuSO ₄ ·5H ₂ O	Calcium Molybdenum Oxide	CaMoO ₄
Otavite	CdCO ₃	Ferrihydrite	Fe(OH) ₃	Nickel Hydroxide	Ni(OH) ₂
Barite	BaSO ₄	Melanterite	FeSO ₄ ·7H ₂ O	Zinc Hydroxide	Zn(OH) ₂
Calcite	CaCO ₃	Anglesite	PbSO ₄	Smithsonite	ZnCO ₃
Brochantite	Cu ₄ SO ₄ (OH) ₆	Birnessite	MnO ₂ ·nH ₂ O	Goslarite	ZnSO ₄ ·7H ₂ O
Copper Hydroxide	Cu(OH) ₂	Manganite	MnO(OH)	Gypsum	CaSO ₄ ·2H ₂ O
Malachite	Cu ₂ (CO ₃)(OH) ₂				

4.2.2 High Case Source Term

To account for variability in the source term inputs, a high case source term was developed. The high case source term was estimated by increasing sulfate concentrations to concentrations that are in equilibrium with gypsum (i.e., sulfate concentrations are assumed to be saturated in solution) under the assumed pH and redox conditions. Equilibrium with gypsum was achieved by incrementally adding anhydrite (CaSO₄) to the predicted base case solution (Section 4.2.1) until sulfate concentrations reached steady state. Concentrations of all other elements were scaled up in the high source term by preserving the metal sulphate ratios (M/SO₄) in the base case source term. A key assumption in this approach is that all elements in the solution are chalcophile which could result in an overprediction of non-chalcophile elements. Mineral saturation was evaluated by equilibrating the high case unsaturated mine rock water quality with the same mineral phases (Table 4-4) as the base case solution.

4.3 Saturated Mine Rock

4.3.1 PAG Rock Flushing Source Term

All PAG rock produced during mining of the Tenas deposit will be permanently stored in saturated conditions in the management ponds. Placement of PAG rock in the management ponds will result in flushing of oxidation products accumulating on the surfaces of the PAG following exposure during mining. A unit annual flushing rate, in kilograms per tonne of rock (kg/tonne), was estimated by proportioning scaled HCT solute release rates (Section 4.1) in the relative proportion of each zone to be mined in each year (Table 4-5).

As noted in Section 4.1, HCT are scaled to account for release rate differences between laboratory and field conditions. Grain size and temperature scaling factors (Table 4-3) were applied to saturated PAG

rock. A channelization factor was not applied since conceptual exposed surfaces will be flushed as the rock is inundated in the management ponds.

A key input to the PAG rock flushing source term is the exposure time prior to placement in the management ponds. TCL proposes to have all rock placed in the management ponds within an average of six months which was used when developing the PAG rock flushing source term. Similar to the unsaturated mine rock source term, a high case was also developed where PAG mine rock was assumed to be exposed for 12 months.

Table 4-5. Annual PAG Rock Volumes and Relative Proportions

Year	Mine Rock Volume (bcm)								Mine Rock Proportion						
	Zone 1a	Zone 2	Zone 3	Zone 4 (PAG)	Zone 5	Zone 55	Zone 6	Total	Zone 1A	Zone 2	Zone 3	Zone 4 (PAG)	Zone 5	Zone 55	Zone 6
1	---	---	---	77,481	120,526	129,135	---	327,142	---	---	---	0.24	0.37	0.39	---
2	---	101,036	116,673	276,461	270,055	271,264	178,523	1,214,012	---	0.083	0.096	0.23	0.22	0.22	0.15
3	---	179,056	229,804	620,602	320,738	99,933	99,320	1,549,453	---	0.12	0.15	0.4	0.21	0.064	0.064
4	21,889	285,673	321,699	472,335	345,853	151,588	112,489	1,711,526	0.013	0.17	0.19	0.28	0.2	0.089	0.066
5	27,407	155,626	308,582	663,762	353,038	165,727	94,900	1,769,042	0.015	0.088	0.17	0.38	0.2	0.094	0.054
6	130,618	312,373	397,354	613,605	290,367	160,116	75,573	1,980,006	0.066	0.16	0.2	0.31	0.15	0.081	0.038
7	68,844	381,138	593,269	214,295	250,877	182,880	79,710	1,771,013	0.039	0.22	0.33	0.12	0.14	0.1	0.045
8	52,353	327,938	705,510	---	321,128	178,341	175,380	1,760,650	0.03	0.19	0.4	---	0.18	0.1	0.10
9	18,042	198,457	378,872	---	378,932	89,907	66,893	1,131,103	0.016	0.18	0.33	---	0.34	0.079	0.059
10	37,018	388,733	629,396	---	439,200	71,890	151,249	1,717,486	0.022	0.23	0.37	---	0.26	0.042	0.088
11	55,727	316,821	466,150	---	428,117	74,035	97,842	1,438,692	0.039	0.22	0.32	---	0.3	0.051	0.068
12	98,303	381,613	547,361	238,780	386,869	55,623	148,670	1,857,219	0.053	0.21	0.29	0.13	0.21	0.03	0.08
13	76,587	223,829	298,043	569,289	532,297	16,062	116,153	1,832,260	0.042	0.12	0.16	0.31	0.29	0.0088	0.063
14	308,172	257,049	167,938	---	264,424	29,924	119,692	1,147,199	0.27	0.22	0.15	---	0.23	0.026	0.1
15	146,459	198,589	397,430	---	523,609	---	61,069	1,327,156	0.11	0.15	0.3	---	0.39	---	0.046
16	325,128	307,724	365,342	---	495,915	---	95,471	1,589,580	0.2	0.19	0.23	---	0.31	---	0.06
17	201,789	146,756	226,844	---	481,190	---	102,576	1,159,155	0.17	0.13	0.2	---	0.42	---	0.088
18	377,112	302,140	282,975	---	186,028	36,948	55,034	1,240,237	0.3	0.24	0.23	---	0.15	0.03	0.044
19	162,336	261,355	238,266	419,874	434,193	49,875	136,393	1,702,292	0.095	0.15	0.14	0.25	0.26	0.029	0.08
20	55,193	165,578	202,373	386,347	183,975	143,569	69,979	1,207,014	0.046	0.14	0.17	0.32	0.15	0.12	0.058
21	33,669	271,177	390,325	437,687	185,176	101,005	55,193	1,474,232	0.023	0.18	0.26	0.3	0.13	0.069	0.037
22	---	---	---	495,776	188,053	102,575	135,720	922,124	---	---	---	0.54	0.2	0.11	0.15

Source: P:\01_SITES\Telkwa Coal\1CT027.007_2021 Geochemistry Support\Task 500 - Source Term Memo\Tenas_source_term_rpt_tables_1ct027.007_MKH_r1.xlsx

4.3.2 Processed Rock Flushing Source Term

Processed rock has been classified as PAG (SRK 2022) and TCL proposes to store these materials with PAG rock under saturated conditions. Similar to PAG rock, oxidation products that accumulate on the processed rock will be flushed from the surfaces as these materials are placed in the management ponds. A processed rock flushing source term, in kg/tonne, was estimated by scaling HCT results to field conditions using the same scaling factors as the PAG rock flushing term.

One fine processed rock and one coarse coal processed rock HCT was initiated in August 2018 and 74 weeks of testing results were available when the source terms were developed. The average of the last 10 weeks of results when the humidity cell pH was stable were used to calculate loadings from the reject HCTs. The coarse and fine processed rock loadings were mixed in their relative proportions of 72% and 28%, respectively (TCL 2019, pers. comm.). The mixed processed rock loading was scaled to field conditions using the same scaling factors as the PAG rock (i.e., grain size and temperature scaling factors). Consistent with PAG rock, the processed rock flushing source term was estimated for six- and 12-month exposure periods.

4.3.3 NAG Rock Flushing Source Term

As PAG material reaches its designed elevation, NAG rock will then be placed in a 1.5 metre lift above the saturated PAG. Once this lift is completed, overburden is then placed in a 1 to 3 metre lift to form dry land reclamation. Surface soils will then be placed in a lift thickness of approximately 30 centimetres. The NAG rock will be placed in aqueous conditions and the majority of the overburden will be unsaturated. Oxidation products that have accumulated on the NAG mine rock following exposure during mining will be flushed from the surfaces as the rock is placed in the management pond.

TCL proposes to use NAG rock source from zone 1 in the management pond cover. A unit flushing rate, in kg/tonne, was estimated by scaling the zone 1 HCT results to account for differences between laboratory and field conditions. The same scaling factors used to estimate the PAG rock flushing term were applied (i.e., grain size and temperature factors). Flushing rates were estimated for six- and 12-month exposure periods.

4.3.4 Flooded NAG Rock Backfill

Approximately 50% of the NAG rock in the backfill will become flooded in post-closure. As discussed in Section 4.2.1, unsaturated mine rock is assumed to have a channelization factor of 0.5 to account for portions of the rock that will not be contacted by water. The residual mass that is not flushed from the backfill by meteoric water contact can be dissolved during flooding. The water balance model (SRK 2021) indicates there is no hydraulic connection of water stored in the flooded backfill to the management ponds. However, a small volume of the flooded backfill water will report to the groundwater system. Water balancing modelling indicates that the water losses from the flooded backfill represent less than one percent (i.e., 0.4%) of the total flow to the groundwater system. There is a high degree of uncertainty in estimating the residual load that will be flushed from the flooded

backfill and since the flow is effectively negligible to other flows, a source term was not developed for the flooded NAG rock backfill.

4.4 Wall Rock Runoff

Exposed wall rock surfaces will produce oxidative load that will be flushed by meteoric water. An annual pit wall drainage water quality was estimated using equation 1; however, in this instance $L_{j,annual}$ is the annual load of constituent j released from exposed wall rock surfaces and Q_{annual} is the annual average flow contacting the exposed wall rock. TCL proposed to progressively backfill the open pit during operations. This will continually change the areas of rock exposed in the pit walls. To evaluate changes to the wall rock runoff composition, source terms were developed for the following time periods, which correspond to backfilling of different areas and volumes placed in the open pit:

- End of placement of PAG rock in the North Management Pond (NMP)
- End of placement of PAG rock in the East Management Pond (EMP)
- End of the Operation Phase (EOM)

The reactive mass of each stratigraphic zone in the open pit walls was estimated by multiplying the exposed surface area of each of the zones in the open pit walls by an assumed depth of fractured rock for each of the above time periods. Surface areas for each time period are provided in Table 4-6. The fractured rock depth was assumed to be two metres for blasted areas and five centimetres for free dig areas and the floor of the pit. A density of 2.55 g/cc was assumed to estimate the reactive mass exposed in the pit walls.

The HCTs assigned to each zone (Table 4-2) were prorated in relative proportions calculated based on the exposed surface areas (Table 4-6) to estimate the unit solute release rates for the backfill. A coal sample was not submitted for HCT and the combined processed rock HCT (see Section 4.3.2) was used to represent loadings from exposed coal seams. This rate was multiplied by the total reactive mass in the open pit walls to estimate the annual load produced. The annual load was scaled to field conditions using the grain size and temperature factors presented in Table 4-6. It was assumed that the entire fractured rock zone in the open pit walls would be flushed and a channelization factor was not included.

The annual scaled release rate was divided by the annual average volume of water contacting wall rock runoff (SRK 2022) to estimate drainage concentrations using Equation 1. The annual volume for each time period is presented in Table 4-7. Mineral solubility was evaluated and phases that were identified to be supersaturated in solution were allowed to precipitate or off-gas (for gas phases). Mineral phases that were considered are provided in Table 4-4. Sorption to ferrihydrite was also included when this mineral phase precipitated.

Similar to the unsaturated mine rock source term, a high case wall rock source term was estimated by forcing the predicted solutions to gypsum saturation through incremental anhydrite addition in PHREEQC. Element sulfate ratios in the base case source term were assumed when calculating concentrations of other constituents. The scaled-up solution was subsequently equilibrated with the

mineral phases presented in Table 4-4 and sorption to ferrihydrite was permitted when this mineral phase precipitated.

Table 4-6. Open Pit Wall Surface Areas (m²)

Layer	Type	End of NMP	End of EMP	EOM
Zone 1	Blasted Wall	34,151	92,219	15,722
Zone 1a	Blasted Wall	---	3,711	---
Zone 2	Blasted Wall	6,392	22,127	---
Zone 3	Blasted Wall	5,780	33,410	---
Zone 4	Blasted Wall	10,798	48,741	---
Zone 5	Blasted Wall	8,489	26,942	---
Zone 6	Free Dug Wall	356,326	948,129	---
Overburden	Free Dug Wall	81,128	253,429	27,065
Seam C	Free Dug Wall	554	3,290	---
Seam 1U	Free Dug Wall	841	4,645	---
Zone 55	Free Dug Wall	2,697	12,171	---
Seam 1L	Free Dug Wall	1,200	7,224	---

Note: Areas presented in m²

Table 4-7. Annual Wall Rock Runoff Volumes

Time Period	Volume (m ³ /year)
End of NMP	247,264
End of EMP	708,217
EOM	20,812

4.5 Processed Coal Stockpile Runoff

Coal will be temporarily stored in a coal stockpile in the rail loadout area where it will be loaded onto railcars and transported off site. The annual load from the coal stockpile was estimated by multiplying HCT loading rates by the maximum amount of coal (90,000 tonnes) that will be stored in the stockpile (TCL 2020b, pers. comm.). A coal sample was not submitted for HCT as part of the SRK (2022) geochemical characterization and the coal reject solute release rate (see Section 4.3.2) was used as a surrogate. The annual load release was scaled to field conditions applying the scaling factors presented in Table 4-3.

The annual scaled release rate was divided by the annual average volume of water (3,857 m³) contacting wall rock runoff (SRK 2022) to estimate annual average drainage concentrations using Equation 1. Mineral solubility was evaluated and phases that were identified to be supersaturated in solution were allowed to precipitate or off-gas (for gas phases). The same mineral phases used in the

unsaturated mine rock and wall rock runoff source terms (Table 4-4) were used in the coal stockpile source term equilibrations. If ferrihydrite was predicted to precipitate from solutions, sorption to this mineral phase was permitted.

Similar to the unsaturated mine rock and wall rock source terms, a high case source term was estimated through incrementally dissolving anhydrite until gypsum saturation was achieved. All other constituent concentrations were calculated assuming the base case source term element sulfate ratios would be preserved. The scaled-up solution was subsequently equilibrated with the phase in Table 4-4 and sorption to ferrihydrite was included when this mineral precipitated from solution.

4.6 Particulate Concentrations

The source terms discussed in the previous sections will provide an estimate of dissolved concentrations when carried forward into the site water and load balance model. To provide a mechanism for estimating total concentrations in surface discharge from the project, particulate concentrations were calculated for overburden, PAG and NAG mine rock to account for changes to sediment quality as a result of exposing these materials. Average solid-phase concentrations (SRK 2022) were prorated based on the relative volumes of each rock type at the end of mining to estimate the solid-phase concentrations of each material (e.g., PAG mine rock, etc.). The solid-phase concentrations were multiplied by an assumed total suspended solids (TSS) concentration to estimate the particulate concentration according to the following formula:

$$[J]_{particulate} = [J]_{ICP} \times [TSS]$$

Where: $[J]_{particulate}$ is the particulate concentration of parameter J in mg/L

$[J]_{ICP}$ is the prorated solid-phase concentration of parameter J in mg/kg

$[TSS]$ is the assumed total suspended solids concentration in the project discharge

Particulate concentrations were estimated for an assumed TSS concentration of 35 mg/L, which corresponds to the maximum monthly mean concentration in the proposed Coal Mining Effluent Regulation.

5 Source Terms

The following sections present the Tenas project source terms. The source terms do not represent discharge water quality and how the mine rock flushing source terms influence site drainage water quality cannot be quantified until they are carried forward into the site wide water and load balance. Therefore, limited interpretation of the source terms is included in the following sections. Detailed interpretations of the site wide water and load balance model results using these source terms is included in SRK (2022).

5.1 Unsaturated Mine Rock

The base case and high case unsaturated mine rock source terms are provided in Table 5-1. The charge imbalance for the base case and high case solutions were less than 10%. This is considered acceptable for a modelled solution mixing together average inputs from multiple HCTs and charge imbalances were not corrected.

The pH of both solutions is alkaline and in general, most of the modelled constituent concentrations are higher in the high case in comparison to the base case. Aluminum, barium and lead are the exceptions and are lower in the high case source term. Concentrations of these constituents are low in both scenarios since they are solubility constrained. Lower concentrations can occur in the high case source term as a result of additional mineral precipitation or sorption as a result of an increase in a limiting reactant.

Table 5-1. Unsaturated Mine Rock Source Terms

Parameter	Units	NAG Mine Rock Runoff/Seepage	
		NAG Typical	NAG High
Conventional			
pH	s.u.	7.8	8.1
% Error	%	0.9	1.0
Alkalinity	mg CaCO ₃ /L	2885	5668
Major Ions			
Calcium	mg/L	7	3
Magnesium	mg/L	48	95
Potassium	mg/L	90	177
Sodium	mg/L	2207.0	4357.3
Chloride	mg/L	83	164
Sulfate	mg/L	1971	3891
Dissolved Elements			
Aluminum	mg/L	0.0026	0.0042
Antimony	mg/L	0.004	0.008
Arsenic	mg/L	0.002	0.004
Barium	mg/L	0.0043	0.0035
Boron	mg/L	1.2	2.3
Cadmium	mg/L	0.00037	0.00073
Chromium	mg/L	0.0111	0.0218
Cobalt	mg/L	0.003	0.006
Copper	mg/L	0.0131	0.0259
Iron	mg/L	0.00021	0.00014
Lead	mg/L	0.00115	0.00227
Lithium	mg/L	0.79	1.56
Manganese	mg/L	0.147	0.29
Mercury	mg/L	<0.00001	<0.00001
Phosphorus	mg/L	0.445	0.88
Molybdenum	mg/L	0.017	0.03
Nickel	mg/L	0.015	0.03
Selenium	mg/L	0.036	0.07
Silica	mg/L	43	85
Silver	mg/L	<0.000005	<0.000005
Strontium	mg/L	4	7
Tin	mg/L	<0.002	<0.002
Thallium	mg/L	0.00	0.001
Uranium	mg/L	0.013	0.0256
Vanadium	mg/L	0.035	0.07
Zinc	mg/L	0.023	0.045

Source: P:\01_SITES\Telkwa Coal\1CT027.007_2021 Geochemistry Support\Task 500 - Source Term Memo\Tenas_source_term_rpt_tables_1ct027.007_MKH_r1.xlsx

5.2 Saturated Mine Rock

Saturated rock flushing terms are presented in kg/tonne. The influence of flushing of rock as it is placed in the management ponds cannot be quantified until it is carried forward into the water and load balance. Annual PAG rock flushing rates for the six- and 12-month exposure periods are provided in Table 5-2 and Table 5-3. Processed and NAG rock flushing source terms are provided in Table 5-4 and Table 5-5, respectively.

Table 5-4. Processed Rock Flushing Source Term

Parameter	Units	Six Month Exposure	Twelve Month Exposure
Conventional			
Alkalinity	kg CaCO ₃ /tonne	0.0023	0.0045
Major Ions			
Calcium	kg/tonne	0.021	0.042
Magnesium	kg/tonne	0.0063	0.013
Potassium	kg/tonne	0.00018	0.00036
Sodium	kg/tonne	0.000078	0.00016
Chloride	kg/tonne	0.000095	0.00019
Sulfate	kg/tonne	0.083	0.17
Elements			
Aluminum	kg/tonne	0.0000068	0.000014
Antimony	kg/tonne	3.8E-09	7.6E-09
Arsenic	kg/tonne	3.8E-09	7.6E-09
Barium	kg/tonne	0.000007	0.000014
Boron	kg/tonne	0.0000095	0.000019
Cadmium	kg/tonne	0.00000011	0.00000022
Chromium	kg/tonne	1.9E-08	3.8E-08
Cobalt	kg/tonne	0.000001	0.0000021
Copper	kg/tonne	0.00000032	0.00000063
Iron	kg/tonne	0.00013	0.00025
Lead	kg/tonne	5.5E-08	0.00000011
Lithium	kg/tonne	0.0000027	0.0000053
Manganese	kg/tonne	0.000061	0.00012
Mercury	kg/tonne	1.9E-09	3.8E-09
Phosphorus	kg/tonne	0.00000086	0.0000017
Molybdenum	kg/tonne	0.00000018	0.00000037
Nickel	kg/tonne	0.0000024	0.0000049
Selenium	kg/tonne	0.00000039	0.00000079
Silica	kg/tonne	0.00019	0.00038
Silver	kg/tonne	9.5E-10	1.9E-09
Strontium	kg/tonne	0.000077	0.00015
Tin	kg/tonne	0.00000038	0.00000076
Thallium	kg/tonne	0.00000013	0.00000026
Uranium	kg/tonne	2.2E-08	4.5E-08
Vanadium	kg/tonne	3.8E-08	7.6E-08
Zinc	kg/tonne	0.0000048	0.0000095

Source: P:\01_SITES\Telkwa Coal\1CT027.007_2021 Geochemistry Support\Task 500 - Source Term Memo\Tenas_source_term_rpt_tables_1ct027.007_MKH_r1.xlsx

Table 5-5. NAG Rock Flushing Source Term

Parameter	Units	Six Month Exposure	Twelve Month Exposure
Conventional			
Alkalinity	kg CaCO ₃ /tonne	0.027	0.054
Major Ions			
Calcium	kg/tonne	0.001	0.002
Magnesium	kg/tonne	0.0004	0.0008
Potassium	kg/tonne	0.00074	0.00148
Sodium	kg/tonne	0.018279	0.036558
Chloride	kg/tonne	0.00069	0.0014
Sulfate	kg/tonne	0.016	0.033
Elements			
Aluminum	kg/tonne	0.0001242	0.0002484
Antimony	kg/tonne	0.00000003	0.00000007
Arsenic	kg/tonne	0.00000002	0.00000003
Barium	kg/tonne	0.000005	0.000011
Boron	kg/tonne	0.0000095	0.000019
Cadmium	kg/tonne	3.1E-09	6.1E-09
Chromium	kg/tonne	9.2E-08	1.8E-07
Cobalt	kg/tonne	0.00000003	0.00000005
Copper	kg/tonne	1.1E-07	0.00000022
Iron	kg/tonne	0.00003183	0.0000637
Lead	kg/tonne	9.5E-09	1.9E-08
Lithium	kg/tonne	0.0000065	0.0000131
Manganese	kg/tonne	0.00000122	0.00000243
Mercury	kg/tonne	1.9E-09	3.8E-09
Phosphorus	kg/tonne	0.00000368	0.0000074
Molybdenum	kg/tonne	0.00000014	0.0000003
Nickel	kg/tonne	0.00000012	0.0000002
Selenium	kg/tonne	0.0000003	0.0000006
Silica	kg/tonne	0.00036	0.00072
Silver	kg/tonne	9.5E-10	1.9E-09
Strontium	kg/tonne	0.00003	0.00006
Tin	kg/tonne	0.00000038	0.00000076
Thallium	kg/tonne	0.0000000	0.00000001
Uranium	kg/tonne	1.1E-07	2.1E-07
Vanadium	kg/tonne	2.9E-07	0.00000059
Zinc	kg/tonne	0.00000019	0.00000038

Source: P:\01_SITES\Telkwa Coal\1CT027.007_2021 Geochemistry Support\Task 500 - Source Term Memo\Tenas_source_term_rpt_tables_1ct027.007_MKH_r1.xlsx

5.3 Open Pit Wall Rock Runoff

The base case and high case open pit wall rock runoff source terms for the End of NMP, End of EMP and EOM are provided in Table 5-6. The charge balance in all of the wall rock source terms is less than 10%, which is considered reasonable for solutions based on mixing of several averaged HCT loading rates and charge balances were not corrected.

The pH of all solutions was alkaline and the majority of the constituents were higher in the high case source term in comparison to the base case. Concentrations of the following constituents were lower in the high case scenario:

- End of NMP – barium
- End of EMP – calcium and barium
- EOM – aluminum and barium

As noted in Section 5.1, lower concentrations can occur in the high case source term as a result of additional mineral precipitation or sorption as a result of an increase in a limiting reactant.

Table 5-6. Open Pit Wall Rock Runoff Source Terms

Parameter	Units	Open Pit Wall Runoff - End of NMP		Open Pit Wall Runoff - End of EMP		Open Pit Wall Runoff - EOM	
		Typical	High	Typical	High	Typical	High
Conventional							
pH	s.u.	6.4	7.4	6.5	7.4	6.8	7.7
% Error	%	-5.3	-7.3	-5.4	-7.6	0.3	0.4
Alkalinity	mg CaCO ₃ /L	92	901	107	898	211	1815
Major Ions							
Calcium	mg/L	18	49	22	49	15	15
Magnesium	mg/L	10.2	171	12.7	185	5	54
Potassium	mg/L	2.2	37	2.5	37	6.0	61
Sodium	mg/L	36	601	39	575	146.68	1499.8
Chloride	mg/L	1.5	25	1.7	24	5.5	57
Sulfate	mg/L	89	1491	103	1505	158	1620
Dissolved Elements							
Aluminum	mg/L	0.002	0.0014	0.0018	0.001	0.0014	0.0019
Antimony	mg/L	0.0011	0.018	0.0021	0.031	0.0003	0.003
Arsenic	mg/L	0.0011	0.018	0.0021	0.031	0.0001	0.001
Barium	mg/L	0.019	0.0038	0.017	0.0038	0.013	0.0041
Boron	mg/L	0.035	0.59	0.042	0.61	0.08	0.81
Cadmium	mg/L	0.001	0.017	0.0021	0.031	0.00006	0.00062
Chromium	mg/L	0.0012	0.02	0.0023	0.033	0.00074	0.0076
Cobalt	mg/L	0.0015	0.026	0.0027	0.039	0.0006	0.006
Copper	mg/L	0.0014	0.0235	0.0025	0.0367	0.00098	0.010
Iron	mg/L	0.004066	0.000562	0.003536	0.000565	0.001858	0.0003
Lead	mg/L	0.001	0.0095	0.0021	0.007	0.000095	0.00097
Lithium	mg/L	0.02	0.34	0.024	0.35	0.053	0.55
Manganese	mg/L	0.034	0.57	0.043	0.63	0.03	0.31
Mercury	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Phosphorus	mg/L	0.0094	0.16	0.0114	0.17	0.0298	0.305
Molybdenum	mg/L	0.0014	0.02	0.0025	0.025	0.0012	0.012
Nickel	mg/L	0.0025	0.043	0.0039	0.058	0.0018	0.018
Selenium	mg/L	0.0018	0.03	0.003	0.043	0.0025	0.026
Silica	mg/L	0.91	15	1.0	15	2.9	30
Silver	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Strontium	mg/L	0.18	3.0	0.22	3.2	0.27	2.7
Tin	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thallium	mg/L	0.001	0.018	0.0021	0.031	0.0001	0.001
Uranium	mg/L	0.0012	0.02	0.0023	0.034	0.00087	0.0089
Vanadium	mg/L	0.0016	0.027	0.0028	0.04	0.00237	0.0242
Zinc	mg/L	0.0038	0.063	0.0051	0.074	0.0031	0.032

Source: P:\01_SITES\Telkwa Coal\1CT027.007_2021 Geochemistry Support\Task 500 - Source Term Memo\Tenas_source_term_rpt_tables_1ct027.007_MKH_r1.xlsx

5.4 Processed Coal Stockpile Runoff

The base case and high case coal stockpile runoff source term is provided in Table 5-7. Charge imbalances for the base and high case source terms were -7.7% and -8.7%, respectively. This charge imbalance is considered reasonable and was not corrected. The pH of the coal stockpile runoff was alkaline in both the base and high case source terms. Barium and iron were lower in the high case source term. As discussed previously, this can occur through an increase of a limiting reactant resulting in additional mineral precipitation in the high source term.

Table 5-7. Coal Stockpile Runoff Source Term

Parameter	Units	Processed Coal Stockpile	
		Typical	High
Conventional			
pH	s.u.	7.8	7.9
% Error	%	-7.7	-8.7
Alkalinity	mg CaCO ₃ /L	24	31
Major Ions			
Calcium	mg/L	170	398
Magnesium	mg/L	51	123
Potassium	mg/L	1.6	3.8
Sodium	mg/L	0.64	1.5
Chloride	mg/L	0.95	2.3
Sulfate	mg/L	670	1608
Dissolved Elements			
Aluminum	mg/L	0.0023	0.0026
Antimony	mg/L	0.00011	0.00027
Arsenic	mg/L	0.00011	0.00026
Barium	mg/L	0.0049	0.0033
Boron	mg/L	0.079	0.19
Cadmium	mg/L	0.00087	0.0021
Chromium	mg/L	0.00016	0.00038
Cobalt	mg/L	0.0084	0.02
Copper	mg/L	0.0025	0.0061
Iron	mg/L	0.13	0.044
Lead	mg/L	0.00044	0.0011
Lithium	mg/L	0.023	0.055
Manganese	mg/L	0.49	1.2
Mercury	mg/L	<0.00001	<0.00001
Phosphorus	mg/L	0.007	0.017
Molybdenum	mg/L	0.0017	0.0041
Nickel	mg/L	0.02	0.048
Selenium	mg/L	0.0033	0.008
Silica	mg/L	1.6	3.8
Silver	mg/L	0.0000079	0.000019
Strontium	mg/L	0.65	1.6
Tin	mg/L	0.0032	0.0076
Thallium	mg/L	0.0011	0.0026
Uranium	mg/L	0.00019	0.00045
Vanadium	mg/L	0.00034	0.00081
Zinc	mg/L	0.038	0.092

Source: P:\01_SITES\Telkwa Coal\1CT027.007_2021 Geochemistry Support\Task 500 - Source Term Memo\Tenas_source_term_rpt_tables_1ct027.007_MKH_r1.xlsx

5.5 Particulate Concentrations

Overburden, PAG and NAG mine rock particulate concentrations assuming a TSS concentration of 35 mg/L are provided in Table 5-8.

Table 5-8. Particulate Source Term Concentrations

Parameter	Units	Overburden	PAG Rock	NAG Rock
Aluminum	ppm	0.71	0.033	0.37
Antimony	ppm	0.000013	0.00000048	0.0000019
Arsenic	ppm	0.00062	0.00014	0.00051
Barium	ppm	0.0078	0.00097	0.0066
Bismuth	ppm	0.0000062	0.0000012	0.0000062
Boron	ppm	0.00035	0.000065	0.00035
Cadmium	ppm	0.00001	0.00000054	0.0000025
Calcium	ppm	0.53	0.071	0.6
Chromium	ppm	0.0015	0.00011	0.0012
Cobalt	ppm	0.00054	0.00011	0.00064
Copper	ppm	0.0016	0.0002	0.0013
Iron	ppm	1.3	0.25	1.5
Lead	ppm	0.00074	0.000088	0.00039
Magnesium	ppm	0.33	0.041	0.32
Manganese	ppm	0.032	0.0051	0.025
Mercury	ppm	0.0016	0.0000006	0.0000031
Molybdenum	ppm	0.000023	0.0000055	0.000027
Nickel	ppm	0.001	0.00023	0.0018
Phosphorus	ppm	0.024	0.0012	0.015
Potassium	ppm	0.051	0.0085	0.064
Selenium	ppm	0.0000018	0.0000012	0.0000055
Sodium	ppm	0.02	0.0083	0.077
Strontium	ppm	0.0034	0.00052	0.0033
Thallium	ppm	0.0000023	0.00000034	0.0000019
Thorium	ppm	0.00006	0.000005	0.000096
Titanium	ppm	0.023	0.000047	0.00049
Tungsten	ppm	0.00000088	0.00000032	0.0000018
Uranium	ppm	0.000018	0.0000018	0.000012
Vanadium	ppm	0.0025	0.00021	0.0014
Zinc	ppm	0.0036	0.00066	0.0036

Source: P:\01_SITES\Telkwa Coal\1CT027.007_2021 Geochemistry Support\Task 500 - Source Term Memo\Tenas_source_term_rpt_tables_1ct027.007_MKH_r1.xlsx

6 Summary

Base case and high case source terms were developed for the following:

- Unsaturated NAG rock
- Saturated NAG rock
- PAG rock
- Processed rock
- Open pit wall rock runoff
- Processed coal stockpile runoff
- Particulate concentrations

The above source terms will be carried forward into the site wide water and load balance to evaluate the mixed project discharge water quality. To evaluate uncertainty in the model, both the base case and high case scenarios should be evaluated.

Particulate concentrations should be applied to the corresponding material. For example, when PAG rock is being placed in the management ponds, the PAG particulate concentration should be used. The NAG particulate source term should for drainage from the backfill, management pond embankments, buttresses, open pit wall rock and also in the management ponds when NAG rock is being placed at closure. The overburden particulate concentrations should be applied to overburden piles and facilities that use overburden as a cover.

Closure

This report, Water Quality Model Source Term Derivation Methods, was prepared by



Michael Herrell, MSc, PGeo
Principal Consultant (Geochemistry)

and reviewed by


This signature is consistent with the author's appearance in the photograph on the document and other means that authorize.

Signed on Behalf of

Chris Kennedy, PhD, PGeo
Principal Consultant (Geochemistry)

SRK Consulting (Canada) Inc Engineers and Geoscientist BC Permit to Practice No: 1003655

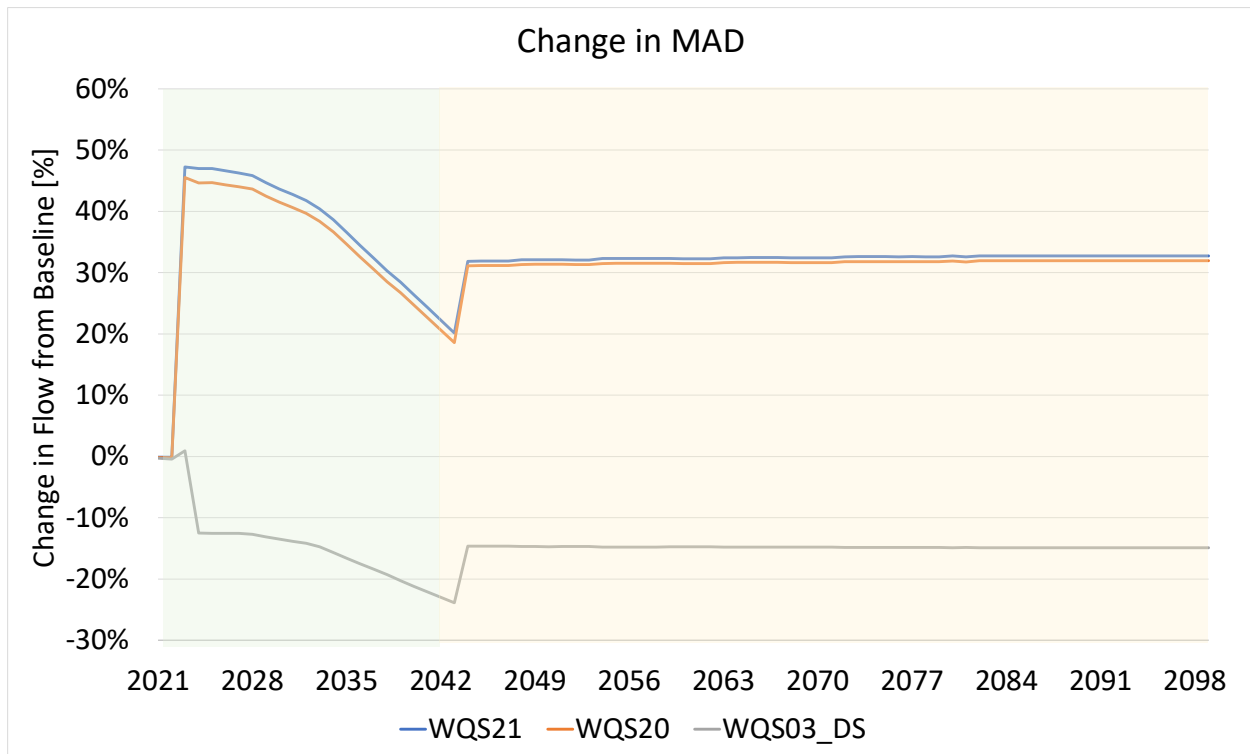
All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

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Appendix F Project Case Results

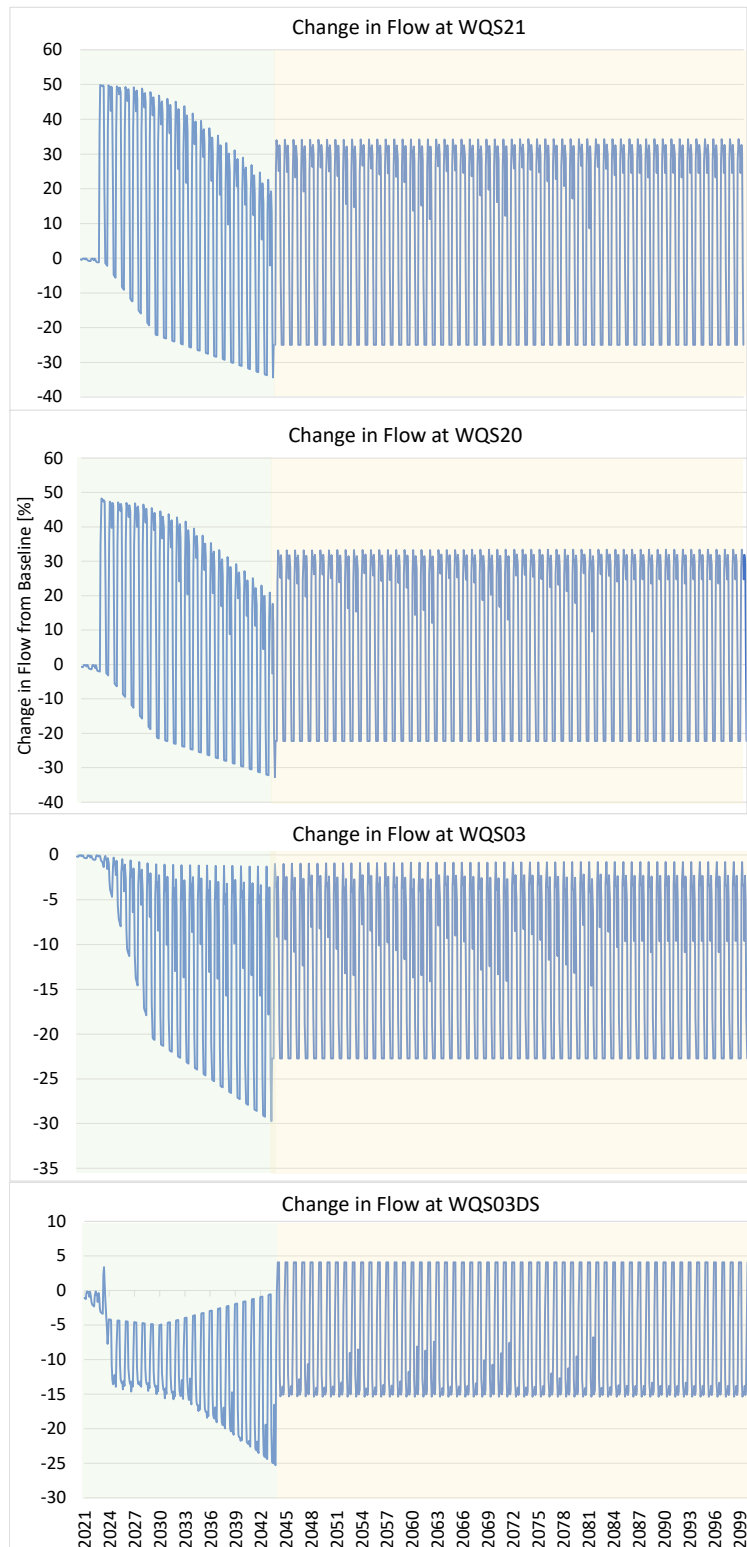
Figure F-1. Four Creek Streamflow Effect to Mean Annual Discharge relative to Base Case Conditions



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Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

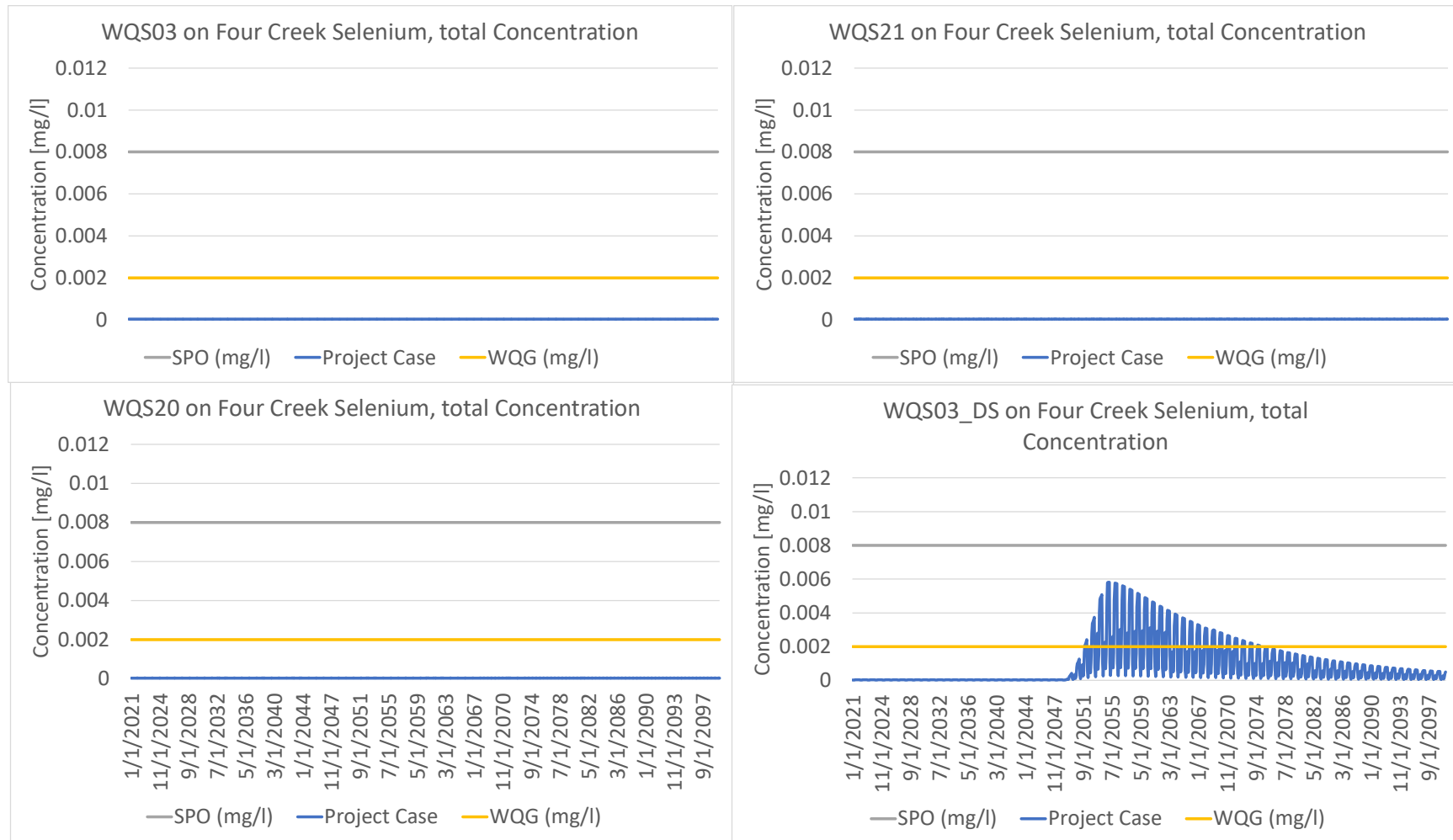
Figure F-2. Four Creek Streamflow Effect to Monthly Average Discharge relative to Base Case Conditions in the Project Case



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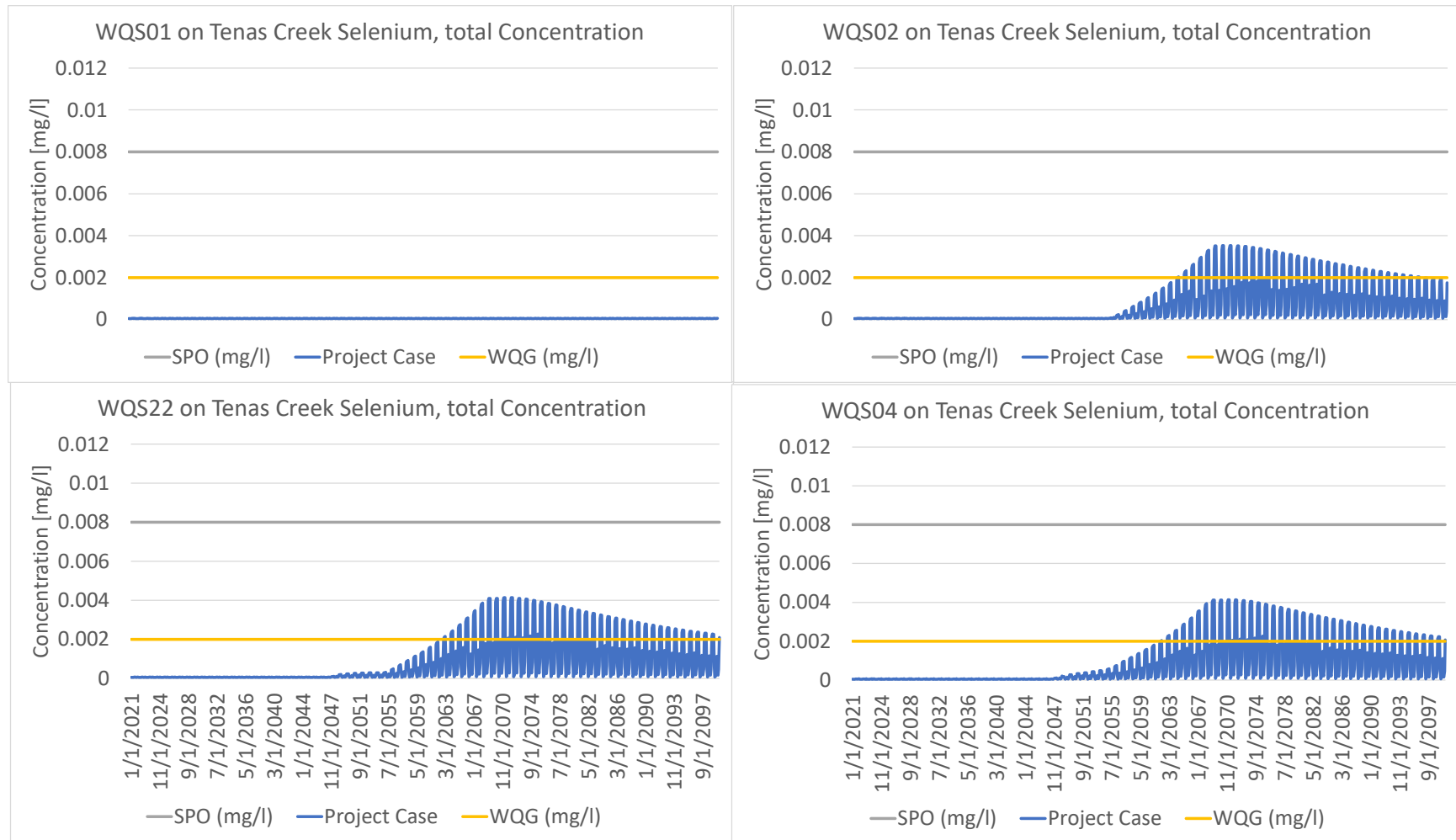
Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

Figure F-3. Total Selenium Model Results for Project Case in Four Creek



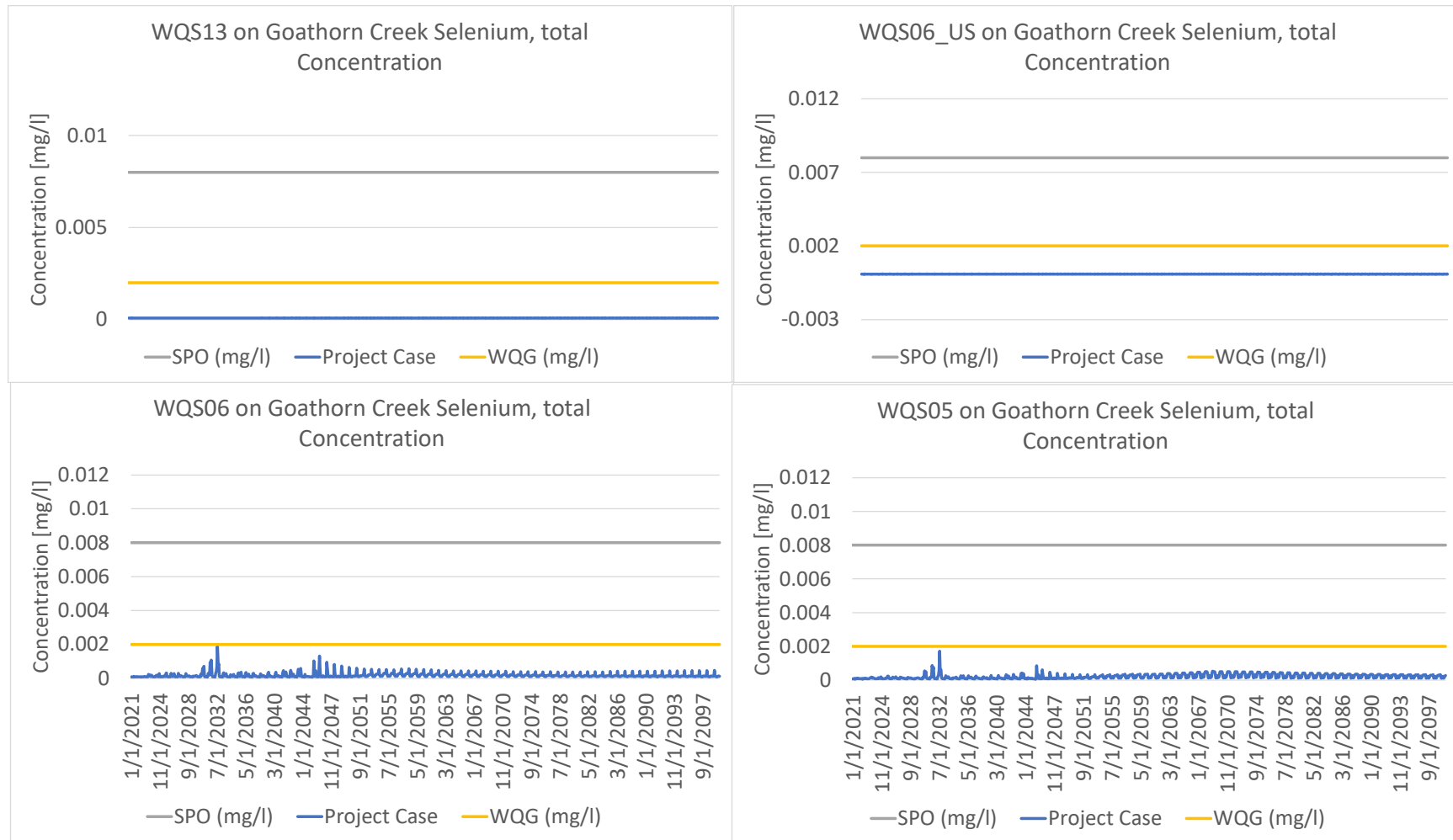
Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

Figure F-4. Total Selenium Model Results for Project Case in Tenas Creek



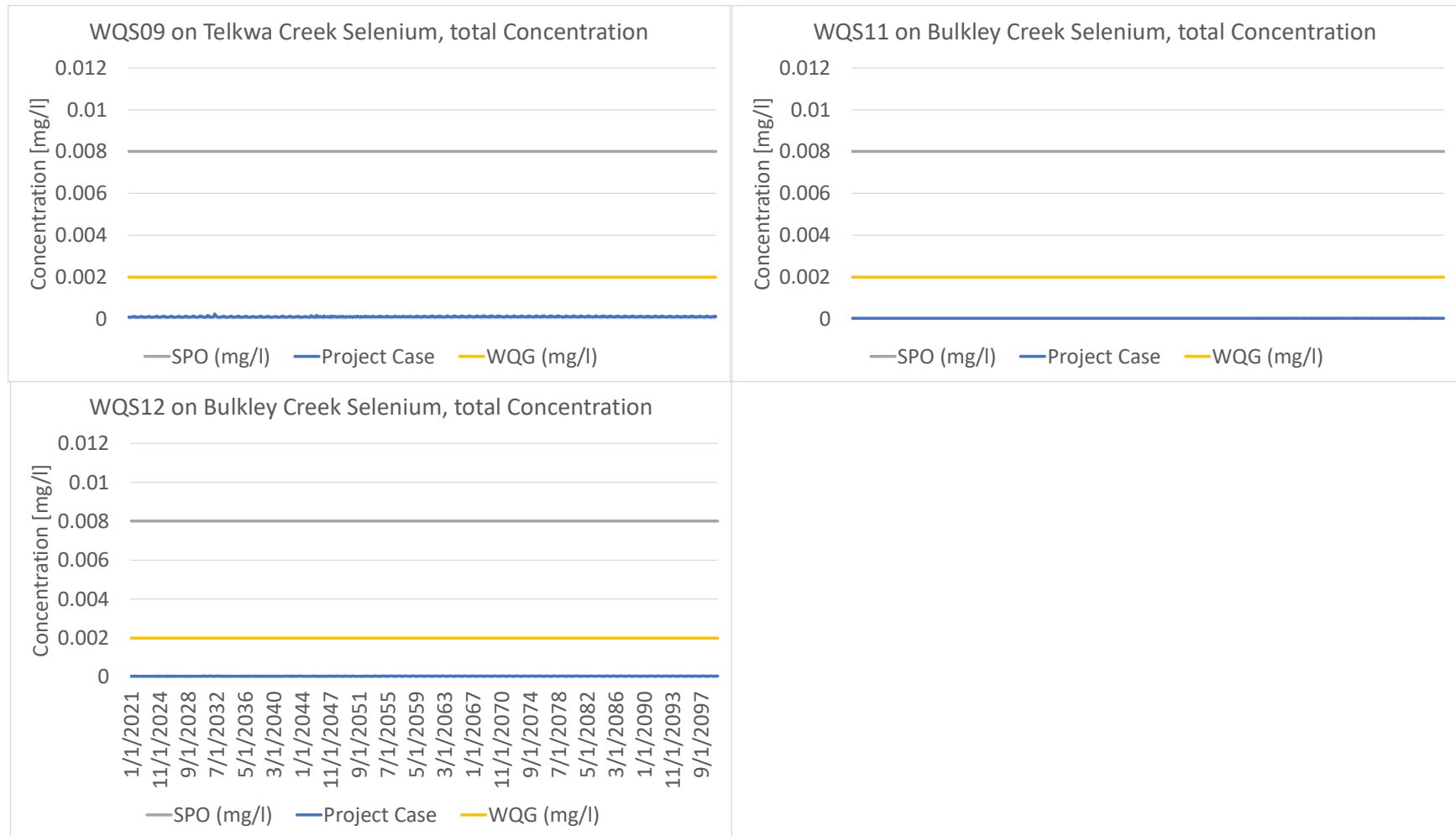
Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

Figure F-5. Total Selenium Model Results for Project Case in Goathorn Creek



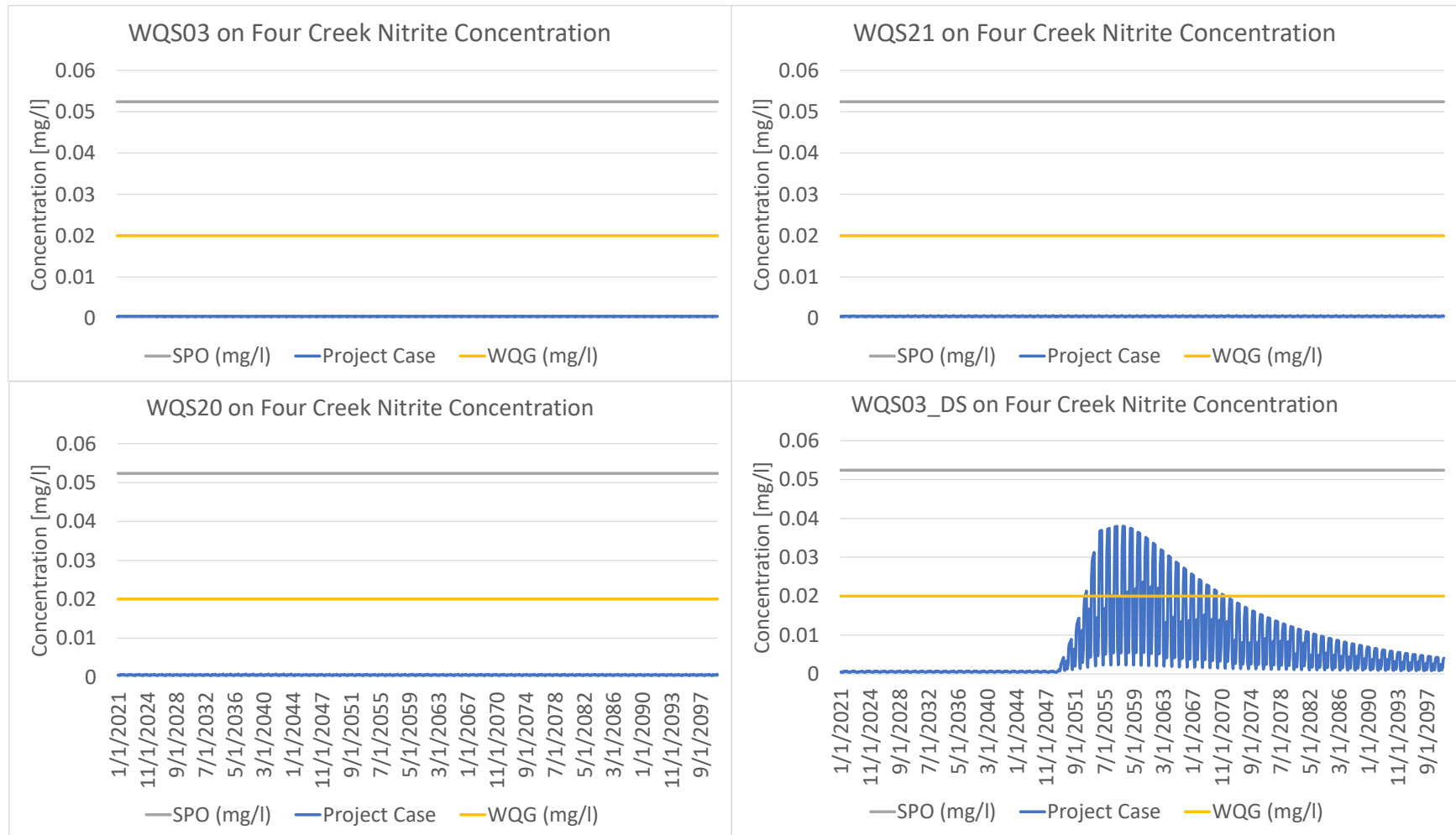
Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

Figure F-6. Total Selenium Model Results for Project Case in Telkwa and Bulkley River



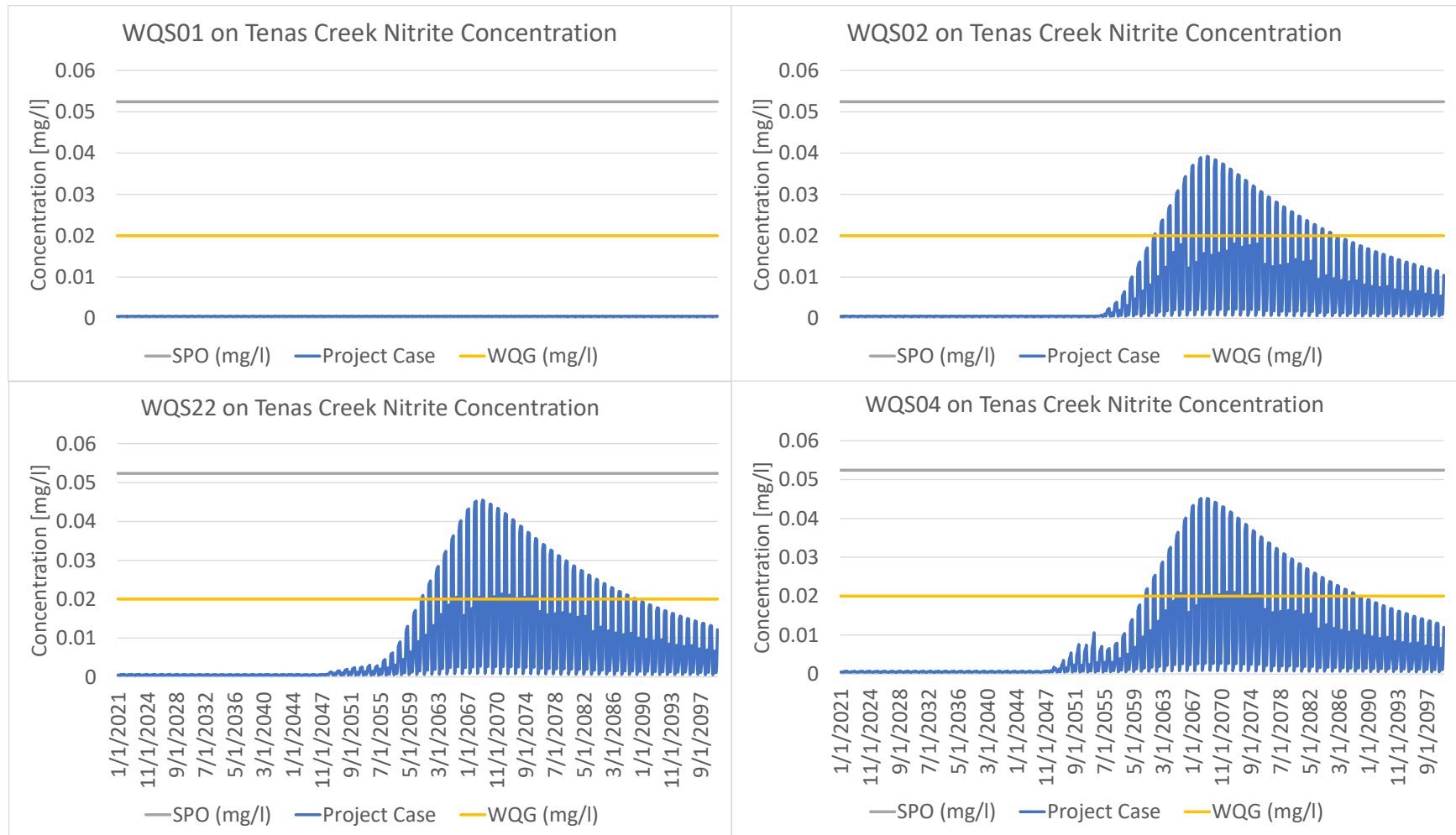
Tenas Project Water and Load Balance Report
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Figure F-7. Nitrite Model Results for Project Case in Four Creek



Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

Figure F-8. Nitrite Model Results for Project Case in Tenas Creek



Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

Figure F-9. Nitrite Model Results for Project Case in Goathorn Creek

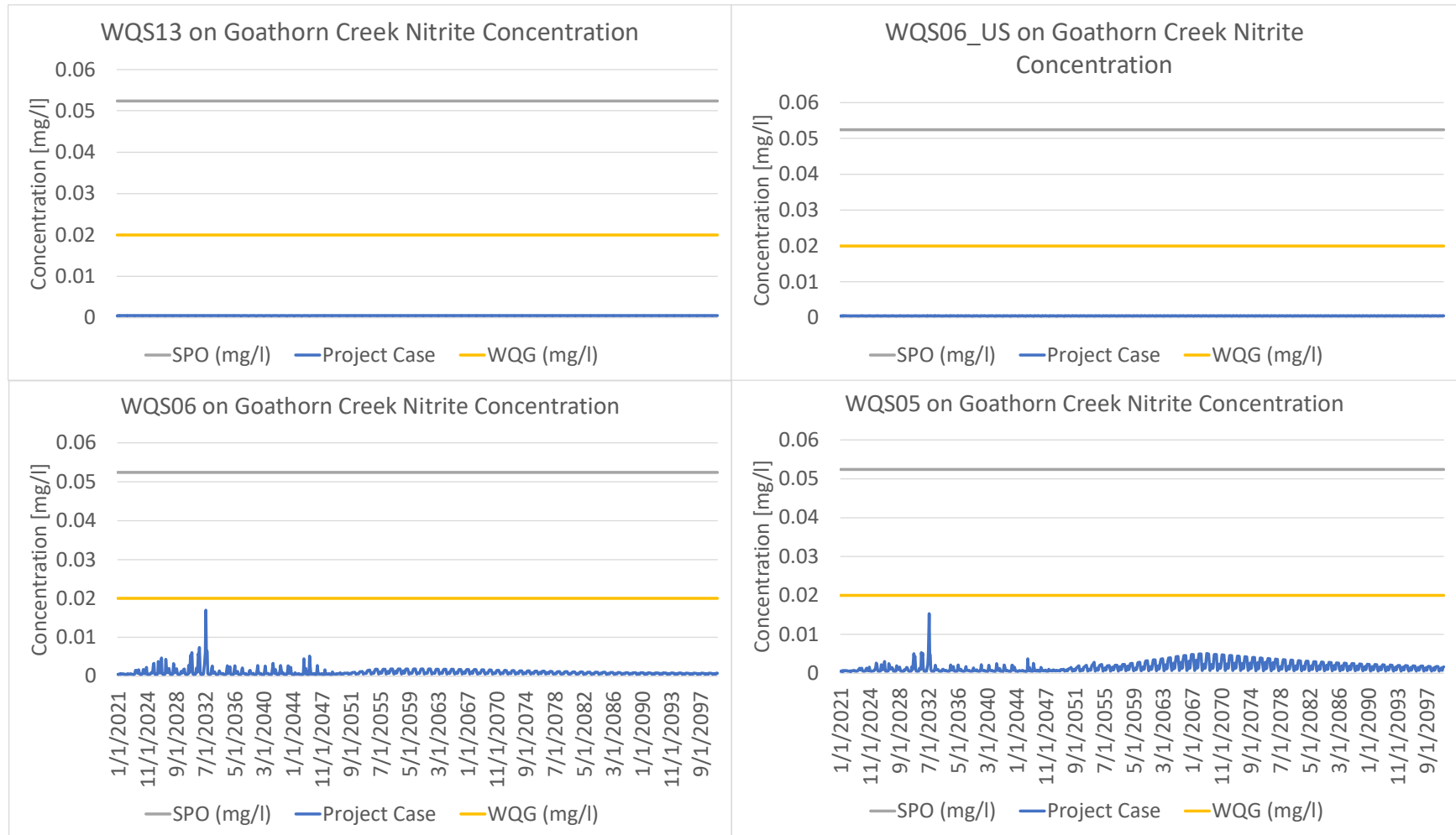
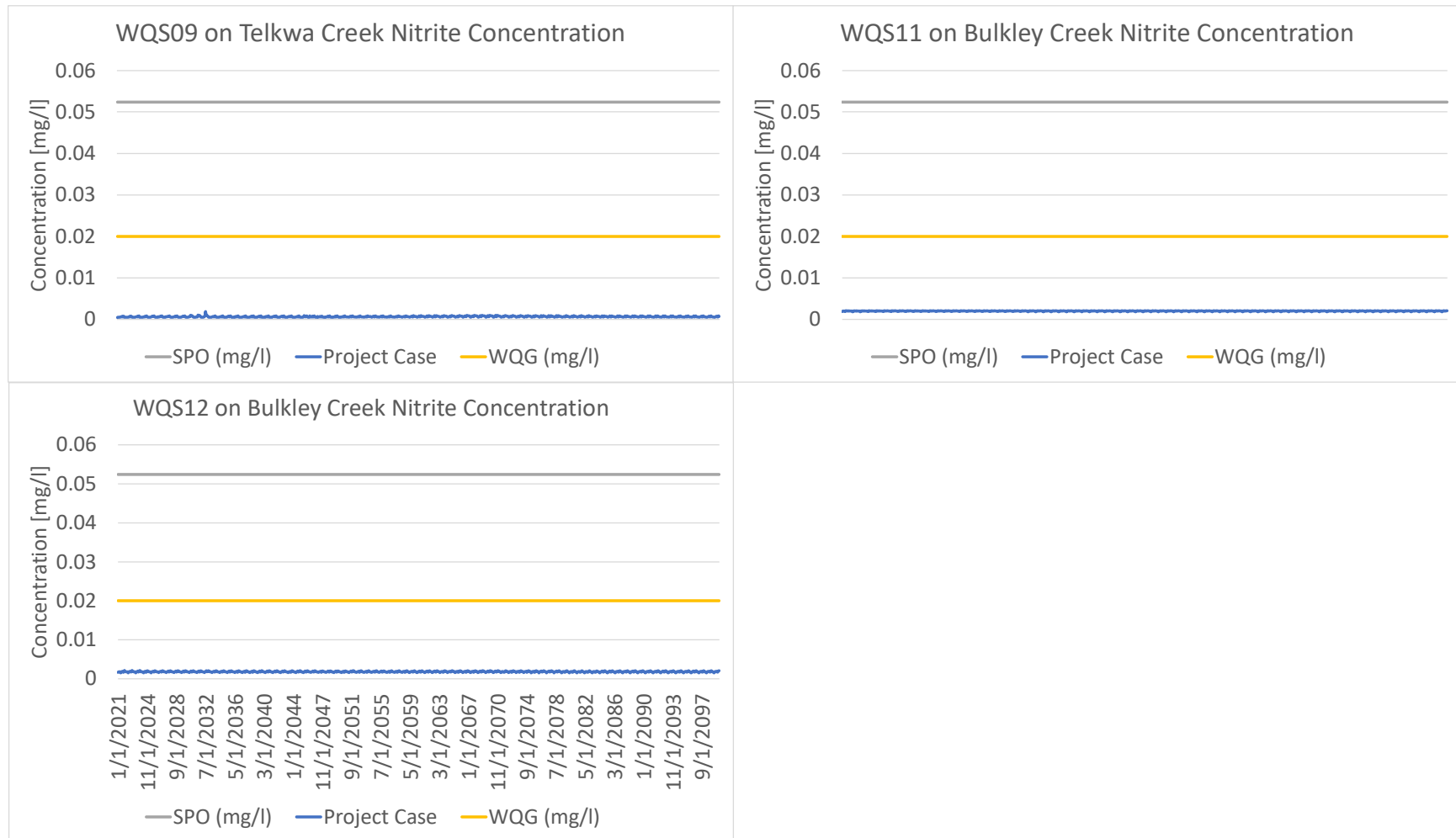
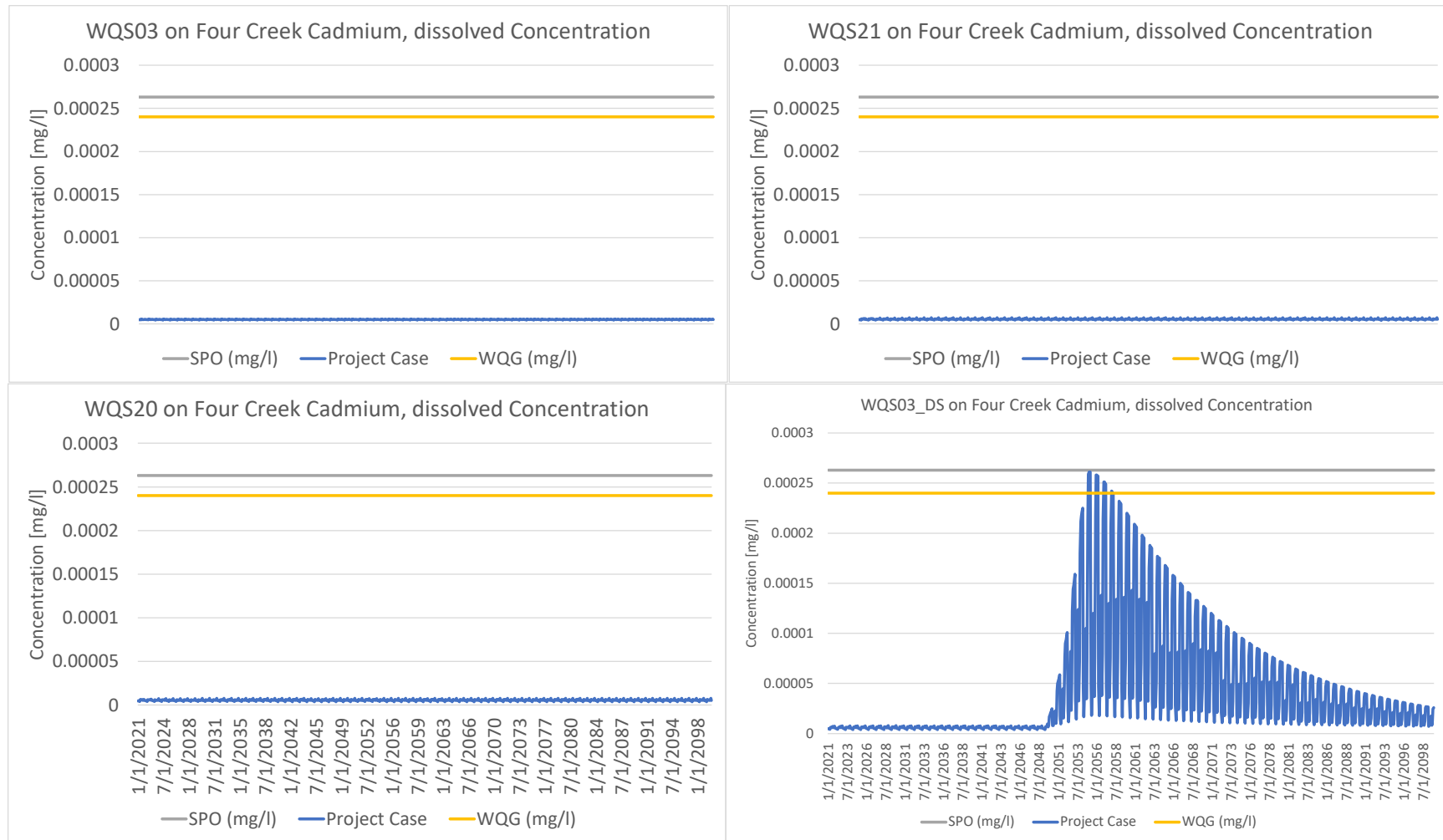


Figure F-10. Nitrite Model Results for Project Case in Telkwa and Bulkley River



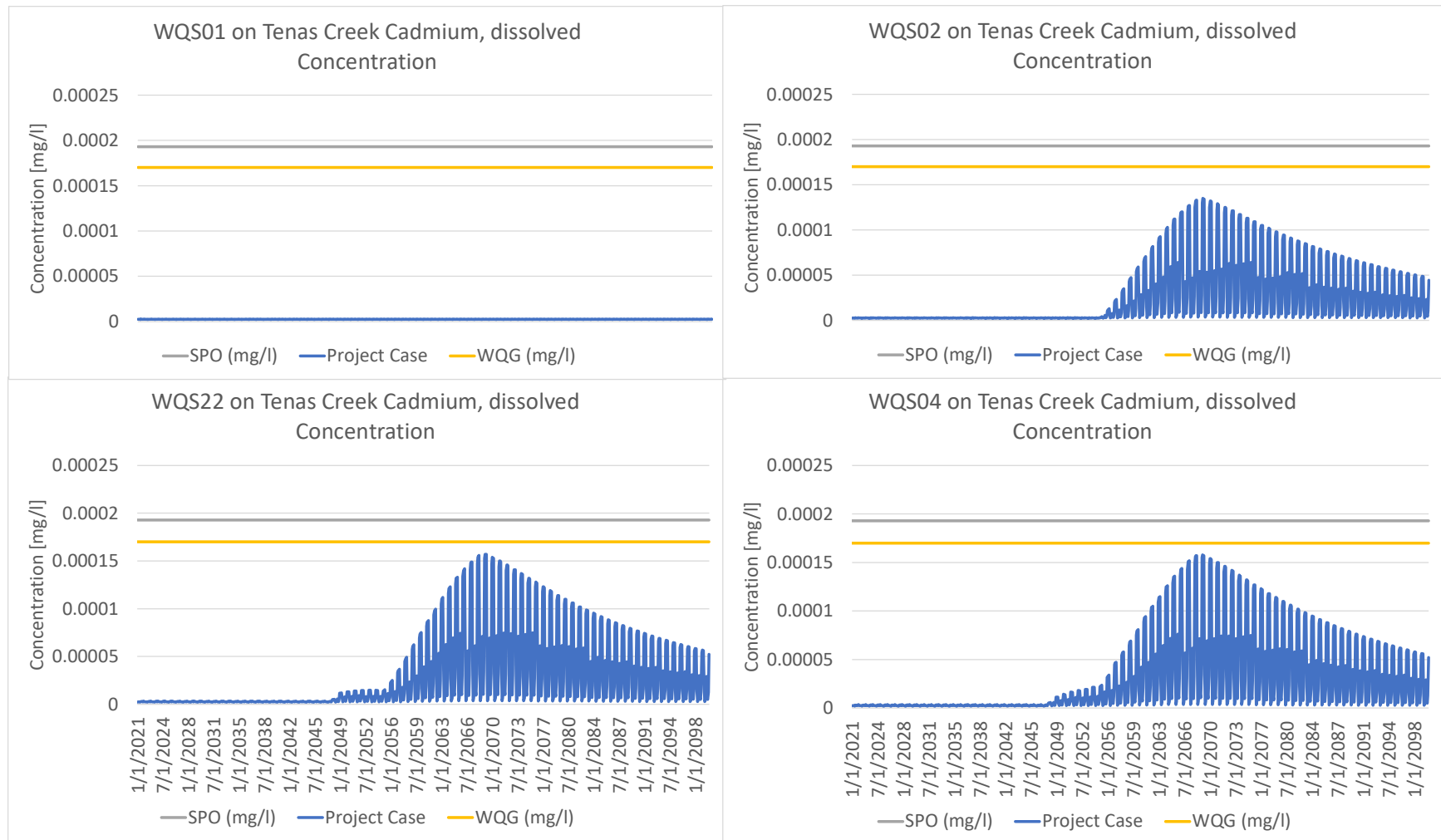
Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

Figure F-11. Dissolved Cadmium Model Results for Project Case in Four Creek



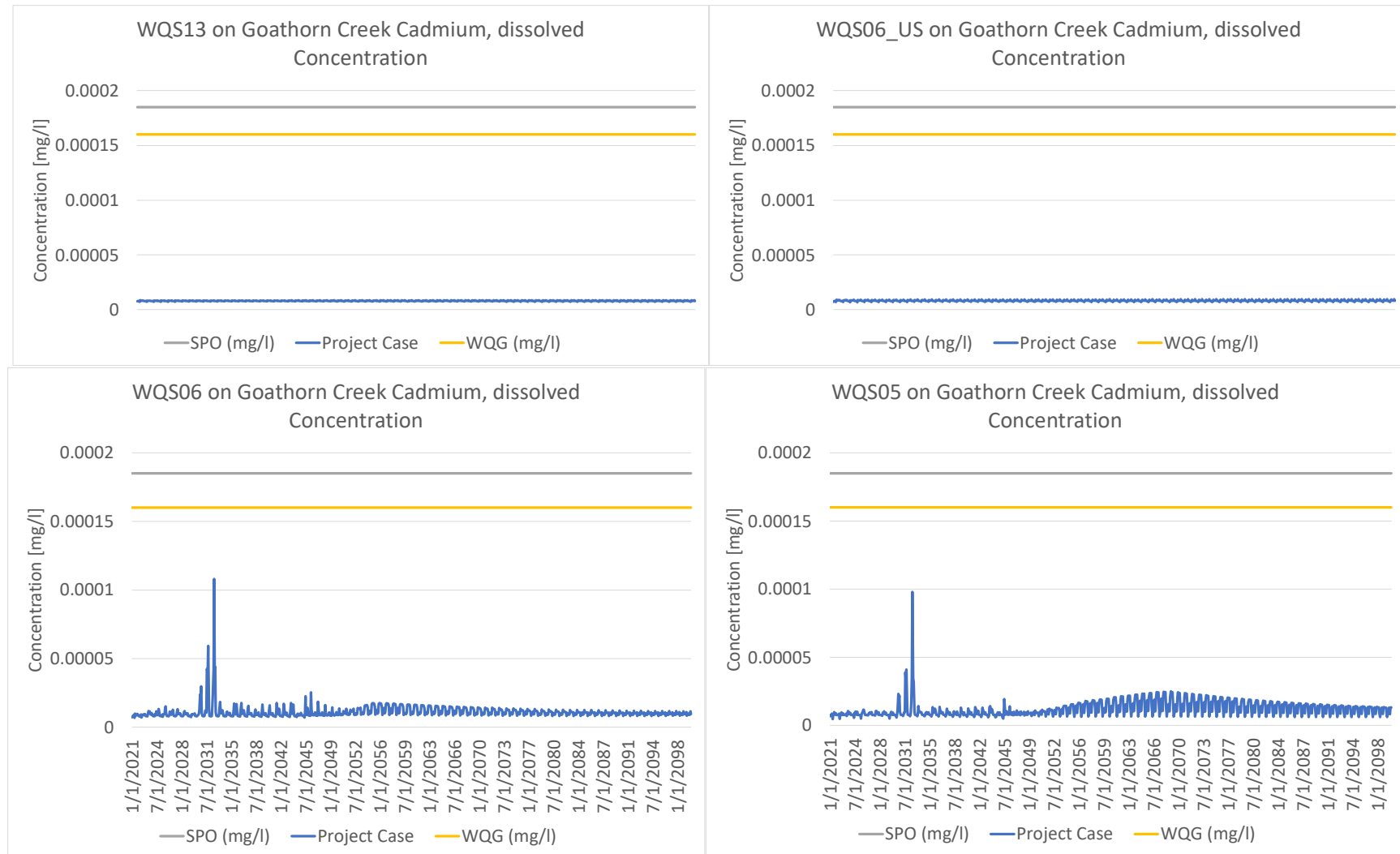
Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

Figure F-12. Dissolved Cadmium Model Results for Project Case in Tenas Creek



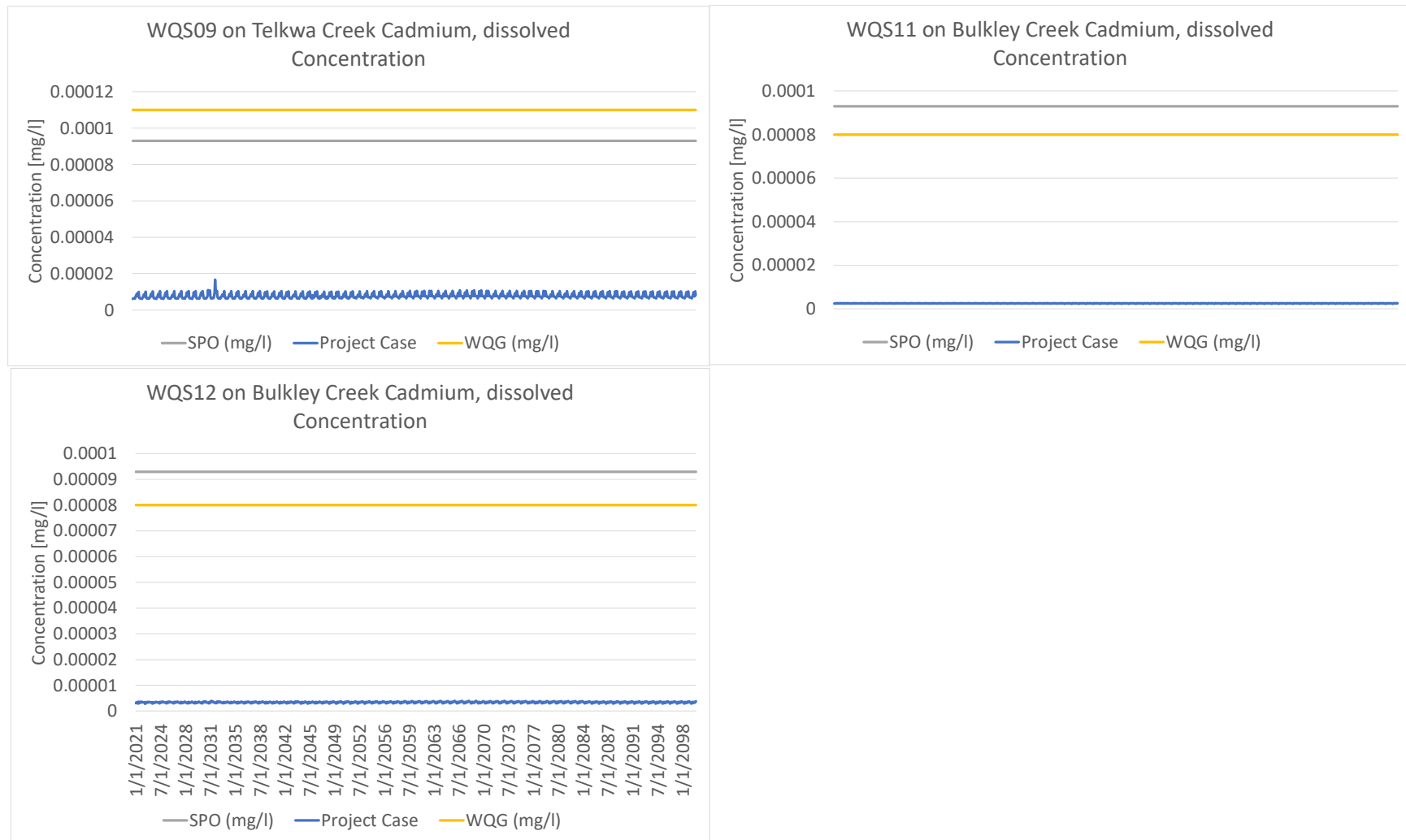
Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

Figure F-13. Dissolved Cadmium Model Results for Project Case in Goathorn Creek



Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

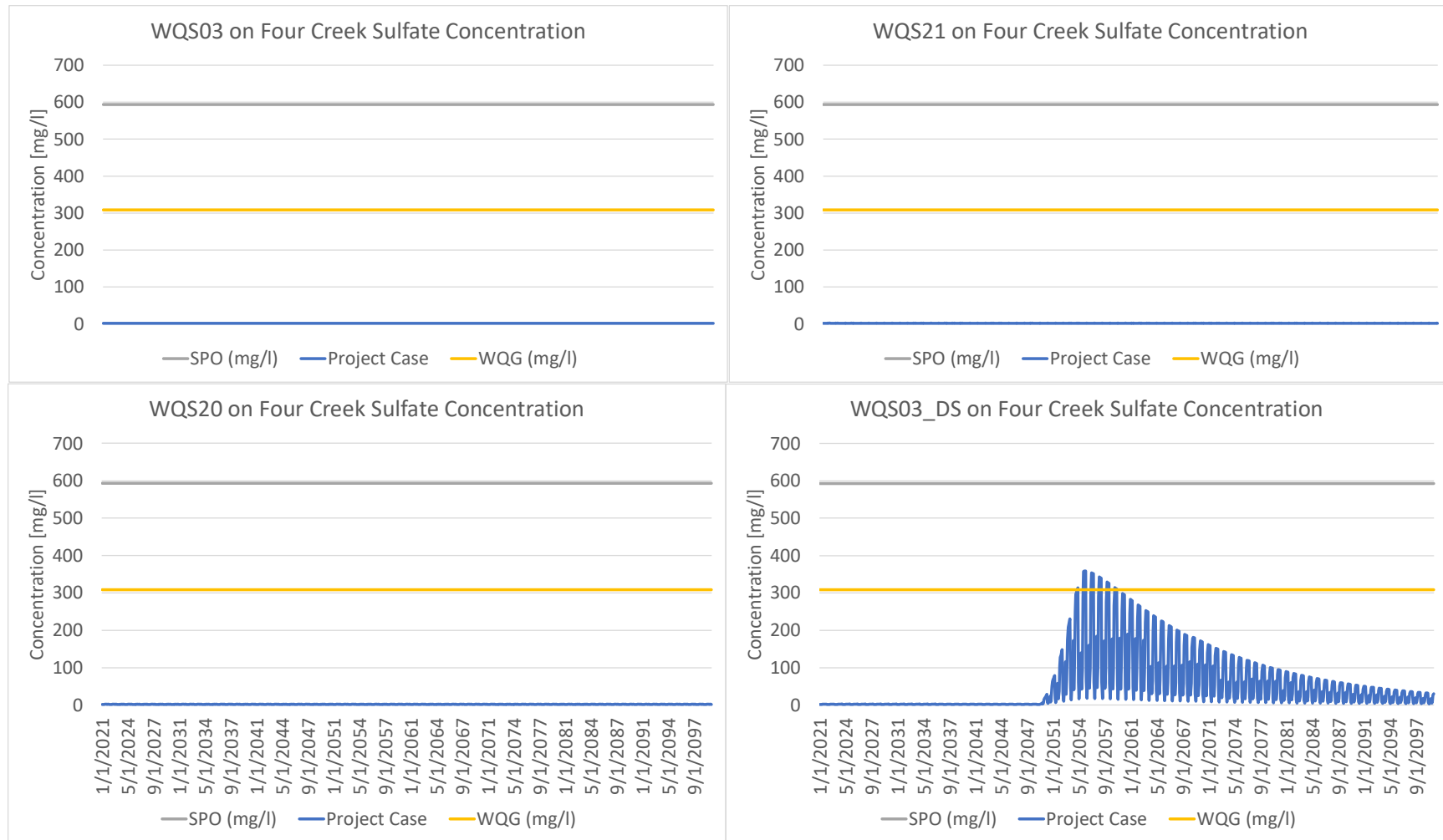
Figure F-14. Dissolved Cadmium Model Results for Project Case in Telkwa and Bulkley River



Note the SPO for dissolved cadmium is based on baseline hardness and is higher in the Telkwa River than in the Bulkley River. Plots presented above show the more stringent (lower) SPO of the Bulkley River, which is less than the WQG for the Telkwa River. The SPO for the Bulkley River is 0.000093 mg/L and the SPO for the Telkwa River is 0.00012 mg/L.

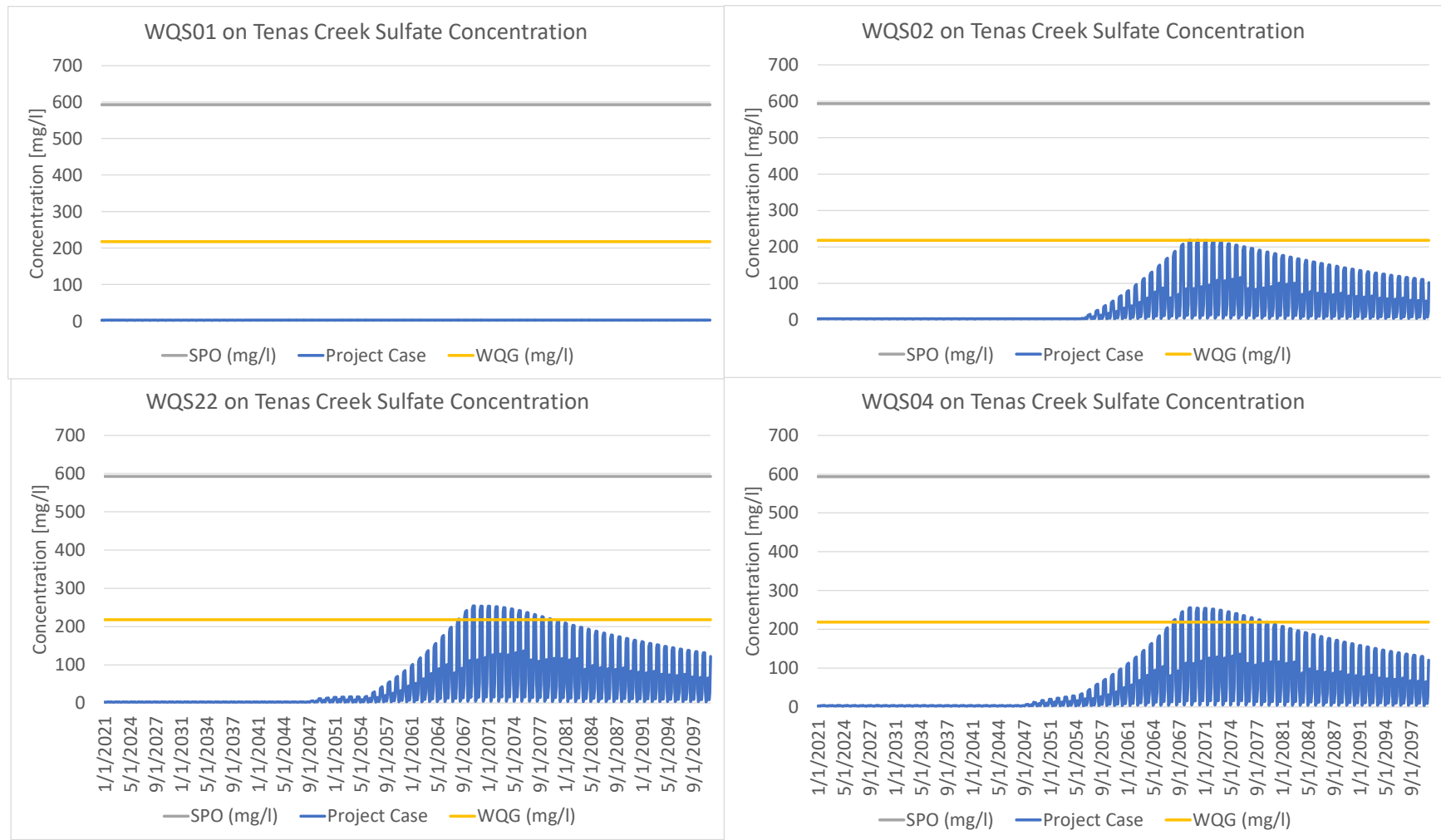
Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

Figure F-15. Sulphate Model Results for Project Case in Four Creek



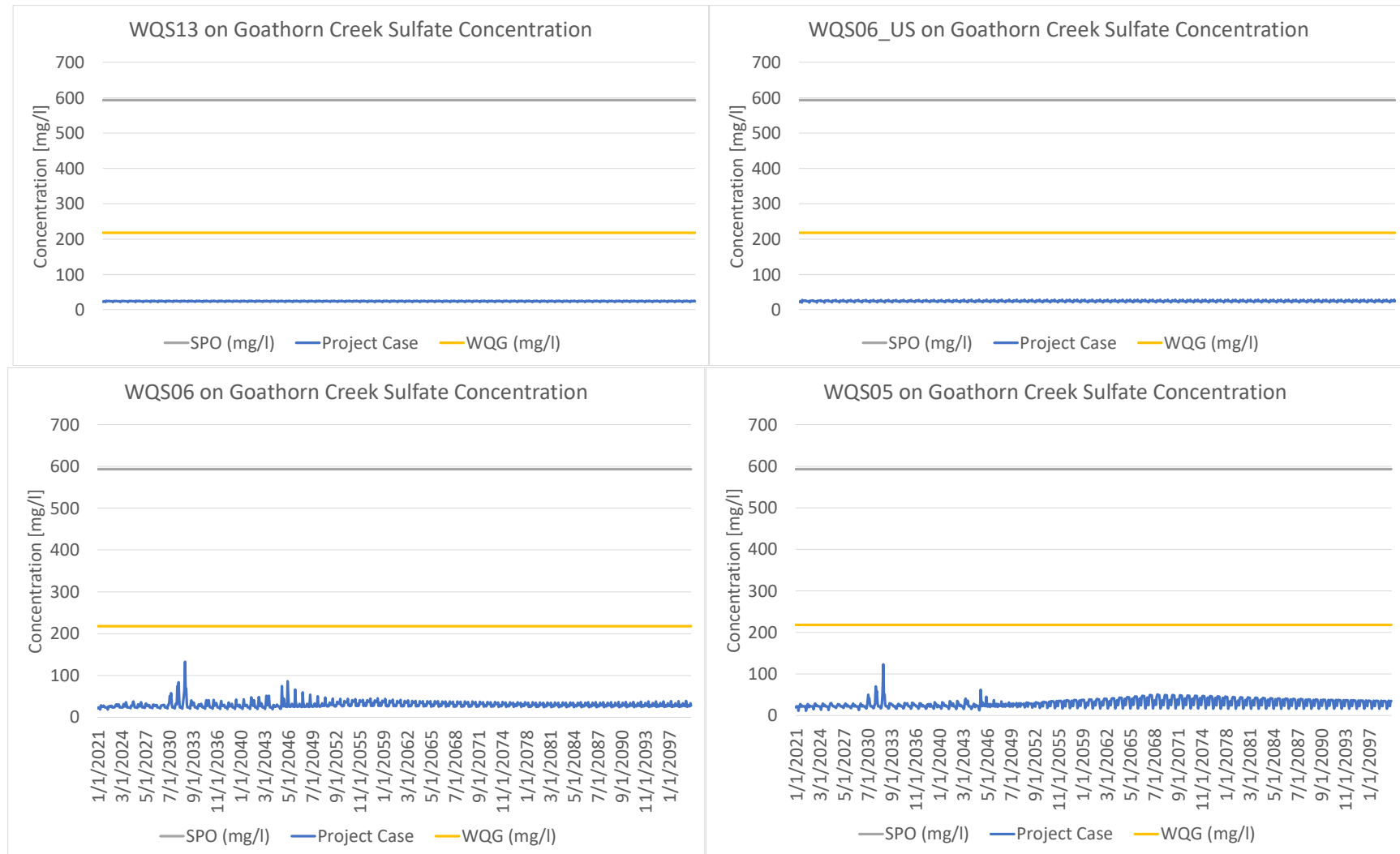
Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

Figure F-16. Sulphate Model Results for Project Case in Tenas Creek



Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

Figure F-17. Sulphate Model Results for Project Case in Goathorn Creek



Tenas Project Water and Load Balance Report
Appendix F: Project Case Figures

Figure F-18. Sulphate Model Results for Project Case in Telkwa and Bulkley River

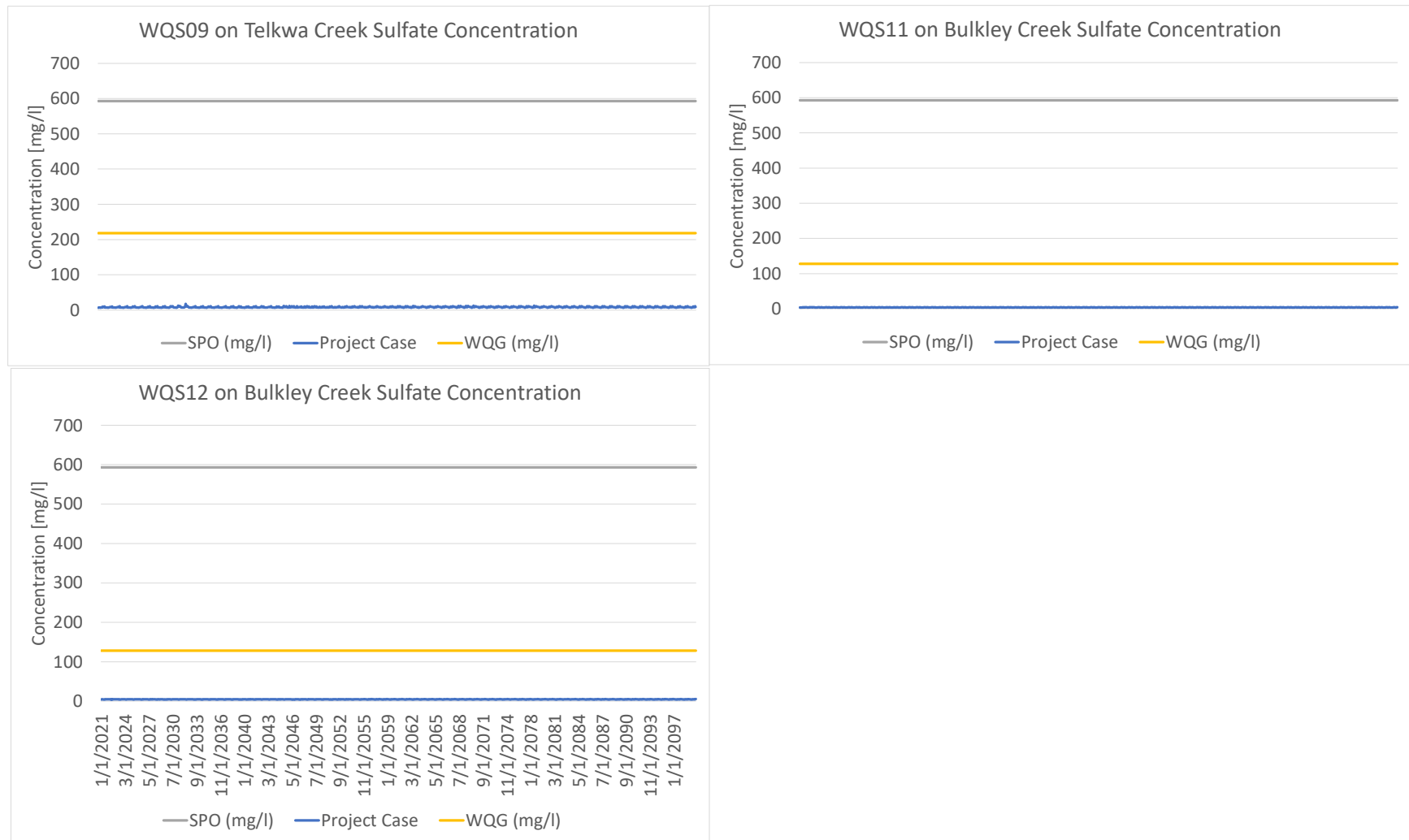
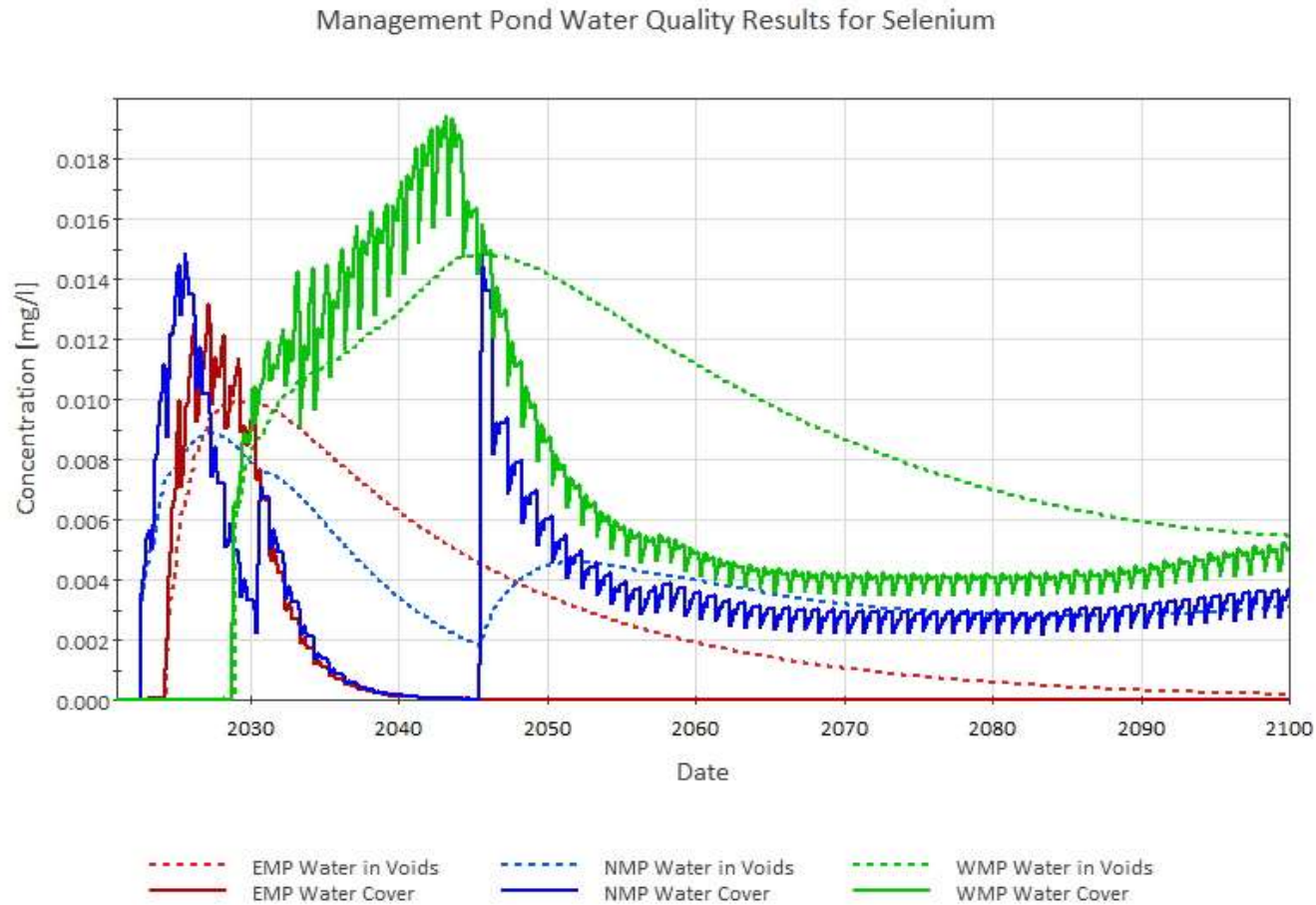
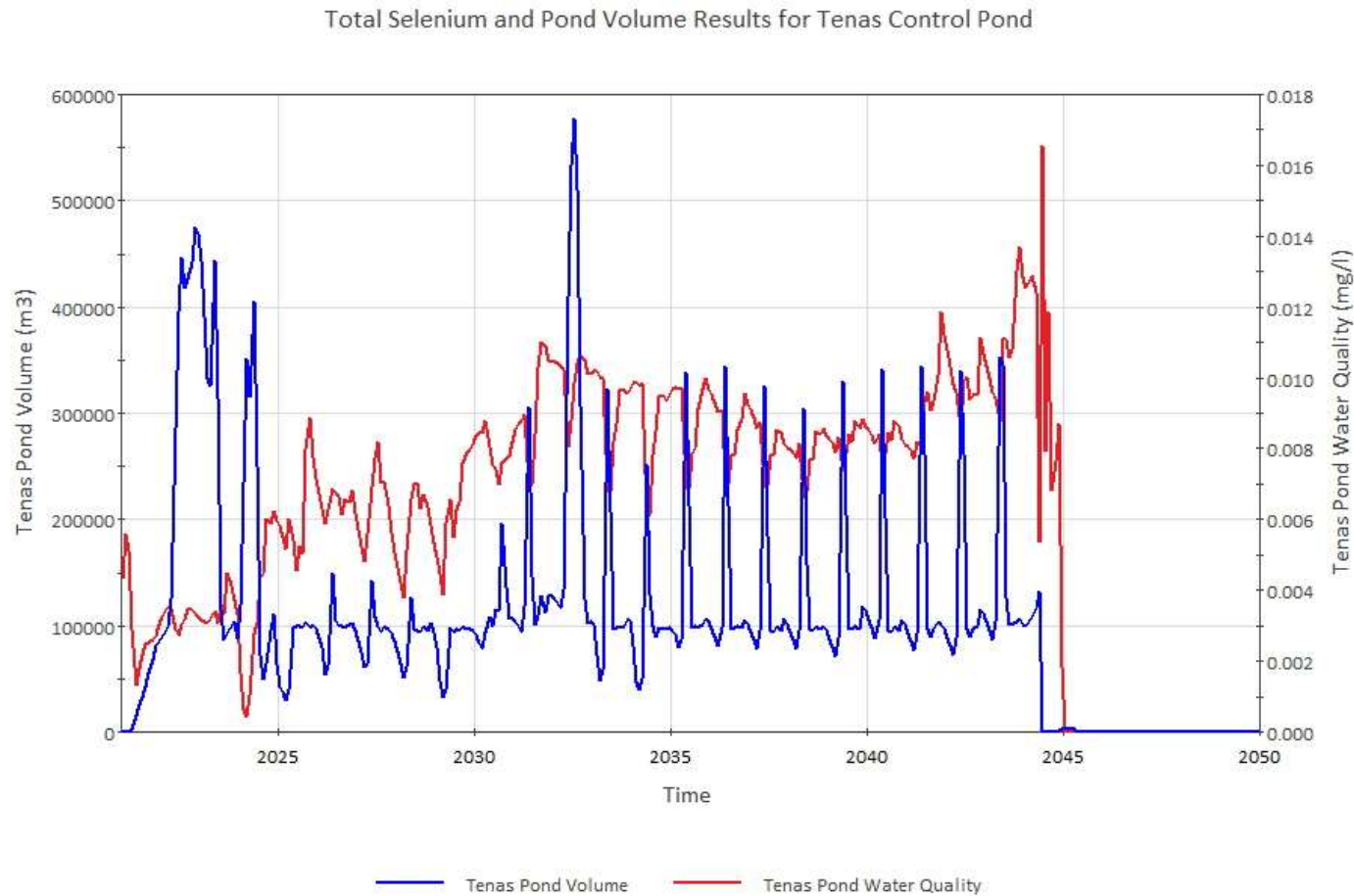


Figure F-19. Management Pond Water Quality Results for Total Selenium with Project Case



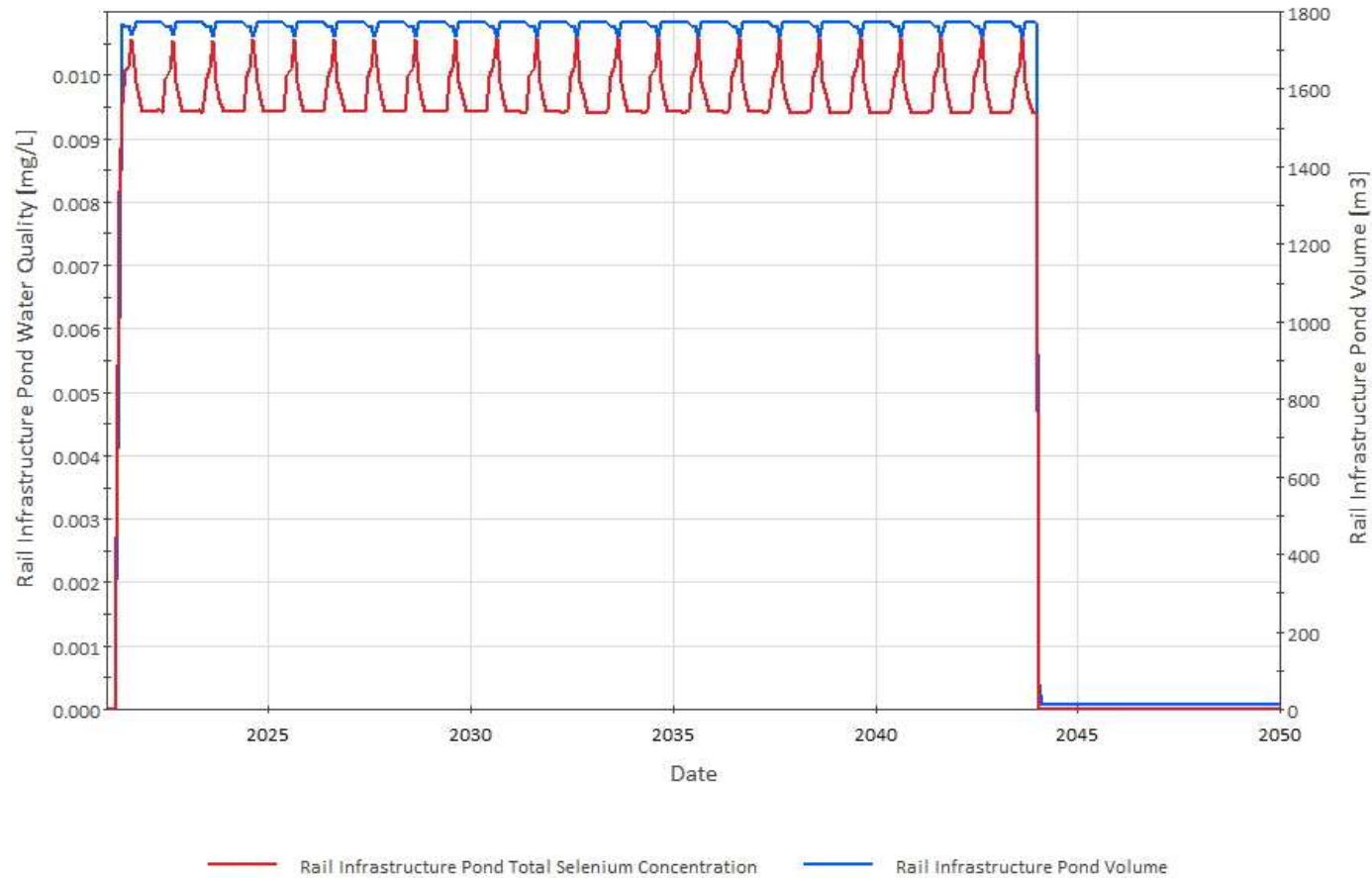
Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\080_Deliverables\WaterBalanceReport\030_Appendices\AppF_ProjectCaseResults\Feb2022_NewSourceTermSubmission\AppendixF-Figures\Plot_MP Se Water Quality_EA21.jpg

Figure F-20. Tenas Control Pond Water Quality Results for Total Selenium with Project Case



Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\080_Deliverables\WaterBalanceReport\030_Appendices\AppF_ProjectCaseResults\Feb2022_NewSourceTermSubmission\AppendixF-Figures\Plot_TCP Se Water Quality_EA21.jpg

Figure F-21. Rail Infrastructure Sedimentation Pond Water Quality Results for Total Selenium with Project Case



Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\080_Deliverables\WaterBalanceReport\030_Appendices\AppF_ProjectCaseResults\Feb2022_NewSourceTermSubmission\AppendixF-Figures\Plot_RLO Se Water Quality_EA21.jpg

Table F-1

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	West Management Pond									
				Goathorn Baseline		Operations				Closure			
				P50	P95	Project Case				Project Case			
						Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			68	102	160	158	83	87	109	111	67	68
Alkalinity, total	mg CaCO ₃ /L			52	87	1600	1600	750	810	1000	1100	480	500
Chloride	mg/L		150	0.25	0.50	44	44	19	21	27	30	11	12
Fluoride	mg/L		0.12	0.032	0.041	0.035	0.034	0.014	0.015	0.13	0.14	0.11	0.12
Ammonia, total	mg-N/L		1.5	0.0025	0.0070	1.2	1.4	0.55	0.61	0.13	0.18	0.051	0.055
Nitrate	mg/L	18.8	3	0.041	0.076	9.1	11	4.3	4.8	0.79	1.2	0.042	0.052
Nitrite	mg/L		0.02	0.00050	0.0020	0.21	0.26	0.099	0.11	0.019	0.028	0.0019	0.0021
Sulfate	mg/L		218	24	37	1100	1100	550	600	650	710	260	270
Aluminum, total	mg/L		0.1	0.092	0.75	0.24	0.28	0.100	0.11	0.39	0.40	0.37	0.37
Aluminum, dissolved	mg/L		0.05	0.014	0.13	0.20	0.24	0.067	0.075	0.022	0.032	0.0059	0.0061
Antimony, total	mg/L			0.000073	0.00014	0.0023	0.0023	0.0012	0.0012	0.0015	0.0016	0.00065	0.00068
Antimony, dissolved	mg/L		0.009	0.000050	0.00011	0.0023	0.0023	0.0012	0.0012	0.0015	0.0016	0.00065	0.00068
Arsenic, total	mg/L		0.005	0.00023	0.00068	0.0016	0.0016	0.00098	0.0010	0.0014	0.0015	0.00100	0.0010
Arsenic, dissolved	mg/L			0.00017	0.00035	0.0015	0.0015	0.00085	0.00087	0.00090	0.00099	0.00049	0.00051
Barium, total	mg/L		1	0.058	0.072	0.068	0.098	0.039	0.042	0.055	0.056	0.049	0.051
Barium, dissolved	mg/L			0.059	0.073	0.068	0.097	0.038	0.041	0.049	0.049	0.042	0.044
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000023	0.000038	0.000010	0.000011	0.000039	0.000039	0.000034	0.000035
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000023	0.000038	0.000010	0.000011	0.000039	0.000039	0.000034	0.000035
Boron, total	mg/L		1.2	0.0050	0.050	0.63	0.64	0.29	0.32	0.39	0.43	0.18	0.18
Boron, dissolved	mg/L			0.0050	0.050	0.63	0.64	0.29	0.32	0.39	0.43	0.18	0.18
Cadmium, total	mg/L		0.00009	0.000010	0.000049	0.00079	0.00073	0.00039	0.00037	0.00015	0.00017	0.000058	0.000060
Cadmium, dissolved	mg/L		0.00016	0.0000081	0.000036	0.00079	0.00073	0.00039	0.00037	0.00014	0.00016	0.000055	0.000058
Calcium, total	mg/L			21	30	18	17	10	10	14	13	12	12
Calcium, dissolved	mg/L			22	32	18	17	10	10	13	13	12	12
Chromium, total	mg/L		0.0089	0.00020	0.00091	0.0062	0.0062	0.0030	0.0032	0.0050	0.0053	0.0029	0.0030
Chromium, dissolved	mg/L			0.00010	0.00027	0.0061	0.0061	0.0028	0.0030	0.0038	0.0041	0.0017	0.0018
Cobalt, total	mg/L		0.004	0.000050	0.00055	0.0037	0.0038	0.0019	0.0020	0.0019	0.0021	0.0012	0.0012
Cobalt, dissolved	mg/L			0.000050	0.00011	0.0035	0.0037	0.0017	0.0018	0.0013	0.0015	0.00051	0.00053
Copper, total	mg/L		0.0028	0.0015	0.0054	0.0079	0.0079	0.0039	0.0041	0.0060	0.0063	0.0035	0.0036
Copper, dissolved	mg/L			0.0014	0.0039	0.0077	0.0077	0.0037	0.0039	0.0047	0.0050	0.0022	0.0023
Iron, total	mg/L		0.3	0.085	0.78	0.36	0.39	0.30	0.31	1.5	1.5	1.5	1.5
Iron, dissolved	mg/L		0.30	0.015	0.13	0.11	0.14	0.052	0.058	0.018	0.023	0.014	0.014
Lead, total	mg/L		0.0050	0.000025	0.00023	0.0011	0.0010	0.00065	0.00065	0.00087	0.00090	0.00066	0.00067
Lead, dissolved	mg/L			0.000025	0.000050	0.0010	0.00096	0.00056	0.00056	0.00047	0.00051	0.00027	0.00028
Lithium, total	mg/L			0.00050	0.0011	0.42	0.43	0.19	0.21	0.26	0.28	0.11	0.11
Lithium, dissolved	mg/L			0.00050	0.0010	0.42	0.43	0.19	0.21	0.26	0.28	0.11	0.11

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Parameter	Units	End-of-Pipe Limit	West Management Pond										
			Goathorn WQG	Goathorn Baseline		Operations				Closure			
						Project Case				Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L			3.9	6.5	28	28	14	15	18	19	8.9	9.2
Magnesium, dissolved	mg/L			3.8	7.4	28	28	14	15	17	19	8.6	8.9
Manganese, total	mg/L		0.12	0.0059	0.033	0.24	0.26	0.10	0.11	0.080	0.086	0.050	0.051
Manganese, dissolved	mg/L			0.0026	0.0084	0.24	0.25	0.100	0.11	0.055	0.061	0.025	0.026
Mercury, total	mg/L		0.00002	0.0000025	0.0000064	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.088	0.00047	0.00062	0.011	0.010	0.0049	0.0052	0.0066	0.0071	0.0033	0.0034
Molybdenum, dissolved	mg-N/L			0.00046	0.00062	0.011	0.010	0.0049	0.0052	0.0065	0.0071	0.0032	0.0033
Nickel, total	mg/L		0.080	0.00025	0.0011	0.014	0.014	0.0065	0.0070	0.0072	0.0077	0.0040	0.0041
Nickel, dissolved	mg/L			0.00025	0.00060	0.013	0.014	0.0063	0.0068	0.0053	0.0059	0.0022	0.0023
Phosphorus, total	mg/L			0.0045	0.019	0.0012	0.0012	0.0012	0.0012	0.015	0.015	0.015	0.015
Orthophosphate, dissolved	mg/L			0.00050	0.0040	0.00019	0.00038	0.000084	0.000089	0.00015	0.00014	0.00013	0.00013
Potassium, total	mg/L			0.39	1.0	46	46	20	22	29	32	12	13
Potassium, dissolved	mg/L			0.36	0.48	46	46	20	22	29	32	12	13
Selenium, total	mg/L	0.050	0.002	0.000086	0.00020	0.019	0.019	0.0087	0.0094	0.012	0.013	0.0048	0.0050
Selenium, dissolved	mg/L			0.000076	0.00012	0.019	0.019	0.0087	0.0094	0.012	0.013	0.0048	0.0050
Silica, dissolved	mg/L			5.6	6.2	25	24	11	12	15	16	7.3	7.5
Sodium, total	mg/L			2.3	4.8	1100	1100	500	540	740	790	330	340
Sodium, dissolved	mg/L			2.4	4.8	1100	1100	500	540	740	790	330	340
Strontium, total	mg/L		7.0	0.076	0.11	2.1	2.1	1.1	1.2	1.2	1.4	0.50	0.52
Strontium, dissolved	mg/L			0.077	0.12	2.1	2.1	1.1	1.2	1.2	1.4	0.50	0.52
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L		0.0008	0.0000050	0.000010	0.00079	0.00074	0.00039	0.00037	0.00020	0.00024	0.000093	0.000098
Thallium, dissolved	mg/L			0.0000050	0.000010	0.00079	0.00074	0.00039	0.00037	0.00020	0.00024	0.000093	0.000098
Uranium, total	mg/L		0.0085	0.000054	0.00014	0.0070	0.0071	0.0033	0.0035	0.0043	0.0047	0.0019	0.0020
Uranium, dissolved	mg/L			0.000051	0.00014	0.0070	0.0070	0.0032	0.0035	0.0043	0.0047	0.0019	0.0019
Vanadium, total	mg/L			0.00025	0.0020	0.019	0.019	0.0086	0.0093	0.013	0.014	0.0064	0.0066
Vanadium, dissolved	mg/L			0.00025	0.00052	0.019	0.019	0.0084	0.0091	0.012	0.013	0.0049	0.0051
Zinc, total	mg/L		0.0075	0.0015	0.0061	0.019	0.019	0.0097	0.010	0.013	0.013	0.0081	0.0083
Zinc, dissolved	mg/L			0.0015	0.0021	0.018	0.018	0.0090	0.0098	0.0089	0.0096	0.0045	0.0047

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsm

Table F-2

Parameter	Units	West Management Pond Void Space and Seepage Water Quality										
		WQG in Tenas Creek	Tenas Creek Baseline Water Quality		Operations				Closure			
					Project Case				Project Case			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L		72	103	22	23	11	11	37	37	32	32
Alkalinity, total	mg CaCO ₃ /L		83	110	1200	1300	660	650	1200	1300	790	790
Chloride	mg/L	150	0.25	0.50	32	32	16	16	32	33	20	20
Fluoride	mg/L	0.12	0.031	0.045	0.025	0.025	0.010	0.010	0.11	0.11	0.083	0.082
Ammonia, total	mg-N/L	1.2	0.0025	0.0074	0.98	0.98	0.52	0.51	0.83	0.84	0.36	0.36
Nitrate	mg/L	3	0.0050	0.060	7.7	7.7	4.1	4.0	6.5	6.6	2.6	2.6
Nitrite	mg/L	0.02	0.00050	0.0020	0.18	0.18	0.093	0.092	0.15	0.15	0.060	0.060
Sulfate	mg/L	218	2.6	7.4	910	920	480	480	900	910	520	520
Aluminum, total	mg/L	0.1	0.056	1.8	0.024	0.024	0.011	0.011	0.077	0.077	0.060	0.060
Aluminum, dissolved	mg/L	0.05	0.016	0.14	0.15	0.15	0.069	0.068	0.11	0.11	0.046	0.046
Antimony, total	mg/L		0.00013	0.00024	0.0019	0.0019	0.0010	0.0010	0.0019	0.0019	0.0012	0.0012
Antimony, dissolved	mg/L	0.009	0.00011	0.00023	0.000038	0.000039	0.000018	0.000017	0.00012	0.00012	0.000097	0.000096
Arsenic, total	mg/L	0.005	0.00048	0.00090	0.00013	0.00013	0.000064	0.000063	0.00030	0.00030	0.00025	0.00025
Arsenic, dissolved	mg/L		0.00041	0.00054	0.0013	0.0013	0.00079	0.00078	0.0013	0.0013	0.00082	0.00082
Barium, total	mg/L	1	0.034	0.047	0.020	0.020	0.0095	0.0093	0.061	0.061	0.048	0.048
Barium, dissolved	mg/L		0.033	0.043	0.072	0.071	0.040	0.039	0.059	0.059	0.049	0.049
Beryllium, total	mg/L	0.00013	0.000050	0.00010	0.000016	0.000016	0.0000080	0.0000079	0.000033	0.000033	0.000028	0.000028
Beryllium, dissolved	mg/L		0.000050	0.00010	0.000016	0.000016	0.0000080	0.0000079	0.000033	0.000033	0.000028	0.000028
Boron, total	mg/L	1.2	0.015	0.050	0.0064	0.0065	0.0026	0.0025	0.028	0.028	0.021	0.021
Boron, dissolved	mg/L		0.013	0.050	0.49	0.49	0.25	0.25	0.49	0.49	0.30	0.30
Cadmium, total	mg/L	0.00009	0.0000050	0.000021	0.0000037	0.0000037	0.0000017	0.0000016	0.000012	0.000012	0.0000095	0.0000095
Cadmium, dissolved	mg/L	0.00017	0.0000025	0.0000058	0.000064	0.000064	0.000038	0.000038	0.000052	0.000052	0.000024	0.000024
Calcium, total	mg/L		22	31	6.8	6.9	3.4	3.4	11	11	9.7	9.7
Calcium, dissolved	mg/L		21	31	16	16	9.4	9.3	15	15	13	13
Chromium, total	mg/L	0.0089	0.00032	0.0018	0.000096	0.000096	0.000046	0.000045	0.00027	0.00027	0.00021	0.00021
Chromium, dissolved	mg/L		0.00025	0.00041	0.0047	0.0047	0.0025	0.0024	0.0047	0.0047	0.0029	0.0029
Cobalt, total	mg/L	0.004	0.000050	0.00099	0.000029	0.000029	0.000012	0.000012	0.00011	0.00011	0.000084	0.000084
Cobalt, dissolved	mg/L		0.000050	0.00011	0.0029	0.0029	0.0016	0.0016	0.0027	0.0027	0.0014	0.0014
Copper, total	mg/L	0.003	0.0011	0.0050	0.00037	0.00037	0.00019	0.00018	0.00068	0.00068	0.00058	0.00058
Copper, dissolved	mg/L		0.0011	0.0030	0.0061	0.0061	0.0032	0.0032	0.0060	0.0060	0.0038	0.0038
Iron, total	mg/L	0.3	0.048	1.2	0.029	0.029	0.012	0.012	0.11	0.11	0.088	0.088
Iron, dissolved	mg/L	0.30	0.015	0.14	0.10	0.099	0.055	0.054	0.079	0.080	0.039	0.040
Lead, total	mg/L	0.0050	0.000025	0.00039	0.000031	0.000032	0.000012	0.000012	0.00015	0.00015	0.00012	0.00012
Lead, dissolved	mg/L		0.000025	0.000050	0.00089	0.00089	0.00053	0.00053	0.00082	0.00083	0.00049	0.00049
Lithium, total	mg/L		0.00050	0.0012	0.00013	0.00013	0.000068	0.000068	0.00013	0.00013	0.00013	0.00013
Lithium, dissolved	mg/L		0.00050	0.0010	0.32	0.32	0.16	0.16	0.32	0.32	0.19	0.19

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsx

Parameter	Units	West Management Pond Void Space and Seepage Water Quality										
		WQG in Tenas Creek	Tenas Creek Baseline Water Quality		Operations				Closure			
					Project Case				Project Case			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L		4.2	6.3	1.3	1.3	0.65	0.64	2.3	2.3	2.0	2.0
Magnesium, dissolved	mg/L		4.1	6.3	23	23	12	12	22	22	14	14
Manganese, total	mg/L	0.12	0.0050	0.058	0.0030	0.0030	0.0012	0.0012	0.013	0.013	0.0097	0.0097
Manganese, dissolved	mg/L		0.0020	0.0062	0.17	0.17	0.090	0.089	0.15	0.15	0.075	0.075
Mercury, total	mg/L	0.00001	0.0000025	0.0000089	0.00000090	0.00000090	0.00000044	0.00000043	0.0000023	0.0000023	0.0000018	0.0000018
Mercury, dissolved	mg/L		0.0000025	0.0000055	0.00052	0.00052	0.00030	0.00030	0.00039	0.00040	0.00017	0.00018
Molybdenum, total	mg-N/L	0.073	0.00012	0.00019	0.00010	0.00010	0.000049	0.000048	0.00027	0.00027	0.00022	0.00022
Molybdenum, dissolved	mg-N/L		0.00010	0.00019	0.0080	0.0081	0.0042	0.0042	0.0081	0.0081	0.0052	0.0052
Nickel, total	mg/L	0.080	0.00025	0.0017	0.000099	0.000099	0.000047	0.000046	0.00029	0.00029	0.00023	0.00023
Nickel, dissolved	mg/L		0.00025	0.00054	0.010	0.010	0.0057	0.0056	0.0099	0.0099	0.0053	0.0053
Phosphorus, total	mg/L		0.0042	0.046	0.0023	0.0024	0.0010	0.00099	0.0090	0.0090	0.0070	0.0069
Orthophosphate, dissolved	mg/L		0.0010	0.0040	0.00013	0.00013	0.000068	0.000068	0.00013	0.00013	0.00013	0.00013
Potassium, total	mg/L		0.23	1.0	0.16	0.16	0.072	0.071	0.49	0.49	0.39	0.39
Potassium, dissolved	mg/L		0.19	0.30	34	34	17	17	34	34	21	21
Selenium, total	mg/L	0.002	0.000051	0.00020	0.000022	0.000022	0.000011	0.000011	0.000042	0.000042	0.000035	0.000035
Selenium, dissolved	mg/L		0.000040	0.000073	0.015	0.015	0.0075	0.0075	0.015	0.015	0.0088	0.0088
Silica, dissolved	mg/L		7.0	8.0	18	18	9.1	9.0	18	18	12	12
Sodium, total	mg/L		3.5	4.8	7.2	7.3	2.6	2.5	39	39	29	29
Sodium, dissolved	mg/L		3.5	4.8	830	840	420	410	840	840	540	540
Strontium, total	mg/L	7.0	0.11	0.13	0.024	0.024	0.012	0.012	0.024	0.024	0.023	0.023
Strontium, dissolved	mg/L		0.10	0.14	1.8	1.8	0.96	0.95	1.7	1.7	1.00	1.00
Silver, total	mg/L	0.00005	0.0000050	0.000020	0.0000019	0.0000019	0.00000092	0.00000090	0.0000053	0.0000053	0.0000043	0.0000043
Silver, dissolved	mg/L		0.0000050	0.000010	0.00048	0.00048	0.00028	0.00028	0.00035	0.00035	0.00015	0.00015
Tin, total	mg/L		0.000050	0.00010	0.000029	0.000030	0.000013	0.000012	0.00011	0.00011	0.000087	0.000087
Tin, dissolved	mg/L		0.000050	0.00010	0.020	0.020	0.010	0.010	0.020	0.020	0.012	0.012
Thallium, total	mg/L	0.00088	0.0000050	0.000010	0.0000013	0.0000013	0.00000068	0.00000068	0.0000013	0.0000013	0.0000013	0.0000013
Thallium, dissolved	mg/L		0.0000050	0.000010	0.00065	0.00065	0.00038	0.00038	0.00054	0.00054	0.00027	0.00027
Uranium, total	mg/L	0.0085	0.00011	0.00025	0.000051	0.000051	0.000021	0.000020	0.00022	0.00022	0.00017	0.00017
Uranium, dissolved	mg/L		0.00011	0.00024	0.0054	0.0054	0.0028	0.0028	0.0054	0.0054	0.0033	0.0033
Vanadium, total	mg/L		0.00094	0.0037	0.00021	0.00022	0.00010	0.00010	0.00050	0.00050	0.00041	0.00041
Vanadium, dissolved	mg/L		0.00072	0.0010	0.014	0.014	0.0072	0.0071	0.014	0.014	0.0087	0.0087
Zinc, total	mg/L	0.0075	0.0015	0.0060	0.00057	0.00058	0.00027	0.00027	0.0016	0.0016	0.0013	0.0013
Zinc, dissolved	mg/L		0.0015	0.0015	0.015	0.015	0.0082	0.0081	0.014	0.014	0.0084	0.0085

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsx

Table F-3

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	East Management Pond									
				Goathorn Baseline		Operations				Closure			
						Project Case				Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			68	102	115	168	37	41	11	10	10	10
Alkalinity, total	mg CaCO ₃ /L			52	87	970	1100	270	310	7.9	7.6	7.0	7.1
Chloride	mg/L		150	0.25	0.50	25	29	6.8	7.7	0.038	0.039	0.025	0.025
Fluoride	mg/L		0.12	0.032	0.041	0.034	0.089	0.0059	0.0068	0.0036	0.0034	0.0032	0.0032
Ammonia, total	mg-N/L		1.5	0.0025	0.0070	0.46	0.55	0.16	0.19	0.0011	0.0013	0.00029	0.00030
Nitrate	mg/L	18.8	3	0.041	0.076	3.6	4.3	1.3	1.5	0.0094	0.011	0.0030	0.0031
Nitrite	mg/L		0.02	0.00050	0.0020	0.083	0.100	0.030	0.034	0.00020	0.00024	0.000057	0.000059
Sulfate	mg/L		218	24	37	690	800	190	210	0.94	0.98	0.61	0.62
Aluminum, total	mg/L		0.1	0.092	0.75	0.42	0.43	0.30	0.30	0.37	0.37	0.37	0.37
Aluminum, dissolved	mg/L		0.05	0.014	0.13	0.32	0.34	0.059	0.063	0.0017	0.0015	0.0015	0.0015
Antimony, total	mg/L			0.000073	0.00014	0.0015	0.0016	0.00048	0.00051	0.0000062	0.0000061	0.0000049	0.0000050
Antimony, dissolved	mg/L		0.009	0.000050	0.00011	0.0015	0.0016	0.00048	0.00052	0.0000081	0.0000081	0.0000069	0.0000069
Arsenic, total	mg/L		0.005	0.00023	0.00068	0.0016	0.0016	0.00074	0.00077	0.00054	0.00054	0.00054	0.00054
Arsenic, dissolved	mg/L			0.00017	0.00035	0.0011	0.0011	0.00038	0.00041	0.000034	0.000032	0.000030	0.000031
Barium, total	mg/L		1	0.058	0.072	0.080	0.081	0.028	0.030	0.012	0.011	0.011	0.011
Barium, dissolved	mg/L			0.059	0.073	0.079	0.080	0.023	0.025	0.0051	0.0047	0.0045	0.0045
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000034	0.000083	0.0000074	0.0000085	0.0000055	0.0000051	0.0000049	0.0000049
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000034	0.000083	0.0000074	0.0000085	0.0000055	0.0000051	0.0000049	0.0000049
Boron, total	mg/L		1.2	0.0050	0.050	0.37	0.44	0.10	0.12	0.0010	0.0011	0.00085	0.00085
Boron, dissolved	mg/L			0.0050	0.050	0.37	0.44	0.10	0.12	0.00069	0.00071	0.00050	0.00050
Cadmium, total	mg/L		0.00009	0.000010	0.000049	0.00057	0.00054	0.00015	0.00015	0.0000033	0.0000033	0.0000030	0.0000030
Cadmium, dissolved	mg/L		0.00016	0.0000081	0.000036	0.00056	0.00054	0.00015	0.00015	0.00000076	0.00000080	0.00000050	0.00000051
Calcium, total	mg/L			21	30	18	36	6.1	6.6	3.1	2.9	2.8	2.9
Calcium, dissolved	mg/L			22	32	18	36	5.7	6.2	2.5	2.4	2.2	2.3
Chromium, total	mg/L		0.0089	0.00020	0.00091	0.0038	0.0043	0.0018	0.0019	0.0012	0.0012	0.0012	0.0012
Chromium, dissolved	mg/L			0.00010	0.00027	0.0037	0.0042	0.0010	0.0011	0.000018	0.000018	0.000016	0.000016
Cobalt, total	mg/L		0.004	0.000050	0.00055	0.0025	0.0026	0.0011	0.0011	0.00065	0.00065	0.00065	0.00065
Cobalt, dissolved	mg/L			0.000050	0.00011	0.0021	0.0023	0.00065	0.00070	0.0000065	0.0000066	0.0000050	0.0000050
Copper, total	mg/L		0.0028	0.0015	0.0054	0.0049	0.0055	0.0023	0.0024	0.0014	0.0014	0.0014	0.0014
Copper, dissolved	mg/L			0.0014	0.0039	0.0047	0.0053	0.0014	0.0016	0.00012	0.00011	0.00011	0.00011
Iron, total	mg/L		0.3	0.085	0.78	1.5	1.5	1.0	1.0	1.5	1.5	1.5	1.5
Iron, dissolved	mg/L		0.30	0.015	0.13	0.14	0.17	0.029	0.031	0.0017	0.0015	0.0015	0.0015
Lead, total	mg/L		0.0050	0.000025	0.00023	0.00088	0.0010	0.00049	0.00050	0.00040	0.00040	0.00040	0.00040
Lead, dissolved	mg/L			0.000025	0.000050	0.00076	0.00075	0.00021	0.00022	0.0000029	0.0000029	0.0000025	0.0000025
Lithium, total	mg/L			0.00050	0.0011	0.25	0.29	0.068	0.076	0.00017	0.00019	0.000055	0.000056
Lithium, dissolved	mg/L			0.00050	0.0010	0.25	0.29	0.068	0.076	0.00017	0.00019	0.000055	0.000056

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	East Management Pond									
				Goathorn Baseline		Operations				Closure			
						Project Case				Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L			3.9	6.5	17	19	5.4	6.0	0.80	0.76	0.74	0.75
Magnesium, dissolved	mg/L			3.8	7.4	17	19	5.2	5.8	0.47	0.44	0.42	0.42
Manganese, total	mg/L		0.12	0.0059	0.033	0.11	0.13	0.045	0.048	0.026	0.026	0.026	0.026
Manganese, dissolved	mg/L			0.0026	0.0084	0.11	0.12	0.028	0.031	0.00024	0.00024	0.00020	0.00020
Mercury, total	mg/L		0.00002	0.0000025	0.0000064	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.088	0.00047	0.00062	0.0063	0.0071	0.0022	0.0025	0.00047	0.00044	0.00042	0.00042
Molybdenum, dissolved	mg-N/L			0.00046	0.00062	0.0063	0.0071	0.0022	0.0025	0.00044	0.00041	0.00039	0.00039
Nickel, total	mg/L		0.080	0.00025	0.0011	0.0076	0.0085	0.0033	0.0035	0.0019	0.0019	0.0018	0.0018
Nickel, dissolved	mg/L			0.00025	0.00060	0.0074	0.0083	0.0021	0.0023	0.000030	0.000029	0.000025	0.000025
Phosphorus, total	mg/L			0.0045	0.019	0.015	0.015	0.0097	0.0097	0.015	0.015	0.015	0.015
Orthophosphate, dissolved	mg/L			0.00050	0.0040	0.00032	0.00075	0.000072	0.000083	0.000055	0.000051	0.000049	0.000049
Potassium, total	mg/L			0.39	1.0	25	30	7.0	7.9	0.11	0.11	0.095	0.096
Potassium, dissolved	mg/L			0.36	0.48	25	30	6.9	7.8	0.044	0.045	0.031	0.031
Selenium, total	mg/L	0.050	0.002	0.000086	0.00020	0.011	0.013	0.0032	0.0036	0.000017	0.000018	0.000011	0.000011
Selenium, dissolved	mg/L			0.000076	0.00012	0.011	0.013	0.0032	0.0036	0.000012	0.000013	0.0000058	0.0000059
Silica, dissolved	mg/L			5.6	6.2	14	16	4.3	4.8	0.69	0.64	0.62	0.62
Sodium, total	mg/L			2.3	4.8	620	720	170	190	0.67	0.73	0.39	0.39
Sodium, dissolved	mg/L			2.4	4.8	620	720	170	190	0.60	0.65	0.31	0.31
Strontium, total	mg/L		7.0	0.076	0.11	1.3	1.6	0.40	0.44	0.014	0.013	0.013	0.013
Strontium, dissolved	mg/L			0.077	0.12	1.3	1.6	0.40	0.44	0.010	0.010	0.0092	0.0093
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L		0.0008	0.0000050	0.000010	0.00057	0.00057	0.00017	0.00017	0.00000092	0.00000090	0.0000005	0.00000052
Thallium, dissolved	mg/L			0.0000050	0.000010	0.00057	0.00057	0.00017	0.00017	0.00000092	0.00000090	0.0000005	0.00000052
Uranium, total	mg/L		0.0085	0.000054	0.00014	0.0042	0.0048	0.0012	0.0013	0.000021	0.000021	0.000019	0.000019
Uranium, dissolved	mg/L			0.000051	0.00014	0.0042	0.0048	0.0012	0.0013	0.0000087	0.0000088	0.0000064	0.0000065
Vanadium, total	mg/L			0.00025	0.0020	0.011	0.013	0.0040	0.0043	0.0015	0.0015	0.0015	0.0015
Vanadium, dissolved	mg/L			0.00025	0.00052	0.011	0.013	0.0030	0.0034	0.000031	0.000031	0.000025	0.000025
Zinc, total	mg/L		0.0075	0.0015	0.0061	0.012	0.013	0.0057	0.0060	0.0038	0.0038	0.0038	0.0038
Zinc, dissolved	mg/L			0.0015	0.0021	0.011	0.012	0.0032	0.0035	0.00017	0.00015	0.00015	0.00015

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Table F-4

Parameter	Units	East Management Pond Void Space and Seepage Water Quality										
		WQG in Four Creek	Four Creek Baseline Water Quality		Operations				Closure			
					Project Case				Project Case			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L		118	163	42	42	17	16	11	11	8	8
Alkalinity, total	mg CaCO ₃ /L		130	190	870	870	580	570	350	360	110	110
Chloride	mg/L	150	0.25	0.50	22	22	14	14	8.8	8.9	2.7	2.7
Fluoride	mg/L	0.12	0.059	0.068	0.028	0.028	0.010	0.0099	0.0062	0.0063	0.0041	0.0041
Ammonia, total	mg-N/L	0.95	0.0025	0.0092	0.35	0.35	0.26	0.25	0.17	0.18	0.053	0.054
Nitrate	mg/L	3	0.013	0.058	2.8	2.8	2.0	2.0	1.4	1.4	0.42	0.43
Nitrite	mg/L	0.02	0.00050	0.0010	0.064	0.064	0.047	0.046	0.031	0.032	0.0097	0.0098
Sulfate	mg/L	309	1.9	28	610	610	400	400	250	250	76	77
Aluminum, total	mg/L	0.1	0.099	1.2	0.037	0.037	0.014	0.013	0.0090	0.0090	0.0065	0.0065
Aluminum, dissolved	mg/L	0.05	0.032	0.49	0.27	0.27	0.16	0.15	0.083	0.085	0.027	0.027
Antimony, total	mg/L		0.000050	0.00012	0.0013	0.0013	0.00090	0.00089	0.00057	0.00058	0.00018	0.00018
Antimony, dissolved	mg/L	0.009	0.000050	0.00010	0.000058	0.000057	0.000022	0.000021	0.000014	0.000014	0.000010	0.000010
Arsenic, total	mg/L	0.005	0.00074	0.0011	0.00023	0.00023	0.000088	0.000083	0.000058	0.000058	0.000043	0.000043
Arsenic, dissolved	mg/L		0.00064	0.00086	0.00098	0.00098	0.00069	0.00067	0.00043	0.00044	0.00015	0.00016
Barium, total	mg/L	1	0.071	0.13	0.032	0.031	0.012	0.011	0.0077	0.0078	0.0057	0.0057
Barium, dissolved	mg/L		0.075	0.13	0.067	0.068	0.041	0.040	0.026	0.026	0.011	0.011
Beryllium, total	mg/L	0.00013	0.000050	0.00010	0.000030	0.000029	0.000011	0.000011	0.0000075	0.0000075	0.0000057	0.0000057
Beryllium, dissolved	mg/L		0.000050	0.00010	0.000030	0.000029	0.000011	0.000011	0.0000075	0.0000075	0.0000057	0.0000057
Boron, total	mg/L	1.2	0.012	0.020	0.0069	0.0069	0.0026	0.0025	0.0015	0.0015	0.0010	0.0010
Boron, dissolved	mg/L		0.011	0.019	0.33	0.33	0.22	0.22	0.13	0.14	0.042	0.042
Cadmium, total	mg/L	0.00009	0.0000063	0.000019	0.0000054	0.0000053	0.0000020	0.0000019	0.0000013	0.0000013	0.00000094	0.00000094
Cadmium, dissolved	mg/L	0.00024	0.0000052	0.000012	0.00044	0.00044	0.00029	0.00029	0.00018	0.00018	0.000055	0.000056
Calcium, total	mg/L		24	34	13	13	5.1	4.8	3.4	3.4	2.6	2.6
Calcium, dissolved	mg/L		23	36	16	16	9.5	9.2	6.2	6.3	3.4	3.5
Chromium, total	mg/L	0.0089	0.00026	0.0016	0.00016	0.00016	0.000060	0.000057	0.000039	0.000039	0.000029	0.000029
Chromium, dissolved	mg/L		0.00015	0.00079	0.0032	0.0032	0.0021	0.0021	0.0013	0.0013	0.00041	0.00042
Cobalt, total	mg/L	0.004	0.000050	0.00047	0.000037	0.000037	0.000014	0.000013	0.0000086	0.0000087	0.0000060	0.0000060
Cobalt, dissolved	mg/L		0.000050	0.00015	0.0019	0.0019	0.0013	0.0012	0.00078	0.00080	0.00024	0.00025
Copper, total	mg/L	0.0047	0.0014	0.0044	0.00070	0.00069	0.00027	0.00025	0.00018	0.00018	0.00014	0.00014
Copper, dissolved	mg/L		0.0014	0.0034	0.0043	0.0043	0.0029	0.0028	0.0018	0.0018	0.00062	0.00062
Iron, total	mg/L	0.3	0.095	1.1	0.036	0.036	0.014	0.013	0.0084	0.0085	0.0058	0.0058
Iron, dissolved	mg/L	0.30	0.015	0.41	0.13	0.13	0.074	0.072	0.040	0.040	0.013	0.013
Lead, total	mg/L	0.0050	0.000025	0.00028	0.000028	0.000029	0.000010	0.0000099	0.0000057	0.0000058	0.0000035	0.0000035
Lead, dissolved	mg/L		0.000025	0.000091	0.00063	0.00063	0.00042	0.00042	0.00026	0.00026	0.000082	0.000082
Lithium, total	mg/L		0.0015	0.0019	0.00028	0.00027	0.00011	0.00010	0.000072	0.000072	0.000056	0.000056
Lithium, dissolved	mg/L		0.0014	0.0019	0.22	0.22	0.14	0.14	0.088	0.089	0.027	0.027

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsx

Parameter	Units	East Management Pond Void Space and Seepage Water Quality										
		WQG in Four Creek	Four Creek Baseline Water Quality		Operations				Closure			
					Project Case				Project Case			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L		14	19	2.4	2.4	0.94	0.88	0.62	0.63	0.47	0.48
Magnesium, dissolved	mg/L		13	20	15	15	10	10	6.4	6.6	2.3	2.3
Manganese, total	mg/L	0.12	0.0025	0.024	0.0034	0.0034	0.0013	0.0012	0.00077	0.00078	0.00052	0.00052
Manganese, dissolved	mg/L		0.00067	0.0074	0.094	0.094	0.061	0.061	0.037	0.038	0.011	0.012
Mercury, total	mg/L	0.00001	0.0000025	0.000013	0.0000015	0.0000015	0.00000059	0.00000056	0.00000038	0.00000039	0.00000029	0.00000029
Mercury, dissolved	mg/L		0.0000025	0.0000093	0.00034	0.00034	0.00022	0.00022	0.00014	0.00014	0.000043	0.000044
Molybdenum, total	mg-N/L	0.073	0.00023	0.00038	0.00017	0.00017	0.000064	0.000061	0.000042	0.000042	0.000031	0.000031
Molybdenum, dissolved	mg-N/L		0.00019	0.00036	0.0059	0.0059	0.0041	0.0040	0.0026	0.0026	0.0011	0.0011
Nickel, total	mg/L	0.080	0.00025	0.0018	0.00016	0.00016	0.000061	0.000057	0.000039	0.000039	0.000029	0.000029
Nickel, dissolved	mg/L		0.00025	0.0011	0.0065	0.0065	0.0043	0.0043	0.0027	0.0027	0.00083	0.00084
Phosphorus, total	mg/L		0.0041	0.044	0.0030	0.0030	0.0011	0.0011	0.00069	0.00070	0.00048	0.00048
Orthophosphate, dissolved	mg/L		0.00050	0.0012	0.00028	0.00027	0.00011	0.00010	0.000072	0.000072	0.000056	0.000056
Potassium, total	mg/L		0.36	0.77	0.24	0.24	0.090	0.085	0.058	0.058	0.042	0.042
Potassium, dissolved	mg/L		0.35	0.84	22	22	14	14	8.9	9.1	2.8	2.8
Selenium, total	mg/L	0.002	0.000025	0.000095	0.000040	0.000039	0.000015	0.000014	0.000010	0.000010	0.0000077	0.0000077
Selenium, dissolved	mg/L		0.000025	0.00011	0.0099	0.0099	0.0066	0.0065	0.0040	0.0041	0.0012	0.0013
Silica, dissolved	mg/L				12	12	8.3	8.2	5.2	5.3	2.0	2.0
Sodium, total	mg/L		7.0	13	5.4	5.5	1.9	1.8	0.97	0.98	0.49	0.50
Sodium, dissolved	mg/L		7.4	13	540	540	350	350	220	220	67	68
Strontium, total	mg/L	7.0	0.17	0.24	0.050	0.049	0.019	0.018	0.013	0.013	0.010	0.010
Strontium, dissolved	mg/L		0.16	0.24	1.2	1.2	0.82	0.81	0.50	0.51	0.16	0.16
Silver, total	mg/L	0.0015	0.0000050	0.000022	0.0000031	0.0000031	0.0000012	0.0000011	0.00000078	0.00000078	0.00000058	0.00000058
Silver, dissolved	mg/L		0.0000050	0.000012	0.00031	0.00031	0.00020	0.00020	0.00013	0.00013	0.000040	0.000040
Tin, total	mg/L		0.000050	0.00010	0.000037	0.000037	0.000014	0.000013	0.0000086	0.0000087	0.0000060	0.0000060
Tin, dissolved	mg/L		0.000050	0.00010	0.014	0.014	0.0089	0.0088	0.0054	0.0055	0.0017	0.0017
Thallium, total	mg/L	0.00088	0.0000050	0.000010	0.0000028	0.0000027	0.0000011	0.0000010	0.00000072	0.00000072	0.00000056	0.00000056
Thallium, dissolved	mg/L		0.0000050	0.000010	0.00044	0.00044	0.00030	0.00030	0.00019	0.00020	0.000060	0.000060
Uranium, total	mg/L	0.0085	0.000078	0.00025	0.000056	0.000056	0.000021	0.000020	0.000013	0.000013	0.0000084	0.0000084
Uranium, dissolved	mg/L		0.000075	0.00025	0.0037	0.0037	0.0024	0.0024	0.0015	0.0015	0.00046	0.00047
Vanadium, total	mg/L		0.00061	0.0027	0.00037	0.00037	0.00014	0.00014	0.000094	0.000095	0.000071	0.000071
Vanadium, dissolved	mg/L		0.00025	0.0013	0.0096	0.0096	0.0063	0.0062	0.0039	0.0039	0.0012	0.0012
Zinc, total	mg/L	0.029	0.0015	0.0059	0.00094	0.00093	0.00036	0.00034	0.00023	0.00024	0.00017	0.00017
Zinc, dissolved	mg/L		0.0015	0.0025	0.010	0.010	0.0067	0.0066	0.0041	0.0041	0.0013	0.0014

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsx

Table F-5

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	North Management Pond									
				Baseline in Goathorn Creek		Operations				Closure			
						Project Case				Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			68	102	171	157	41	42	73	83	46	51
Alkalinity, total	mg CaCO ₃ /L			52	87	1200	1100	290	310	660	780	310	360
Chloride	mg/L		150	0.25	0.50	31	31	7.5	8.2	18	21	7.4	8.6
Fluoride	mg/L		0.12	0.032	0.041	0.046	0.038	0.0054	0.0055	0.090	0.098	0.075	0.085
Ammonia, total	mg-N/L		1.5	0.0025	0.0070	0.65	0.65	0.20	0.21	0.10	0.16	0.034	0.039
Nitrate	mg/L	18.8	3	0.041	0.076	5.2	5.1	1.6	1.7	0.65	1.1	0.032	0.046
Nitrite	mg/L		0.02	0.00050	0.0020	0.12	0.12	0.036	0.039	0.015	0.026	0.0013	0.0017
Sulfate	mg/L		218	24	37	790	790	200	210	430	510	170	200
Aluminum, total	mg/L		0.1	0.092	0.75	0.47	0.47	0.35	0.36	0.39	0.40	0.37	0.37
Aluminum, dissolved	mg/L		0.05	0.014	0.13	0.32	0.36	0.040	0.047	0.018	0.031	0.0042	0.0049
Antimony, total	mg/L			0.000073	0.00014	0.0024	0.0022	0.00058	0.00062	0.00097	0.0012	0.00042	0.00049
Antimony, dissolved	mg/L		0.009	0.000050	0.00011	0.0024	0.0022	0.00059	0.00062	0.00097	0.0012	0.00042	0.00049
Arsenic, total	mg/L		0.005	0.00023	0.00068	0.0023	0.0021	0.00090	0.00092	0.0011	0.0012	0.00083	0.00088
Arsenic, dissolved	mg/L			0.00017	0.00035	0.0018	0.0016	0.00046	0.00047	0.00060	0.00074	0.00032	0.00037
Barium, total	mg/L		1	0.058	0.072	0.094	0.086	0.031	0.032	0.040	0.042	0.035	0.039
Barium, dissolved	mg/L			0.059	0.073	0.088	0.080	0.026	0.027	0.033	0.035	0.028	0.032
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000063	0.000046	0.0000070	0.0000069	0.000027	0.000028	0.000023	0.000026
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000063	0.000046	0.0000070	0.0000069	0.000027	0.000028	0.000023	0.000026
Boron, total	mg/L		1.2	0.0050	0.050	0.45	0.45	0.11	0.12	0.26	0.31	0.11	0.13
Boron, dissolved	mg/L			0.0050	0.050	0.45	0.45	0.11	0.12	0.26	0.30	0.11	0.13
Cadmium, total	mg/L		0.00009	0.000010	0.000049	0.00068	0.00064	0.00017	0.00017	0.00010	0.00013	0.000038	0.000044
Cadmium, dissolved	mg/L		0.00016	0.0000081	0.000036	0.00068	0.00064	0.00017	0.00017	0.000098	0.00013	0.000036	0.000042
Calcium, total	mg/L			21	30	32	25	6.4	6.3	9.6	10	8.6	9.4
Calcium, dissolved	mg/L			22	32	32	25	5.9	5.8	9.0	9.5	8.0	8.8
Chromium, total	mg/L		0.0089	0.00020	0.00091	0.0057	0.0057	0.0021	0.0022	0.0036	0.0041	0.0023	0.0025
Chromium, dissolved	mg/L			0.00010	0.00027	0.0045	0.0046	0.0011	0.0012	0.0025	0.0029	0.0011	0.0013
Cobalt, total	mg/L		0.004	0.000050	0.00055	0.0036	0.0033	0.0013	0.0013	0.0015	0.0018	0.00097	0.0010
Cobalt, dissolved	mg/L			0.000050	0.00011	0.0030	0.0027	0.00075	0.00079	0.00088	0.0011	0.00033	0.00039
Copper, total	mg/L		0.0028	0.0015	0.0054	0.0070	0.0071	0.0026	0.0027	0.0044	0.0049	0.0028	0.0030
Copper, dissolved	mg/L			0.0014	0.0039	0.0057	0.0058	0.0015	0.0016	0.0031	0.0036	0.0015	0.0017
Iron, total	mg/L		0.3	0.085	0.78	1.5	1.5	1.3	1.3	1.5	1.5	1.5	1.5
Iron, dissolved	mg/L		0.30	0.015	0.13	0.16	0.19	0.022	0.025	0.014	0.020	0.0093	0.010
Lead, total	mg/L		0.0050	0.000025	0.00023	0.0013	0.0013	0.00058	0.00058	0.00070	0.00076	0.00057	0.00059
Lead, dissolved	mg/L			0.000025	0.000050	0.00091	0.00088	0.00024	0.00024	0.00031	0.00036	0.00017	0.00020
Lithium, total	mg/L			0.00050	0.0011	0.30	0.30	0.073	0.079	0.17	0.20	0.069	0.080
Lithium, dissolved	mg/L			0.00050	0.0010	0.30	0.30	0.073	0.079	0.17	0.20	0.069	0.080

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	North Management Pond									
				Baseline in Goathorn Creek		Operations				Closure			
				P50	P95	Project Case				Project Case			
						Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L			3.9	6.5	22	23	6.0	6.3	12	14	6.0	6.8
Magnesium, dissolved	mg/L			3.8	7.4	22	22	5.7	6.0	11	13	5.6	6.5
Manganese, total	mg/L		0.12	0.0059	0.033	0.11	0.11	0.045	0.047	0.062	0.070	0.041	0.044
Manganese, dissolved	mg/L			0.0026	0.0084	0.091	0.11	0.023	0.025	0.036	0.044	0.016	0.018
Mercury, total	mg/L		0.00002	0.0000025	0.0000064	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.088	0.00047	0.00062	0.0092	0.0084	0.0025	0.0026	0.0044	0.0053	0.0022	0.0025
Molybdenum, dissolved	mg-N/L			0.00046	0.00062	0.0091	0.0084	0.0025	0.0026	0.0044	0.0052	0.0022	0.0025
Nickel, total	mg/L		0.080	0.00025	0.0011	0.010	0.0096	0.0037	0.0039	0.0054	0.0062	0.0033	0.0035
Nickel, dissolved	mg/L			0.00025	0.00060	0.0084	0.0078	0.0022	0.0023	0.0035	0.0043	0.0014	0.0017
Phosphorus, total	mg/L			0.0045	0.019	0.015	0.015	0.013	0.013	0.015	0.015	0.015	0.015
Orthophosphate, dissolved	mg/L			0.00050	0.0040	0.00062	0.00044	0.000068	0.000067	0.00011	0.00011	0.000094	0.00010
Potassium, total	mg/L			0.39	1.0	32	33	7.7	8.3	19	23	8.0	9.2
Potassium, dissolved	mg/L			0.36	0.48	32	33	7.6	8.3	19	23	7.9	9.1
Selenium, total	mg/L	0.050	0.002	0.000086	0.00020	0.015	0.014	0.0035	0.0039	0.0078	0.0093	0.0031	0.0036
Selenium, dissolved	mg/L			0.000076	0.00012	0.015	0.014	0.0035	0.0038	0.0078	0.0093	0.0031	0.0036
Silica, dissolved	mg/L			5.6	6.2	17	18	4.6	4.9	10	12	4.8	5.5
Sodium, total	mg/L			2.3	4.8	780	800	180	200	480	560	210	240
Sodium, dissolved	mg/L			2.4	4.8	780	800	180	200	480	560	210	240
Strontium, total	mg/L		7.0	0.076	0.11	1.7	1.6	0.42	0.46	0.82	0.99	0.33	0.38
Strontium, dissolved	mg/L			0.077	0.12	1.7	1.6	0.42	0.45	0.81	0.98	0.32	0.37
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L		0.0008	0.0000050	0.000010	0.000086	0.00078	0.00022	0.00023	0.00014	0.00019	0.000060	0.000070
Thallium, dissolved	mg/L			0.0000050	0.000010	0.00086	0.00078	0.00022	0.00023	0.00014	0.00019	0.000060	0.000070
Uranium, total	mg/L		0.0085	0.000054	0.00014	0.0052	0.0053	0.0013	0.0014	0.0028	0.0034	0.0012	0.0014
Uranium, dissolved	mg/L			0.000051	0.00014	0.0052	0.0052	0.0013	0.0014	0.0028	0.0033	0.0012	0.0014
Vanadium, total	mg/L			0.00025	0.0020	0.015	0.015	0.0045	0.0048	0.0091	0.011	0.0046	0.0051
Vanadium, dissolved	mg/L			0.00025	0.00052	0.014	0.014	0.0033	0.0035	0.0076	0.0091	0.0032	0.0037
Zinc, total	mg/L		0.0075	0.0015	0.0061	0.016	0.015	0.0063	0.0066	0.0095	0.011	0.0066	0.0070
Zinc, dissolved	mg/L			0.0015	0.0021	0.012	0.013	0.0032	0.0035	0.0058	0.0070	0.0029	0.0034

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Table F-6

Parameter	Units	North Management Pond Void Space and Seepage Water Quality										
		WQG in Tenas Creek	Tenas Creek Baseline Water Quality		Operations				Closure			
					Project Case				Project Case			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L		72	103	78	75	25	26	29	29	25	25
Alkalinity, total	mg CaCO ₃ /L		83	110	770	770	470	470	400	400	330	330
Chloride	mg/L	150	0.25	0.50	19	19	12	12	10	10	8.0	8.0
Fluoride	mg/L	0.12	0.031	0.045	0.039	0.038	0.014	0.014	0.082	0.082	0.069	0.069
Ammonia, total	mg-N/L	1.2	0.0025	0.0074	0.34	0.34	0.23	0.23	0.13	0.13	0.051	0.051
Nitrate	mg/L	3	0.0050	0.060	2.6	2.6	1.8	1.8	0.99	0.99	0.19	0.19
Nitrite	mg/L	0.02	0.00050	0.0020	0.061	0.061	0.042	0.042	0.023	0.023	0.0049	0.0050
Sulfate	mg/L	218	2.6	7.4	520	520	320	320	250	250	180	190
Aluminum, total	mg/L	0.1	0.056	1.8	0.061	0.058	0.021	0.021	0.058	0.058	0.049	0.049
Aluminum, dissolved	mg/L	0.05	0.016	0.14	0.28	0.28	0.12	0.13	0.034	0.034	0.0091	0.0092
Antimony, total	mg/L		0.00013	0.00024	0.0014	0.0014	0.00085	0.00085	0.00061	0.00061	0.00046	0.00046
Antimony, dissolved	mg/L	0.009	0.00011	0.00023	0.000094	0.000091	0.000032	0.000033	0.000093	0.000093	0.000079	0.000079
Arsenic, total	mg/L	0.005	0.00048	0.00090	0.00040	0.00038	0.00013	0.00013	0.00023	0.00023	0.00020	0.00020
Arsenic, dissolved	mg/L		0.00041	0.00054	0.0011	0.0011	0.00070	0.00071	0.00042	0.00042	0.00035	0.00035
Barium, total	mg/L	1	0.034	0.047	0.053	0.051	0.018	0.018	0.046	0.046	0.039	0.039
Barium, dissolved	mg/L		0.033	0.043	0.074	0.075	0.045	0.046	0.031	0.031	0.029	0.029
Beryllium, total	mg/L	0.00013	0.000050	0.00010	0.000052	0.000050	0.000017	0.000018	0.000025	0.000025	0.000022	0.000022
Beryllium, dissolved	mg/L		0.000050	0.00010	0.000052	0.000050	0.000017	0.000018	0.000025	0.000025	0.000022	0.000022
Boron, total	mg/L	1.2	0.015	0.050	0.0096	0.0092	0.0035	0.0035	0.021	0.021	0.018	0.018
Boron, dissolved	mg/L		0.013	0.050	0.29	0.29	0.18	0.18	0.15	0.15	0.12	0.12
Cadmium, total	mg/L	0.00009	0.0000050	0.000021	0.0000087	0.0000084	0.0000030	0.0000030	0.0000091	0.0000092	0.0000077	0.0000077
Cadmium, dissolved	mg/L	0.00017	0.0000025	0.0000058	0.00049	0.00049	0.00029	0.00029	0.00010	0.00010	0.000049	0.000049
Calcium, total	mg/L		22	31	24	23	7.8	7.9	8.5	8.5	7.4	7.4
Calcium, dissolved	mg/L		21	31	27	26	12	12	8.6	8.6	7.8	7.8
Chromium, total	mg/L	0.0089	0.00032	0.0018	0.00027	0.00026	0.000089	0.000091	0.00020	0.00020	0.00017	0.00017
Chromium, dissolved	mg/L		0.00025	0.00041	0.0029	0.0029	0.0018	0.0018	0.0015	0.0015	0.0012	0.0012
Cobalt, total	mg/L	0.004	0.000050	0.00099	0.000056	0.000054	0.000020	0.000020	0.000082	0.000082	0.000069	0.000069
Cobalt, dissolved	mg/L		0.000050	0.00011	0.0019	0.0019	0.0012	0.0012	0.00064	0.00064	0.00040	0.00040
Copper, total	mg/L	0.003	0.0011	0.0050	0.0013	0.0012	0.00041	0.00042	0.00052	0.00052	0.00045	0.00045
Copper, dissolved	mg/L		0.0011	0.0030	0.0042	0.0042	0.0025	0.0025	0.0019	0.0019	0.0015	0.0015
Iron, total	mg/L	0.3	0.048	1.2	0.055	0.052	0.019	0.019	0.086	0.086	0.073	0.073
Iron, dissolved	mg/L	0.30	0.015	0.14	0.14	0.14	0.065	0.066	0.019	0.019	0.011	0.011
Lead, total	mg/L	0.0050	0.000025	0.00039	0.000033	0.000032	0.000013	0.000013	0.00012	0.00012	0.000097	0.000097
Lead, dissolved	mg/L		0.000025	0.000050	0.00066	0.00066	0.00039	0.00040	0.00021	0.00021	0.00018	0.00018
Lithium, total	mg/L		0.00050	0.0012	0.00051	0.00049	0.00017	0.00017	0.00010	0.00010	0.000092	0.000092
Lithium, dissolved	mg/L		0.00050	0.0010	0.19	0.19	0.11	0.11	0.100	0.100	0.075	0.075

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsx

Parameter	Units	North Management Pond Void Space and Seepage Water Quality										
		WQG in Tenas Creek	Tenas Creek Baseline Water Quality		Operations				Closure			
					Project Case				Project Case			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L		4.2	6.3	4.4	4.2	1.4	1.5	1.8	1.8	1.5	1.5
Magnesium, dissolved	mg/L		4.1	6.3	15	15	9.4	9.5	7.1	7.1	5.9	5.9
Manganese, total	mg/L	0.12	0.0050	0.058	0.0049	0.0047	0.0018	0.0018	0.0096	0.0096	0.0081	0.0080
Manganese, dissolved	mg/L		0.0020	0.0062	0.077	0.077	0.044	0.044	0.024	0.024	0.018	0.018
Mercury, total	mg/L	0.00001	0.0000025	0.0000089	0.0000026	0.0000025	0.00000088	0.00000090	0.0000017	0.0000017	0.0000015	0.0000015
Mercury, dissolved	mg/L		0.0000025	0.0000055	0.00039	0.00039	0.00023	0.00023	0.000077	0.000077	0.000032	0.000033
Molybdenum, total	mg-N/L	0.073	0.00012	0.00019	0.00029	0.00028	0.000096	0.000098	0.00021	0.00021	0.00018	0.00017
Molybdenum, dissolved	mg-N/L		0.00010	0.00019	0.0067	0.0067	0.0041	0.0042	0.0028	0.0028	0.0023	0.0023
Nickel, total	mg/L	0.080	0.00025	0.0017	0.00027	0.00026	0.000090	0.000091	0.00022	0.00022	0.00018	0.00018
Nickel, dissolved	mg/L		0.00025	0.00054	0.0058	0.0058	0.0035	0.0036	0.0023	0.0023	0.0016	0.0016
Phosphorus, total	mg/L		0.0042	0.046	0.0045	0.0043	0.0016	0.0016	0.0068	0.0068	0.0058	0.0057
Orthophosphate, dissolved	mg/L		0.0010	0.0040	0.00051	0.00049	0.00017	0.00017	0.00010	0.00010	0.000092	0.000092
Potassium, total	mg/L		0.23	1.0	0.39	0.37	0.13	0.13	0.37	0.37	0.32	0.32
Potassium, dissolved	mg/L		0.19	0.30	19	19	12	12	11	11	8.4	8.5
Selenium, total	mg/L	0.002	0.000051	0.00020	0.000071	0.000068	0.000023	0.000024	0.000032	0.000032	0.000028	0.000028
Selenium, dissolved	mg/L		0.000040	0.000073	0.0089	0.0089	0.0054	0.0055	0.0046	0.0046	0.0034	0.0034
Silica, dissolved	mg/L		7.0	8.0	13	13	7.7	7.8	6.2	6.2	5.1	5.1
Sodium, total	mg/L		3.5	4.8	5.1	5.1	2.2	2.2	29	29	24	24
Sodium, dissolved	mg/L		3.5	4.8	460	460	280	280	280	280	220	220
Strontium, total	mg/L	7.0	0.11	0.13	0.092	0.089	0.030	0.030	0.018	0.018	0.017	0.017
Strontium, dissolved	mg/L		0.10	0.14	1.1	1.1	0.67	0.67	0.50	0.50	0.36	0.36
Silver, total	mg/L	0.00005	0.0000050	0.000020	0.0000053	0.0000051	0.0000018	0.0000018	0.0000040	0.0000040	0.0000034	0.0000034
Silver, dissolved	mg/L		0.0000050	0.000010	0.00037	0.00037	0.00021	0.00022	0.000066	0.000067	0.000024	0.000024
Tin, total	mg/L		0.000050	0.00010	0.000057	0.000054	0.000020	0.000020	0.000085	0.000085	0.000072	0.000072
Tin, dissolved	mg/L		0.000050	0.00010	0.012	0.012	0.0071	0.0072	0.0059	0.0059	0.0043	0.0043
Thallium, total	mg/L	0.00088	0.0000050	0.000010	0.0000051	0.0000049	0.0000017	0.0000017	0.0000010	0.0000010	0.00000092	0.00000092
Thallium, dissolved	mg/L		0.0000050	0.000010	0.00054	0.00054	0.00034	0.00034	0.00014	0.00014	0.000077	0.000078
Uranium, total	mg/L	0.0085	0.00011	0.00025	0.000079	0.000076	0.000029	0.000029	0.00016	0.00016	0.00014	0.00014
Uranium, dissolved	mg/L		0.00011	0.00024	0.0033	0.0033	0.0020	0.0020	0.0017	0.0017	0.0013	0.0013
Vanadium, total	mg/L		0.00094	0.0037	0.00065	0.00063	0.00022	0.00022	0.00038	0.00038	0.00033	0.00033
Vanadium, dissolved	mg/L		0.00072	0.0010	0.0084	0.0084	0.0051	0.0051	0.0045	0.0045	0.0034	0.0034
Zinc, total	mg/L	0.0075	0.0015	0.0060	0.0016	0.0015	0.00054	0.00054	0.0012	0.0012	0.0010	0.0010
Zinc, dissolved	mg/L		0.0015	0.0015	0.0097	0.0097	0.0057	0.0058	0.0037	0.0037	0.0031	0.0031

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsm

Table F-7

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	Tenas Control Pond					
				Baseline in Goathorn Creek		Operations			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			68	102	154	154	103	110
Alkalinity, total	mg CaCO ₃ /L			52	87	1100	1200	650	700
Chloride	mg/L		150	0.25	0.50	30	31	16	17
Fluoride	mg/L		0.12	0.032	0.041	0.076	0.16	0.049	0.085
Ammonia, total	mg-N/L		1.5	0.0025	0.0070	0.91	2.7	0.31	0.49
Nitrate	mg/L	18.8	3	0.041	0.076	7.0	21	2.4	3.7
Nitrite	mg/L		0.02	0.00050	0.0020	0.16	0.48	0.055	0.085
Sulfate	mg/L		218	24	37	730	770	410	420
Aluminum, total	mg/L		0.1	0.092	0.75	0.50	0.46	0.41	0.40
Aluminum, dissolved	mg/L		0.05	0.014	0.13	0.13	0.095	0.036	0.029
Antimony, total	mg/L			0.000073	0.00014	0.0016	0.0016	0.00094	0.00098
Antimony, dissolved	mg/L		0.009	0.000050	0.00011	0.0016	0.0016	0.00094	0.00098
Arsenic, total	mg/L		0.005	0.00023	0.00068	0.0017	0.0016	0.0013	0.0013
Arsenic, dissolved	mg/L			0.00017	0.00035	0.0012	0.0011	0.00075	0.00078
Barium, total	mg/L		1	0.058	0.072	0.072	0.079	0.055	0.063
Barium, dissolved	mg/L			0.059	0.073	0.065	0.072	0.048	0.056
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000058	0.000061	0.000038	0.000046
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000058	0.000061	0.000038	0.000046
Boron, total	mg/L		1.2	0.0050	0.050	0.43	0.45	0.24	0.26
Boron, dissolved	mg/L			0.0050	0.050	0.43	0.45	0.24	0.26
Cadmium, total	mg/L		0.00009	0.000010	0.000049	0.00057	0.00051	0.00018	0.00015
Cadmium, dissolved	mg/L		0.00016	0.0000081	0.000036	0.00057	0.00051	0.00018	0.00015
Calcium, total	mg/L			21	30	27	27	20	21
Calcium, dissolved	mg/L			22	32	26	26	19	21
Chromium, total	mg/L		0.0089	0.00020	0.00091	0.0054	0.0056	0.0036	0.0037
Chromium, dissolved	mg/L			0.00010	0.00027	0.0042	0.0044	0.0024	0.0025
Cobalt, total	mg/L		0.004	0.000050	0.00055	0.0027	0.0025	0.0016	0.0016
Cobalt, dissolved	mg/L			0.000050	0.00011	0.0021	0.0019	0.00100	0.00095
Copper, total	mg/L		0.0028	0.0015	0.0054	0.0068	0.0070	0.0048	0.0049
Copper, dissolved	mg/L			0.0014	0.0039	0.0055	0.0057	0.0035	0.0036
Iron, total	mg/L		0.3	0.085	0.78	1.5	1.5	1.5	1.5
Iron, dissolved	mg/L		0.30	0.015	0.13	0.065	0.056	0.029	0.027
Lead, total	mg/L		0.0050	0.000025	0.00023	0.0012	0.0011	0.00076	0.00077
Lead, dissolved	mg/L			0.000025	0.000050	0.00079	0.00073	0.00036	0.00038
Lithium, total	mg/L			0.00050	0.0011	0.29	0.30	0.16	0.16
Lithium, dissolved	mg/L			0.00050	0.0010	0.29	0.30	0.16	0.16

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	Tenas Control Pond					
				Baseline in Goathorn Creek		Operations			
				P50	P95	Project Case			
						Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L			3.9	6.5	21	21	13	14
Magnesium, dissolved	mg/L			3.8	7.4	20	21	13	14
Manganese, total	mg/L		0.12	0.0059	0.033	0.12	0.13	0.073	0.071
Manganese, dissolved	mg/L			0.0026	0.0084	0.096	0.10	0.048	0.045
Mercury, total	mg/L		0.00002	0.0000025	0.0000064	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.088	0.00047	0.00062	0.0084	0.0086	0.0060	0.0063
Molybdenum, dissolved	mg-N/L			0.00046	0.00062	0.0084	0.0085	0.0060	0.0062
Nickel, total	mg/L		0.080	0.00025	0.0011	0.0087	0.0084	0.0057	0.0056
Nickel, dissolved	mg/L			0.00025	0.00060	0.0069	0.0066	0.0039	0.0038
Phosphorus, total	mg/L			0.0045	0.019	0.015	0.015	0.015	0.015
Orthophosphate, dissolved	mg/L			0.00050	0.0040	0.00056	0.00056	0.00032	0.00034
Potassium, total	mg/L			0.39	1.0	32	33	18	19
Potassium, dissolved	mg/L			0.36	0.48	32	33	18	18
Selenium, total	mg/L	0.050	0.002	0.000086	0.00020	0.013	0.014	0.0072	0.0075
Selenium, dissolved	mg/L			0.000076	0.00012	0.013	0.014	0.0072	0.0075
Silica, dissolved	mg/L			5.6	6.2	19	19	12	13
Sodium, total	mg/L			2.3	4.8	790	830	440	470
Sodium, dissolved	mg/L			2.4	4.8	790	830	440	470
Strontium, total	mg/L		7.0	0.076	0.11	1.4	1.5	0.83	0.85
Strontium, dissolved	mg/L			0.077	0.12	1.4	1.5	0.83	0.84
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L		0.0008	0.0000050	0.000010	0.00058	0.00052	0.00019	0.00018
Thallium, dissolved	mg/L			0.0000050	0.000010	0.00058	0.00052	0.00019	0.00018
Uranium, total	mg/L		0.0085	0.000054	0.00014	0.0048	0.0050	0.0027	0.0028
Uranium, dissolved	mg/L			0.000051	0.00014	0.0048	0.0050	0.0027	0.0028
Vanadium, total	mg/L			0.00025	0.0020	0.014	0.015	0.0086	0.0090
Vanadium, dissolved	mg/L			0.00025	0.00052	0.013	0.014	0.0072	0.0075
Zinc, total	mg/L		0.0075	0.0015	0.0061	0.014	0.015	0.010	0.011
Zinc, dissolved	mg/L			0.0015	0.0021	0.011	0.011	0.0067	0.0070

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Table F-8

Parameter	Units	End-of-Pipe Limit	Rail Infrastructure Sedimentation Pond						
			Bulkley WQG	Baseline in Bulkley River		Operations			
				P50	P95	Project Case			
						Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			28	38	2073	1841	1957	1816
Alkalinity, total	mg CaCO ₃ /L			27	35	34	30	32	30
Chloride	mg/L		150	0.25	0.86	2.5	2.3	2.4	2.2
Fluoride	mg/L		0.12	0.023	0.035	0	0	0	0
Ammonia, total	mg-N/L		1.7	0.0050	0.017	0	0	0	0
Nitrate	mg/L	18.8	3	0.013	0.041	0	0	0	0
Nitrite	mg/L		0.02	0.0020	0.0050	0	0	0	0
Sulfate	mg/L		128	4.0	5.0	2200	2000	2100	1900
Aluminum, total	mg/L		0.1	0.13	1.3	0.37	0.37	0.37	0.37
Aluminum, dissolved	mg/L		0.05	0.017	0.13	0.0029	0.0026	0.0028	0.0026
Antimony, total	mg/L			0.000050	0.00011	0.00010	0.000091	0.000095	0.000088
Antimony, dissolved	mg/L		0.009	0.000050	0.00010	0.00010	0.000093	0.000097	0.000090
Arsenic, total	mg/L		0.005	0.00024	0.00070	0.00061	0.00060	0.00060	0.00060
Arsenic, dissolved	mg/L			0.00016	0.00033	0.00010	0.000091	0.000095	0.000088
Barium, total	mg/L		1	0.026	0.038	0.010	0.0097	0.0099	0.0097
Barium, dissolved	mg/L			0.023	0.032	0.0035	0.0031	0.0033	0.0030
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0	0	0	0
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000050	0.00010	0.000050	0.00010
Boron, total	mg/L		1.2	0.0050	0.010	0.25	0.23	0.24	0.22
Boron, dissolved	mg/L			0.0050	0.010	0.25	0.23	0.24	0.22
Cadmium, total	mg/L		0.00009	0.0000079	0.000021	0.0029	0.0026	0.0027	0.0025
Cadmium, dissolved	mg/L		0.00008	0.0000025	0.0000065	0.0029	0.0026	0.0027	0.0025
Calcium, total	mg/L			8.8	11	550	490	520	480
Calcium, dissolved	mg/L			8.8	12	550	490	520	480
Chromium, total	mg/L		0.0089	0.00025	0.0012	0.0017	0.0016	0.0017	0.0016
Chromium, dissolved	mg/L			0.000050	0.00023	0.00051	0.00045	0.00048	0.00044
Cobalt, total	mg/L		0.004	0.000050	0.00068	0.028	0.025	0.027	0.025
Cobalt, dissolved	mg/L			0.000050	0.00010	0.028	0.025	0.026	0.024
Copper, total	mg/L		0.002	0.00090	0.0029	0.0098	0.0089	0.0093	0.0087
Copper, dissolved	mg/L			0.00067	0.0020	0.0085	0.0076	0.0080	0.0074
Iron, total	mg/L		0.3	0.18	1.3	2.0	2.0	2.0	1.9
Iron, dissolved	mg/L		0.30	0.024	0.16	0.57	0.51	0.53	0.49
Lead, total	mg/L		0.004	0.000095	0.00051	0.0019	0.0017	0.0018	0.0017
Lead, dissolved	mg/L			0.000025	0.000050	0.0015	0.0013	0.0014	0.0013
Lithium, total	mg/L			0.00050	0.0010	0.072	0.064	0.067	0.062
Lithium, dissolved	mg/L			0.00050	0.0010	0.072	0.064	0.067	0.062

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	End-of-Pipe Limit	Rail Infrastructure Sedimentation Pond						
			Bulkley WQG	Baseline in Bulkley River		Operations			
				P50	P95	Project Case			
						Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L			1.4	2.5	170	150	160	150
Magnesium, dissolved	mg/L			1.3	2.7	170	150	160	150
Manganese, total	mg/L		0.12	0.016	0.059	1.7	1.5	1.6	1.5
Manganese, dissolved	mg/L			0.0052	0.020	1.6	1.5	1.5	1.4
Mercury, total	mg/L		0.00002	0.0000025	0.0000055	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.088	0.00037	0.00055	0.0050	0.0044	0.0047	0.0043
Molybdenum, dissolved	mg-N/L			0.00037	0.00045	0.0049	0.0044	0.0046	0.0043
Nickel, total	mg/L		0.025	0.00025	0.0014	0.068	0.061	0.064	0.059
Nickel, dissolved	mg/L			0.00025	0.0013	0.066	0.059	0.062	0.057
Phosphorus, total	mg/L			0.0057	0.043	0.015	0.015	0.015	0.015
Orthophosphate, dissolved	mg/L			0.0013	0.0040	0	0	0	0
Potassium, total	mg/L			0.33	0.68	4.9	4.4	4.6	4.3
Potassium, dissolved	mg/L			0.32	0.52	4.8	4.3	4.5	4.2
Selenium, total	mg/L	0.050	0.002	0.000025	0.00020	0.011	0.0095	0.0099	0.0092
Selenium, dissolved	mg/L			0.000025	0.000050	0.011	0.0095	0.0099	0.0092
Silica, dissolved	mg/L					5.1	4.6	4.8	4.4
Sodium, total	mg/L			1.0	2.5	2.2	2.0	2.1	1.9
Sodium, dissolved	mg/L			1.0	2.5	2.1	1.9	2.0	1.8
Strontium, total	mg/L		7.0	0.040	0.061	2.1	1.9	1.9	1.8
Strontium, dissolved	mg/L			0.040	0.055	2.1	1.9	1.9	1.8
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00012	0.000050	0.000050	0.000050	0.000050
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L		0.0008	0.0000050	0.000014	0.0035	0.0031	0.0033	0.0030
Thallium, dissolved	mg/L			0.0000050	0.000010	0.0035	0.0031	0.0033	0.0030
Uranium, total	mg/L		0.0085	0.000036	0.000094	0.00061	0.00055	0.00058	0.00053
Uranium, dissolved	mg/L			0.000028	0.000052	0.00060	0.00054	0.00056	0.00052
Vanadium, total	mg/L			0.00057	0.0050	0.0025	0.0024	0.0024	0.0023
Vanadium, dissolved	mg/L			0.00025	0.00060	0.0010	0.00091	0.00095	0.00088
Zinc, total	mg/L		0.0075	0.0015	0.0055	0.13	0.12	0.12	0.11
Zinc, dissolved	mg/L			0.0013	0.0045	0.13	0.11	0.12	0.11

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Table F-9

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	Pit Lake					
				Goathorn Baseline		Closure			
				P50	P95	Project Case			
						Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			68	102	70	70	31	30
Alkalinity, total	mg CaCO ₃ /L			52	87	750	750	160	150
Chloride	mg/L		150	0.25	0.50	21	21	4.2	4.0
Fluoride	mg/L		0.12	0.032	0.041	0.0081	0.0081	0.0076	0.0076
Ammonia, total	mg-N/L		1.5	0.0025	0.0070	0.0014	0.0014	0.00078	0.00078
Nitrate	mg/L	18.8	3	0.041	0.076	0.013	0.013	0.0079	0.0078
Nitrite	mg/L		0.02	0.00050	0.0020	0.00027	0.00027	0.00015	0.00015
Sulfate	mg/L		218	24	37	500	500	99	96
Aluminum, total	mg/L		0.1	0.092	0.75	0.37	0.37	0.37	0.37
Aluminum, dissolved	mg/L		0.05	0.014	0.13	0.0037	0.0037	0.0036	0.0036
Antimony, total	mg/L			0.000073	0.00014	0.0010	0.0010	0.00021	0.00020
Antimony, dissolved	mg/L		0.009	0.000050	0.00011	0.0010	0.0010	0.00021	0.00020
Arsenic, total	mg/L		0.005	0.00023	0.00068	0.0011	0.0011	0.00068	0.00068
Arsenic, dissolved	mg/L			0.00017	0.00035	0.00057	0.00057	0.00017	0.00017
Barium, total	mg/L		1	0.058	0.072	0.018	0.018	0.017	0.017
Barium, dissolved	mg/L			0.059	0.073	0.011	0.011	0.011	0.011
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000012	0.000012	0.000012	0.000012
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000012	0.000012	0.000012	0.000012
Boron, total	mg/L		1.2	0.0050	0.050	0.29	0.29	0.058	0.057
Boron, dissolved	mg/L			0.0050	0.050	0.29	0.29	0.058	0.056
Cadmium, total	mg/L		0.00009	0.000010	0.000049	0.000098	0.000098	0.000022	0.000021
Cadmium, dissolved	mg/L		0.00016	0.0000081	0.000036	0.000095	0.000095	0.000020	0.000019
Calcium, total	mg/L			21	30	6.7	6.6	6.3	6.2
Calcium, dissolved	mg/L			22	32	6.1	6.1	5.7	5.6
Chromium, total	mg/L		0.0089	0.00020	0.00091	0.0040	0.0040	0.0018	0.0017
Chromium, dissolved	mg/L			0.00010	0.00027	0.0028	0.0028	0.00058	0.00057
Cobalt, total	mg/L		0.004	0.000050	0.00055	0.0015	0.0015	0.00081	0.00081
Cobalt, dissolved	mg/L			0.000050	0.00011	0.00084	0.00084	0.00017	0.00017
Copper, total	mg/L		0.0028	0.0015	0.0054	0.0049	0.0049	0.0022	0.0022
Copper, dissolved	mg/L			0.0014	0.0039	0.0035	0.0035	0.00090	0.00088
Iron, total	mg/L		0.3	0.085	0.78	1.5	1.5	1.5	1.5
Iron, dissolved	mg/L		0.30	0.015	0.13	0.0037	0.0037	0.0035	0.0035
Lead, total	mg/L		0.0050	0.000025	0.00023	0.00069	0.00069	0.00046	0.00045
Lead, dissolved	mg/L			0.000025	0.000050	0.00030	0.00030	0.000063	0.000061
Lithium, total	mg/L			0.00050	0.0011	0.20	0.20	0.039	0.038
Lithium, dissolved	mg/L			0.00050	0.0010	0.20	0.20	0.039	0.038

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	Pit Lake					
				Goathorn Baseline		Closure			
				P50	P95	Project Case			
						Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L			3.9	6.5	13	13	3.7	3.6
Magnesium, dissolved	mg/L			3.8	7.4	13	13	3.4	3.3
Manganese, total	mg/L		0.12	0.0059	0.033	0.063	0.063	0.033	0.033
Manganese, dissolved	mg/L			0.0026	0.0084	0.038	0.038	0.0077	0.0075
Mercury, total	mg/L		0.00002	0.0000025	0.0000064	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.088	0.00047	0.00062	0.0050	0.0050	0.0018	0.0018
Molybdenum, dissolved	mg-N/L			0.00046	0.00062	0.0050	0.0050	0.0018	0.0017
Nickel, total	mg/L		0.080	0.00025	0.0011	0.0056	0.0056	0.0026	0.0026
Nickel, dissolved	mg/L			0.00025	0.00060	0.0038	0.0038	0.00079	0.00076
Phosphorus, total	mg/L			0.0045	0.019	0.015	0.015	0.015	0.015
Orthophosphate, dissolved	mg/L			0.00050	0.0040	0.00012	0.00012	0.00012	0.00012
Potassium, total	mg/L			0.39	1.0	23	23	4.6	4.4
Potassium, dissolved	mg/L			0.36	0.48	23	23	4.5	4.4
Selenium, total	mg/L	0.050	0.002	0.000086	0.00020	0.0092	0.0092	0.0018	0.0017
Selenium, dissolved	mg/L			0.000076	0.00012	0.0092	0.0092	0.0018	0.0017
Silica, dissolved	mg/L			5.6	6.2	12	12	3.6	3.5
Sodium, total	mg/L			2.3	4.8	560	560	110	110
Sodium, dissolved	mg/L			2.4	4.8	560	560	110	110
Strontium, total	mg/L		7.0	0.076	0.11	0.94	0.94	0.20	0.20
Strontium, dissolved	mg/L			0.077	0.12	0.94	0.94	0.20	0.19
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L		0.0008	0.0000050	0.000010	0.000089	0.000090	0.000018	
Thallium, dissolved	mg/L			0.0000050	0.000010	0.000089	0.000090	0.000018	
Uranium, total	mg/L		0.0085	0.000054	0.00014	0.0033	0.0033	0.00067	0.00065
Uranium, dissolved	mg/L			0.000051	0.00014	0.0033	0.0033	0.00066	0.00063
Vanadium, total	mg/L			0.00025	0.0020	0.011	0.011	0.0033	0.0032
Vanadium, dissolved	mg/L			0.00025	0.00052	0.0091	0.0091	0.0018	0.0018
Zinc, total	mg/L		0.0075	0.0015	0.0061	0.0098	0.0098	0.0051	0.0051
Zinc, dissolved	mg/L			0.0015	0.0021	0.0061	0.0061	0.0015	0.0014

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Table F-10

Parameter	Units	Pit Backfill and Seepage Water Quality						
		Four Creek WQG	Four Creek Baseline Water Quality		Closure			
			P50	P95	Project Case			
					Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L		118	163	58	58	51	51
Alkalinity, total	mg CaCO ₃ /L		130	190	1800	1800	880	880
Chloride	mg/L	150	0.25	0.50	49	51	22	22
Fluoride	mg/L	0.12	0.059	0.068	0.20	0.21	0.17	0.17
Ammonia, total	mg-N/L	0.95	0.0025	0.0092	0.085	0.088	0.070	0.073
Nitrate	mg/L	3	0.013	0.058	0.066	0.070	0.021	0.022
Nitrite	mg/L	0.02	0.00050	0.0010	0.0025	0.0026	0.0018	0.0019
Sulfate	mg/L	309	1.9	28	1100	1200	510	500
Aluminum, total	mg/L	0.1	0.099	1.2	0.14	0.14	0.11	0.12
Aluminum, dissolved	mg/L	0.05	0.032	0.49	0.0076	0.0075	0.0069	0.0069
Antimony, total	mg/L		0.000050	0.00012	0.0024	0.0026	0.0012	0.0012
Antimony, dissolved	mg/L	0.009	0.000050	0.00010	0.00022	0.00022	0.00018	0.00019
Arsenic, total	mg/L	0.005	0.00074	0.0011	0.00050	0.00051	0.00043	0.00044
Arsenic, dissolved	mg/L		0.00064	0.00086	0.0014	0.0014	0.00081	0.00082
Barium, total	mg/L	1	0.071	0.13	0.11	0.11	0.090	0.093
Barium, dissolved	mg/L		0.075	0.13	0.069	0.071	0.059	0.061
Beryllium, total	mg/L	0.00013	0.000050	0.00010	0.000054	0.000055	0.000047	0.000048
Beryllium, dissolved	mg/L		0.000050	0.00010	0.000054	0.000055	0.000047	0.000048
Boron, total	mg/L	1.2	0.012	0.020	0.052	0.054	0.043	0.045
Boron, dissolved	mg/L		0.011	0.019	0.69	0.72	0.33	0.33
Cadmium, total	mg/L	0.00009	0.0000063	0.000019	0.000021	0.000022	0.000018	0.000019
Cadmium, dissolved	mg/L	0.00024	0.0000052	0.000012	0.00022	0.00023	0.00010	0.00010
Calcium, total	mg/L		24	34	17	17	15	15
Calcium, dissolved	mg/L		23	36	18	18	16	16
Chromium, total	mg/L	0.0089	0.00026	0.0016	0.00046	0.00047	0.00039	0.00040
Chromium, dissolved	mg/L		0.00015	0.00079	0.0066	0.0070	0.0032	0.0032
Cobalt, total	mg/L	0.004	0.000050	0.00047	0.00020	0.00020	0.00016	0.00017
Cobalt, dissolved	mg/L		0.000050	0.00015	0.0020	0.0020	0.00094	0.00094
Copper, total	mg/L	0.0047	0.0014	0.0044	0.0011	0.0011	0.00094	0.00095
Copper, dissolved	mg/L		0.0014	0.0034	0.0080	0.0084	0.0040	0.0040
Iron, total	mg/L	0.3	0.095	1.1	0.21	0.22	0.17	0.18
Iron, dissolved	mg/L	0.30	0.015	0.41	0.022	0.022	0.019	0.019
Lead, total	mg/L	0.0050	0.000025	0.00028	0.00029	0.00030	0.00024	0.00025
Lead, dissolved	mg/L		0.000025	0.000091	0.00078	0.00081	0.00046	0.00046
Lithium, total	mg/L		0.0015	0.0019	0.00017	0.00016	0.00016	0.00015
Lithium, dissolved	mg/L		0.0014	0.0019	0.46	0.48	0.21	0.21

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsm

Parameter	Units	Pit Backfill and Seepage Water Quality						
		Four Creek WQG	Four Creek Baseline Water Quality		Closure			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L		14	19	3.7	3.7	3.2	3.3
Magnesium, dissolved	mg/L		13	20	30	31	15	15
Manganese, total	mg/L	0.12	0.0025	0.024	0.023	0.024	0.019	0.020
Manganese, dissolved	mg/L		0.00067	0.0074	0.090	0.094	0.045	0.045
Mercury, total	mg/L	0.00001	0.0000025	0.000013	0.0000039	0.0000040	0.0000033	0.0000034
Mercury, dissolved	mg/L		0.0000025	0.0000093	0.00013	0.00014	0.000061	0.000061
Molybdenum, total	mg-N/L	0.073	0.00023	0.00038	0.00047	0.00048	0.00040	0.00041
Molybdenum, dissolved	mg-N/L		0.00019	0.00036	0.011	0.011	0.0056	0.0055
Nickel, total	mg/L	0.080	0.00025	0.0018	0.00050	0.00051	0.00042	0.00043
Nickel, dissolved	mg/L		0.00025	0.0011	0.0088	0.0092	0.0042	0.0041
Phosphorus, total	mg/L		0.0041	0.044	0.016	0.017	0.014	0.014
Orthophosphate, dissolved	mg/L		0.00050	0.0012	0.00017	0.00016	0.00016	0.00015
Potassium, total	mg/L		0.36	0.77	0.87	0.90	0.73	0.76
Potassium, dissolved	mg/L		0.35	0.84	52	55	24	23
Selenium, total	mg/L	0.002	0.000025	0.000095	0.000067	0.000069	0.000059	0.000060
Selenium, dissolved	mg/L		0.000025	0.00011	0.021	0.022	0.0093	0.0092
Silica, dissolved	mg/L				26	27	13	13
Sodium, total	mg/L		7.0	13	73	76	60	63
Sodium, dissolved	mg/L		7.4	13	1300	1400	620	620
Strontium, total	mg/L	7.0	0.17	0.24	0.030	0.029	0.028	0.028
Strontium, dissolved	mg/L		0.16	0.24	2.1	2.2	0.95	0.94
Silver, total	mg/L	0.0015	0.0000050	0.000022	0.0000092	0.0000094	0.0000078	0.0000080
Silver, dissolved	mg/L		0.0000050	0.000012	0.000072	0.000075	0.000037	0.000037
Tin, total	mg/L		0.000050	0.00010	0.00020	0.00021	0.00017	0.00018
Tin, dissolved	mg/L		0.000050	0.00010	0.027	0.028	0.012	0.012
Thallium, total	mg/L	0.00088	0.0000050	0.000010	0.0000017	0.0000016	0.0000016	0.0000015
Thallium, dissolved	mg/L		0.0000050	0.000010	0.00025	0.00026	0.00015	0.00015
Uranium, total	mg/L	0.0085	0.000078	0.00025	0.00040	0.00041	0.00033	0.00034
Uranium, dissolved	mg/L		0.000075	0.00025	0.0077	0.0080	0.0035	0.0035
Vanadium, total	mg/L		0.00061	0.0027	0.00084	0.00086	0.00072	0.00074
Vanadium, dissolved	mg/L		0.00025	0.0013	0.021	0.022	0.0094	0.0094
Zinc, total	mg/L	0.029	0.0015	0.0059	0.0028	0.0028	0.0023	0.0024
Zinc, dissolved	mg/L		0.0015	0.0025	0.015	0.015	0.0079	0.0079

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsm

Tenas Project Water and Load Balance Report
Appendix F: Project Case Results

Table F-11. Four Creek Project Case Streamflow Effect as Monthly Change over Base Case Conditions

Scenario		Four Creek Monthly % Change											
Period	Month	WQS03			WQS21			WQS20			WQS03DS		
		Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease
Construction	January		-0.18			-0.40			-0.67			-1.10	
	February		-0.19			-0.43			-0.72			-1.19	
	March		-0.20			-0.46			-0.77			-1.27	
	April		-0.07			-0.15			-0.25			-0.41	
	May		-0.02			-0.05			-0.09			-0.15	
	June		-0.07			-0.15			-0.25			-0.41	
	July		-0.04			-0.10			-0.16			-0.27	
	August		-0.15			-0.33			-0.56			-0.92	
	September		-0.03			-0.08			-0.13			-0.22	
	October		-0.10			-0.22			-0.38			-0.62	
	November		-0.28			-0.63			-1.06			-1.76	
	December		-0.33			-0.74			-1.25			-2.07	
Operations	January	-	-17.5	-29.1	-	-19.7	-33.6	-0.7	-19.2	-32.1	-0.6	-3.2	-5.0
	February	-	-17.6	-29.2	-	-19.8	-33.6	-0.7	-19.3	-32.1	-0.6	-3.2	-5.0
	March	-	-17.7	-29.2	-	-19.9	-33.7	-0.8	-19.4	-32.2	-0.6	-3.2	-4.9
	April	-	-3.9	-5.8	37.7	25.8	-0.3	35.7	24.3	-0.5	2.3	-12.4	-20.7
	May	-	-0.9	-1.3	49.9	36.8	-0.1	48.3	34.9	-0.1	3.4	-14.6	-24.8
	June	-	-3.3	-5.9	49.7	34.0	-0.2	48.0	32.1	-0.4	0.9	-15.2	-24.9
	July	-	-2.8	-4.9	49.8	34.5	-0.2	47.9	32.6	-0.3	-0.3	-15.2	-25.0
	August	-	-8.8	-17.8	49.5	25.9	-2.1	47.3	24.3	-2.6	-0.9	-14.5	-21.8
	September	-	-2.1	-3.6	49.8	35.0	-0.1	47.7	33.2	-0.2	-0.2	-15.4	-25.2
	October	-	-5.1	-8.7	49.5	31.5	-0.3	47.2	29.8	-0.6	-0.6	-16.0	-25.3
	November	-	-15.6	-25.0	20.8	-1.0	-19.4	18.9	-1.4	-18.9	-1.8	-8.1	-9.2
	December	-	-18.7	-29.7	-	-21.0	-34.4	-	-20.4	-32.8	-	-3.1	-5.0
Post-Closure	January	-	-22.7	-22.7	-	-25.0	-25.0	-	-22.3	-22.3	-	4.0	-
	February	-	-22.7	-22.7	-	-25.0	-25.0	-	-22.3	-22.3	-	4.0	-
	March	-	-22.7	-22.7	-	-25.0	-25.0	-	-22.3	-22.3	-	4.0	-
	April	-	-3.3	-3.4	37.7	27.5	-	35.7	27.0	-	2.3	-13.0	-13.4
	May	-	-0.8	-0.8	49.9	34.3	-	48.3	33.4	-	3.4	-15.4	-15.4
	June	-	-3.4	-4.1	49.7	31.5	-	48.0	30.9	-	0.9	-14.9	-15.0
	July	-	-3.6	-4.3	49.8	31.2	-	47.9	30.6	-	-	-14.9	-15.0
	August	-	-10.3	-14.6	49.5	22.9	-	47.3	23.2	-	-	-12.9	-14.1
	September	-	-2.4	-2.7	49.8	32.6	-	47.7	31.8	-	-	-15.1	-15.1
	October	-	-5.4	-6.3	49.5	29.3	-	47.2	28.9	-	-	-14.6	-14.7
	November	-	-18.2	-18.9	20.8	-2.9	-5.3	18.9	-1.3	-3.5	-	-3.2	-3.7
	December	-	-22.7	-22.7	-	-25.0	-25.0	-	-22.3	-22.3	-	4.0	-

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Results_Streams_MonthlyChange_07132021_sab.xlsm

Note: Blank rows represent periods where an increase or decrease in flows is not expected based on model results

Tenas Project Water and Load Balance Report
Appendix F: Project Case Results

Table F-12. Tenas Creek Project Case Streamflow Effect as Monthly Change over Base Case Conditions

Scenario		Tenas Creek Monthly % Change											
Period	Month	WQS01			WQS02			WQS22			WQS04		
		Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease
Construction	January	-	-0.01	-	-	-0.30	-	-	-0.26	-	-	-0.24	-
	February	-	-0.01	-	-	-0.32	-	-	-0.28	-	-	-0.26	-
	March	-	-0.02	-	-	-0.35	-	-	-0.30	-	-	-0.28	-
	April	-	-0.01	-	-	-0.26	-	-	-0.14	-	-	-0.13	-
	May	-	0.00	-	-	-0.01	-	-	-0.01	-	-	-0.01	-
	June	-	0.00	-	-	-0.01	-	-	-0.01	-	-	-0.01	-
	July	-	0.00	-	-	-0.04	-	-	-0.04	-	-	-0.04	-
	August	-	-0.01	-	-	-0.19	-	-	-0.18	-	-	-0.17	-
	September	-	0.00	-	-	-0.04	-	-	-0.03	-	-	-0.03	-
	October	-	0.00	-	-	-0.04	-	-	-0.03	-	-	-0.03	-
	November	-	-0.01	-	-	-0.26	-	-	-0.19	-	-	-0.18	-
	December	-	-0.02	-	-	-0.56	-	-	-0.49	-	-	-0.45	-
Operations	January	-	-0.2	-0.4	1.3	-1.5	-3.9	2.8	-1.8	-5.9	2.7	-1.7	-5.5
	February	-	-0.2	-0.4	1.4	-1.5	-3.9	2.8	-1.8	-5.8	2.7	-1.7	-5.5
	March	-	-0.2	-0.4	1.4	-1.5	-3.9	2.9	-1.8	-5.8	2.8	-1.7	-5.4
	April	-	-0.1	-0.2	-	-1.5	-3.0	-	-8.2	-10.8	-	-8.4	-10.8
	May	-	0.0	-	0.0	-1.4	-1.5	0.0	-6.2	-7.2	0.0	-7.2	-8.1
	June	-	0.0	-	0.0	-1.4	-1.5	0.0	-4.6	-5.3	0.0	-5.8	-6.6
	July	-	0.0	-	0.0	-1.5	-1.8	0.0	-5.1	-6.5	0.0	-6.3	-7.7
	August	-	-0.1	-0.2	-	-1.9	-3.3	-	-5.9	-9.6	-	-6.9	-10.4
	September	-	0.0	-	0.0	-1.5	-1.8	0.0	-5.4	-6.8	0.0	-6.5	-7.9
	October	-	0.0	-	0.0	-1.4	-1.7	0.0	-5.8	-7.3	0.0	-6.8	-8.3
	November	-	-0.1	-0.1	-	-1.7	-2.5	-	-6.3	-8.3	-	-7.3	-9.3
	December	-	-0.2	-0.4	1.4	-1.5	-4.0	2.3	-2.3	-6.4	2.0	-2.2	-6.2
Post-Closure	January	-	-0.3	-0.3	1.9	1.9	1.9	3.1	3.1	-	3.0	3.0	-
	February	-	-0.3	-0.3	1.9	1.9	1.9	3.1	3.1	-	3.0	3.0	-
	March	-	-0.3	-0.3	1.9	1.9	1.9	3.1	3.1	-	3.0	3.0	-
	April	-	-0.1	-0.1	0.1	0.0	-	-	-5.4	-5.8	-	-5.5	-5.9
	May	-	0.0	-	-	-0.8	-	-	-5.4	-5.5	-	-5.6	-5.7
	June	-	0.0	-	-	-0.8	-	-	-3.9	-4.1	-	-4.3	-4.4
	July	-	0.0	-	-	-0.6	-	-	-4.4	-4.9	-	-4.7	-5.1
	August	-	-0.1	-0.2	0.4	0.1	-	-	-3.2	-3.9	-	-3.5	-4.1
	September	-	0.0	-	-	-0.7	-	-	-4.8	-5.2	-	-5.0	-5.4
	October	-	0.0	-	-	-0.7	-	-	-4.8	-5.4	-	-5.1	-5.6
	November	-	-0.1	-0.1	-	-0.5	-	-	-4.5	-4.9	-	-4.8	-5.1
	December	-	-0.3	-0.3	1.6	1.6	1.6	2.1	2.0	-	2.0	1.8	-

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Results_Streams_MonthlyChange_07132021_sab.xlsm

Note: Blank rows represent periods where an increase or decrease in flows is not expected based on model results

Tenas Project Water and Load Balance Report
Appendix F: Project Case Results

Table F-13. Goathorn Creek Project Case Streamflow Effect as Monthly Change over Base Case Conditions

Scenario		Goathorn Creek Monthly % Change								
Period	Month	WQS06US			WQS06			WQS05		
		Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease
Construction	January	-	0.00	-	-	-2.58	-	-	-0.12	-
	February	-	0.00	-	-	-2.58	-	-	-0.13	-
	March	-	-0.01	-	-	-2.59	-	-	-0.14	-
	April	-	-0.01	-	-	-2.60	-	-	-0.14	-
	May	-	0.00	-	-	-2.51	-	-	-0.01	-
	June	-	0.00	-	-	-2.51	-	-	-0.02	-
	July	-	0.00	-	-	-2.51	-	-	-0.03	-
	August	-	0.00	-	-	-2.53	-	-	-0.10	-
	September	-	0.00	-	-	-2.51	-	-	-0.03	-
	October	-	0.00	-	-	-2.53	-	-	-0.06	-
	November	-	-0.01	-	-	-2.63	-	-	-0.20	-
	December	-	-0.01	-	-	-2.65	-	-	-0.23	-
Operations	January	-	-0.1	-0.2	-	-2.8	-3.0	0.6	-0.7	-1.9
	February	-	-0.1	-0.2	-	-2.8	-3.0	0.7	-0.7	-1.9
	March	-	-0.1	-0.2	-	-2.8	-3.0	0.7	-0.7	-1.8
	April	-	-0.1	-0.2	-	-4.7	-6.2	-	-4.6	-5.7
	May	-	0.0	-	4.0	-0.3	-2.5	4.1	-2.0	-3.6
	June	-	0.0	-	1.3	-0.4	-2.7	0.3	-0.7	-2.6
	July	-	0.0	-	4.1	-0.5	-2.9	3.7	0.3	-1.6
	August	-	-0.1	-0.1	18.5	-0.6	-2.9	11.8	0.6	-1.7
	September	-	0.0	0.0	3.8	-1.4	-2.9	3.0	-0.7	-2.0
	October	-	0.0	-0.1	8.9	0.3	-2.6	4.1	-0.9	-3.1
	November	-	-0.1	-0.2	-	-2.9	-3.1	-	-2.1	-3.2
	December	-	-0.1	-0.2	-	-2.8	-3.0	0.8	-0.6	-1.9
Post-Closure	January	-	0.0	-	-	-2.2	-2.2	1.1	1.1	-
	February	-	0.0	-	-	-2.2	-2.2	1.1	1.1	-
	March	-	0.0	-	-	-2.2	-2.2	1.1	1.1	-
	April	-	0.0	-	8.4	7.9	-	4.2	4.0	-
	May	-	0.0	-	-	-0.8	-1.1	-	-1.4	-1.5
	June	-	0.0	-	-	-2.6	-2.7	-	-1.6	-1.6
	July	-	0.0	-	-	-2.6	-2.6	-	-0.8	-0.9
	August	-	0.0	-	-	-2.5	-2.5	0.3	0.1	-0.1
	September	-	0.0	-	-	-2.7	-2.7	-	-1.1	-1.2
	October	-	0.0	-	-	-0.9	-1.4	-	-0.6	-1.0
	November	-	0.0	-	-	-2.2	-2.3	-	-0.6	-0.7
	December	-	0.0	-	-	-2.2	-2.2	1.1	1.1	-

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Results_Streams_MonthlyChange_07132021_sab.xlsm

Note: Blank rows represent periods where an increase or decrease in flows is not expected based on model results

Tenas Project Water and Load Balance Report
Appendix F: Project Case Results

Table F-14. Telkwa River and Bulkley River Project Case Streamflow Effect as Monthly Change over Base Case Conditions

Scenario		Telkwa River Monthly % Change			Bulkley River Monthly % Change					
Period	Month	WQS09			WQS11			WQS12		
		Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease
Construction	January	-	-0.10	-	-	0.00	-	-	0.00	-
	February	-	-0.11	-	-	0.00	-	-	0.00	-
	March	-	-0.12	-	-	0.00	-	-	0.00	-
	April	-	-0.13	-	-	0.00	-	-	0.00	-
	May	-	-0.03	-	-	0.00	-	-	0.00	-
	June	-	-0.02	-	-	0.00	-	-	0.00	-
	July	-	-0.03	-	-	0.00	-	-	0.00	-
	August	-	-0.07	-	-	0.00	-	-	0.00	-
	September	-	-0.03	-	-	0.00	-	-	0.00	-
	October	-	-0.07	-	-	0.00	-	-	0.00	-
	November	-	-0.17	-	-	0.00	-	-	0.00	-
	December	-	-0.19	-	-	0.00	-	-	0.00	-
Operations	January	0.6	-0.6	-1.6	-	0.0	-	0.0	0.0	-
	February	0.6	-0.6	-1.6	-	0.0	-	0.0	0.0	-
	March	0.6	-0.6	-1.6	-	0.0	-	0.0	0.0	-
	April	0.0	-0.8	-1.6	-	0.0	-	0.0	-0.1	-0.1
	May	0.2	-0.2	-0.5	-	0.0	-	0.1	0.0	-0.1
	June	0.0	-0.1	-0.2	-	0.0	-	0.0	0.0	0.0
	July	0.3	-0.1	-0.3	-	0.0	-	0.0	0.0	-
	August	0.3	-0.2	-1.0	-	0.0	-	0.1	0.0	-
	September	0.0	-0.1	-0.4	-	0.0	-	0.0	0.0	-
	October	0.1	-0.2	-0.6	-	0.0	-	0.0	0.0	-
	November	0.3	-0.6	-1.3	-	0.0	-	0.0	0.0	-
	December	0.7	-0.5	-1.6	-	0.0	-	0.0	0.0	-
Post-Closure	January	1.0	1.0	-	-	0.0	-	0.0	0.0	-
	February	1.0	1.0	-	-	0.0	-	0.0	0.0	-
	March	1.0	1.0	-	-	0.0	-	0.0	0.0	-
	April	0.7	0.7	-	-	0.0	-	0.1	0.1	-
	May	0.0	0.0	-0.1	-	0.0	-	0.0	0.0	-
	June	0.0	0.0	-	-	0.0	-	0.0	0.0	-
	July	0.1	0.1	-	-	0.0	-	0.0	0.0	-
	August	0.6	0.4	-	-	0.0	-	0.0	0.0	-
	September	0.1	0.1	-	-	0.0	-	0.0	0.0	-
	October	0.1	0.1	-	-	0.0	-	0.0	0.0	-
	November	0.5	0.4	-	-	0.0	-	0.0	0.0	-
	December	1.0	1.0	-	-	0.0	-	0.0	0.0	-

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Results_Streams_MonthlyChange_07132021_sab.xlsm

Note: Blank rows represent periods where an increase or decrease in flows is not expected based on model results

Table F-15

Parameter	Units	SPO	WQG	Tenas Creek					
				Baseline		WQS02			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			72	103	99	110	77	87
Alkalinity, total	mg-CaCO ₃ /L			83	110	250	380	110	210
Chloride	mg/L		150	0.25	0.50	4.4	7.9	0.79	3.5
Fluoride	mg/L		0.12	0.031	0.045	0.045	0.055	0.033	0.038
Ammonia, total	mg-N/L		1.2	0.0025	0.0074	0.10	0.22	0.015	0.079
Nitrate	mg/L		3	0.0050	0.060	0.76	1.7	0.099	0.59
Nitrite	mg/L	0.0524	0.02	0.00050	0.0020	0.018	0.039	0.0027	0.014
Sulfate	mg/L	593	218	2.6	7.4	120	220	17	92
Aluminum, total	mg/L	0.233	0.1	0.056	1.8	0.076	0.088	0.060	0.067
Aluminum, dissolved	mg/L		0.05	0.016	0.14	0.031	0.043	0.018	0.026
Antimony, total	mg/L			0.00013	0.00024	0.00037	0.00056	0.00015	0.00031
Antimony, dissolved	mg/L		0.009	0.00011	0.00023	0.00039	0.00058	0.00017	0.00033
Arsenic, total	mg/L		0.005	0.00048	0.00090	0.00071	0.00084	0.00052	0.00063
Arsenic, dissolved	mg/L			0.00041	0.00054	0.00063	0.00076	0.00045	0.00056
Barium, total	mg/L		1	0.034	0.047	0.046	0.051	0.037	0.042
Barium, dissolved	mg/L			0.033	0.043	0.045	0.050	0.036	0.041
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000059	0.000063	0.000053	0.000054
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000059	0.000063	0.000053	0.000054
Boron, total	mg/L		1.2	0.015	0.050	0.079	0.13	0.024	0.065
Boron, dissolved	mg/L			0.013	0.050	0.077	0.13	0.022	0.062
Cadmium, total	mg/L		0.00009	0.0000050	0.000021	0.000067	0.00014	0.000013	0.000055
Cadmium, dissolved	mg/L	0.00019	0.00017	0.0000025	0.0000058	0.000064	0.00013	0.000011	0.000053
Calcium, total	mg/L			22	31	27	28	23	24
Calcium, dissolved	mg/L			21	31	26	27	22	23
Chromium, total	mg/L		0.0089	0.00032	0.0018	0.00096	0.0014	0.00041	0.00080
Chromium, dissolved	mg/L			0.00025	0.00041	0.00088	0.0014	0.00034	0.00073
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00099	0.00038	0.00071	0.000094	0.00031
Cobalt, dissolved	mg/L			0.000050	0.00011	0.00038	0.00071	0.000094	0.00031
Copper, total	mg/L		0.003	0.0011	0.0050	0.0020	0.0026	0.0012	0.0017

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Stream_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Tenas Creek						
			WQG	Baseline		WQS02			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Copper, dissolved	mg/L			0.0011	0.0030	0.0020	0.0026	0.0012	0.0017
Iron, total	mg/L		0.3	0.048	1.2	0.063	0.073	0.051	0.057
Iron, dissolved	mg/L		0.30	0.015	0.14	0.026	0.036	0.017	0.023
Lead, total	mg/L		0.0050	0.000025	0.00039	0.00013	0.00023	0.000040	0.00011
Lead, dissolved	mg/L			0.000025	0.000050	0.00013	0.00023	0.000040	0.00011
Lithium, total	mg/L			0.00050	0.0012	0.041	0.076	0.0057	0.033
Lithium, dissolved	mg/L			0.00050	0.0010	0.041	0.076	0.0057	0.033
Magnesium, total	mg/L			4.2	6.3	7.6	9.8	4.8	6.6
Magnesium, dissolved	mg/L			4.1	6.3	7.5	9.7	4.6	6.5
Manganese, total	mg/L		0.12	0.0050	0.058	0.024	0.043	0.0075	0.020
Manganese, dissolved	mg/L			0.0020	0.0062	0.020	0.040	0.0044	0.016
Mercury, total	mg/L		0.00001	0.0000025	0.0000089	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000055	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00012	0.00019	0.0012	0.0020	0.00026	0.00095
Molybdenum, dissolved	mg-N/L			0.00010	0.00019	0.0058	0.0065	0.0045	0.0051
Nickel, total	mg/L		0.080	0.00025	0.0017	0.0015	0.0027	0.00042	0.0012
Nickel, dissolved	mg/L			0.00025	0.00054	0.0015	0.0027	0.00042	0.0012
Phosphorus, total	mg/L			0.0042	0.046	0.0055	0.0064	0.0045	0.0049
Orthophosphate, dissolved	mg/L			0.0010	0.0040	0.0012	0.0012	0.0010	0.0010
Potassium, total	mg/L			0.23	1.0	4.6	8.3	0.80	3.7
Potassium, dissolved	mg/L			0.19	0.30	4.6	8.3	0.76	3.6
Selenium, total	mg/L	0.008	0.002	0.000051	0.00020	0.0019	0.0035	0.00029	0.0015
Selenium, dissolved	mg/L			0.000040	0.000073	0.0019	0.0035	0.00028	0.0015
Silica, dissolved	mg/L			7.0	8.0	10	12	7.6	9.0
Sodium, total	mg/L			3.5	4.8	110	200	17	89
Sodium, dissolved	mg/L			3.5	4.8	110	200	17	89
Strontium, total	mg/L		7.0	0.11	0.13	0.34	0.53	0.14	0.28
Strontium, dissolved	mg/L			0.10	0.14	0.33	0.52	0.13	0.27
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Stream_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Tenas Creek						
			WQG	Baseline		WQS02			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.000070	0.00014	0.000014	0.000058
Thallium, dissolved	mg/L			0.0000050	0.000010	0.000070	0.00014	0.000014	0.000058
Uranium, total	mg/L		0.0085	0.00011	0.00025	0.00081	0.0014	0.00020	0.00065
Uranium, dissolved	mg/L			0.00011	0.00024	0.00081	0.0014	0.00020	0.00065
Vanadium, total	mg/L			0.00094	0.0037	0.0029	0.0043	0.0012	0.0024
Vanadium, dissolved	mg/L			0.00072	0.0010	0.0026	0.0041	0.00098	0.0022
Zinc, total	mg/L		0.0075	0.0015	0.0060	0.0035	0.0050	0.0018	0.0030
Zinc, dissolved	mg/L			0.0015	0.0015	0.0035	0.0050	0.0018	0.0030

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsm

Table F-16

Parameter	Units	SPO	Tenas Creek						
			WQG	Baseline		WQS22			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			72	103	111	123	81	95
Alkalinity, total	mg-CaCO ₃ /L			83	110	290	430	120	240
Chloride	mg/L		150	0.25	0.50	5.2	9.3	0.95	4.2
Fluoride	mg/L		0.12	0.031	0.045	0.053	0.064	0.035	0.041
Ammonia, total	mg-N/L		1.2	0.0025	0.0074	0.12	0.25	0.018	0.093
Nitrate	mg/L		3	0.0050	0.060	0.91	2.0	0.12	0.69
Nitrite	mg/L	0.0524	0.02	0.00050	0.0020	0.021	0.046	0.0033	0.016
Sulfate	mg/L	593	218	2.6	7.4	140	250	21	110
Aluminum, total	mg/L	0.233	0.1	0.056	1.8	0.086	0.100	0.063	0.072
Aluminum, dissolved	mg/L		0.05	0.016	0.14	0.035	0.050	0.019	0.029
Antimony, total	mg/L			0.00013	0.00024	0.00043	0.00065	0.00016	0.00035
Antimony, dissolved	mg/L		0.009	0.00011	0.00023	0.00045	0.00067	0.00018	0.00037
Arsenic, total	mg/L		0.005	0.00048	0.00090	0.00081	0.00095	0.00055	0.00068
Arsenic, dissolved	mg/L			0.00041	0.00054	0.00072	0.00086	0.00047	0.00060
Barium, total	mg/L		1	0.034	0.047	0.052	0.058	0.038	0.045
Barium, dissolved	mg/L			0.033	0.043	0.051	0.057	0.037	0.044
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000068	0.000071	0.000055	0.000057
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000068	0.000071	0.000055	0.000057
Boron, total	mg/L		1.2	0.015	0.050	0.092	0.15	0.027	0.075
Boron, dissolved	mg/L			0.013	0.050	0.090	0.15	0.024	0.073
Cadmium, total	mg/L		0.00009	0.0000050	0.000021	0.000078	0.00016	0.000016	0.000065
Cadmium, dissolved	mg/L	0.00019	0.00017	0.0000025	0.0000058	0.000075	0.00016	0.000013	0.000063
Calcium, total	mg/L			22	31	30	31	24	26
Calcium, dissolved	mg/L			21	31	29	30	23	25
Chromium, total	mg/L		0.0089	0.00032	0.0018	0.0011	0.0016	0.00045	0.00091
Chromium, dissolved	mg/L			0.00025	0.00041	0.0010	0.0016	0.00037	0.00084
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00099	0.00045	0.00082	0.00011	0.00036
Cobalt, dissolved	mg/L			0.000050	0.00011	0.00045	0.00082	0.00011	0.00036
Copper, total	mg/L		0.003	0.0011	0.0050	0.0023	0.0030	0.0013	0.0019

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Tenas Creek						
			WQG	Baseline		WQS22			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Copper, dissolved	mg/L			0.0011	0.0030	0.0023	0.0030	0.0013	0.0019
Iron, total	mg/L		0.3	0.048	1.2	0.072	0.082	0.054	0.060
Iron, dissolved	mg/L		0.30	0.015	0.14	0.030	0.041	0.018	0.025
Lead, total	mg/L		0.0050	0.000025	0.00039	0.00015	0.00026	0.000045	0.00013
Lead, dissolved	mg/L			0.000025	0.000050	0.00015	0.00026	0.000045	0.00013
Lithium, total	mg/L			0.00050	0.0012	0.049	0.089	0.0072	0.039
Lithium, dissolved	mg/L			0.00050	0.0010	0.049	0.089	0.0072	0.039
Magnesium, total	mg/L			4.2	6.3	8.7	11	5.0	7.2
Magnesium, dissolved	mg/L			4.1	6.3	8.6	11	4.9	7.1
Manganese, total	mg/L		0.12	0.0050	0.058	0.028	0.050	0.0084	0.022
Manganese, dissolved	mg/L			0.0020	0.0062	0.024	0.047	0.0051	0.019
Mercury, total	mg/L		0.00001	0.0000025	0.0000089	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000055	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00012	0.00019	0.0014	0.0024	0.00030	0.0011
Molybdenum, dissolved	mg-N/L			0.00010	0.00019	0.0066	0.0074	0.0047	0.0055
Nickel, total	mg/L		0.080	0.00025	0.0017	0.0017	0.0031	0.00047	0.0014
Nickel, dissolved	mg/L			0.00025	0.00054	0.0017	0.0031	0.00047	0.0014
Phosphorus, total	mg/L			0.0042	0.046	0.0065	0.0074	0.0047	0.0052
Orthophosphate, dissolved	mg/L			0.0010	0.0040	0.0013	0.0013	0.0011	0.0011
Potassium, total	mg/L			0.23	1.0	5.5	9.7	0.97	4.4
Potassium, dissolved	mg/L			0.19	0.30	5.4	9.7	0.92	4.3
Selenium, total	mg/L	0.008	0.002	0.000051	0.00020	0.0023	0.0041	0.00036	0.0018
Selenium, dissolved	mg/L			0.000040	0.000073	0.0023	0.0041	0.00035	0.0018
Silica, dissolved	mg/L			7.0	8.0	12	13	8.0	9.7
Sodium, total	mg/L			3.5	4.8	130	240	22	110
Sodium, dissolved	mg/L			3.5	4.8	130	240	22	110
Strontium, total	mg/L		7.0	0.11	0.13	0.40	0.60	0.16	0.32
Strontium, dissolved	mg/L			0.10	0.14	0.38	0.59	0.14	0.31
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Stream_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Tenas Creek						
			WQG	Baseline		WQS22			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.000082	0.00016	0.000016	0.000069
Thallium, dissolved	mg/L			0.0000050	0.000010	0.000082	0.00016	0.000016	0.000069
Uranium, total	mg/L		0.0085	0.00011	0.00025	0.00095	0.0016	0.00023	0.00077
Uranium, dissolved	mg/L			0.00011	0.00024	0.00095	0.0016	0.00023	0.00077
Vanadium, total	mg/L			0.00094	0.0037	0.0033	0.0049	0.0013	0.0027
Vanadium, dissolved	mg/L			0.00072	0.0010	0.0031	0.0047	0.0011	0.0025
Zinc, total	mg/L		0.0075	0.0015	0.0060	0.0040	0.0058	0.0019	0.0033
Zinc, dissolved	mg/L			0.0015	0.0015	0.0040	0.0058	0.0019	0.0033

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsm

Table F-17

Parameter	Units	SPO	WQG	Tenas Creek					
				Baseline		WQS04			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			72	103	117	132	83	95
Alkalinity, total	mg-CaCO ₃ /L			83	110	300	450	120	250
Chloride	mg/L		150	0.25	0.50	5.2	9.3	0.96	4.3
Fluoride	mg/L		0.12	0.031	0.045	0.054	0.066	0.036	0.042
Ammonia, total	mg-N/L		1.2	0.0025	0.0074	0.12	0.25	0.018	0.094
Nitrate	mg/L		3	0.0050	0.060	0.89	1.9	0.12	0.71
Nitrite	mg/L	0.0524	0.02	0.00050	0.0020	0.021	0.045	0.0033	0.017
Sulfate	mg/L	593	218	2.6	7.4	140	260	22	110
Aluminum, total	mg/L	0.233	0.1	0.056	1.8	0.090	0.10	0.064	0.073
Aluminum, dissolved	mg/L		0.05	0.016	0.14	0.037	0.053	0.020	0.030
Antimony, total	mg/L			0.00013	0.00024	0.00043	0.00066	0.00016	0.00036
Antimony, dissolved	mg/L		0.009	0.00011	0.00023	0.00046	0.00069	0.00019	0.00038
Arsenic, total	mg/L		0.005	0.00048	0.00090	0.00084	0.00098	0.00056	0.00069
Arsenic, dissolved	mg/L			0.00041	0.00054	0.00074	0.00089	0.00048	0.00061
Barium, total	mg/L		1	0.034	0.047	0.054	0.060	0.039	0.045
Barium, dissolved	mg/L			0.033	0.043	0.053	0.059	0.038	0.044
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000070	0.000074	0.000056	0.000058
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000070	0.000074	0.000056	0.000058
Boron, total	mg/L		1.2	0.015	0.050	0.093	0.15	0.027	0.076
Boron, dissolved	mg/L			0.013	0.050	0.090	0.15	0.025	0.074
Cadmium, total	mg/L		0.00009	0.0000050	0.000021	0.000080	0.00016	0.000016	0.000067
Cadmium, dissolved	mg/L	0.00019	0.00017	0.0000025	0.0000058	0.000076	0.00016	0.000013	0.000064
Calcium, total	mg/L			22	31	32	33	25	26
Calcium, dissolved	mg/L			21	31	30	32	24	25
Chromium, total	mg/L		0.0089	0.00032	0.0018	0.0011	0.0017	0.00046	0.00093
Chromium, dissolved	mg/L			0.00025	0.00041	0.0010	0.0016	0.00038	0.00085
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00099	0.00045	0.00082	0.00011	0.00037
Cobalt, dissolved	mg/L			0.000050	0.00011	0.00045	0.00082	0.00011	0.00037
Copper, total	mg/L		0.003	0.0011	0.0050	0.0024	0.0031	0.0014	0.0019

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Stream_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Tenas Creek						
			WQG	Baseline		WQS04			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Copper, dissolved	mg/L			0.0011	0.0030	0.0024	0.0031	0.0014	0.0019
Iron, total	mg/L		0.3	0.048	1.2	0.075	0.085	0.055	0.061
Iron, dissolved	mg/L		0.30	0.015	0.14	0.031	0.043	0.018	0.026
Lead, total	mg/L		0.0050	0.000025	0.00039	0.00015	0.00027	0.000046	0.00013
Lead, dissolved	mg/L			0.000025	0.000050	0.00015	0.00027	0.000046	0.00013
Lithium, total	mg/L			0.00050	0.0012	0.049	0.090	0.0073	0.040
Lithium, dissolved	mg/L			0.00050	0.0010	0.049	0.090	0.0073	0.040
Magnesium, total	mg/L			4.2	6.3	9.0	12	5.1	7.4
Magnesium, dissolved	mg/L			4.1	6.3	8.8	11	5.0	7.2
Manganese, total	mg/L		0.12	0.0050	0.058	0.028	0.050	0.0085	0.023
Manganese, dissolved	mg/L			0.0020	0.0062	0.024	0.046	0.0052	0.019
Mercury, total	mg/L		0.00001	0.0000025	0.0000089	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000055	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00012	0.00019	0.0014	0.0024	0.00031	0.0012
Molybdenum, dissolved	mg-N/L			0.00010	0.00019	0.0068	0.0076	0.0048	0.0056
Nickel, total	mg/L		0.080	0.00025	0.0017	0.0018	0.0031	0.00048	0.0014
Nickel, dissolved	mg/L			0.00025	0.00054	0.0018	0.0031	0.00048	0.0014
Phosphorus, total	mg/L			0.0042	0.046	0.0067	0.0076	0.0048	0.0053
Orthophosphate, dissolved	mg/L			0.0010	0.0040	0.0014	0.0014	0.0011	0.0011
Potassium, total	mg/L			0.23	1.0	5.5	9.7	0.98	4.5
Potassium, dissolved	mg/L			0.19	0.30	5.4	9.7	0.94	4.4
Selenium, total	mg/L	0.008	0.002	0.000051	0.00020	0.0023	0.0041	0.00036	0.0018
Selenium, dissolved	mg/L			0.000040	0.000073	0.0022	0.0041	0.00035	0.0018
Silica, dissolved	mg/L			7.0	8.0	12	14	8.2	9.8
Sodium, total	mg/L			3.5	4.8	130	240	22	110
Sodium, dissolved	mg/L			3.5	4.8	130	240	22	110
Strontium, total	mg/L		7.0	0.11	0.13	0.40	0.62	0.16	0.33
Strontium, dissolved	mg/L			0.10	0.14	0.39	0.60	0.15	0.32
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Stream_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Tenas Creek						
			WQG	Baseline		WQS04			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.000082	0.00016	0.000017	0.000071
Thallium, dissolved	mg/L			0.0000050	0.000010	0.000082	0.00016	0.000017	0.000071
Uranium, total	mg/L		0.0085	0.00011	0.00025	0.00095	0.0016	0.00024	0.00078
Uranium, dissolved	mg/L			0.00011	0.00024	0.00095	0.0016	0.00024	0.00078
Vanadium, total	mg/L			0.00094	0.0037	0.0034	0.0050	0.0013	0.0028
Vanadium, dissolved	mg/L			0.00072	0.0010	0.0031	0.0048	0.0011	0.0025
Zinc, total	mg/L		0.0075	0.0015	0.0060	0.0041	0.0059	0.0020	0.0034
Zinc, dissolved	mg/L			0.0015	0.0015	0.0041	0.0059	0.0020	0.0034

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsm

Table F-18

Parameter	Units	SPO	Four Creek						
			WQG	Baseline		WQS20			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			118	163	152	176	133	124
Alkalinity, total	mg-CaCO ₃ /L			130	190	170	190	150	140
Chloride	mg/L		150	0.25	0.50	0.33	0.37	0.28	0.26
Fluoride	mg/L		0.12	0.059	0.068	0.077	0.087	0.067	0.062
Ammonia, total	mg-N/L		0.95	0.0025	0.0092	0.0033	0.0037	0.0028	0.0026
Nitrate	mg/L		3	0.013	0.058	0.017	0.019	0.015	0.014
Nitrite	mg/L	0.0524	0.02	0.00050	0.0010	0.00065	0.00074	0.00057	0.00052
Sulfate	mg/L	593	309	1.9	28	2.5	2.8	2.2	2.0
Aluminum, total	mg/L	0.249	0.1	0.099	1.2	0.13	0.15	0.11	0.10
Aluminum, dissolved	mg/L		0.05	0.032	0.49	0.042	0.047	0.036	0.034
Antimony, total	mg/L			0.000050	0.00012	0.000065	0.000074	0.000057	0.000052
Antimony, dissolved	mg/L		0.009	0.000050	0.00010	0.000065	0.000074	0.000057	0.000052
Arsenic, total	mg/L		0.005	0.00074	0.0011	0.00097	0.0011	0.00084	0.00078
Arsenic, dissolved	mg/L			0.00064	0.00086	0.00084	0.00095	0.00073	0.00067
Barium, total	mg/L		1	0.071	0.13	0.093	0.11	0.081	0.074
Barium, dissolved	mg/L			0.075	0.13	0.098	0.11	0.085	0.079
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000065	0.000074	0.000057	0.000052
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000065	0.000074	0.000057	0.000052
Boron, total	mg/L		1.2	0.012	0.020	0.016	0.018	0.014	0.013
Boron, dissolved	mg/L			0.011	0.019	0.014	0.016	0.013	0.012
Cadmium, total	mg/L		0.00009	0.000063	0.000019	0.000082	0.000093	0.000072	0.000066
Cadmium, dissolved	mg/L	0.00026	0.00024	0.000052	0.000012	0.000068	0.000077	0.000059	0.000055
Calcium, total	mg/L			24	34	31	36	27	25
Calcium, dissolved	mg/L			23	36	30	34	26	24
Chromium, total	mg/L		0.0089	0.00026	0.0016	0.00034	0.00038	0.00030	0.00027
Chromium, dissolved	mg/L			0.00015	0.00079	0.00020	0.00022	0.00017	0.00016
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00047	0.000065	0.000074	0.000057	0.000052
Cobalt, dissolved	mg/L			0.000050	0.00015	0.000065	0.000074	0.000057	0.000052
Copper, total	mg/L		0.0047	0.0014	0.0044	0.0018	0.0021	0.0016	0.0015

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Stream_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Four Creek						
			WQG	Baseline		WQS20			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Copper, dissolved	mg/L			0.0014	0.0034	0.0018	0.0021	0.0016	0.0015
Iron, total	mg/L		0.3	0.095	1.1	0.12	0.14	0.11	0.100
Iron, dissolved	mg/L		0.30	0.015	0.41	0.020	0.022	0.017	0.016
Lead, total	mg/L		0.0050	0.000025	0.00028	0.000033	0.000037	0.000028	0.000026
Lead, dissolved	mg/L			0.000025	0.000091	0.000033	0.000037	0.000028	0.000026
Lithium, total	mg/L			0.0015	0.0019	0.0020	0.0022	0.0017	0.0016
Lithium, dissolved	mg/L			0.0014	0.0019	0.0018	0.0021	0.0016	0.0015
Magnesium, total	mg/L			14	19	18	21	16	15
Magnesium, dissolved	mg/L			13	20	17	19	15	14
Manganese, total	mg/L		0.12	0.0025	0.024	0.0033	0.0037	0.0028	0.0026
Manganese, dissolved	mg/L			0.00067	0.0074	0.00088	0.00099	0.00076	0.00070
Mercury, total	mg/L		0.00001	0.0000025	0.000013	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000093	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00023	0.00038	0.00030	0.00034	0.00026	0.00024
Molybdenum, dissolved	mg-N/L			0.00019	0.00036	0.0054	0.0061	0.0047	0.0043
Nickel, total	mg/L		0.080	0.00025	0.0018	0.00033	0.00037	0.00028	0.00026
Nickel, dissolved	mg/L			0.00025	0.0011	0.00033	0.00037	0.00028	0.00026
Phosphorus, total	mg/L			0.0041	0.044	0.0054	0.0061	0.0047	0.0043
Orthophosphate, dissolved	mg/L			0.00050	0.0012	0.00065	0.00074	0.00057	0.00052
Potassium, total	mg/L			0.36	0.77	0.47	0.53	0.41	0.38
Potassium, dissolved	mg/L			0.35	0.84	0.46	0.52	0.40	0.37
Selenium, total	mg/L	0.008	0.002	0.000025	0.000095	0.000033	0.000037	0.000028	0.000026
Selenium, dissolved	mg/L			0.000025	0.00011	0.000033	0.000037	0.000028	0.000026
Silica, dissolved	mg/L								
Sodium, total	mg/L			7.0	13	9.2	10	8.0	7.3
Sodium, dissolved	mg/L			7.4	13	9.7	11	8.4	7.8
Strontium, total	mg/L		7.0	0.17	0.24	0.22	0.25	0.19	0.18
Strontium, dissolved	mg/L			0.16	0.24	0.21	0.24	0.18	0.17
Silver, total	mg/L		0.00005	0.0000050	0.000022	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000012	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Four Creek						
			WQG	Baseline		WQS20			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.0000065	0.0000074	0.0000057	0.0000052
Thallium, dissolved	mg/L			0.0000050	0.000010	0.0000065	0.0000074	0.0000057	0.0000052
Uranium, total	mg/L		0.0085	0.000078	0.00025	0.00010	0.00012	0.000089	0.000082
Uranium, dissolved	mg/L			0.000075	0.00025	0.000098	0.00011	0.000085	0.000079
Vanadium, total	mg/L			0.00061	0.0027	0.00080	0.00090	0.00069	0.00064
Vanadium, dissolved	mg/L			0.00025	0.0013	0.00033	0.00037	0.00028	0.00026
Zinc, total	mg/L		0.023	0.0015	0.0059	0.0020	0.0022	0.0017	0.0016
Zinc, dissolved	mg/L			0.0015	0.0025	0.0020	0.0022	0.0017	0.0016

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsm

Table F-19

Parameter	Units	SPO	WQG	Four Creek					
				Baseline		WQS21			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			118	163	152	167	127	124
Alkalinity, total	mg-CaCO ₃ /L			130	190	170	180	140	140
Chloride	mg/L		150	0.25	0.50	0.32	0.35	0.28	0.26
Fluoride	mg/L		0.12	0.059	0.068	0.076	0.083	0.065	0.062
Ammonia, total	mg-N/L		0.95	0.0025	0.0092	0.0032	0.0035	0.0028	0.0026
Nitrate	mg/L		3	0.013	0.058	0.017	0.018	0.014	0.014
Nitrite	mg/L	0.0524	0.02	0.00050	0.0010	0.00064	0.00070	0.00055	0.00052
Sulfate	mg/L	593	309	1.9	28	2.4	2.7	2.1	2.0
Aluminum, total	mg/L	0.249	0.1	0.099	1.2	0.13	0.14	0.11	0.10
Aluminum, dissolved	mg/L		0.05	0.032	0.49	0.041	0.045	0.035	0.034
Antimony, total	mg/L			0.000050	0.00012	0.000064	0.000070	0.000055	0.000052
Antimony, dissolved	mg/L		0.009	0.000050	0.00010	0.000064	0.000070	0.000055	0.000052
Arsenic, total	mg/L		0.005	0.00074	0.0011	0.00095	0.0010	0.00082	0.00078
Arsenic, dissolved	mg/L			0.00064	0.00086	0.00082	0.00090	0.00071	0.00067
Barium, total	mg/L		1	0.071	0.13	0.091	0.099	0.078	0.074
Barium, dissolved	mg/L			0.075	0.13	0.096	0.11	0.083	0.079
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000064	0.000070	0.000055	0.000052
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000064	0.000070	0.000055	0.000052
Boron, total	mg/L		1.2	0.012	0.020	0.015	0.017	0.013	0.013
Boron, dissolved	mg/L			0.011	0.019	0.014	0.015	0.012	0.012
Cadmium, total	mg/L		0.00009	0.000063	0.000019	0.000081	0.000088	0.000069	0.000066
Cadmium, dissolved	mg/L	0.00026	0.00024	0.000052	0.000012	0.000067	0.000073	0.000057	0.000054
Calcium, total	mg/L			24	34	31	34	26	25
Calcium, dissolved	mg/L			23	36	30	32	25	24
Chromium, total	mg/L		0.0089	0.00026	0.0016	0.00033	0.00036	0.00029	0.00027
Chromium, dissolved	mg/L			0.00015	0.00079	0.00019	0.00021	0.00017	0.00016
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00047	0.000064	0.000070	0.000055	0.000052
Cobalt, dissolved	mg/L			0.000050	0.00015	0.000064	0.000070	0.000055	0.000052
Copper, total	mg/L		0.0047	0.0014	0.0044	0.0018	0.0020	0.0015	0.0015

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Stream_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Four Creek						
			WQG	Baseline		WQS21			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Copper, dissolved	mg/L			0.0014	0.0034	0.0018	0.0020	0.0015	0.0015
Iron, total	mg/L		0.3	0.095	1.1	0.12	0.13	0.10	0.100
Iron, dissolved	mg/L		0.30	0.015	0.41	0.019	0.021	0.017	0.016
Lead, total	mg/L		0.0050	0.000025	0.00028	0.000032	0.000035	0.000028	0.000026
Lead, dissolved	mg/L			0.000025	0.000091	0.000032	0.000035	0.000028	0.000026
Lithium, total	mg/L			0.0015	0.0019	0.0019	0.0021	0.0017	0.0016
Lithium, dissolved	mg/L			0.0014	0.0019	0.0018	0.0020	0.0015	0.0015
Magnesium, total	mg/L			14	19	18	20	15	15
Magnesium, dissolved	mg/L			13	20	17	18	14	14
Manganese, total	mg/L		0.12	0.0025	0.024	0.0032	0.0035	0.0028	0.0026
Manganese, dissolved	mg/L			0.00067	0.0074	0.00086	0.00094	0.00074	0.00070
Mercury, total	mg/L		0.00001	0.0000025	0.000013	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000093	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00023	0.00038	0.00030	0.00032	0.00025	0.00024
Molybdenum, dissolved	mg-N/L			0.00019	0.00036	0.0053	0.0057	0.0045	0.0043
Nickel, total	mg/L		0.080	0.00025	0.0018	0.00032	0.00035	0.00028	0.00026
Nickel, dissolved	mg/L			0.00025	0.0011	0.00032	0.00035	0.00028	0.00026
Phosphorus, total	mg/L			0.0041	0.044	0.0053	0.0057	0.0045	0.0043
Orthophosphate, dissolved	mg/L			0.00050	0.0012	0.00064	0.00070	0.00055	0.00052
Potassium, total	mg/L			0.36	0.77	0.46	0.50	0.40	0.38
Potassium, dissolved	mg/L			0.35	0.84	0.45	0.49	0.39	0.37
Selenium, total	mg/L	0.008	0.002	0.000025	0.000095	0.000032	0.000035	0.000028	0.000026
Selenium, dissolved	mg/L			0.000025	0.00011	0.000032	0.000035	0.000028	0.000026
Silica, dissolved	mg/L			no data	no data				
Sodium, total	mg/L			7.0	13	9.0	9.8	7.7	7.3
Sodium, dissolved	mg/L			7.4	13	9.5	10	8.2	7.8
Strontium, total	mg/L		7.0	0.17	0.24	0.22	0.24	0.19	0.18
Strontium, dissolved	mg/L			0.16	0.24	0.21	0.22	0.18	0.17
Silver, total	mg/L		0.00005	0.0000050	0.000022	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000012	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Four Creek						
			WQG	Baseline		WQS21			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.0000064	0.0000070	0.0000055	0.0000052
Thallium, dissolved	mg/L			0.0000050	0.000010	0.0000064	0.0000070	0.0000055	0.0000052
Uranium, total	mg/L		0.0085	0.000078	0.00025	0.00010	0.00011	0.000086	0.000082
Uranium, dissolved	mg/L			0.000075	0.00025	0.000096	0.00011	0.000083	0.000079
Vanadium, total	mg/L			0.00061	0.0027	0.00078	0.00085	0.00067	0.00064
Vanadium, dissolved	mg/L			0.00025	0.0013	0.00032	0.00035	0.00028	0.00026
Zinc, total	mg/L		0.023	0.0015	0.0059	0.0019	0.0021	0.0017	0.0016
Zinc, dissolved	mg/L			0.0015	0.0025	0.0019	0.0021	0.0017	0.0016

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsm

Table F-20

Parameter	Units	SPO	WQG	Four Creek					
				Baseline		WQS03_DS			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			118	163	194	220	152	144
Alkalinity, total	mg-CaCO ₃ /L			130	190	450	640	210	300
Chloride	mg/L		150	0.25	0.50	7.0	13	1.4	4.3
Fluoride	mg/L		0.12	0.059	0.068	0.087	0.095	0.074	0.065
Ammonia, total	mg-N/L		0.95	0.0025	0.0092	0.13	0.21	0.023	0.077
Nitrate	mg/L		3	0.013	0.058	1.0	1.6	0.18	0.60
Nitrite	mg/L	0.0524	0.02	0.00050	0.0010	0.024	0.038	0.0043	0.014
Sulfate	mg/L	593	309	1.9	28	190	360	33	110
Aluminum, total	mg/L	0.249	0.1	0.099	1.2	0.21	0.25	0.13	0.14
Aluminum, dissolved	mg/L		0.05	0.032	0.49	0.11	0.16	0.051	0.073
Antimony, total	mg/L			0.00050	0.00012	0.00050	0.00083	0.00013	0.00031
Antimony, dissolved	mg/L		0.009	0.00050	0.00010	0.00050	0.00083	0.00013	0.00031
Arsenic, total	mg/L		0.005	0.00074	0.0011	0.0014	0.0016	0.00097	0.00097
Arsenic, dissolved	mg/L			0.00064	0.00086	0.0012	0.0014	0.00085	0.00087
Barium, total	mg/L		1	0.071	0.13	0.12	0.13	0.092	0.086
Barium, dissolved	mg/L			0.075	0.13	0.12	0.14	0.097	0.090
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000074	0.000081	0.000063	0.000056
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000074	0.000081	0.000063	0.000056
Boron, total	mg/L		1.2	0.012	0.020	0.12	0.21	0.032	0.074
Boron, dissolved	mg/L			0.011	0.019	0.12	0.20	0.031	0.073
Cadmium, total	mg/L		0.00009	0.000063	0.000019	0.00014	0.00026	0.000030	0.000088
Cadmium, dissolved	mg/L	0.00026	0.00024	0.000052	0.000012	0.00014	0.00026	0.000029	0.000086
Calcium, total	mg/L			24	34	38	42	31	28
Calcium, dissolved	mg/L			23	36	36	41	29	27
Chromium, total	mg/L		0.0089	0.00026	0.0016	0.0014	0.0021	0.00049	0.00087
Chromium, dissolved	mg/L			0.00015	0.00079	0.0012	0.0020	0.00035	0.00076
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00047	0.00066	0.0011	0.00016	0.00041
Cobalt, dissolved	mg/L			0.000050	0.00015	0.00066	0.0011	0.00016	0.00041
Copper, total	mg/L		0.0047	0.0014	0.0044	0.0033	0.0041	0.0020	0.0023

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Stream_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Four Creek						
			WQG	Baseline		WQS03_DS			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Copper, dissolved	mg/L			0.0014	0.0034	0.0033	0.0041	0.0020	0.0023
Iron, total	mg/L		0.3	0.095	1.1	0.16	0.19	0.12	0.12
Iron, dissolved	mg/L		0.30	0.015	0.41	0.052	0.076	0.024	0.034
Lead, total	mg/L		0.0050	0.000025	0.00028	0.00023	0.00040	0.000064	0.00014
Lead, dissolved	mg/L			0.000025	0.000091	0.00023	0.00040	0.000064	0.00014
Lithium, total	mg/L			0.0015	0.0019	0.069	0.13	0.013	0.042
Lithium, dissolved	mg/L			0.0014	0.0019	0.069	0.13	0.013	0.042
Magnesium, total	mg/L			14	19	24	28	18	18
Magnesium, dissolved	mg/L			13	20	23	27	17	17
Manganese, total	mg/L		0.12	0.0025	0.024	0.032	0.057	0.0078	0.020
Manganese, dissolved	mg/L			0.00067	0.0074	0.029	0.056	0.0055	0.018
Mercury, total	mg/L		0.00001	0.0000025	0.000013	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000093	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00023	0.00038	0.0021	0.0036	0.00061	0.0014
Molybdenum, dissolved	mg-N/L			0.00019	0.00036	0.0076	0.0089	0.0054	0.0055
Nickel, total	mg/L		0.080	0.00025	0.0018	0.0024	0.0040	0.00064	0.0015
Nickel, dissolved	mg/L			0.00025	0.0011	0.0024	0.0040	0.00064	0.0015
Phosphorus, total	mg/L			0.0041	0.044	0.0062	0.0068	0.0052	0.0046
Orthophosphate, dissolved	mg/L			0.00050	0.0012	0.00074	0.00081	0.00063	0.00056
Potassium, total	mg/L			0.36	0.77	7.3	13	1.6	4.5
Potassium, dissolved	mg/L			0.35	0.84	7.3	13	1.6	4.5
Selenium, total	mg/L	0.008	0.002	0.000025	0.000095	0.0031	0.0058	0.00054	0.0019
Selenium, dissolved	mg/L			0.000025	0.00011	0.0031	0.0058	0.00054	0.0019
Silica, dissolved	mg/L			no data	no data	3.8	7.1	0.66	2.4
Sodium, total	mg/L			7.0	13	180	320	36	110
Sodium, dissolved	mg/L			7.4	13	180	320	37	110
Strontium, total	mg/L		7.0	0.17	0.24	0.62	0.89	0.27	0.41
Strontium, dissolved	mg/L			0.16	0.24	0.60	0.87	0.26	0.40
Silver, total	mg/L		0.00005	0.0000050	0.000022	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000012	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Stream_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Four Creek						
			WQG	Baseline		WQS03_DS			
						Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.00015	0.00027	0.000030	0.000091
Thallium, dissolved	mg/L			0.0000050	0.000010	0.00015	0.00027	0.000030	0.000091
Uranium, total	mg/L		0.0085	0.000078	0.00025	0.0012	0.0022	0.00028	0.00076
Uranium, dissolved	mg/L			0.000075	0.00025	0.0012	0.0022	0.00028	0.00076
Vanadium, total	mg/L			0.00061	0.0027	0.0038	0.0062	0.0012	0.0024
Vanadium, dissolved	mg/L			0.00025	0.0013	0.0033	0.0058	0.00080	0.0020
Zinc, total	mg/L		0.023	0.0015	0.0059	0.0051	0.0074	0.0024	0.0034
Zinc, dissolved	mg/L			0.0015	0.0025	0.0051	0.0074	0.0024	0.0034

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsm

Table F-21

Parameter	Units	SPO	Goathorn Creek										
			WQG	Baseline		WQS05							
						Operations				Post-Closure			
						Project Case				Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			68	102	103	110	80	76	96	113	82	77
Alkalinity, total	mg-CaCO ₃ /L			52	87	210	100	78	65	97	120	77	86
Chloride	mg/L		150	0.25	0.50	3.8	0.54	0.53	0.28	0.91	1.3	0.46	0.88
Fluoride	mg/L		0.12	0.032	0.041	0.043	0.049	0.037	0.036	0.044	0.051	0.037	0.036
Ammonia, total	mg-N/L		1.5	0.0025	0.0070	0.085	0.0066	0.0079	0.0029	0.018	0.028	0.0057	0.014
Nitrate	mg/L		3	0.041	0.076	0.69	0.066	0.077	0.039	0.16	0.24	0.057	0.12
Nitrite	mg/L	0.0524	0.02	0.00050	0.0020	0.015	0.0013	0.0014	0.00057	0.0033	0.0051	0.0011	0.0025
Sulfate	mg/L	593	218	24	37	120	30	27	22	43	51	25	38
Aluminum, total	mg/L	0.231	0.1	0.092	0.75	0.17	0.12	0.099	0.095	0.12	0.13	0.097	0.097
Aluminum, dissolved	mg/L		0.05	0.014	0.13	0.026	0.023	0.017	0.016	0.021	0.026	0.017	0.018
Antimony, total	mg/L			0.000073	0.00014	0.00030	0.00012	0.000088	0.000066	0.00011	0.00015	0.000085	0.000100
Antimony, dissolved	mg/L		0.009	0.000050	0.00011	0.00033	0.00015	0.00011	0.000090	0.00014	0.00018	0.00011	0.00012
Arsenic, total	mg/L		0.005	0.00023	0.00068	0.00057	0.00049	0.00036	0.00031	0.00045	0.00052	0.00035	0.00033
Arsenic, dissolved	mg/L			0.00017	0.00035	0.00041	0.00039	0.00028	0.00024	0.00036	0.00042	0.00028	0.00026
Barium, total	mg/L		1	0.058	0.072	0.074	0.077	0.060	0.060	0.074	0.080	0.060	0.059
Barium, dissolved	mg/L			0.059	0.073	0.075	0.078	0.060	0.061	0.075	0.080	0.061	0.060
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000067	0.000077	0.000057	0.000055	0.000069	0.000079	0.000058	0.000054
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000067	0.000077	0.000057	0.000055	0.000069	0.000079	0.000058	0.000054
Boron, total	mg/L		1.2	0.0050	0.050	0.061	0.015	0.012	0.0076	0.016	0.022	0.011	0.016
Boron, dissolved	mg/L			0.0050	0.050	0.061	0.014	0.012	0.0072	0.017	0.022	0.011	0.016
Cadmium, total	mg/L		0.00009	0.000010	0.000049	0.00010	0.000016	0.000014	0.000010	0.000022	0.000027	0.000012	0.000018
Cadmium, dissolved	mg/L	0.00019	0.00016	0.0000081	0.000036	0.000098	0.000013	0.000011	0.0000079	0.000020	0.000025	0.0000098	0.000016
Calcium, total	mg/L			21	30	29	33	24	23	29	34	25	23
Calcium, dissolved	mg/L			22	32	29	33	25	24	30	34	25	24
Chromium, total	mg/L		0.0089	0.00020	0.00091	0.00097	0.00040	0.00031	0.00024	0.00036	0.00047	0.00029	0.00033
Chromium, dissolved	mg/L			0.00010	0.00027	0.00067	0.00025	0.00019	0.00014	0.00024	0.00033	0.00018	0.00022
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00055	0.00048	0.000094	0.000083	0.000056	0.00011	0.00014	0.000071	0.00010
Cobalt, dissolved	mg/L			0.000050	0.00011	0.00038	0.000089	0.000074	0.000055	0.00011	0.00014	0.000069	0.000098
Copper, total	mg/L		0.0028	0.0015	0.0054	0.0026	0.0021	0.0016	0.0016	0.0020	0.0023	0.0016	0.0016

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Stream_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Goathorn Creek										
			WQG	Baseline		WQS05							
						Operations				Post-Closure			
						Project Case				Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Copper, dissolved	mg/L			0.0014	0.0039	0.0023	0.0020	0.0015	0.0015	0.0019	0.0022	0.0016	0.0016
Iron, total	mg/L		0.3	0.085	0.78	0.33	0.12	0.11	0.088	0.11	0.14	0.093	0.098
Iron, dissolved	mg/L		0.30	0.015	0.13	0.027	0.023	0.017	0.016	0.021	0.025	0.018	0.017
Lead, total	mg/L		0.0050	0.000025	0.00023	0.00021	0.000046	0.000040	0.000028	0.000048	0.000059	0.000034	0.000045
Lead, dissolved	mg/L			0.000025	0.000050	0.00015	0.000043	0.000035	0.000028	0.000048	0.000057	0.000033	0.000042
Lithium, total	mg/L			0.00050	0.0011	0.036	0.0024	0.0030	0.00064	0.0060	0.010	0.0021	0.0062
Lithium, dissolved	mg/L			0.00050	0.0010	0.036	0.0024	0.0030	0.00063	0.0064	0.011	0.0022	0.0065
Magnesium, total	mg/L			3.9	6.5	7.5	6.6	4.8	4.6	5.7	6.8	4.8	4.8
Magnesium, dissolved	mg/L			3.8	7.4	7.3	6.3	4.7	4.5	5.6	6.6	4.7	4.7
Manganese, total	mg/L		0.12	0.0059	0.033	0.026	0.0092	0.0075	0.0063	0.010	0.012	0.0072	0.0086
Manganese, dissolved	mg/L			0.0026	0.0084	0.018	0.0042	0.0036	0.0027	0.0060	0.0074	0.0034	0.0050
Mercury, total	mg/L		0.00001	0.0000025	0.0000064	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00047	0.00062	0.0015	0.00058	0.00051	0.00045	0.00069	0.00072	0.00048	0.00059
Molybdenum, dissolved	mg-N/L			0.00046	0.00062	0.0061	0.0068	0.0051	0.0049	0.0060	0.0070	0.0051	0.0049
Nickel, total	mg/L		0.080	0.00025	0.0011	0.0016	0.00044	0.00037	0.00028	0.00050	0.00059	0.00034	0.00044
Nickel, dissolved	mg/L			0.00025	0.00060	0.0014	0.00042	0.00035	0.00028	0.00051	0.00059	0.00033	0.00043
Phosphorus, total	mg/L			0.0045	0.019	0.0075	0.0068	0.0052	0.0049	0.0060	0.0070	0.0052	0.0049
Orthophosphate, dissolved	mg/L			0.00050	0.0040	0.00092	0.0010	0.00071	0.00064	0.00094	0.0010	0.00072	0.00062
Potassium, total	mg/L			0.39	1.0	4.1	0.68	0.66	0.41	1.0	1.4	0.57	0.99
Potassium, dissolved	mg/L			0.36	0.48	4.1	0.63	0.62	0.37	1.1	1.4	0.54	1.00
Selenium, total	mg/L	0.008	0.002	0.000086	0.00020	0.0017	0.00018	0.00020	0.000090	0.00035	0.00052	0.00016	0.00034
Selenium, dissolved	mg/L			0.000076	0.00012	0.0017	0.00017	0.00019	0.000079	0.00035	0.00054	0.00015	0.00035
Silica, dissolved	mg/L			5.6	6.2	8.7	9.3	6.8	6.3	8.4	9.7	6.9	6.5
Sodium, total	mg/L			2.3	4.8	93	8.3	9.5	3.0	17	27	7.2	18
Sodium, dissolved	mg/L			2.4	4.8	93	8.4	9.6	3.1	19	29	7.7	19
Strontium, total	mg/L	7.0		0.076	0.11	0.29	0.14	0.11	0.092	0.14	0.17	0.11	0.12
Strontium, dissolved	mg/L			0.077	0.12	0.29	0.14	0.11	0.091	0.14	0.17	0.10	0.12
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Goathorn Creek										
			WQG	Baseline		WQS05							
						Operations				Post-Closure			
						Project Case				Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.000097	0.000011	0.0000097	0.0000056	0.000017	0.000023	0.0000081	0.000015
Thallium, dissolved	mg/L			0.0000050	0.000010	0.000097	0.000011	0.0000097	0.0000056	0.000017	0.000023	0.0000082	0.000015
Uranium, total	mg/L		0.0085	0.000054	0.00014	0.00068	0.00014	0.00012	0.000071	0.00017	0.00023	0.00010	0.00016
Uranium, dissolved	mg/L			0.000051	0.00014	0.00068	0.00013	0.00012	0.000068	0.00017	0.00023	0.00010	0.00017
Vanadium, total	mg/L			0.00025	0.0020	0.0022	0.00082	0.00061	0.00041	0.00073	0.0010	0.00057	0.00066
Vanadium, dissolved	mg/L			0.00025	0.00052	0.0019	0.00069	0.00052	0.00036	0.00066	0.00091	0.00050	0.00062
Zinc, total	mg/L		0.0075	0.0015	0.0061	0.0039	0.0024	0.0018	0.0017	0.0022	0.0026	0.0018	0.0019
Zinc, dissolved	mg/L			0.0015	0.0021	0.0034	0.0024	0.0018	0.0017	0.0022	0.0026	0.0018	0.0019

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsm

Table F-22

Parameter	Units	SPO	Goathorn Creek										
			WQG	Baseline		WQS06							
						Operations				Post-Closure			
						Project Case				Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			68	102	93	103	74	74	85	95	76	73
Alkalinity, total	mg-CaCO ₃ /L			52	87	210	91	70	59	80	130	61	71
Chloride	mg/L		150	0.25	0.50	4.1	0.47	0.61	0.27	1.0	2.3	0.37	0.64
Fluoride	mg/L		0.12	0.032	0.041	0.039	0.050	0.035	0.035	0.040	0.042	0.035	0.035
Ammonia, total	mg-N/L		1.5	0.0025	0.0070	0.094	0.0060	0.0098	0.0027	0.0072	0.016	0.0036	0.0067
Nitrate	mg/L		3	0.041	0.076	0.77	0.073	0.10	0.043	0.079	0.13	0.049	0.069
Nitrite	mg/L	0.0524	0.02	0.00050	0.0020	0.017	0.0011	0.0018	0.00055	0.0013	0.0027	0.00067	0.0012
Sulfate	mg/L	593	218	24	37	130	34	34	24	39	67	28	34
Aluminum, total	mg/L	0.231	0.1	0.092	0.75	0.16	0.12	0.10	0.098	0.11	0.12	0.10	0.10
Aluminum, dissolved	mg/L		0.05	0.014	0.13	0.023	0.024	0.016	0.016	0.019	0.022	0.016	0.016
Antimony, total	mg/L			0.000073	0.00014	0.00031	0.000073	0.000074	0.000053	0.000089	0.00016	0.000060	0.000074
Antimony, dissolved	mg/L	0.009	0.009	0.000050	0.00011	0.00033	0.00010	0.000097	0.000077	0.00011	0.00017	0.000083	0.000094
Arsenic, total	mg/L	0.005	0.005	0.00023	0.00068	0.00051	0.00045	0.00028	0.00027	0.00029	0.00039	0.00026	0.00027
Arsenic, dissolved	mg/L			0.00017	0.00035	0.00037	0.00036	0.00020	0.00020	0.00022	0.00029	0.00020	0.00020
Barium, total	mg/L		1	0.058	0.072	0.071	0.079	0.062	0.062	0.072	0.076	0.063	0.061
Barium, dissolved	mg/L			0.059	0.073	0.072	0.081	0.063	0.063	0.073	0.078	0.064	0.062
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000061	0.000065	0.000053	0.000053	0.000062	0.000066	0.000054	0.000052
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000061	0.000065	0.000053	0.000053	0.000062	0.000066	0.000054	0.000052
Boron, total	mg/L		1.2	0.0050	0.050	0.065	0.0088	0.011	0.0057	0.016	0.034	0.0068	0.010
Boron, dissolved	mg/L			0.0050	0.050	0.065	0.0088	0.011	0.0057	0.016	0.035	0.0071	0.011
Cadmium, total	mg/L		0.00009	0.000010	0.000049	0.00011	0.000016	0.000016	0.000010	0.000016	0.000020	0.000012	0.000014
Cadmium, dissolved	mg/L	0.00019	0.00016	0.0000081	0.000036	0.00011	0.000014	0.000014	0.0000085	0.000014	0.000019	0.0000096	0.000013
Calcium, total	mg/L			21	30	26	28	22	22	26	28	23	22
Calcium, dissolved	mg/L			22	32	27	29	23	23	27	29	24	23
Chromium, total	mg/L		0.0089	0.00020	0.00091	0.00100	0.00028	0.00029	0.00022	0.00034	0.00057	0.00024	0.00027
Chromium, dissolved	mg/L			0.00010	0.00027	0.00070	0.00015	0.00016	0.00011	0.00020	0.00038	0.00012	0.00016
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00055	0.00052	0.000081	0.000089	0.000054	0.00011	0.00021	0.000063	0.000084
Cobalt, dissolved	mg/L			0.000050	0.00011	0.00041	0.000076	0.000077	0.000053	0.000085	0.00015	0.000060	0.000076
Copper, total	mg/L		0.0028	0.0015	0.0054	0.0024	0.0019	0.0017	0.0016	0.0019	0.0020	0.0016	0.0016

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Stream_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Goathorn Creek										
			WQG	Baseline		WQS06							
						Operations				Post-Closure			
						Project Case				Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Copper, dissolved	mg/L			0.0014	0.0039	0.0021	0.0018	0.0015	0.0015	0.0017	0.0019	0.0015	0.0015
Iron, total	mg/L		0.3	0.085	0.78	0.34	0.12	0.12	0.091	0.14	0.22	0.10	0.11
Iron, dissolved	mg/L		0.30	0.015	0.13	0.025	0.019	0.016	0.016	0.019	0.021	0.016	0.016
Lead, total	mg/L		0.0050	0.000025	0.00023	0.00023	0.000039	0.000043	0.000027	0.000053	0.000094	0.000032	0.000041
Lead, dissolved	mg/L			0.000025	0.000050	0.00016	0.000036	0.000035	0.000027	0.000036	0.000057	0.000029	0.000035
Lithium, total	mg/L			0.00050	0.0011	0.040	0.0022	0.0040	0.00063	0.0082	0.020	0.0014	0.0037
Lithium, dissolved	mg/L			0.00050	0.0010	0.040	0.0022	0.0039	0.00063	0.0083	0.020	0.0016	0.0043
Magnesium, total	mg/L			3.9	6.5	6.9	8.1	4.6	4.7	5.0	6.2	4.4	4.5
Magnesium, dissolved	mg/L			3.8	7.4	6.8	7.7	4.5	4.5	4.8	5.9	4.3	4.4
Manganese, total	mg/L		0.12	0.0059	0.033	0.027	0.0081	0.0078	0.0061	0.0078	0.011	0.0067	0.0074
Manganese, dissolved	mg/L			0.0026	0.0084	0.019	0.0039	0.0038	0.0027	0.0040	0.0063	0.0030	0.0038
Mercury, total	mg/L		0.00001	0.0000025	0.0000064	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00047	0.00062	0.0015	0.00064	0.00060	0.00049	0.00060	0.00088	0.00052	0.00057
Molybdenum, dissolved	mg-N/L			0.00046	0.00062	0.0055	0.0058	0.0048	0.0048	0.0056	0.0059	0.0048	0.0047
Nickel, total	mg/L		0.080	0.00025	0.0011	0.0017	0.00037	0.00039	0.00027	0.00046	0.00080	0.00030	0.00037
Nickel, dissolved	mg/L			0.00025	0.00060	0.0014	0.00036	0.00035	0.00027	0.00038	0.00064	0.00029	0.00035
Phosphorus, total	mg/L			0.0045	0.019	0.0069	0.0058	0.0050	0.0048	0.0056	0.0059	0.0049	0.0048
Orthophosphate, dissolved	mg/L			0.00050	0.0040	0.00061	0.00065	0.00053	0.00053	0.00062	0.00065	0.00054	0.00051
Potassium, total	mg/L			0.39	1.0	4.5	0.66	0.78	0.42	1.2	2.5	0.51	0.74
Potassium, dissolved	mg/L			0.36	0.48	4.5	0.62	0.75	0.39	1.2	2.5	0.50	0.77
Selenium, total	mg/L	0.008	0.002	0.000086	0.00020	0.0019	0.00018	0.00025	0.000090	0.00043	0.00095	0.00013	0.00023
Selenium, dissolved	mg/L			0.000076	0.00012	0.0019	0.00017	0.00024	0.000080	0.00042	0.00096	0.00013	0.00025
Silica, dissolved	mg/L			5.6	6.2	7.5	7.1	6.0	5.7	6.9	7.4	6.0	5.8
Sodium, total	mg/L			2.3	4.8	100	7.1	12	2.8	24	56	4.9	11
Sodium, dissolved	mg/L			2.4	4.8	100	7.3	12	2.9	24	57	5.5	13
Strontium, total	mg/L		7.0	0.076	0.11	0.30	0.13	0.10	0.086	0.11	0.17	0.088	0.097
Strontium, dissolved	mg/L			0.077	0.12	0.30	0.12	0.10	0.086	0.11	0.17	0.089	0.10
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Stream_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	WQG	Goathorn Creek									
				Baseline		WQS06							
						Operations				Post-Closure			
						Project Case				Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.00011	0.000010	0.000011	0.0000054	0.000011	0.000022	0.0000065	0.0000100
Thallium, dissolved	mg/L			0.0000050	0.000010	0.00011	0.000010	0.000011	0.0000054	0.000011	0.000022	0.0000066	0.000010
Uranium, total	mg/L		0.0085	0.000054	0.00014	0.00074	0.000096	0.00012	0.000059	0.00018	0.00037	0.000073	0.00011
Uranium, dissolved	mg/L			0.000051	0.00014	0.00073	0.000092	0.00011	0.000056	0.00018	0.00037	0.000072	0.00012
Vanadium, total	mg/L			0.00025	0.0020	0.0022	0.00043	0.00045	0.00029	0.00065	0.0013	0.00032	0.00043
Vanadium, dissolved	mg/L			0.00025	0.00052	0.0020	0.00038	0.00042	0.00027	0.00057	0.0011	0.00031	0.00042
Zinc, total	mg/L		0.0075	0.0015	0.0061	0.0039	0.0020	0.0018	0.0016	0.0019	0.0023	0.0017	0.0017
Zinc, dissolved	mg/L			0.0015	0.0021	0.0033	0.0020	0.0017	0.0016	0.0019	0.0021	0.0016	0.0017

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsm

Table F-23

Parameter	Units	SPO	Telkwa River						
			WQG	Baseline		WQS09			
						Post-Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			39	64	65	65	49	46
Alkalinity, total	mg-CaCO ₃ /L			38	62	63	64	47	47
Chloride	mg/L		150	0.25	0.50	0.43	0.44	0.31	0.33
Fluoride	mg/L		0.12	0.029	0.038	0.046	0.047	0.035	0.034
Ammonia, total	mg-N/L		1.7	0.0025	0.0095	0.0049	0.0050	0.0032	0.0037
Nitrate	mg/L		3	0.013	0.076	0.031	0.032	0.018	0.023
Nitrite	mg/L	0.0524	0.02	0.00050	0.0050	0.00096	0.00097	0.00063	0.00071
Sulfate	mg/L	593	218	5.6	9.0	12	11	8.0	8.7
Aluminum, total	mg/L	0.208	0.1	0.17	1.7	0.26	0.26	0.20	0.19
Aluminum, dissolved	mg/L		0.05	0.027	0.088	0.041	0.042	0.031	0.030
Antimony, total	mg/L			0.000050	0.000050	0.000081	0.000084	0.000061	0.000061
Antimony, dissolved	mg/L		0.009	0.000050	0.000050	0.000084	0.000086	0.000063	0.000062
Arsenic, total	mg/L		0.005	0.00024	0.00055	0.00038	0.00039	0.00029	0.00028
Arsenic, dissolved	mg/L			0.00016	0.00025	0.00026	0.00027	0.00020	0.00019
Barium, total	mg/L		1	0.040	0.049	0.065	0.065	0.049	0.047
Barium, dissolved	mg/L			0.034	0.048	0.056	0.056	0.042	0.041
Beryllium, total	mg/L		0.00013	0.000050	0.000050	0.000078	0.000080	0.000060	0.000057
Beryllium, dissolved	mg/L			0.000050	0.000050	0.000078	0.000080	0.000060	0.000057
Boron, total	mg/L		1.2	0.0050	0.050	0.0085	0.0088	0.0063	0.0065
Boron, dissolved	mg/L			0.0050	0.050	0.0085	0.0088	0.0063	0.0065
Cadmium, total	mg/L		0.00009	0.000011	0.000036	0.000018	0.000018	0.000013	0.000013
Cadmium, dissolved	mg/L	0.00012	0.00011	0.0000063	0.0000099	0.000011	0.000011	0.0000077	0.0000079
Calcium, total	mg/L			12	20	20	20	15	14
Calcium, dissolved	mg/L			12	21	20	20	15	14
Chromium, total	mg/L		0.0089	0.00020	0.0010	0.00032	0.00033	0.00024	0.00024
Chromium, dissolved	mg/L			0.000050	0.00021	0.000092	0.000095	0.000068	0.000070
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00088	0.000081	0.000083	0.000061	0.000061
Cobalt, dissolved	mg/L			0.000050	0.00010	0.000081	0.000083	0.000060	0.000060
Copper, total	mg/L		0.002	0.0011	0.0042	0.0018	0.0018	0.0013	0.0013

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Stream_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Telkwa River						
			WQG	Baseline		WQS09			
						Post-Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Copper, dissolved	mg/L			0.00067	0.0017	0.0011	0.0011	0.00085	0.00083
Iron, total	mg/L		0.3	0.31	1.5	0.46	0.47	0.35	0.34
Iron, dissolved	mg/L		0.30	0.076	0.27	0.11	0.12	0.086	0.082
Lead, total	mg/L		0.0044	0.00014	0.0014	0.00021	0.00021	0.00016	0.00015
Lead, dissolved	mg/L			0.000025	0.00010	0.000040	0.000041	0.000030	0.000030
Lithium, total	mg/L			0.00050	0.0010	0.0012	0.0019	0.00070	0.0010
Lithium, dissolved	mg/L			0.00050	0.00050	0.0012	0.0019	0.00071	0.0010
Magnesium, total	mg/L			2.1	3.5	3.6	3.6	2.7	2.6
Magnesium, dissolved	mg/L			2.0	3.8	3.4	3.4	2.5	2.5
Manganese, total	mg/L		0.12	0.020	0.078	0.030	0.031	0.023	0.022
Manganese, dissolved	mg/L			0.0074	0.021	0.011	0.011	0.0085	0.0082
Mercury, total	mg/L		0.00001	0.0000025	0.0000070	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00053	0.00073	0.00082	0.00083	0.00062	0.00061
Molybdenum, dissolved	mg-N/L			0.00052	0.00068	0.0092	0.0094	0.0070	0.0067
Nickel, total	mg/L		0.025	0.00025	0.0011	0.00040	0.00041	0.00030	0.00030
Nickel, dissolved	mg/L			0.00025	0.00025	0.00040	0.00041	0.00030	0.00030
Phosphorus, total	mg/L			0.0060	0.050	0.0092	0.0094	0.0070	0.0067
Orthophosphate, dissolved	mg/L			0.0017	0.0030	0.0025	0.0026	0.0019	0.0019
Potassium, total	mg/L			0.31	1.0	0.53	0.54	0.38	0.40
Potassium, dissolved	mg/L			0.28	0.35	0.49	0.49	0.35	0.37
Selenium, total	mg/L	0.008	0.002	0.000080	0.00020	0.00014	0.00015	0.000100	0.00011
Selenium, dissolved	mg/L			0.000070	0.000095	0.00013	0.00014	0.000088	0.00010
Silica, dissolved	mg/L			6.7	8.6	10	11	7.9	7.6
Sodium, total	mg/L			1.0	2.9	2.8	5.1	1.6	2.4
Sodium, dissolved	mg/L			1.0	2.9	2.8	5.2	1.6	2.5
Strontium, total	mg/L		7.0	0.062	0.087	0.10	0.10	0.076	0.075
Strontium, dissolved	mg/L			0.056	0.091	0.092	0.094	0.069	0.068
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.000096	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Telkwa River						
			WQG	Baseline		WQS09			
						Post-Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Tin, dissolved	mg/L			0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.0000050	0.0000084	0.0000086	0.0000061	0.0000064
Thallium, dissolved	mg/L			0.0000050	0.0000050	0.0000085	0.0000086	0.0000061	0.0000064
Uranium, total	mg/L		0.0085	0.000056	0.000092	0.000094	0.000097	0.000069	0.000072
Uranium, dissolved	mg/L			0.000043	0.000083	0.000075	0.000078	0.000055	0.000058
Vanadium, total	mg/L			0.00064	0.0036	0.00097	0.0010	0.00075	0.00073
Vanadium, dissolved	mg/L			0.00025	0.00055	0.00041	0.00043	0.00031	0.00031
Zinc, total	mg/L		0.0075	0.0015	0.0072	0.0024	0.0024	0.0018	0.0017
Zinc, dissolved	mg/L			0.0015	0.0015	0.0024	0.0024	0.0018	0.0017

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsm

Table F-24

Parameter	Units	SPO	Bulkley River										
			WQG	Baseline		WQS11							
						Operations				Post-Closure			
						Project Case				Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			28	38	28	29	28	28	29	29	28	28
Alkalinity, total	mg-CaCO ₃ /L			27	35	28	28	27	27	28	28	27	27
Chloride	mg/L		150	0.25	0.86	0.26	0.26	0.25	0.25	0.26	0.26	0.25	0.25
Fluoride	mg/L		0.12	0.023	0.035	0.024	0.024	0.023	0.023	0.024	0.024	0.023	0.023
Ammonia, total	mg-N/L		1.7	0.0050	0.017	0.0052	0.0052	0.0050	0.0050	0.0052	0.0052	0.0050	0.0050
Nitrate	mg/L		3	0.013	0.041	0.013	0.014	0.013	0.013	0.014	0.014	0.013	0.013
Nitrite	mg/L	0.0524	0.02	0.0020	0.0050	0.0021	0.0021	0.0020	0.0020	0.0021	0.0021	0.0020	0.0020
Sulfate	mg/L	593	128	4.0	5.0	4.1	4.2	4.0	4.0	4.2	4.2	4.0	4.0
Aluminum, total	mg/L	0.197	0.1	0.13	1.3	0.13	0.14	0.13	0.13	0.14	0.14	0.13	0.13
Aluminum, dissolved	mg/L		0.05	0.017	0.13	0.018	0.018	0.017	0.017	0.018	0.018	0.017	0.017
Antimony, total	mg/L			0.000050	0.00011	0.000052	0.000052	0.000050	0.000050	0.000052	0.000052	0.000050	0.000050
Antimony, dissolved	mg/L		0.009	0.000050	0.00010	0.000052	0.000052	0.000050	0.000050	0.000052	0.000052	0.000050	0.000050
Arsenic, total	mg/L		0.005	0.00024	0.00070	0.00025	0.00025	0.00024	0.00024	0.00025	0.00025	0.00024	0.00024
Arsenic, dissolved	mg/L			0.00016	0.00033	0.00017	0.00017	0.00016	0.00016	0.00017	0.00017	0.00016	0.00016
Barium, total	mg/L		1	0.026	0.038	0.027	0.027	0.026	0.026	0.027	0.027	0.026	0.026
Barium, dissolved	mg/L			0.023	0.032	0.024	0.024	0.023	0.023	0.024	0.024	0.023	0.023
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000052	0.000052	0.000050	0.000050	0.000052	0.000052	0.000050	0.000050
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000052	0.000052	0.000050	0.000050	0.000052	0.000052	0.000050	0.000050
Boron, total	mg/L		1.2	0.0050	0.010	0.0052	0.0052	0.0050	0.0050	0.0052	0.0052	0.0050	0.0050
Boron, dissolved	mg/L			0.0050	0.010	0.0052	0.0052	0.0050	0.0050	0.0052	0.0052	0.0050	0.0050
Cadmium, total	mg/L		0.00009	0.0000079	0.000021	0.0000082	0.0000082	0.0000079	0.0000079	0.0000082	0.0000082	0.0000079	0.0000079
Cadmium, dissolved	mg/L	0.00009	0.00008	0.0000025	0.0000065	0.0000026	0.0000026	0.0000025	0.0000025	0.0000026	0.0000026	0.0000025	0.0000025
Calcium, total	mg/L			8.8	11	9.1	9.2	8.8	8.8	9.1	9.2	8.8	8.8
Calcium, dissolved	mg/L			8.8	12	9.1	9.2	8.8	8.8	9.1	9.2	8.8	8.8
Chromium, total	mg/L		0.0089	0.00025	0.0012	0.00026	0.00026	0.00025	0.00025	0.00026	0.00026	0.00025	0.00025
Chromium, dissolved	mg/L			0.000050	0.00023	0.000052	0.000052	0.000050	0.000050	0.000052	0.000052	0.000050	0.000050
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00068	0.000052	0.000052	0.000050	0.000050	0.000052	0.000052	0.000050	0.000050
Cobalt, dissolved	mg/L			0.000050	0.00010	0.000052	0.000052	0.000050	0.000050	0.000052	0.000052	0.000050	0.000050
Copper, total	mg/L		0.002	0.00090	0.0029	0.00093	0.00094	0.00090	0.00090	0.00093	0.00094	0.00090	0.00090

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsm

Parameter	Units	SPO	Bulkley River										
			WQG	Baseline		WQS11							
						Operations				Post-Closure			
						Project Case				Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Copper, dissolved	mg/L			0.00067	0.0020	0.00069	0.00070	0.00067	0.00067	0.00070	0.00070	0.00067	0.00067
Iron, total	mg/L		0.3	0.18	1.3	0.19	0.19	0.18	0.18	0.19	0.19	0.18	0.18
Iron, dissolved	mg/L		0.30	0.024	0.16	0.025	0.025	0.024	0.024	0.025	0.025	0.024	0.024
Lead, total	mg/L		0.004	0.000095	0.00051	0.000098	0.000099	0.000095	0.000095	0.000099	0.000099	0.000095	0.000095
Lead, dissolved	mg/L			0.000025	0.000050	0.000026	0.000026	0.000025	0.000025	0.000026	0.000026	0.000025	0.000025
Lithium, total	mg/L			0.00050	0.0010	0.00052	0.00052	0.00050	0.00050	0.00052	0.00052	0.00050	0.00050
Lithium, dissolved	mg/L			0.00050	0.0010	0.00052	0.00052	0.00050	0.00050	0.00052	0.00052	0.00050	0.00050
Magnesium, total	mg/L			1.4	2.5	1.4	1.5	1.4	1.4	1.5	1.5	1.4	1.4
Magnesium, dissolved	mg/L			1.3	2.7	1.3	1.4	1.3	1.3	1.4	1.4	1.3	1.3
Manganese, total	mg/L		0.12	0.016	0.059	0.017	0.017	0.016	0.016	0.017	0.017	0.016	0.016
Manganese, dissolved	mg/L			0.0052	0.020	0.0054	0.0054	0.0052	0.0052	0.0054	0.0054	0.0052	0.0052
Mercury, total	mg/L		0.00001	0.0000025	0.0000055	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00037	0.00055	0.00038	0.00039	0.00037	0.00037	0.00038	0.00039	0.00037	0.00037
Molybdenum, dissolved	mg-N/L			0.00037	0.00045	0.00059	0.00059	0.00057	0.00057	0.00059	0.00059	0.00057	0.00057
Nickel, total	mg/L		0.025	0.00025	0.0014	0.00026	0.00026	0.00025	0.00025	0.00026	0.00026	0.00025	0.00025
Nickel, dissolved	mg/L			0.00025	0.0013	0.00026	0.00026	0.00025	0.00025	0.00026	0.00026	0.00025	0.00025
Phosphorus, total	mg/L			0.0057	0.043	0.0059	0.0059	0.0057	0.0057	0.0059	0.0059	0.0057	0.0057
Orthophosphate, dissolved	mg/L			0.0013	0.0040	0.0013	0.0014	0.0013	0.0013	0.0014	0.0014	0.0013	0.0013
Potassium, total	mg/L			0.33	0.68	0.34	0.34	0.33	0.33	0.34	0.34	0.33	0.33
Potassium, dissolved	mg/L			0.32	0.52	0.33	0.33	0.32	0.32	0.33	0.33	0.32	0.32
Selenium, total	mg/L	0.008	0.002	0.000025	0.00020	0.000026	0.000026	0.000025	0.000025	0.000026	0.000026	0.000025	0.000025
Selenium, dissolved	mg/L			0.000025	0.000050	0.000026	0.000026	0.000025	0.000025	0.000026	0.000026	0.000025	0.000025
Silica, dissolved	mg/L			no data	no data	0.000093	0.00023	0.000025	0.000034				
Sodium, total	mg/L			1.0	2.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.00
Sodium, dissolved	mg/L			1.0	2.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.00
Strontium, total	mg/L		7.0	0.040	0.061	0.041	0.042	0.040	0.040	0.042	0.042	0.040	0.040
Strontium, dissolved	mg/L			0.040	0.055	0.041	0.042	0.040	0.040	0.042	0.042	0.040	0.040
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00012	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsm

Parameter	Units	SPO	Bulkley River										
			WQG	Baseline		WQS11							
						Operations				Post-Closure			
						Project Case				Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000014	0.0000052	0.0000052	0.0000050	0.0000050	0.0000052	0.0000052	0.0000050	0.0000050
Thallium, dissolved	mg/L			0.0000050	0.000010	0.0000052	0.0000052	0.0000050	0.0000050	0.0000052	0.0000052	0.0000050	0.0000050
Uranium, total	mg/L		0.0085	0.000036	0.000094	0.000037	0.000038	0.000036	0.000036	0.000037	0.000038	0.000036	0.000036
Uranium, dissolved	mg/L			0.000028	0.000052	0.000029	0.000029	0.000028	0.000028	0.000029	0.000029	0.000028	0.000028
Vanadium, total	mg/L			0.00057	0.0050	0.00059	0.00059	0.00057	0.00057	0.00059	0.00059	0.00057	0.00057
Vanadium, dissolved	mg/L			0.00025	0.00060	0.00026	0.00026	0.00025	0.00025	0.00026	0.00026	0.00025	0.00025
Zinc, total	mg/L		0.0075	0.0015	0.0055	0.0016	0.0016	0.0015	0.0015	0.0016	0.0016	0.0015	0.0015
Zinc, dissolved	mg/L			0.0013	0.0045	0.0013	0.0014	0.0013	0.0013	0.0014	0.0014	0.0013	0.0013

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsm

Table F-25

Parameter	Units	SPO	WQG	Bulkley River					
				Baseline		WQS12			
						Post-Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			28	38	34	35	31	32
Alkalinity, total	mg-CaCO ₃ /L			27	35	33	34	30	31
Chloride	mg/L		150	0.25	0.86	0.27	0.30	0.26	0.27
Fluoride	mg/L		0.12	0.023	0.035	0.027	0.028	0.025	0.025
Ammonia, total	mg-N/L		1.7	0.0050	0.017	0.0051	0.0056	0.0047	0.0049
Nitrate	mg/L		3	0.013	0.041	0.015	0.018	0.014	0.015
Nitrite	mg/L	0.0524	0.02	0.0020	0.0050	0.0020	0.0021	0.0018	0.0018
Sulfate	mg/L	593	128	4.0	5.0	4.9	5.5	4.6	4.9
Aluminum, total	mg/L	0.197	0.1	0.13	1.3	0.15	0.16	0.14	0.14
Aluminum, dissolved	mg/L		0.05	0.017	0.13	0.021	0.022	0.019	0.020
Antimony, total	mg/L			0.000050	0.00011	0.000055	0.000059	0.000052	0.000053
Antimony, dissolved	mg/L		0.009	0.000050	0.00010	0.000055	0.000059	0.000052	0.000054
Arsenic, total	mg/L		0.005	0.00024	0.00070	0.00026	0.00028	0.00025	0.00025
Arsenic, dissolved	mg/L			0.00016	0.00033	0.00018	0.00019	0.00017	0.00017
Barium, total	mg/L		1	0.026	0.038	0.032	0.033	0.030	0.030
Barium, dissolved	mg/L			0.023	0.032	0.028	0.029	0.026	0.027
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000055	0.000059	0.000052	0.000053
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000055	0.000059	0.000052	0.000053
Boron, total	mg/L		1.2	0.0050	0.010	0.0055	0.0060	0.0052	0.0054
Boron, dissolved	mg/L			0.0050	0.010	0.0055	0.0060	0.0052	0.0054
Cadmium, total	mg/L		0.00009	0.0000079	0.000021	0.0000093	0.000010	0.0000088	0.0000090
Cadmium, dissolved	mg/L	0.00009	0.00008	0.0000025	0.0000065	0.0000037	0.0000039	0.0000033	0.0000035
Calcium, total	mg/L			8.8	11	11	11	9.8	10
Calcium, dissolved	mg/L			8.8	12	11	11	9.8	10
Chromium, total	mg/L		0.0089	0.00025	0.0012	0.00026	0.00028	0.00025	0.00026
Chromium, dissolved	mg/L			0.000050	0.00023	0.000056	0.000061	0.000053	0.000055
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00068	0.000055	0.000059	0.000052	0.000053
Cobalt, dissolved	mg/L			0.000050	0.00010	0.000055	0.000059	0.000052	0.000053
Copper, total	mg/L		0.002	0.00090	0.0029	0.0010	0.0011	0.00097	0.00099

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Stream_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Bulkley River						
			WQG	Baseline		WQS12			
						Post-Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Copper, dissolved	mg/L			0.00067	0.0020	0.00074	0.00079	0.00070	0.00072
Iron, total	mg/L		0.3	0.18	1.3	0.22	0.23	0.21	0.21
Iron, dissolved	mg/L		0.30	0.024	0.16	0.039	0.038	0.034	0.034
Lead, total	mg/L		0.004	0.000095	0.00051	0.00011	0.00012	0.00011	0.00011
Lead, dissolved	mg/L			0.000025	0.000050	0.000027	0.000030	0.000026	0.000027
Lithium, total	mg/L			0.00050	0.0010	0.00057	0.00070	0.00053	0.00060
Lithium, dissolved	mg/L			0.00050	0.0010	0.00057	0.00070	0.00053	0.00060
Magnesium, total	mg/L			1.4	2.5	1.7	1.8	1.6	1.6
Magnesium, dissolved	mg/L			1.3	2.7	1.6	1.7	1.5	1.5
Manganese, total	mg/L		0.12	0.016	0.059	0.018	0.019	0.017	0.017
Manganese, dissolved	mg/L			0.0052	0.020	0.0061	0.0065	0.0057	0.0059
Mercury, total	mg/L		0.00001	0.0000025	0.0000055	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00037	0.00055	0.00044	0.00047	0.00041	0.00042
Molybdenum, dissolved	mg-N/L			0.00037	0.00045	0.0063	0.0067	0.0059	0.0060
Nickel, total	mg/L		0.025	0.00025	0.0014	0.00027	0.00030	0.00026	0.00027
Nickel, dissolved	mg/L			0.00025	0.0013	0.00027	0.00030	0.00026	0.00027
Phosphorus, total	mg/L			0.0057	0.043	0.0063	0.0067	0.0059	0.0060
Orthophosphate, dissolved	mg/L			0.0013	0.0040	0.0015	0.0016	0.0014	0.0014
Potassium, total	mg/L			0.33	0.68	0.36	0.39	0.34	0.35
Potassium, dissolved	mg/L			0.32	0.52	0.34	0.38	0.33	0.34
Selenium, total	mg/L	0.008	0.002	0.000025	0.00020	0.000042	0.000046	0.000037	0.000040
Selenium, dissolved	mg/L			0.000025	0.000050	0.000039	0.000044	0.000035	0.000038
Silica, dissolved	mg/L			no data	no data	1.9	1.4	1.3	1.3
Sodium, total	mg/L			1.0	2.5	1.2	1.5	1.1	1.3
Sodium, dissolved	mg/L			1.0	2.5	1.2	1.5	1.1	1.3
Strontium, total	mg/L	7.0		0.040	0.061	0.049	0.052	0.046	0.047
Strontium, dissolved	mg/L			0.040	0.055	0.048	0.051	0.045	0.046
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00012	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsx

Parameter	Units	SPO	Bulkley River						
			WQG	Baseline		WQS12			
						Post-Closure			
						Project Case			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000014	0.0000055	0.0000060	0.0000052	0.0000054
Thallium, dissolved	mg/L			0.0000050	0.000010	0.0000055	0.0000061	0.0000052	0.0000054
Uranium, total	mg/L		0.0085	0.000036	0.000094	0.000044	0.000048	0.000042	0.000043
Uranium, dissolved	mg/L			0.000028	0.000052	0.000035	0.000038	0.000032	0.000034
Vanadium, total	mg/L			0.00057	0.0050	0.00064	0.00068	0.00060	0.00061
Vanadium, dissolved	mg/L			0.00025	0.00060	0.00028	0.00030	0.00026	0.00027
Zinc, total	mg/L		0.0075	0.0015	0.0055	0.0016	0.0018	0.0016	0.0016
Zinc, dissolved	mg/L			0.0013	0.0045	0.0015	0.0016	0.0014	0.0014

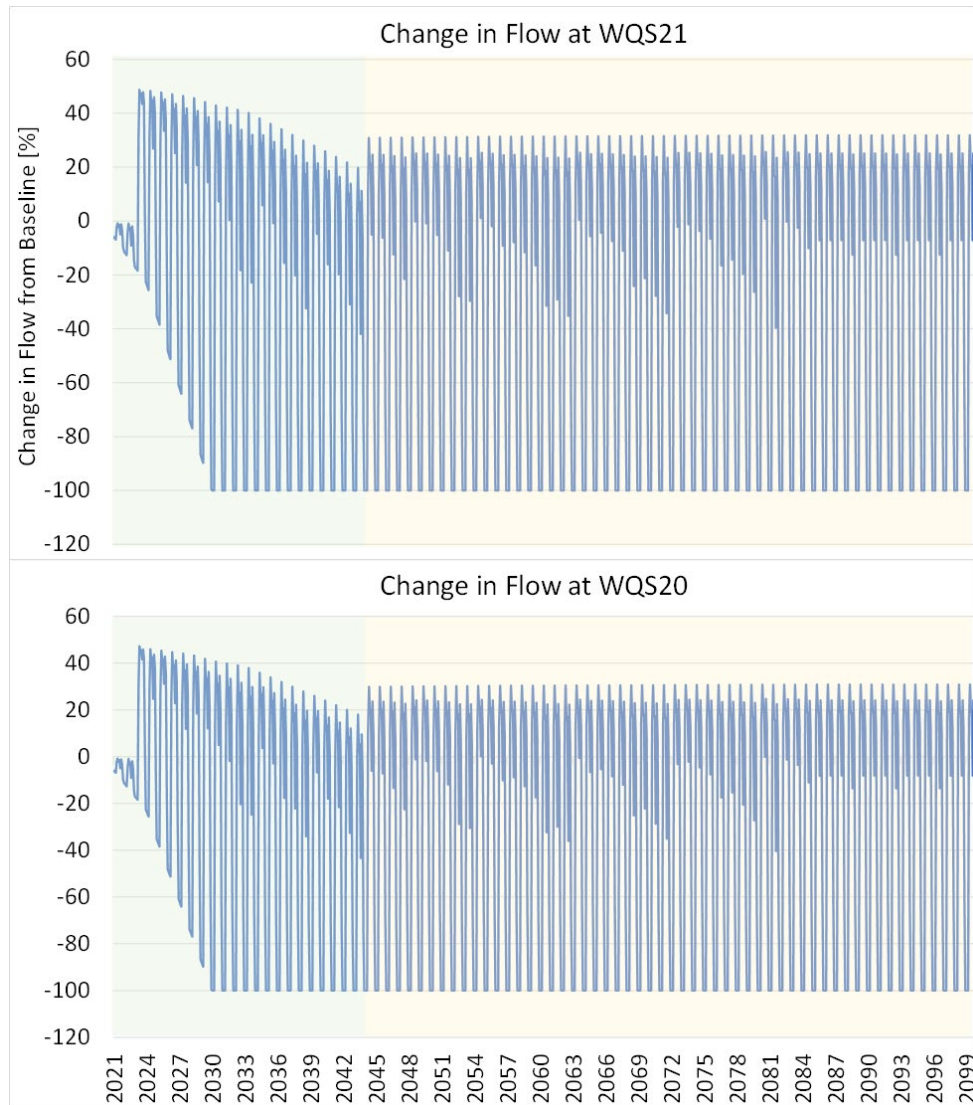
Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Apr2022_Results/Results_Streams_WaterQuality_EAModel_v29_20220426.xlsm

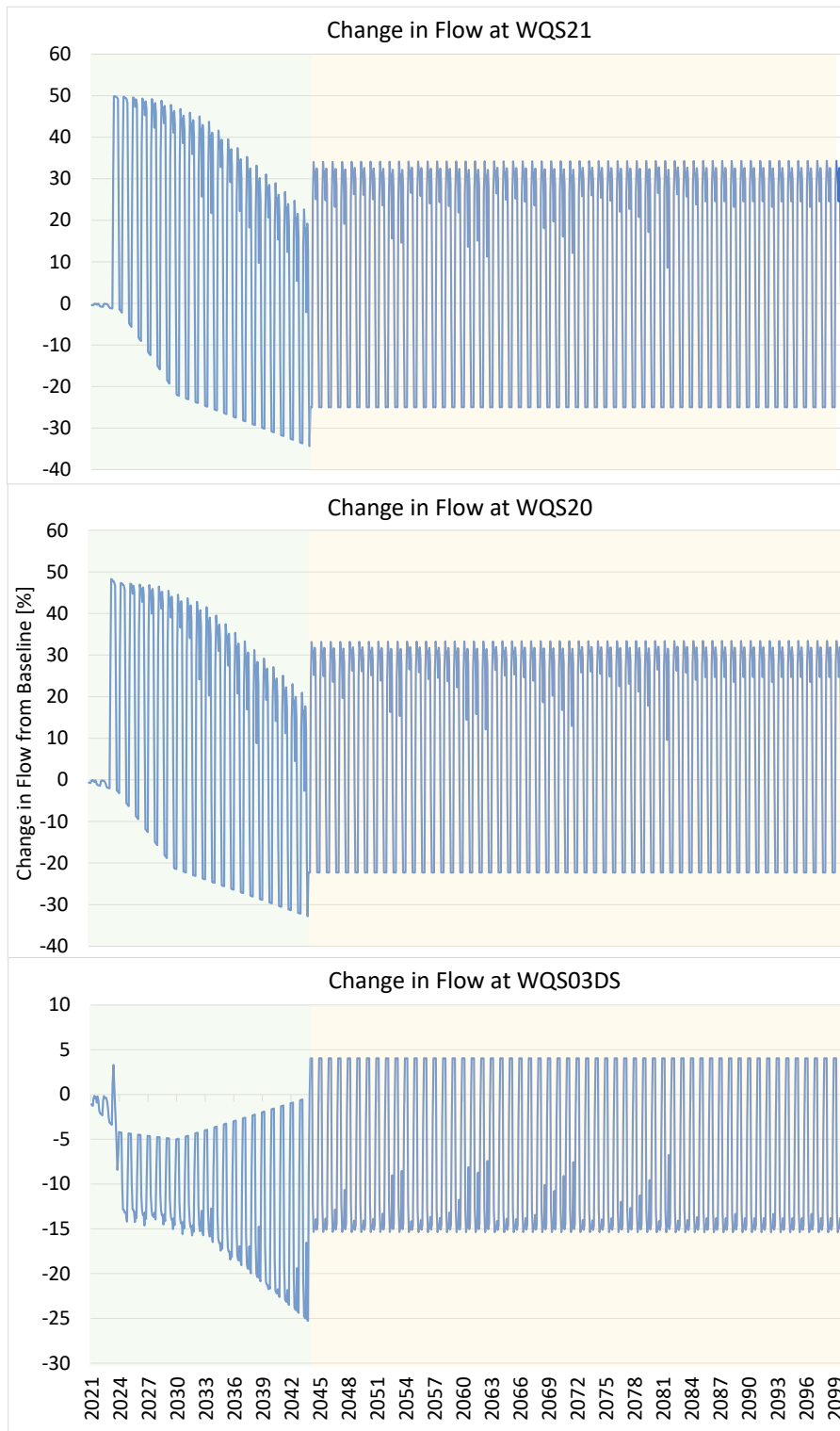
Appendix G Alternative Assessment Cases Results

Figure G-1. Streamflow Effect to Monthly Average Discharge relative to Base Case Conditions in Alternative Case 1



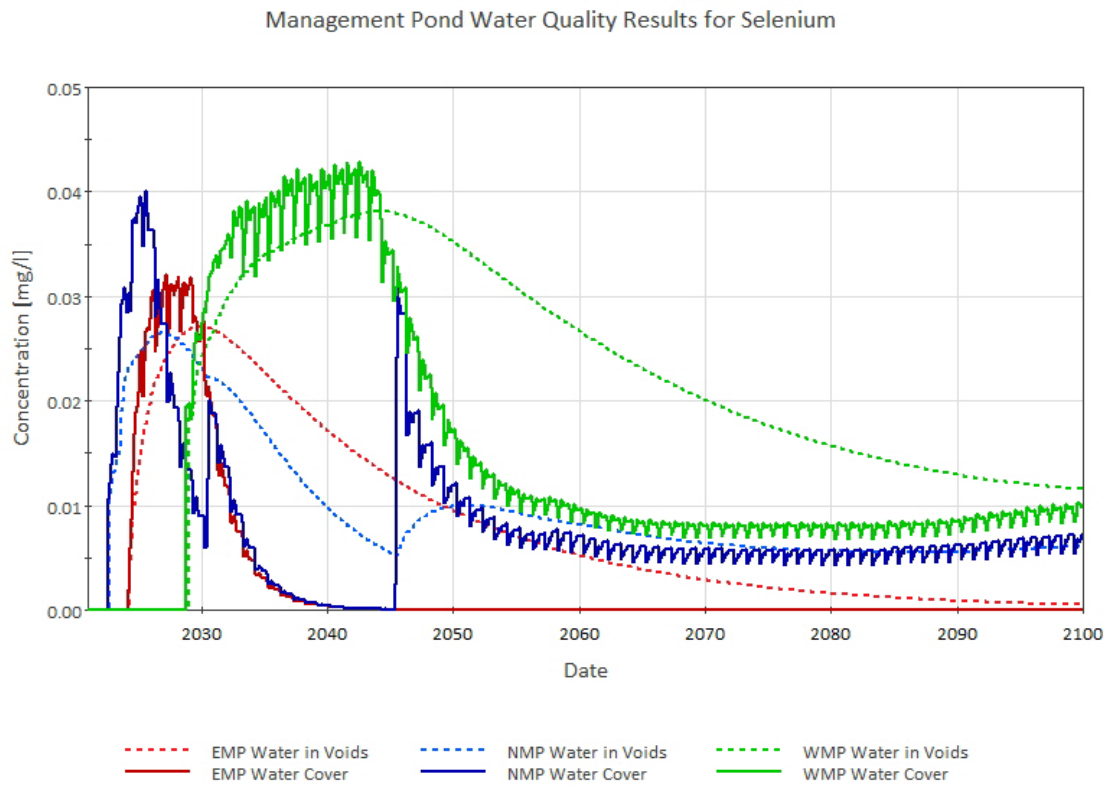
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Management\500_Water_Balance\Results\WaterQuantity_Results_Rev01.xlsm

Figure G-2. Streamflow Effect to Monthly Average Discharge relative to Base Case Conditions in Alternative Case 4



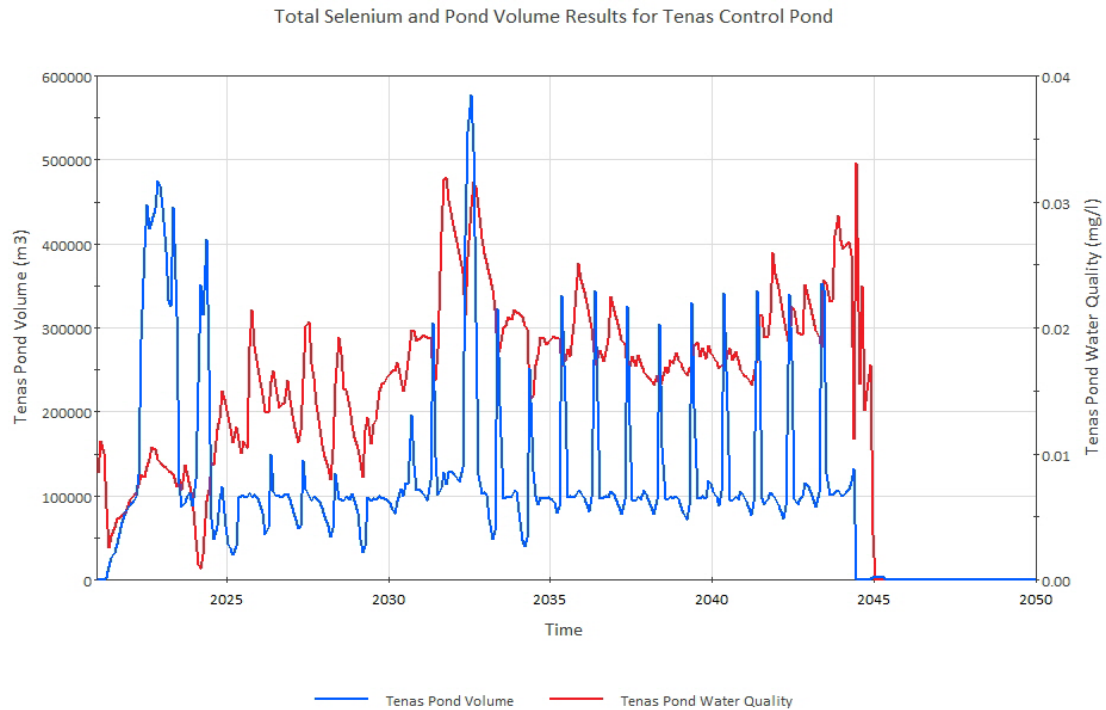
Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\WaterQuantity_Results_Rev01.xlsm

Figure G-3. Management Pond Water Quality Results for Total Selenium with Alternative Assessment Case 2: High Geochemical Source Terms



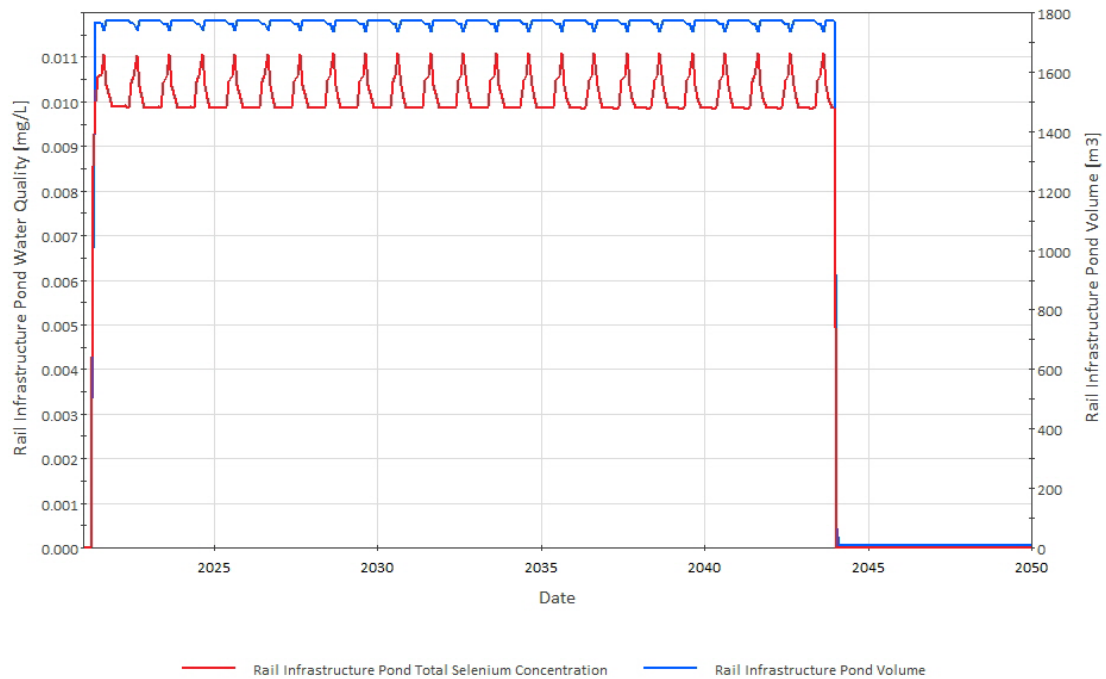
Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\080_Deliverables\WaterBalanceReport\030_Appendices\AppG_AltCaseResults\Feb2022_NewSourceTermSubmission\AppendixG-Figures\Plot_MP Se Water Quality_SA2.jpg

Figure G-4. Tenas Control Pond Water Quality Results for Total Selenium with Alternative Assessment Case 2: High Geochemical Source Terms



Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\080_Deliverables\WaterBalanceReport\030_Appendices\AppG_AltCaseResults\Feb2022_NewSourceTermSubmission\AppendixG-Figures\Plot_TCP Se Water Quality_SA2.jpg

Figure G-5. Rail Infrastructure Sedimentation Pond Water Quality Results for Total Selenium with Alternative Assessment Case 2: High Geochemical Source Terms



Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\080_Deliverables\WaterBalanceReport\030_Appendices\AppG_AltCaseResults\Feb2022_NewSource TermSubmission\AppendixG-Figures\Plot_RLO Se Water Quality_SA2.jpg

Table G-1

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	West Management Pond									
				Goathorn Baseline		Operations				Closure			
				P50	P95	Alternative Case 2: High Source Terms				Alternative Case 2: High Source Terms			
						Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			68	102	623	574	310	295	177	193	92	96
Alkalinity, total	mg CaCO ₃ /L			52	87	3300	3300	1600	1700	1900	2100	840	880
Chloride	mg/L		150	0.25	0.50	90	90	43	46	54	59	22	23
Fluoride	mg/L		0.12	0.032	0.041	0.035	0.034	0.014	0.015	0.13	0.14	0.11	0.12
Ammonia, total	mg-N/L		1.5	0.0025	0.0070	1.2	1.4	0.55	0.61	0.13	0.18	0.051	0.055
Nitrate	mg/L	18.8	3	0.041	0.076	9.1	11	4.3	4.8	0.79	1.2	0.042	0.052
Nitrite	mg/L		0.02	0.00050	0.0020	0.21	0.26	0.099	0.11	0.019	0.028	0.0019	0.0021
Sulfate	mg/L		218	24	37	2600	2600	1400	1500	1300	1400	520	540
Aluminum, total	mg/L		0.1	0.092	0.75	0.43	0.52	0.16	0.18	0.41	0.43	0.38	0.38
Aluminum, dissolved	mg/L		0.05	0.014	0.13	0.40	0.48	0.13	0.15	0.039	0.061	0.0066	0.0071
Antimony, total	mg/L			0.000073	0.00014	0.013	0.012	0.0062	0.0059	0.0031	0.0035	0.0012	0.0012
Antimony, dissolved	mg/L		0.009	0.000050	0.00011	0.013	0.012	0.0062	0.0059	0.0031	0.0035	0.0012	0.0013
Arsenic, total	mg/L		0.005	0.00023	0.00068	0.012	0.011	0.0057	0.0053	0.0024	0.0027	0.0013	0.0013
Arsenic, dissolved	mg/L			0.00017	0.00035	0.012	0.011	0.0055	0.0052	0.0019	0.0022	0.00078	0.00081
Barium, total	mg/L		1	0.058	0.072	0.10	0.17	0.057	0.063	0.056	0.065	0.049	0.051
Barium, dissolved	mg/L			0.059	0.073	0.10	0.17	0.056	0.062	0.050	0.059	0.043	0.044
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000023	0.000038	0.000010	0.000011	0.000039	0.000039	0.000034	0.000035
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000023	0.000038	0.000010	0.000011	0.000039	0.000039	0.000034	0.000035
Boron, total	mg/L		1.2	0.0050	0.050	1.3	1.3	0.70	0.74	0.77	0.84	0.32	0.34
Boron, dissolved	mg/L			0.0050	0.050	1.3	1.3	0.70	0.74	0.77	0.84	0.32	0.34
Cadmium, total	mg/L		0.00009	0.000010	0.000049	0.011	0.0098	0.0046	0.0042	0.00052	0.00068	0.00014	0.00015
Cadmium, dissolved	mg/L		0.00016	0.0000081	0.000036	0.011	0.0098	0.0046	0.0042	0.00051	0.00068	0.00014	0.00014
Calcium, total	mg/L			21	30	35	32	17	16	13	13	12	12
Calcium, dissolved	mg/L			22	32	35	32	17	16	12	12	11	11
Chromium, total	mg/L		0.0089	0.00020	0.00091	0.018	0.017	0.010	0.010	0.0087	0.0095	0.0043	0.0045
Chromium, dissolved	mg/L			0.00010	0.00027	0.018	0.017	0.0100	0.0099	0.0076	0.0083	0.0032	0.0033
Cobalt, total	mg/L		0.004	0.000050	0.00055	0.019	0.018	0.0093	0.0089	0.0035	0.0041	0.0016	0.0017
Cobalt, dissolved	mg/L			0.000050	0.00011	0.019	0.017	0.0091	0.0088	0.0029	0.0034	0.00098	0.0010
Copper, total	mg/L		0.0028	0.0015	0.0054	0.022	0.021	0.012	0.012	0.011	0.011	0.0053	0.0054
Copper, dissolved	mg/L			0.0014	0.0039	0.022	0.021	0.012	0.012	0.0092	0.010	0.0039	0.0041
Iron, total	mg/L		0.3	0.085	0.78	0.46	0.52	0.35	0.36	1.5	1.5	1.5	1.5
Iron, dissolved	mg/L		0.30	0.015	0.13	0.21	0.27	0.099	0.11	0.027	0.036	0.014	0.015
Lead, total	mg/L		0.0050	0.000025	0.00023	0.0065	0.0060	0.0030	0.0029	0.0014	0.0015	0.00082	0.00084
Lead, dissolved	mg/L			0.000025	0.000050	0.0064	0.0059	0.0030	0.0028	0.00097	0.0011	0.00043	0.00045
Lithium, total	mg/L			0.00050	0.0011	0.88	0.88	0.45	0.47	0.52	0.56	0.21	0.22
Lithium, dissolved	mg/L			0.00050	0.0010	0.88	0.88	0.45	0.47	0.52	0.56	0.21	0.22

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	End-of-Pipe Limit	West Management Pond										
			Goathorn WQG	Goathorn Baseline		Operations				Closure			
						Alternative Case 2: High Source Terms				Alternative Case 2: High Source Terms			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L			3.9	6.5	130	120	65	62	35	39	15	16
Magnesium, dissolved	mg/L			3.8	7.4	130	120	65	62	35	39	15	16
Manganese, total	mg/L		0.12	0.0059	0.033	0.68	0.71	0.33	0.33	0.14	0.15	0.070	0.072
Manganese, dissolved	mg/L			0.0026	0.0084	0.68	0.71	0.32	0.33	0.11	0.13	0.045	0.047
Mercury, total	mg/L		0.00002	0.0000025	0.0000064	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.088	0.00047	0.00062	0.023	0.022	0.013	0.013	0.012	0.014	0.0055	0.0056
Molybdenum, dissolved	mg-N/L			0.00046	0.00062	0.023	0.022	0.013	0.013	0.012	0.014	0.0054	0.0056
Nickel, total	mg/L		0.080	0.00025	0.0011	0.043	0.042	0.022	0.022	0.013	0.014	0.0060	0.0062
Nickel, dissolved	mg/L			0.00025	0.00060	0.043	0.042	0.022	0.022	0.011	0.012	0.0042	0.0044
Phosphorus, total	mg/L			0.0045	0.019	0.0012	0.0012	0.0012	0.0012	0.015	0.015	0.015	0.015
Orthophosphate, dissolved	mg/L			0.00050	0.0040	0.00019	0.00038	0.000084	0.000089	0.00015	0.00014	0.00013	0.00013
Potassium, total	mg/L			0.39	1.0	96	95	48	50	58	63	24	25
Potassium, dissolved	mg/L			0.36	0.48	96	95	48	50	58	63	24	25
Selenium, total	mg/L	0.050	0.002	0.000086	0.00020	0.043	0.042	0.024	0.025	0.024	0.026	0.0095	0.0098
Selenium, dissolved	mg/L			0.000076	0.00012	0.043	0.042	0.024	0.025	0.024	0.026	0.0095	0.0098
Silica, dissolved	mg/L			5.6	6.2	48	48	24	25	29	32	13	13
Sodium, total	mg/L			2.3	4.8	2300	2300	1100	1200	1400	1600	610	640
Sodium, dissolved	mg/L			2.4	4.8	2300	2300	1100	1200	1400	1600	610	640
Strontium, total	mg/L		7.0	0.076	0.11	4.9	4.9	2.8	2.9	2.5	2.7	0.97	1.0
Strontium, dissolved	mg/L			0.077	0.12	4.9	4.9	2.8	2.9	2.5	2.7	0.97	1.0
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L		0.0008	0.0000050	0.000010	0.011	0.0099	0.0047	0.0042	0.00060	0.00081	0.00017	0.00018
Thallium, dissolved	mg/L			0.0000050	0.000010	0.011	0.0099	0.0047	0.0042	0.00060	0.00081	0.00017	0.00018
Uranium, total	mg/L		0.0085	0.000054	0.00014	0.020	0.018	0.011	0.011	0.0087	0.0096	0.0036	0.0037
Uranium, dissolved	mg/L			0.000051	0.00014	0.020	0.018	0.011	0.011	0.0087	0.0095	0.0036	0.0037
Vanadium, total	mg/L			0.00025	0.0020	0.041	0.041	0.023	0.023	0.025	0.027	0.011	0.011
Vanadium, dissolved	mg/L			0.00025	0.00052	0.041	0.041	0.023	0.023	0.023	0.025	0.0095	0.0099
Zinc, total	mg/L		0.0075	0.0015	0.0061	0.060	0.058	0.032	0.032	0.021	0.023	0.011	0.011
Zinc, dissolved	mg/L			0.0015	0.0021	0.059	0.057	0.032	0.031	0.017	0.019	0.0076	0.0079

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsm

Table G-2

Parameter	Units	West Management Pond Void Space and Seepage Water Quality										
		WQG in Tenas Creek	Tenas Creek Baseline Water Quality		Operations				Closure			
					Alternative Case 2: High Source Terms				Alternative Case 2: High Source Terms			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L		72	103	22	23	11	11	37	37	32	32
Alkalinity, total	mg CaCO ₃ /L		83	110	2700	2700	1500	1500	2600	2700	1600	1600
Chloride	mg/L	150	0.25	0.50	71	71	38	37	71	71	42	42
Fluoride	mg/L	0.12	0.031	0.045	0.025	0.025	0.010	0.010	0.11	0.11	0.083	0.082
Ammonia, total	mg-N/L	1.2	0.0025	0.0074	0.98	0.98	0.52	0.51	0.83	0.84	0.36	0.36
Nitrate	mg/L	3	0.0050	0.060	7.7	7.7	4.1	4.0	6.5	6.6	2.6	2.6
Nitrite	mg/L	0.02	0.00050	0.0020	0.18	0.18	0.093	0.092	0.15	0.15	0.060	0.060
Sulfate	mg/L	218	2.6	7.4	2300	2300	1300	1300	2200	2200	1200	1200
Aluminum, total	mg/L	0.1	0.056	1.8	0.024	0.024	0.011	0.011	0.077	0.077	0.060	0.060
Aluminum, dissolved	mg/L	0.05	0.016	0.14	0.30	0.29	0.13	0.13	0.21	0.21	0.086	0.087
Antimony, total	mg/L		0.00013	0.00024	0.010	0.010	0.0060	0.0060	0.0084	0.0085	0.0041	0.0041
Antimony, dissolved	mg/L	0.009	0.00011	0.00023	0.000038	0.000039	0.000018	0.000017	0.00012	0.00012	0.000097	0.000096
Arsenic, total	mg/L	0.005	0.00048	0.00090	0.00013	0.00013	0.000064	0.000063	0.00030	0.00030	0.00025	0.00025
Arsenic, dissolved	mg/L		0.00041	0.00054	0.0094	0.0094	0.0055	0.0055	0.0072	0.0073	0.0033	0.0033
Barium, total	mg/L	1	0.034	0.047	0.020	0.020	0.0095	0.0093	0.061	0.061	0.048	0.048
Barium, dissolved	mg/L		0.033	0.043	0.12	0.12	0.062	0.061	0.087	0.088	0.061	0.061
Beryllium, total	mg/L	0.00013	0.000050	0.00010	0.000016	0.000016	0.0000080	0.0000079	0.000033	0.000033	0.000028	0.000028
Beryllium, dissolved	mg/L		0.000050	0.00010	0.000016	0.000016	0.0000080	0.0000079	0.000033	0.000033	0.000028	0.000028
Boron, total	mg/L	1.2	0.015	0.050	0.0064	0.0065	0.0026	0.0025	0.028	0.028	0.021	0.021
Boron, dissolved	mg/L		0.013	0.050	1.1	1.1	0.64	0.63	1.1	1.1	0.64	0.64
Cadmium, total	mg/L	0.00009	0.0000050	0.000021	0.0000037	0.0000037	0.0000017	0.0000016	0.000012	0.000012	0.0000095	0.0000095
Cadmium, dissolved	mg/L	0.00017	0.0000025	0.0000058	0.0082	0.0082	0.0047	0.0047	0.0057	0.0057	0.0023	0.0023
Calcium, total	mg/L		22	31	6.8	6.9	3.4	3.4	11	11	9.7	9.7
Calcium, dissolved	mg/L		21	31	28	28	17	16	23	23	16	16
Chromium, total	mg/L	0.0089	0.00032	0.0018	0.000096	0.000096	0.000046	0.000045	0.00027	0.00027	0.00021	0.00021
Chromium, dissolved	mg/L		0.00025	0.00041	0.016	0.016	0.0093	0.0093	0.015	0.015	0.0077	0.0077
Cobalt, total	mg/L	0.004	0.000050	0.00099	0.000029	0.000029	0.000012	0.000012	0.00011	0.00011	0.000084	0.000084
Cobalt, dissolved	mg/L		0.000050	0.00011	0.015	0.015	0.0090	0.0090	0.012	0.012	0.0054	0.0054
Copper, total	mg/L	0.003	0.0011	0.0050	0.00037	0.00037	0.00019	0.00018	0.00068	0.00068	0.00058	0.00058
Copper, dissolved	mg/L		0.0011	0.0030	0.019	0.019	0.012	0.011	0.018	0.018	0.0095	0.0095
Iron, total	mg/L	0.3	0.048	1.2	0.029	0.029	0.012	0.012	0.11	0.11	0.088	0.088
Iron, dissolved	mg/L	0.30	0.015	0.14	0.20	0.19	0.10	0.10	0.15	0.15	0.067	0.068
Lead, total	mg/L	0.0050	0.000025	0.00039	0.000031	0.000032	0.000012	0.000012	0.00015	0.00015	0.00012	0.00012
Lead, dissolved	mg/L		0.000025	0.000050	0.0050	0.0050	0.0029	0.0029	0.0038	0.0039	0.0018	0.0018
Lithium, total	mg/L		0.00050	0.0012	0.00013	0.00013	0.000068	0.000068	0.00013	0.00013	0.00013	0.00013
Lithium, dissolved	mg/L		0.00050	0.0010	0.73	0.73	0.40	0.40	0.72	0.72	0.42	0.42

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsx

Parameter	Units	West Management Pond Void Space and Seepage Water Quality										
		WQG in Tenas Creek	Tenas Creek Baseline Water Quality		Operations				Closure			
					Alternative Case 2: High Source Terms				Alternative Case 2: High Source Terms			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L		4.2	6.3	1.3	1.3	0.65	0.64	2.3	2.3	2.0	2.0
Magnesium, dissolved	mg/L		4.1	6.3	100	100	62	62	89	89	44	44
Manganese, total	mg/L	0.12	0.0050	0.058	0.0030	0.0030	0.0012	0.0012	0.013	0.013	0.0097	0.0097
Manganese, dissolved	mg/L		0.0020	0.0062	0.55	0.55	0.31	0.31	0.45	0.46	0.20	0.21
Mercury, total	mg/L	0.00001	0.0000025	0.0000089	0.00000090	0.00000090	0.00000044	0.00000043	0.0000023	0.0000023	0.0000018	0.0000018
Mercury, dissolved	mg/L		0.0000025	0.0000055	0.0076	0.0076	0.0043	0.0043	0.0052	0.0053	0.0021	0.0021
Molybdenum, total	mg-N/L	0.073	0.00012	0.00019	0.00010	0.00010	0.000049	0.000048	0.00027	0.00027	0.00022	0.00022
Molybdenum, dissolved	mg-N/L		0.00010	0.00019	0.021	0.021	0.012	0.012	0.020	0.020	0.011	0.011
Nickel, total	mg/L	0.080	0.00025	0.0017	0.000099	0.000099	0.000047	0.000046	0.00029	0.00029	0.00023	0.00023
Nickel, dissolved	mg/L		0.00025	0.00054	0.036	0.036	0.021	0.021	0.031	0.031	0.015	0.015
Phosphorus, total	mg/L		0.0042	0.046	0.0023	0.0024	0.0010	0.00099	0.0090	0.0090	0.0070	0.0069
Orthophosphate, dissolved	mg/L		0.0010	0.0040	0.00013	0.00013	0.000068	0.000068	0.00013	0.00013	0.00013	0.00013
Potassium, total	mg/L		0.23	1.0	0.16	0.16	0.072	0.071	0.49	0.49	0.39	0.39
Potassium, dissolved	mg/L		0.19	0.30	78	78	42	42	77	78	45	46
Selenium, total	mg/L	0.002	0.000051	0.00020	0.000022	0.000022	0.000011	0.000011	0.000042	0.000042	0.000035	0.000035
Selenium, dissolved	mg/L		0.000040	0.000073	0.038	0.038	0.022	0.022	0.037	0.037	0.021	0.021
Silica, dissolved	mg/L		7.0	8.0	39	39	21	20	38	39	23	23
Sodium, total	mg/L		3.5	4.8	7.2	7.3	2.6	2.5	39	39	29	29
Sodium, dissolved	mg/L		3.5	4.8	1800	1800	960	950	1800	1800	1100	1100
Strontium, total	mg/L	7.0	0.11	0.13	0.024	0.024	0.012	0.012	0.024	0.024	0.023	0.023
Strontium, dissolved	mg/L		0.10	0.14	4.4	4.4	2.6	2.6	4.2	4.2	2.3	2.3
Silver, total	mg/L	0.00005	0.0000050	0.000020	0.0000019	0.0000019	0.00000092	0.00000090	0.0000053	0.0000053	0.0000043	0.0000043
Silver, dissolved	mg/L		0.0000050	0.000010	0.0075	0.0075	0.0043	0.0043	0.0051	0.0051	0.0020	0.0020
Tin, total	mg/L		0.000050	0.00010	0.000029	0.000030	0.000013	0.000012	0.00011	0.00011	0.000087	0.000087
Tin, dissolved	mg/L		0.000050	0.00010	0.051	0.051	0.029	0.029	0.049	0.049	0.027	0.027
Thallium, total	mg/L	0.00088	0.0000050	0.000010	0.0000013	0.0000013	0.00000068	0.00000068	0.0000013	0.0000013	0.0000013	0.0000013
Thallium, dissolved	mg/L		0.0000050	0.000010	0.0082	0.0082	0.0047	0.0047	0.0057	0.0058	0.0023	0.0024
Uranium, total	mg/L	0.0085	0.00011	0.00025	0.000051	0.000051	0.000021	0.000020	0.00022	0.00022	0.00017	0.00017
Uranium, dissolved	mg/L		0.00011	0.00024	0.017	0.017	0.010	0.010	0.016	0.016	0.0085	0.0086
Vanadium, total	mg/L		0.00094	0.0037	0.00021	0.00022	0.00010	0.00010	0.00050	0.00050	0.00041	0.00041
Vanadium, dissolved	mg/L		0.00072	0.0010	0.036	0.036	0.020	0.020	0.035	0.035	0.020	0.020
Zinc, total	mg/L	0.0075	0.0015	0.0060	0.00057	0.00058	0.00027	0.00027	0.0016	0.0016	0.0013	0.0013
Zinc, dissolved	mg/L		0.0015	0.0015	0.051	0.051	0.030	0.030	0.045	0.045	0.022	0.022

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsx

Table G-3

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	East Management Pond									
				Goathorn Baseline		Operations				Closure			
						Alternative Case 2: High Source Terms				Alternative Case 2: High Source Terms			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			68	102	443	456	125	126	11	10	10	10
Alkalinity, total	mg CaCO ₃ /L			52	87	2100	2400	600	660	8.5	8.3	7.1	7.1
Chloride	mg/L		150	0.25	0.50	56	62	16	17	0.053	0.059	0.026	0.026
Fluoride	mg/L		0.12	0.032	0.041	0.034	0.089	0.0059	0.0068	0.0036	0.0034	0.0032	0.0032
Ammonia, total	mg-N/L		1.5	0.0025	0.0070	0.46	0.55	0.16	0.19	0.0011	0.0013	0.00029	0.00030
Nitrate	mg/L	18.8	3	0.041	0.076	3.6	4.3	1.3	1.5	0.0094	0.011	0.0030	0.0031
Nitrite	mg/L		0.02	0.00050	0.0020	0.083	0.100	0.030	0.034	0.00020	0.00024	0.000057	0.000059
Sulfate	mg/L		218	24	37	1800	1900	510	550	1.5	1.7	0.64	0.65
Aluminum, total	mg/L		0.1	0.092	0.75	0.66	0.71	0.35	0.36	0.37	0.37	0.37	0.37
Aluminum, dissolved	mg/L		0.05	0.014	0.13	0.63	0.68	0.11	0.12	0.0017	0.0016	0.0015	0.0015
Antimony, total	mg/L			0.000073	0.00014	0.0091	0.0088	0.0025	0.0025	0.0000099	0.000011	0.0000051	0.0000052
Antimony, dissolved	mg/L		0.009	0.000050	0.00011	0.0091	0.0088	0.0025	0.0025	0.000012	0.000013	0.0000071	0.0000071
Arsenic, total	mg/L		0.005	0.00023	0.00068	0.0085	0.0082	0.0027	0.0026	0.00055	0.00054	0.00054	0.00054
Arsenic, dissolved	mg/L			0.00017	0.00035	0.0084	0.0080	0.0023	0.0023	0.000036	0.000035	0.000030	0.000031
Barium, total	mg/L		1	0.058	0.072	0.12	0.13	0.040	0.043	0.012	0.011	0.011	0.011
Barium, dissolved	mg/L			0.059	0.073	0.12	0.13	0.036	0.039	0.0051	0.0047	0.0045	0.0045
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000034	0.000083	0.0000074	0.0000085	0.0000055	0.0000051	0.0000049	0.0000049
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000034	0.000083	0.0000074	0.0000085	0.0000055	0.0000051	0.0000049	0.0000049
Boron, total	mg/L		1.2	0.0050	0.050	0.91	0.98	0.26	0.28	0.0013	0.0014	0.00086	0.00087
Boron, dissolved	mg/L			0.0050	0.050	0.91	0.98	0.26	0.28	0.00095	0.0010	0.00051	0.00052
Cadmium, total	mg/L		0.00009	0.000010	0.000049	0.0073	0.0070	0.0019	0.0018	0.0000062	0.0000070	0.0000031	0.0000032
Cadmium, dissolved	mg/L		0.00016	0.0000081	0.000036	0.0073	0.0070	0.0019	0.0018	0.0000037	0.0000045	0.00000065	0.00000069
Calcium, total	mg/L			21	30	24	36	8.9	9.2	3.1	2.9	2.8	2.9
Calcium, dissolved	mg/L			22	32	24	36	8.5	8.8	2.5	2.4	2.2	2.3
Chromium, total	mg/L		0.0089	0.00020	0.00091	0.014	0.013	0.0045	0.0047	0.0012	0.0012	0.0012	0.0012
Chromium, dissolved	mg/L			0.00010	0.00027	0.014	0.013	0.0038	0.0039	0.000023	0.000024	0.000016	0.000016
Cobalt, total	mg/L		0.004	0.000050	0.00055	0.013	0.013	0.0040	0.0040	0.00065	0.00066	0.00065	0.00065
Cobalt, dissolved	mg/L			0.000050	0.00011	0.013	0.013	0.0036	0.0036	0.000012	0.000013	0.0000052	0.0000053
Copper, total	mg/L		0.0028	0.0015	0.0054	0.017	0.017	0.0056	0.0058	0.0014	0.0014	0.0014	0.0014
Copper, dissolved	mg/L			0.0014	0.0039	0.017	0.016	0.0047	0.0049	0.00012	0.00012	0.00011	0.00011
Iron, total	mg/L		0.3	0.085	0.78	1.5	1.5	1.0	1.0	1.5	1.5	1.5	1.5
Iron, dissolved	mg/L		0.30	0.015	0.13	0.27	0.32	0.054	0.059	0.0017	0.0015	0.0015	0.0015
Lead, total	mg/L		0.0050	0.000025	0.00023	0.0046	0.0044	0.0014	0.0014	0.00040	0.00040	0.00040	0.00040
Lead, dissolved	mg/L			0.000025	0.000050	0.0045	0.0043	0.0012	0.0011	0.0000046	0.0000049	0.0000025	0.0000026
Lithium, total	mg/L			0.00050	0.0011	0.58	0.64	0.16	0.18	0.00033	0.00040	0.000063	0.000067
Lithium, dissolved	mg/L			0.00050	0.0010	0.58	0.64	0.16	0.18	0.00033	0.00040	0.000063	0.000067

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	End-of-Pipe Limit	East Management Pond										
			Goathorn WQG	Goathorn Baseline		Operations				Closure			
						Alternative Case 2: High Source Terms				Alternative Case 2: High Source Terms			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L			3.9	6.5	93	89	25	25	0.81	0.79	0.74	0.75
Magnesium, dissolved	mg/L			3.8	7.4	93	89	25	25	0.49	0.47	0.42	0.43
Manganese, total	mg/L		0.12	0.0059	0.033	0.42	0.40	0.12	0.13	0.026	0.026	0.026	0.026
Manganese, dissolved	mg/L			0.0026	0.0084	0.41	0.40	0.11	0.11	0.00037	0.00040	0.00020	0.00021
Mercury, total	mg/L		0.00002	0.0000025	0.0000064	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.088	0.00047	0.00062	0.017	0.017	0.0055	0.0059	0.00047	0.00044	0.00042	0.00042
Molybdenum, dissolved	mg-N/L			0.00046	0.00062	0.017	0.017	0.0055	0.0058	0.00044	0.00041	0.00039	0.00039
Nickel, total	mg/L		0.080	0.00025	0.0011	0.029	0.028	0.0091	0.0093	0.0019	0.0019	0.0018	0.0018
Nickel, dissolved	mg/L			0.00025	0.00060	0.029	0.028	0.0079	0.0081	0.000040	0.000042	0.000025	0.000025
Phosphorus, total	mg/L			0.0045	0.019	0.015	0.015	0.0097	0.0097	0.015	0.015	0.015	0.015
Orthophosphate, dissolved	mg/L			0.00050	0.0040	0.00032	0.00075	0.000072	0.000083	0.000055	0.000051	0.000049	0.000049
Potassium, total	mg/L			0.39	1.0	61	66	17	19	0.13	0.13	0.096	0.097
Potassium, dissolved	mg/L			0.36	0.48	61	66	17	19	0.061	0.067	0.032	0.032
Selenium, total	mg/L	0.050	0.002	0.000086	0.00020	0.031	0.032	0.0090	0.0096	0.000027	0.000031	0.000012	0.000012
Selenium, dissolved	mg/L			0.000076	0.00012	0.031	0.032	0.0090	0.0096	0.000022	0.000026	0.0000063	0.0000065
Silica, dissolved	mg/L			5.6	6.2	30	33	8.9	9.8	0.69	0.64	0.62	0.62
Sodium, total	mg/L			2.3	4.8	1400	1500	390	430	1.0	1.2	0.40	0.41
Sodium, dissolved	mg/L			2.4	4.8	1400	1500	390	430	0.97	1.1	0.33	0.34
Strontium, total	mg/L		7.0	0.076	0.11	3.6	3.7	1.0	1.1	0.015	0.015	0.013	0.013
Strontium, dissolved	mg/L			0.077	0.12	3.6	3.7	1.0	1.1	0.012	0.011	0.0093	0.0094
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L		0.0008	0.0000050	0.000010	0.0074	0.0070	0.0019	0.0018	0.0000040	0.0000049	0.0000067	0.0000071
Thallium, dissolved	mg/L			0.0000050	0.000010	0.0074	0.0070	0.0019	0.0018	0.0000040	0.0000049	0.0000067	0.0000071
Uranium, total	mg/L		0.0085	0.000054	0.00014	0.015	0.015	0.0041	0.0043	0.000026	0.000028	0.000019	0.000019
Uranium, dissolved	mg/L			0.000051	0.00014	0.015	0.015	0.0041	0.0043	0.000014	0.000015	0.0000067	0.0000068
Vanadium, total	mg/L			0.00025	0.0020	0.030	0.031	0.0093	0.0099	0.0015	0.0015	0.0015	0.0015
Vanadium, dissolved	mg/L			0.00025	0.00052	0.029	0.030	0.0083	0.0089	0.000040	0.000042	0.000025	0.000025
Zinc, total	mg/L		0.0075	0.0015	0.0061	0.044	0.042	0.014	0.015	0.0038	0.0038	0.0038	0.0038
Zinc, dissolved	mg/L			0.0015	0.0021	0.043	0.041	0.012	0.012	0.00017	0.00017	0.00015	0.00015

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Table G-4

Parameter	Units	East Management Pond Void Space and Seepage Water Quality										
		WQG in Four Creek	Four Creek Baseline Water Quality		Operations				Closure			
					Alternative Case 2: High Source Terms				Alternative Case 2: High Source Terms			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L		118	163	42	42	17	16	11	11	8	8
Alkalinity, total	mg CaCO ₃ /L		130	190	1900	1900	1300	1200	770	780	240	240
Chloride	mg/L	150	0.25	0.50	49	49	32	32	20	20	6.1	6.2
Fluoride	mg/L	0.12	0.059	0.068	0.028	0.028	0.010	0.0099	0.0062	0.0063	0.0041	0.0041
Ammonia, total	mg-N/L	0.95	0.0025	0.0092	0.35	0.35	0.26	0.25	0.17	0.18	0.053	0.054
Nitrate	mg/L	3	0.013	0.058	2.8	2.8	2.0	2.0	1.4	1.4	0.42	0.43
Nitrite	mg/L	0.02	0.00050	0.0010	0.064	0.064	0.047	0.046	0.031	0.032	0.0097	0.0098
Sulfate	mg/L	309	1.9	28	1600	1600	1000	1000	640	650	200	200
Aluminum, total	mg/L	0.1	0.099	1.2	0.037	0.037	0.014	0.013	0.0090	0.0090	0.0065	0.0065
Aluminum, dissolved	mg/L	0.05	0.032	0.49	0.53	0.53	0.31	0.30	0.16	0.17	0.051	0.052
Antimony, total	mg/L		0.000050	0.00012	0.0070	0.0070	0.0046	0.0046	0.0029	0.0030	0.00090	0.00091
Antimony, dissolved	mg/L	0.009	0.000050	0.00010	0.000058	0.000057	0.000022	0.000021	0.000014	0.000014	0.000010	0.000010
Arsenic, total	mg/L	0.005	0.00074	0.0011	0.00023	0.00023	0.000088	0.000083	0.000058	0.000058	0.000043	0.000043
Arsenic, dissolved	mg/L		0.00064	0.00086	0.0062	0.0062	0.0042	0.0041	0.0026	0.0027	0.00083	0.00084
Barium, total	mg/L	1	0.071	0.13	0.032	0.031	0.012	0.011	0.0077	0.0078	0.0057	0.0057
Barium, dissolved	mg/L		0.075	0.13	0.10	0.10	0.065	0.063	0.040	0.040	0.015	0.015
Beryllium, total	mg/L	0.00013	0.000050	0.00010	0.000030	0.000029	0.000011	0.000011	0.0000075	0.0000075	0.0000057	0.0000057
Beryllium, dissolved	mg/L		0.000050	0.00010	0.000030	0.000029	0.000011	0.000011	0.0000075	0.0000075	0.0000057	0.0000057
Boron, total	mg/L	1.2	0.012	0.020	0.0069	0.0069	0.0026	0.0025	0.0015	0.0015	0.0010	0.0010
Boron, dissolved	mg/L		0.011	0.019	0.80	0.80	0.53	0.52	0.33	0.33	0.10	0.10
Cadmium, total	mg/L	0.00009	0.0000063	0.000019	0.0000054	0.0000053	0.0000020	0.0000019	0.0000013	0.0000013	0.00000094	0.00000094
Cadmium, dissolved	mg/L	0.00024	0.0000052	0.000012	0.0052	0.0052	0.0034	0.0034	0.0021	0.0022	0.00066	0.00066
Calcium, total	mg/L		24	34	13	13	5.1	4.8	3.4	3.4	2.6	2.6
Calcium, dissolved	mg/L		23	36	21	21	15	14	9.3	9.5	4.4	4.4
Chromium, total	mg/L	0.0089	0.00026	0.0016	0.00016	0.00016	0.000060	0.000057	0.000039	0.000039	0.000029	0.000029
Chromium, dissolved	mg/L		0.00015	0.00079	0.011	0.011	0.0074	0.0073	0.0046	0.0047	0.0014	0.0014
Cobalt, total	mg/L	0.004	0.000050	0.00047	0.000037	0.000037	0.000014	0.000013	0.0000086	0.0000087	0.0000060	0.0000060
Cobalt, dissolved	mg/L		0.000050	0.00015	0.010	0.010	0.0067	0.0066	0.0042	0.0043	0.0013	0.0013
Copper, total	mg/L	0.0047	0.0014	0.0044	0.00070	0.00069	0.00027	0.00025	0.00018	0.00018	0.00014	0.00014
Copper, dissolved	mg/L		0.0014	0.0034	0.014	0.014	0.0093	0.0091	0.0057	0.0058	0.0018	0.0019
Iron, total	mg/L	0.3	0.095	1.1	0.036	0.036	0.014	0.013	0.0084	0.0085	0.0058	0.0058
Iron, dissolved	mg/L	0.30	0.015	0.41	0.25	0.25	0.14	0.14	0.076	0.078	0.024	0.025
Lead, total	mg/L	0.0050	0.000025	0.00028	0.000028	0.000029	0.000010	0.0000099	0.0000057	0.0000058	0.0000035	0.0000035
Lead, dissolved	mg/L		0.000025	0.000091	0.0033	0.0033	0.0022	0.0022	0.0014	0.0014	0.00042	0.00043
Lithium, total	mg/L		0.0015	0.0019	0.00028	0.00027	0.00011	0.00010	0.000072	0.000072	0.000056	0.000056
Lithium, dissolved	mg/L		0.0014	0.0019	0.51	0.51	0.34	0.33	0.21	0.21	0.064	0.064

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsx

Parameter	Units	East Management Pond Void Space and Seepage Water Quality										
		WQG in Four Creek	Four Creek Baseline Water Quality		Operations				Closure			
					Alternative Case 2: High Source Terms				Alternative Case 2: High Source Terms			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L		14	19	2.4	2.4	0.94	0.88	0.62	0.63	0.47	0.48
Magnesium, dissolved	mg/L		13	20	72	72	47	47	30	30	9.4	9.5
Manganese, total	mg/L	0.12	0.0025	0.024	0.0034	0.0034	0.0013	0.0012	0.00077	0.00078	0.00052	0.00052
Manganese, dissolved	mg/L		0.00067	0.0074	0.33	0.33	0.21	0.21	0.13	0.13	0.041	0.041
Mercury, total	mg/L	0.00001	0.0000025	0.000013	0.0000015	0.0000015	0.00000059	0.00000056	0.00000038	0.00000039	0.00000029	0.00000029
Mercury, dissolved	mg/L		0.0000025	0.0000093	0.0048	0.0048	0.0031	0.0031	0.0020	0.0020	0.00060	0.00061
Molybdenum, total	mg-N/L	0.073	0.00023	0.00038	0.00017	0.00017	0.000064	0.000061	0.000042	0.000042	0.000031	0.000031
Molybdenum, dissolved	mg-N/L		0.00019	0.00036	0.015	0.015	0.010	0.010	0.0065	0.0066	0.0023	0.0023
Nickel, total	mg/L	0.080	0.00025	0.0018	0.00016	0.00016	0.000061	0.000057	0.000039	0.000039	0.000029	0.000029
Nickel, dissolved	mg/L		0.00025	0.0011	0.023	0.023	0.015	0.015	0.0096	0.0098	0.0030	0.0030
Phosphorus, total	mg/L		0.0041	0.044	0.0030	0.0030	0.0011	0.0011	0.00069	0.00070	0.00048	0.00048
Orthophosphate, dissolved	mg/L		0.00050	0.0012	0.00028	0.00027	0.00011	0.00010	0.000072	0.000072	0.000056	0.000056
Potassium, total	mg/L		0.36	0.77	0.24	0.24	0.090	0.085	0.058	0.058	0.042	0.042
Potassium, dissolved	mg/L		0.35	0.84	52	52	34	34	21	22	6.6	6.6
Selenium, total	mg/L	0.002	0.000025	0.000095	0.000040	0.000039	0.000015	0.000014	0.000010	0.000010	0.0000077	0.0000077
Selenium, dissolved	mg/L		0.000025	0.00011	0.027	0.027	0.018	0.018	0.011	0.011	0.0034	0.0035
Silica, dissolved	mg/L				26	26	18	17	11	11	3.8	3.8
Sodium, total	mg/L		7.0	13	5.4	5.5	1.9	1.8	0.97	0.98	0.49	0.50
Sodium, dissolved	mg/L		7.4	13	1200	1200	790	780	490	500	150	150
Strontium, total	mg/L	7.0	0.17	0.24	0.050	0.049	0.019	0.018	0.013	0.013	0.010	0.010
Strontium, dissolved	mg/L		0.16	0.24	3.1	3.1	2.1	2.1	1.3	1.3	0.40	0.41
Silver, total	mg/L	0.0015	0.0000050	0.000022	0.0000031	0.0000031	0.0000012	0.0000011	0.00000078	0.00000078	0.00000058	0.00000058
Silver, dissolved	mg/L		0.0000050	0.000012	0.0047	0.0047	0.0031	0.0030	0.0019	0.0020	0.00060	0.00060
Tin, total	mg/L		0.000050	0.00010	0.000037	0.000037	0.000014	0.000013	0.0000086	0.0000087	0.0000060	0.0000060
Tin, dissolved	mg/L		0.000050	0.00010	0.036	0.036	0.024	0.024	0.015	0.015	0.0046	0.0046
Thallium, total	mg/L	0.00088	0.0000050	0.000010	0.0000028	0.0000027	0.0000011	0.0000010	0.00000072	0.00000072	0.00000056	0.00000056
Thallium, dissolved	mg/L		0.0000050	0.000010	0.0052	0.0052	0.0035	0.0034	0.0022	0.0022	0.00067	0.00068
Uranium, total	mg/L	0.0085	0.000078	0.00025	0.000056	0.000056	0.000021	0.000020	0.000013	0.000013	0.0000084	0.0000084
Uranium, dissolved	mg/L		0.000075	0.00025	0.012	0.012	0.0081	0.0080	0.0050	0.0051	0.0015	0.0016
Vanadium, total	mg/L		0.00061	0.0027	0.00037	0.00037	0.00014	0.00014	0.000094	0.000095	0.000071	0.000071
Vanadium, dissolved	mg/L		0.00025	0.0013	0.025	0.025	0.017	0.017	0.010	0.011	0.0032	0.0032
Zinc, total	mg/L	0.029	0.0015	0.0059	0.00094	0.00093	0.00036	0.00034	0.00023	0.00024	0.00017	0.00017
Zinc, dissolved	mg/L		0.0015	0.0025	0.035	0.035	0.023	0.023	0.014	0.015	0.0045	0.0045

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsm

Table G-5

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	North Management Pond									
				Baseline in Goathorn Creek		Operations				Closure			
				P50	P95	Alternative Case 2: High Source Terms				Alternative Case 2: High Source Terms			
						Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			68	102	592	540	144	143	122	144	62	72
Alkalinity, total	mg CaCO ₃ /L			52	87	2500	2500	640	680	1300	1500	550	630
Chloride	mg/L		150	0.25	0.50	71	71	17	19	35	42	14	17
Fluoride	mg/L		0.12	0.032	0.041	0.046	0.038	0.0054	0.0055	0.090	0.098	0.075	0.085
Ammonia, total	mg-N/L		1.5	0.0025	0.0070	0.65	0.65	0.20	0.21	0.10	0.16	0.034	0.039
Nitrate	mg/L	18.8	3	0.041	0.076	5.2	5.1	1.6	1.7	0.65	1.1	0.032	0.046
Nitrite	mg/L		0.02	0.00050	0.0020	0.12	0.12	0.036	0.039	0.015	0.026	0.0013	0.0017
Sulfate	mg/L		218	24	37	2100	2100	540	570	850	1000	330	390
Aluminum, total	mg/L		0.1	0.092	0.75	0.66	0.73	0.39	0.40	0.40	0.43	0.37	0.37
Aluminum, dissolved	mg/L		0.05	0.014	0.13	0.63	0.70	0.077	0.091	0.033	0.059	0.0048	0.0058
Antimony, total	mg/L			0.000073	0.00014	0.011	0.011	0.0030	0.0030	0.0021	0.0026	0.00078	0.00090
Antimony, dissolved	mg/L		0.009	0.000050	0.00011	0.011	0.011	0.0030	0.0030	0.0021	0.0026	0.00078	0.00090
Arsenic, total	mg/L		0.005	0.00023	0.00068	0.010	0.0097	0.0032	0.0031	0.0018	0.0022	0.0010	0.0011
Arsenic, dissolved	mg/L			0.00017	0.00035	0.010	0.0096	0.0027	0.0027	0.0013	0.0017	0.00051	0.00059
Barium, total	mg/L		1	0.058	0.072	0.16	0.14	0.046	0.048	0.042	0.055	0.035	0.039
Barium, dissolved	mg/L			0.059	0.073	0.15	0.13	0.040	0.043	0.036	0.048	0.029	0.032
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000063	0.000046	0.0000070	0.0000069	0.000027	0.000028	0.000023	0.000026
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000063	0.000046	0.0000070	0.0000069	0.000027	0.000028	0.000023	0.000026
Boron, total	mg/L		1.2	0.0050	0.050	1.1	1.1	0.28	0.30	0.50	0.60	0.21	0.24
Boron, dissolved	mg/L			0.0050	0.050	1.1	1.1	0.28	0.30	0.50	0.60	0.21	0.24
Cadmium, total	mg/L		0.00009	0.000010	0.000049	0.0091	0.0084	0.0021	0.0021	0.00039	0.00060	0.000094	0.00011
Cadmium, dissolved	mg/L		0.00016	0.0000081	0.000036	0.0091	0.0084	0.0021	0.0021	0.00039	0.00060	0.000091	0.00011
Calcium, total	mg/L			21	30	39	35	9.7	9.4	9.3	9.7	8.3	9.1
Calcium, dissolved	mg/L			22	32	39	35	9.2	8.9	8.8	9.1	7.7	8.5
Chromium, total	mg/L		0.0089	0.00020	0.00091	0.017	0.017	0.0052	0.0053	0.0062	0.0072	0.0032	0.0035
Chromium, dissolved	mg/L			0.00010	0.00027	0.017	0.016	0.0042	0.0043	0.0050	0.0060	0.0020	0.0024
Cobalt, total	mg/L		0.004	0.000050	0.00055	0.016	0.015	0.0047	0.0047	0.0026	0.0034	0.0013	0.0014
Cobalt, dissolved	mg/L			0.000050	0.00011	0.016	0.015	0.0042	0.0041	0.0020	0.0027	0.00064	0.00075
Copper, total	mg/L		0.0028	0.0015	0.0054	0.021	0.021	0.0064	0.0065	0.0074	0.0087	0.0039	0.0043
Copper, dissolved	mg/L			0.0014	0.0039	0.020	0.020	0.0052	0.0054	0.0061	0.0073	0.0026	0.0030
Iron, total	mg/L		0.3	0.085	0.78	1.6	1.6	1.3	1.3	1.5	1.5	1.5	1.5
Iron, dissolved	mg/L		0.30	0.015	0.13	0.31	0.37	0.041	0.048	0.021	0.033	0.0095	0.011
Lead, total	mg/L		0.0050	0.000025	0.00023	0.0056	0.0052	0.0017	0.0017	0.0010	0.0012	0.00067	0.00072
Lead, dissolved	mg/L			0.000025	0.000050	0.0055	0.0051	0.0013	0.0013	0.00066	0.00083	0.00028	0.00032
Lithium, total	mg/L			0.00050	0.0011	0.72	0.72	0.18	0.19	0.34	0.40	0.13	0.16
Lithium, dissolved	mg/L			0.00050	0.0010	0.72	0.72	0.18	0.19	0.34	0.40	0.13	0.16

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Parameter	Units	End-of-Pipe Limit	North Management Pond										
			Goathorn WQG	Baseline in Goathorn Creek		Operations				Closure			
						Alternative Case 2: High Source Terms				Alternative Case 2: High Source Terms			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L			3.9	6.5	120	110	29	29	24	29	10	12
Magnesium, dissolved	mg/L			3.8	7.4	120	110	29	28	23	28	9.8	11
Manganese, total	mg/L		0.12	0.0059	0.033	0.44	0.42	0.13	0.13	0.10	0.12	0.054	0.059
Manganese, dissolved	mg/L			0.0026	0.0084	0.43	0.42	0.11	0.11	0.076	0.097	0.029	0.034
Mercury, total	mg/L		0.00002	0.0000025	0.0000064	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.088	0.00047	0.00062	0.024	0.022	0.0064	0.0066	0.0083	0.010	0.0036	0.0041
Molybdenum, dissolved	mg-N/L			0.00046	0.00062	0.024	0.022	0.0063	0.0065	0.0083	0.010	0.0036	0.0041
Nickel, total	mg/L		0.080	0.00025	0.0011	0.033	0.032	0.010	0.010	0.0092	0.011	0.0045	0.0050
Nickel, dissolved	mg/L			0.00025	0.00060	0.033	0.031	0.0087	0.0088	0.0073	0.0093	0.0027	0.0032
Phosphorus, total	mg/L			0.0045	0.019	0.015	0.015	0.013	0.013	0.015	0.015	0.015	0.015
Orthophosphate, dissolved	mg/L			0.00050	0.0040	0.00062	0.00044	0.000068	0.000067	0.00011	0.00011	0.000094	0.00010
Potassium, total	mg/L			0.39	1.0	76	78	19	20	38	45	15	18
Potassium, dissolved	mg/L			0.36	0.48	76	78	19	20	38	45	15	18
Selenium, total	mg/L	0.050	0.002	0.000086	0.00020	0.040	0.039	0.010	0.011	0.016	0.019	0.0061	0.0071
Selenium, dissolved	mg/L			0.000076	0.00012	0.040	0.039	0.010	0.011	0.016	0.019	0.0061	0.0071
Silica, dissolved	mg/L			5.6	6.2	38	39	9.8	10	19	23	8.4	9.7
Sodium, total	mg/L			2.3	4.8	1800	1800	430	460	940	1100	390	460
Sodium, dissolved	mg/L			2.4	4.8	1800	1800	430	460	940	1100	390	460
Strontium, total	mg/L		7.0	0.076	0.11	4.4	4.2	1.1	1.2	1.6	2.0	0.63	0.73
Strontium, dissolved	mg/L			0.077	0.12	4.4	4.2	1.1	1.2	1.6	2.0	0.63	0.73
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L		0.0008	0.0000050	0.000010	0.0092	0.0085	0.0023	0.0022	0.00046	0.00072	0.00011	0.00014
Thallium, dissolved	mg/L			0.0000050	0.000010	0.0092	0.0085	0.0023	0.0022	0.00046	0.00072	0.00011	0.00014
Uranium, total	mg/L		0.0085	0.000054	0.00014	0.018	0.018	0.0046	0.0047	0.0057	0.0069	0.0023	0.0027
Uranium, dissolved	mg/L			0.000051	0.00014	0.018	0.018	0.0046	0.0047	0.0057	0.0069	0.0023	0.0027
Vanadium, total	mg/L			0.00025	0.0020	0.038	0.038	0.010	0.011	0.017	0.020	0.0076	0.0086
Vanadium, dissolved	mg/L			0.00025	0.00052	0.036	0.037	0.0092	0.0097	0.015	0.018	0.0061	0.0071
Zinc, total	mg/L		0.0075	0.0015	0.0061	0.051	0.049	0.016	0.016	0.015	0.018	0.0085	0.0093
Zinc, dissolved	mg/L			0.0015	0.0021	0.050	0.047	0.013	0.013	0.012	0.014	0.0049	0.0057

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Table G-6

Parameter	Units	North Management Pond Void Space and Seepage Water Quality										
		WQG in Tenas Creek	Tenas Creek Baseline Water Quality		Operations				Closure			
					Alternative Case 2: High Source Terms				Alternative Case 2: High Source Terms			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L		72	103	78	75	25	26	29	29	25	25
Alkalinity, total	mg CaCO ₃ /L		83	110	1700	1700	1000	1000	770	770	590	590
Chloride	mg/L	150	0.25	0.50	44	45	27	27	21	21	16	16
Fluoride	mg/L	0.12	0.031	0.045	0.039	0.038	0.014	0.014	0.082	0.082	0.069	0.069
Ammonia, total	mg-N/L	1.2	0.0025	0.0074	0.34	0.34	0.23	0.23	0.13	0.13	0.051	0.051
Nitrate	mg/L	3	0.0050	0.060	2.6	2.6	1.8	1.8	0.99	0.99	0.19	0.19
Nitrite	mg/L	0.02	0.00050	0.0020	0.061	0.061	0.042	0.042	0.023	0.023	0.0049	0.0050
Sulfate	mg/L	218	2.6	7.4	1500	1500	890	890	540	540	380	380
Aluminum, total	mg/L	0.1	0.056	1.8	0.061	0.058	0.021	0.021	0.058	0.058	0.049	0.049
Aluminum, dissolved	mg/L	0.05	0.016	0.14	0.54	0.54	0.24	0.25	0.065	0.066	0.015	0.015
Antimony, total	mg/L		0.00013	0.00024	0.0079	0.0079	0.0048	0.0048	0.0019	0.0019	0.0010	0.0010
Antimony, dissolved	mg/L	0.009	0.00011	0.00023	0.000094	0.000091	0.000032	0.000033	0.000093	0.000093	0.000079	0.000079
Arsenic, total	mg/L	0.005	0.00048	0.00090	0.00040	0.00038	0.00013	0.00013	0.00023	0.00023	0.00020	0.00020
Arsenic, dissolved	mg/L		0.00041	0.00054	0.0073	0.0073	0.0044	0.0044	0.0016	0.0016	0.00071	0.00071
Barium, total	mg/L	1	0.034	0.047	0.053	0.051	0.018	0.018	0.046	0.046	0.039	0.039
Barium, dissolved	mg/L		0.033	0.043	0.10	0.10	0.067	0.068	0.032	0.032	0.031	0.031
Beryllium, total	mg/L	0.00013	0.000050	0.00010	0.000052	0.000050	0.000017	0.000018	0.000025	0.000025	0.000022	0.000022
Beryllium, dissolved	mg/L		0.000050	0.00010	0.000052	0.000050	0.000017	0.000018	0.000025	0.000025	0.000022	0.000022
Boron, total	mg/L	1.2	0.015	0.050	0.0096	0.0092	0.0035	0.0035	0.021	0.021	0.018	0.018
Boron, dissolved	mg/L		0.013	0.050	0.74	0.74	0.45	0.45	0.31	0.31	0.23	0.23
Cadmium, total	mg/L	0.00009	0.0000050	0.000021	0.0000087	0.0000084	0.0000030	0.0000030	0.0000091	0.0000092	0.0000077	0.0000077
Cadmium, dissolved	mg/L	0.00017	0.0000025	0.0000058	0.0062	0.0062	0.0036	0.0036	0.0010	0.0011	0.00025	0.00025
Calcium, total	mg/L		22	31	24	23	7.8	7.9	8.5	8.5	7.4	7.4
Calcium, dissolved	mg/L		21	31	33	33	18	18	8.3	8.3	7.8	7.8
Chromium, total	mg/L	0.0089	0.00032	0.0018	0.00027	0.00026	0.000089	0.000091	0.00020	0.00020	0.00017	0.00017
Chromium, dissolved	mg/L		0.00025	0.00041	0.012	0.012	0.0069	0.0070	0.0035	0.0035	0.0023	0.0024
Cobalt, total	mg/L	0.004	0.000050	0.00099	0.000056	0.000054	0.000020	0.000020	0.000082	0.000082	0.000069	0.000069
Cobalt, dissolved	mg/L		0.000050	0.00011	0.011	0.011	0.0068	0.0069	0.0024	0.0024	0.00097	0.00098
Copper, total	mg/L	0.003	0.0011	0.0050	0.0013	0.0012	0.00041	0.00042	0.00052	0.00052	0.00045	0.00045
Copper, dissolved	mg/L		0.0011	0.0030	0.015	0.015	0.0087	0.0088	0.0043	0.0043	0.0029	0.0029
Iron, total	mg/L	0.3	0.048	1.2	0.055	0.052	0.019	0.019	0.086	0.086	0.073	0.073
Iron, dissolved	mg/L	0.30	0.015	0.14	0.27	0.27	0.12	0.12	0.034	0.034	0.014	0.014
Lead, total	mg/L	0.0050	0.000025	0.00039	0.000033	0.000032	0.000013	0.000013	0.00012	0.00012	0.000097	0.000097
Lead, dissolved	mg/L		0.000025	0.000050	0.0038	0.0038	0.0022	0.0023	0.00076	0.00076	0.00037	0.00038
Lithium, total	mg/L		0.00050	0.0012	0.00051	0.00049	0.00017	0.00017	0.00010	0.00010	0.000092	0.000092
Lithium, dissolved	mg/L		0.00050	0.0010	0.47	0.47	0.28	0.29	0.21	0.21	0.15	0.15

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsx

Parameter	Units	North Management Pond Void Space and Seepage Water Quality										
		WQG in Tenas Creek	Tenas Creek Baseline Water Quality		Operations				Closure			
					Alternative Case 2: High Source Terms				Alternative Case 2: High Source Terms			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L		4.2	6.3	4.4	4.2	1.4	1.5	1.8	1.8	1.5	1.5
Magnesium, dissolved	mg/L		4.1	6.3	80	80	47	48	19	19	12	12
Manganese, total	mg/L	0.12	0.0050	0.058	0.0049	0.0047	0.0018	0.0018	0.0096	0.0096	0.0081	0.0080
Manganese, dissolved	mg/L		0.0020	0.0062	0.32	0.32	0.19	0.19	0.070	0.070	0.037	0.037
Mercury, total	mg/L	0.00001	0.0000025	0.0000089	0.0000026	0.0000025	0.00000088	0.00000090	0.0000017	0.0000017	0.0000015	0.0000015
Mercury, dissolved	mg/L		0.0000025	0.0000055	0.0058	0.0058	0.0034	0.0034	0.00096	0.00098	0.00021	0.00021
Molybdenum, total	mg-N/L	0.073	0.00012	0.00019	0.00029	0.00028	0.000096	0.000098	0.00021	0.00021	0.00018	0.00017
Molybdenum, dissolved	mg-N/L		0.00010	0.00019	0.017	0.017	0.010	0.010	0.0057	0.0057	0.0040	0.0041
Nickel, total	mg/L	0.080	0.00025	0.0017	0.00027	0.00026	0.000090	0.000091	0.00022	0.00022	0.00018	0.00018
Nickel, dissolved	mg/L		0.00025	0.00054	0.024	0.024	0.014	0.014	0.0061	0.0061	0.0034	0.0034
Phosphorus, total	mg/L		0.0042	0.046	0.0045	0.0043	0.0016	0.0016	0.0068	0.0068	0.0058	0.0057
Orthophosphate, dissolved	mg/L		0.0010	0.0040	0.00051	0.00049	0.00017	0.00017	0.00010	0.00010	0.000092	0.000092
Potassium, total	mg/L		0.23	1.0	0.39	0.37	0.13	0.13	0.37	0.37	0.32	0.32
Potassium, dissolved	mg/L		0.19	0.30	48	48	29	29	23	23	17	17
Selenium, total	mg/L	0.002	0.000051	0.00020	0.000071	0.000068	0.000023	0.000024	0.000032	0.000032	0.000028	0.000028
Selenium, dissolved	mg/L		0.000040	0.000073	0.026	0.027	0.016	0.016	0.010	0.010	0.0069	0.0069
Silica, dissolved	mg/L		7.0	8.0	26	26	16	16	12	12	9.1	9.1
Sodium, total	mg/L		3.5	4.8	5.1	5.1	2.2	2.2	29	29	24	24
Sodium, dissolved	mg/L		3.5	4.8	1100	1100	660	660	550	550	420	420
Strontium, total	mg/L	7.0	0.11	0.13	0.092	0.089	0.030	0.030	0.018	0.018	0.017	0.017
Strontium, dissolved	mg/L		0.10	0.14	3.0	3.0	1.8	1.8	1.1	1.1	0.72	0.72
Silver, total	mg/L	0.00005	0.0000050	0.000020	0.0000053	0.0000051	0.0000018	0.0000018	0.0000040	0.0000040	0.0000034	0.0000034
Silver, dissolved	mg/L		0.0000050	0.000010	0.0057	0.0057	0.0033	0.0033	0.00093	0.00095	0.00019	0.00020
Tin, total	mg/L		0.000050	0.00010	0.000057	0.000054	0.000020	0.000020	0.000085	0.000085	0.000072	0.000072
Tin, dissolved	mg/L		0.000050	0.00010	0.035	0.035	0.021	0.021	0.013	0.013	0.0088	0.0088
Thallium, total	mg/L	0.00088	0.0000050	0.000010	0.0000051	0.0000049	0.0000017	0.0000017	0.0000010	0.0000010	0.00000092	0.00000092
Thallium, dissolved	mg/L		0.0000050	0.000010	0.0064	0.0064	0.0038	0.0038	0.0011	0.0012	0.00029	0.00029
Uranium, total	mg/L	0.0085	0.00011	0.00025	0.000079	0.000076	0.000029	0.000029	0.00016	0.00016	0.00014	0.00014
Uranium, dissolved	mg/L		0.00011	0.00024	0.013	0.013	0.0075	0.0075	0.0039	0.0039	0.0026	0.0026
Vanadium, total	mg/L		0.00094	0.0037	0.00065	0.00063	0.00022	0.00022	0.00038	0.00038	0.00033	0.00033
Vanadium, dissolved	mg/L		0.00072	0.0010	0.024	0.024	0.015	0.015	0.0096	0.0096	0.0068	0.0068
Zinc, total	mg/L	0.0075	0.0015	0.0060	0.0016	0.0015	0.00054	0.00054	0.0012	0.0012	0.0010	0.0010
Zinc, dissolved	mg/L		0.0015	0.0015	0.037	0.037	0.022	0.022	0.0092	0.0092	0.0059	0.0059

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsx

Table G-7

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	Tenas Control Pond									
				Baseline in Goathorn Creek		Operations							
						Project Case				Alternative Case 2: High Source Terms			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			68	102	154	154	103	110	468	428	201	193
Alkalinity, total	mg CaCO ₃ /L			52	87	1100	1200	650	700	2200	2300	1300	1300
Chloride	mg/L		150	0.25	0.50	30	31	16	17	60	63	34	35
Fluoride	mg/L		0.12	0.032	0.041	0.076	0.16	0.049	0.085	0.076	0.16	0.049	0.085
Ammonia, total	mg-N/L		1.5	0.0025	0.0070	0.91	2.7	0.31	0.49	0.91	2.7	0.31	0.49
Nitrate	mg/L	18.8	3	0.041	0.076	7.0	21	2.4	3.7	7.0	21	2.4	3.7
Nitrite	mg/L		0.02	0.00050	0.0020	0.16	0.48	0.055	0.085	0.16	0.48	0.055	0.085
Sulfate	mg/L		218	24	37	730	770	410	420	1800	1700	930	910
Aluminum, total	mg/L		0.1	0.092	0.75	0.50	0.46	0.41	0.40	0.63	0.55	0.43	0.42
Aluminum, dissolved	mg/L		0.05	0.014	0.13	0.13	0.095	0.036	0.029	0.26	0.18	0.062	0.046
Antimony, total	mg/L			0.000073	0.00014	0.0016	0.0016	0.00094	0.00098	0.0093	0.0083	0.0031	0.0028
Antimony, dissolved	mg/L		0.009	0.000050	0.00011	0.0016	0.0016	0.00094	0.00098	0.0093	0.0083	0.0031	0.0028
Arsenic, total	mg/L		0.005	0.00023	0.00068	0.0017	0.0016	0.0013	0.0013	0.0091	0.0081	0.0031	0.0027
Arsenic, dissolved	mg/L			0.00017	0.00035	0.0012	0.0011	0.00075	0.00078	0.0086	0.0076	0.0026	0.0022
Barium, total	mg/L		1	0.058	0.072	0.072	0.079	0.055	0.063	0.099	0.089	0.061	0.067
Barium, dissolved	mg/L			0.059	0.073	0.065	0.072	0.048	0.056	0.092	0.082	0.055	0.061
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000058	0.000061	0.000038	0.000046	0.000058	0.000061	0.000038	0.000046
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000058	0.000061	0.000038	0.000046	0.000058	0.000061	0.000038	0.000046
Boron, total	mg/L		1.2	0.0050	0.050	0.43	0.45	0.24	0.26	0.92	0.92	0.51	0.52
Boron, dissolved	mg/L			0.0050	0.050	0.43	0.45	0.24	0.26	0.92	0.91	0.51	0.52
Cadmium, total	mg/L		0.00009	0.000010	0.000049	0.00057	0.00051	0.00018	0.00015	0.0074	0.0064	0.0017	0.0012
Cadmium, dissolved	mg/L		0.00016	0.0000081	0.000036	0.00057	0.00051	0.00018	0.00015	0.0074	0.0064	0.0017	0.0012
Calcium, total	mg/L			21	30	27	27	20	21	29	28	21	23
Calcium, dissolved	mg/L			22	32	26	26	19	21	28	27	21	22
Chromium, total	mg/L		0.0089	0.00020	0.00091	0.0054	0.0056	0.0036	0.0037	0.015	0.014	0.0073	0.0070
Chromium, dissolved	mg/L			0.00010	0.00027	0.0042	0.0044	0.0024	0.0025	0.014	0.013	0.0061	0.0059
Cobalt, total	mg/L		0.004	0.000050	0.00055	0.0027	0.0025	0.0016	0.0016	0.014	0.012	0.0045	0.0038
Cobalt, dissolved	mg/L			0.000050	0.00011	0.0021	0.0019	0.00100	0.00095	0.013	0.012	0.0039	0.0032
Copper, total	mg/L		0.0028	0.0015	0.0054	0.0068	0.0070	0.0048	0.0049	0.019	0.017	0.0092	0.0089
Copper, dissolved	mg/L			0.0014	0.0039	0.0055	0.0057	0.0035	0.0036	0.017	0.016	0.0079	0.0076
Iron, total	mg/L		0.3	0.085	0.78	1.5	1.5	1.5	1.5	1.6	1.6	1.5	1.5
Iron, dissolved	mg/L		0.30	0.015	0.13	0.065	0.056	0.029	0.027	0.12	0.10	0.044	0.038
Lead, total	mg/L		0.0050	0.000025	0.00023	0.0012	0.0011	0.00076	0.00077	0.0050	0.0044	0.0017	0.0015
Lead, dissolved	mg/L			0.000025	0.000050	0.00079	0.00073	0.00036	0.00038	0.0046	0.0040	0.0013	0.0011
Lithium, total	mg/L			0.00050	0.0011	0.29	0.30	0.16	0.16	0.58	0.61	0.34	0.34
Lithium, dissolved	mg/L			0.00050	0.0010	0.29	0.30	0.16	0.16	0.58	0.61	0.34	0.34

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	Tenas Control Pond									
				Baseline in Goathorn Creek		Operations							
						Project Case				Alternative Case 2: High Source Terms			
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L			3.9	6.5	21	21	13	14	96	87	36	33
Magnesium, dissolved	mg/L			3.8	7.4	20	21	13	14	96	87	36	33
Manganese, total	mg/L		0.12	0.0059	0.033	0.12	0.13	0.073	0.071	0.42	0.38	0.16	0.14
Manganese, dissolved	mg/L			0.0026	0.0084	0.096	0.10	0.048	0.045	0.40	0.35	0.14	0.12
Mercury, total	mg/L		0.00002	0.0000025	0.0000064	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.088	0.00047	0.00062	0.0084	0.0086	0.0060	0.0063	0.018	0.017	0.011	0.011
Molybdenum, dissolved	mg-N/L			0.00046	0.00062	0.0084	0.0085	0.0060	0.0062	0.018	0.017	0.011	0.011
Nickel, total	mg/L		0.080	0.00025	0.0011	0.0087	0.0084	0.0057	0.0056	0.031	0.028	0.013	0.011
Nickel, dissolved	mg/L			0.00025	0.00060	0.0069	0.0066	0.0039	0.0038	0.029	0.026	0.011	0.0096
Phosphorus, total	mg/L			0.0045	0.019	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
Orthophosphate, dissolved	mg/L			0.00050	0.0040	0.00056	0.00056	0.00032	0.00034	0.00056	0.00056	0.00032	0.00034
Potassium, total	mg/L			0.39	1.0	32	33	18	19	64	68	37	38
Potassium, dissolved	mg/L			0.36	0.48	32	33	18	18	64	68	37	38
Selenium, total	mg/L	0.050	0.002	0.000086	0.00020	0.013	0.014	0.0072	0.0075	0.032	0.030	0.017	0.016
Selenium, dissolved	mg/L			0.000076	0.00012	0.013	0.014	0.0072	0.0075	0.032	0.030	0.017	0.016
Silica, dissolved	mg/L			5.6	6.2	19	19	12	13	34	36	22	22
Sodium, total	mg/L			2.3	4.8	790	830	440	470	1600	1700	890	930
Sodium, dissolved	mg/L			2.4	4.8	790	830	440	470	1600	1700	890	930
Strontium, total	mg/L		7.0	0.076	0.11	1.4	1.5	0.83	0.85	3.6	3.4	1.8	1.8
Strontium, dissolved	mg/L			0.077	0.12	1.4	1.5	0.83	0.84	3.6	3.4	1.8	1.8
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L		0.0008	0.0000050	0.000010	0.00058	0.00052	0.00019	0.00018	0.0075	0.0065	0.0017	0.0013
Thallium, dissolved	mg/L			0.0000050	0.000010	0.00058	0.00052	0.00019	0.00018	0.0075	0.0065	0.0017	0.0013
Uranium, total	mg/L		0.0085	0.000054	0.00014	0.0048	0.0050	0.0027	0.0028	0.015	0.014	0.0068	0.0065
Uranium, dissolved	mg/L			0.000051	0.00014	0.0048	0.0050	0.0027	0.0028	0.015	0.014	0.0068	0.0065
Vanadium, total	mg/L			0.00025	0.0020	0.014	0.015	0.0086	0.0090	0.031	0.030	0.017	0.017
Vanadium, dissolved	mg/L			0.00025	0.00052	0.013	0.014	0.0072	0.0075	0.030	0.028	0.016	0.016
Zinc, total	mg/L		0.0075	0.0015	0.0061	0.014	0.015	0.010	0.011	0.047	0.043	0.020	0.019
Zinc, dissolved	mg/L			0.0015	0.0021	0.011	0.011	0.0067	0.0070	0.043	0.039	0.017	0.016

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Table G-8

Parameter	Units	End-of-Pipe Limit	Rail Infrastructure Sedimentation Pond						
			Bulkley WQG	Baseline in Bulkley River		Operations			
				P50	P95	Alternative Case 2: High Source Terms			
						Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			28	38	2189	1957	2048	1866
Alkalinity, total	mg CaCO ₃ /L			27	35	34	30	32	29
Chloride	mg/L		150	0.25	0.86	2.7	2.4	2.5	2.3
Fluoride	mg/L		0.12	0.023	0.035	0	0	0	0
Ammonia, total	mg-N/L		1.7	0.0050	0.017	0	0	0	0
Nitrate	mg/L	18.8	3	0.013	0.041	0	0	0	0
Nitrite	mg/L		0.02	0.0020	0.0050	0	0	0	0
Sulfate	mg/L		128	4.0	5.0	2300	2100	2200	2000
Aluminum, total	mg/L		0.1	0.13	1.3	0.37	0.37	0.37	0.37
Aluminum, dissolved	mg/L		0.05	0.017	0.13	0.0029	0.0026	0.0027	0.0025
Antimony, total	mg/L			0.000050	0.00011	0.00011	0.000095	0.00010	0.000093
Antimony, dissolved	mg/L		0.009	0.000050	0.00010	0.00011	0.000097	0.00010	0.000095
Arsenic, total	mg/L		0.005	0.00024	0.00070	0.00062	0.00060	0.00061	0.00060
Arsenic, dissolved	mg/L			0.00016	0.00033	0.00011	0.000095	0.00010	0.000093
Barium, total	mg/L		1	0.026	0.038	0.010	0.0097	0.0098	0.0096
Barium, dissolved	mg/L			0.023	0.032	0.0034	0.0031	0.0032	0.0030
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0	0	0	0
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000050	0.00010	0.000050	0.00010
Boron, total	mg/L		1.2	0.0050	0.010	0.27	0.24	0.25	0.23
Boron, dissolved	mg/L			0.0050	0.010	0.27	0.24	0.25	0.23
Cadmium, total	mg/L		0.00009	0.0000079	0.000021	0.0031	0.0027	0.0029	0.0026
Cadmium, dissolved	mg/L		0.00008	0.0000025	0.0000065	0.0030	0.0027	0.0029	0.0026
Calcium, total	mg/L			8.8	11	580	520	540	500
Calcium, dissolved	mg/L			8.8	12	580	520	540	500
Chromium, total	mg/L		0.0089	0.00025	0.0012	0.0017	0.0017	0.0017	0.0016
Chromium, dissolved	mg/L			0.000050	0.00023	0.00053	0.00048	0.00050	0.00046
Cobalt, total	mg/L		0.004	0.000050	0.00068	0.030	0.027	0.028	0.026
Cobalt, dissolved	mg/L			0.000050	0.00010	0.029	0.026	0.027	0.025
Copper, total	mg/L		0.002	0.00090	0.0029	0.010	0.0092	0.0096	0.0090
Copper, dissolved	mg/L			0.00067	0.0020	0.0089	0.0079	0.0083	0.0077
Iron, total	mg/L		0.3	0.18	1.3	1.6	1.5	1.5	1.5
Iron, dissolved	mg/L		0.30	0.024	0.16	0.099	0.089	0.093	0.086
Lead, total	mg/L		0.004	0.000095	0.00051	0.0019	0.0018	0.0018	0.0017
Lead, dissolved	mg/L			0.000025	0.000050	0.0016	0.0014	0.0015	0.0013
Lithium, total	mg/L			0.00050	0.0010	0.075	0.067	0.071	0.065
Lithium, dissolved	mg/L			0.00050	0.0010	0.075	0.067	0.071	0.065

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	End-of-Pipe Limit	Rail Infrastructure Sedimentation Pond						
			Bulkley WQG	Baseline in Bulkley River		Operations			
				P50	P95	Alternative Case 2: High Source Terms			
						Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L			1.4	2.5	180	160	170	150
Magnesium, dissolved	mg/L			1.3	2.7	180	160	170	150
Manganese, total	mg/L		0.12	0.016	0.059	1.8	1.6	1.6	1.5
Manganese, dissolved	mg/L			0.0052	0.020	1.7	1.5	1.6	1.5
Mercury, total	mg/L		0.00002	0.0000025	0.0000055	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.088	0.00037	0.00055	0.0052	0.0047	0.0049	0.0045
Molybdenum, dissolved	mg-N/L			0.00037	0.00045	0.0052	0.0046	0.0049	0.0045
Nickel, total	mg/L		0.025	0.00025	0.0014	0.071	0.064	0.067	0.062
Nickel, dissolved	mg/L			0.00025	0.0013	0.069	0.062	0.065	0.060
Phosphorus, total	mg/L			0.0057	0.043	0.015	0.015	0.015	0.015
Orthophosphate, dissolved	mg/L			0.0013	0.0040	0	0	0	0
Potassium, total	mg/L			0.33	0.68	5.1	4.6	4.8	4.5
Potassium, dissolved	mg/L			0.32	0.52	5.1	4.5	4.7	4.4
Selenium, total	mg/L	0.050	0.002	0.000025	0.00020	0.011	0.0099	0.010	0.0096
Selenium, dissolved	mg/L			0.000025	0.000050	0.011	0.0099	0.010	0.0096
Silica, dissolved	mg/L					5.4	4.8	5.0	4.7
Sodium, total	mg/L			1.0	2.5	2.3	2.1	2.1	2.0
Sodium, dissolved	mg/L			1.0	2.5	2.2	2.0	2.1	1.9
Strontium, total	mg/L		7.0	0.040	0.061	2.2	1.9	2.0	1.9
Strontium, dissolved	mg/L			0.040	0.055	2.2	1.9	2.0	1.9
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00012	0.000050	0.000050	0.000050	0.000050
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L		0.0008	0.0000050	0.000014	0.0037	0.0033	0.0034	0.0032
Thallium, dissolved	mg/L			0.0000050	0.000010	0.0037	0.0033	0.0034	0.0032
Uranium, total	mg/L		0.0085	0.000036	0.000094	0.00064	0.00058	0.00060	0.00056
Uranium, dissolved	mg/L			0.000028	0.000052	0.00063	0.00056	0.00059	0.00055
Vanadium, total	mg/L			0.00057	0.0050	0.0025	0.0024	0.0024	0.0024
Vanadium, dissolved	mg/L			0.00025	0.00060	0.0011	0.00095	0.0010	0.00093
Zinc, total	mg/L		0.0075	0.0015	0.0055	0.14	0.12	0.13	0.12
Zinc, dissolved	mg/L			0.0013	0.0045	0.13	0.12	0.13	0.12

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Table G-9

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	Pit Lake					
				Goathorn Baseline		Closure			
				P50	P95	Alternative Case 2: High Source Terms			
						Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L			68	102	118	118	40	40
Alkalinity, total	mg CaCO ₃ /L			52	87	1500	1500	300	290
Chloride	mg/L		150	0.25	0.50	42	42	8.2	7.9
Fluoride	mg/L		0.12	0.032	0.041	0.0081	0.0081	0.0076	0.0076
Ammonia, total	mg-N/L		1.5	0.0025	0.0070	0.0014	0.0014	0.00078	0.00078
Nitrate	mg/L	18.8	3	0.041	0.076	0.013	0.013	0.0079	0.0078
Nitrite	mg/L		0.02	0.00050	0.0020	0.00027	0.00027	0.00015	0.00015
Sulfate	mg/L		218	24	37	990	990	190	190
Aluminum, total	mg/L		0.1	0.092	0.75	0.37	0.37	0.37	0.37
Aluminum, dissolved	mg/L		0.05	0.014	0.13	0.0038	0.0038	0.0037	0.0037
Antimony, total	mg/L			0.000073	0.00014	0.0020	0.0020	0.00040	0.00039
Antimony, dissolved	mg/L		0.009	0.000050	0.00011	0.0020	0.0020	0.00041	0.00039
Arsenic, total	mg/L		0.005	0.00023	0.00068	0.0016	0.0016	0.00078	0.00077
Arsenic, dissolved	mg/L			0.00017	0.00035	0.0011	0.0011	0.00027	0.00026
Barium, total	mg/L		1	0.058	0.072	0.018	0.018	0.017	0.017
Barium, dissolved	mg/L			0.059	0.073	0.011	0.011	0.011	0.011
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000012	0.000012	0.000012	0.000012
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000012	0.000012	0.000012	0.000012
Boron, total	mg/L		1.2	0.0050	0.050	0.58	0.58	0.11	0.11
Boron, dissolved	mg/L			0.0050	0.050	0.58	0.58	0.11	0.11
Cadmium, total	mg/L		0.00009	0.000010	0.000049	0.00019	0.00019	0.000040	0.000039
Cadmium, dissolved	mg/L		0.00016	0.0000081	0.000036	0.00019	0.00019	0.000037	0.000036
Calcium, total	mg/L			21	30	6.2	6.2	6.1	6.1
Calcium, dissolved	mg/L			22	32	5.6	5.6	5.5	5.5
Chromium, total	mg/L		0.0089	0.00020	0.00091	0.0068	0.0068	0.0023	0.0023
Chromium, dissolved	mg/L			0.00010	0.00027	0.0056	0.0056	0.0011	0.0011
Cobalt, total	mg/L		0.004	0.000050	0.00055	0.0023	0.0023	0.00097	0.00096
Cobalt, dissolved	mg/L			0.000050	0.00011	0.0016	0.0016	0.00033	0.00032
Copper, total	mg/L		0.0028	0.0015	0.0054	0.0081	0.0081	0.0028	0.0028
Copper, dissolved	mg/L			0.0014	0.0039	0.0068	0.0068	0.0015	0.0015
Iron, total	mg/L		0.3	0.085	0.78	1.5	1.5	1.5	1.5
Iron, dissolved	mg/L		0.30	0.015	0.13	0.0037	0.0037	0.0035	0.0035
Lead, total	mg/L		0.0050	0.000025	0.00023	0.00098	0.00098	0.00051	0.00051
Lead, dissolved	mg/L			0.000025	0.000050	0.00058	0.00058	0.00012	0.00011
Lithium, total	mg/L			0.00050	0.0011	0.40	0.40	0.077	0.075
Lithium, dissolved	mg/L			0.00050	0.0010	0.40	0.40	0.077	0.075

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Parameter	Units	End-of-Pipe Limit	Goathorn WQG	Pit Lake					
				Goathorn Baseline		Closure			
				P50	P95	Alternative Case 2: High Source Terms			
						Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L			3.9	6.5	25	25	6.0	5.9
Magnesium, dissolved	mg/L			3.8	7.4	25	25	5.7	5.5
Manganese, total	mg/L		0.12	0.0059	0.033	0.099	0.100	0.040	0.040
Manganese, dissolved	mg/L			0.0026	0.0084	0.074	0.074	0.015	0.014
Mercury, total	mg/L		0.00002	0.0000025	0.0000064	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.088	0.00047	0.00062	0.0092	0.0092	0.0026	0.0025
Molybdenum, dissolved	mg-N/L			0.00046	0.00062	0.0092	0.0092	0.0026	0.0025
Nickel, total	mg/L		0.080	0.00025	0.0011	0.0093	0.0093	0.0033	0.0033
Nickel, dissolved	mg/L			0.00025	0.00060	0.0075	0.0075	0.0015	0.0014
Phosphorus, total	mg/L			0.0045	0.019	0.015	0.015	0.015	0.015
Orthophosphate, dissolved	mg/L			0.00050	0.0040	0.00012	0.00012	0.00012	0.00012
Potassium, total	mg/L			0.39	1.0	45	45	8.9	8.6
Potassium, dissolved	mg/L			0.36	0.48	45	45	8.8	8.5
Selenium, total	mg/L	0.050	0.002	0.000086	0.00020	0.018	0.018	0.0035	0.0034
Selenium, dissolved	mg/L			0.000076	0.00012	0.018	0.018	0.0035	0.0034
Silica, dissolved	mg/L			5.6	6.2	23	23	5.7	5.5
Sodium, total	mg/L			2.3	4.8	1100	1100	220	210
Sodium, dissolved	mg/L			2.4	4.8	1100	1100	220	210
Strontium, total	mg/L		7.0	0.076	0.11	1.8	1.8	0.38	0.37
Strontium, dissolved	mg/L			0.077	0.12	1.8	1.8	0.37	0.36
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L		0.0008	0.0000050	0.000010	0.00018	0.00018	0.000035	
Thallium, dissolved	mg/L			0.0000050	0.000010	0.00018	0.00018	0.000035	
Uranium, total	mg/L		0.0085	0.000054	0.00014	0.0065	0.0066	0.0013	0.0013
Uranium, dissolved	mg/L			0.000051	0.00014	0.0065	0.0065	0.0013	0.0012
Vanadium, total	mg/L			0.00025	0.0020	0.019	0.019	0.0050	0.0049
Vanadium, dissolved	mg/L			0.00025	0.00052	0.018	0.018	0.0035	0.0034
Zinc, total	mg/L		0.0075	0.0015	0.0061	0.015	0.016	0.0062	0.0061
Zinc, dissolved	mg/L			0.0015	0.0021	0.012	0.012	0.0026	0.0025

Green highlight is a WQG exceedance

Red highlight is an end-of-pipe exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_MMPs_WaterQuality_EAModel_v29_20220207.xlsx

Table G-10

Parameter	Units	Pit Backfill and Seepage Water Quality						
		Four Creek WQG	Four Creek Baseline Water Quality		Closure			
					Alternative Case 2: High Source Terms			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Total Hardness	mg-CaCO ₃ /L		118	163	58	58	51	51
Alkalinity, total	mg CaCO ₃ /L		130	190	3400	3500	1600	1600
Chloride	mg/L	150	0.25	0.50	95	100	43	42
Fluoride	mg/L	0.12	0.059	0.068	0.20	0.21	0.17	0.17
Ammonia, total	mg-N/L	0.95	0.0025	0.0092	0.085	0.088	0.070	0.073
Nitrate	mg/L	3	0.013	0.058	0.066	0.070	0.021	0.022
Nitrite	mg/L	0.02	0.00050	0.0010	0.0025	0.0026	0.0018	0.0019
Sulfate	mg/L	309	1.9	28	2300	2400	1000	990
Aluminum, total	mg/L	0.1	0.099	1.2	0.14	0.14	0.11	0.12
Aluminum, dissolved	mg/L	0.05	0.032	0.49	0.0080	0.0080	0.0073	0.0073
Antimony, total	mg/L		0.000050	0.00012	0.0047	0.0049	0.0022	0.0022
Antimony, dissolved	mg/L	0.009	0.000050	0.00010	0.00022	0.00022	0.00018	0.00019
Arsenic, total	mg/L	0.005	0.00074	0.0011	0.00050	0.00051	0.00043	0.00044
Arsenic, dissolved	mg/L		0.00064	0.00086	0.0025	0.0026	0.0013	0.0013
Barium, total	mg/L	1	0.071	0.13	0.11	0.11	0.090	0.093
Barium, dissolved	mg/L		0.075	0.13	0.069	0.071	0.059	0.060
Beryllium, total	mg/L	0.00013	0.000050	0.00010	0.000054	0.000055	0.000047	0.000048
Beryllium, dissolved	mg/L		0.000050	0.00010	0.000054	0.000055	0.000047	0.000048
Boron, total	mg/L	1.2	0.012	0.020	0.052	0.054	0.043	0.045
Boron, dissolved	mg/L		0.011	0.019	1.3	1.4	0.62	0.61
Cadmium, total	mg/L	0.00009	0.0000063	0.000019	0.000021	0.000022	0.000018	0.000019
Cadmium, dissolved	mg/L	0.00024	0.0000052	0.000012	0.00043	0.00045	0.00019	0.00019
Calcium, total	mg/L		24	34	17	17	15	15
Calcium, dissolved	mg/L		23	36	17	17	15	15
Chromium, total	mg/L	0.0089	0.00026	0.0016	0.00046	0.00047	0.00039	0.00040
Chromium, dissolved	mg/L		0.00015	0.00079	0.013	0.014	0.0059	0.0059
Cobalt, total	mg/L	0.004	0.000050	0.00047	0.00020	0.00020	0.00016	0.00017
Cobalt, dissolved	mg/L		0.000050	0.00015	0.0038	0.0040	0.0017	0.0017
Copper, total	mg/L	0.0047	0.0014	0.0044	0.0011	0.0011	0.00094	0.00095
Copper, dissolved	mg/L		0.0014	0.0034	0.015	0.016	0.0073	0.0072
Iron, total	mg/L	0.3	0.095	1.1	0.21	0.22	0.17	0.18
Iron, dissolved	mg/L	0.30	0.015	0.41	0.022	0.022	0.019	0.019
Lead, total	mg/L	0.0050	0.000025	0.00028	0.00029	0.00030	0.00024	0.00025
Lead, dissolved	mg/L		0.000025	0.000091	0.0014	0.0015	0.00074	0.00075
Lithium, total	mg/L		0.0015	0.0019	0.00017	0.00016	0.00016	0.00015
Lithium, dissolved	mg/L		0.0014	0.0019	0.91	0.95	0.40	0.40

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsm

Parameter	Units	Pit Backfill and Seepage Water Quality						
		Four Creek WQG	Four Creek Baseline Water Quality		Closure			
					Alternative Case 2: High Source Terms			
			P50	P95	Max Summer	Max Winter	Average Summer	Average Winter
Magnesium, total	mg/L		14	19	3.7	3.7	3.2	3.3
Magnesium, dissolved	mg/L		13	20	57	60	27	27
Manganese, total	mg/L	0.12	0.0025	0.024	0.023	0.024	0.019	0.020
Manganese, dissolved	mg/L		0.00067	0.0074	0.17	0.18	0.081	0.081
Mercury, total	mg/L	0.00001	0.0000025	0.000013	0.0000039	0.0000040	0.0000033	0.0000034
Mercury, dissolved	mg/L		0.0000025	0.0000093	0.00026	0.00028	0.00012	0.00012
Molybdenum, total	mg-N/L	0.073	0.00023	0.00038	0.00047	0.00048	0.00040	0.00041
Molybdenum, dissolved	mg-N/L		0.00019	0.00036	0.020	0.021	0.0097	0.0096
Nickel, total	mg/L	0.080	0.00025	0.0018	0.00050	0.00051	0.00042	0.00043
Nickel, dissolved	mg/L		0.00025	0.0011	0.017	0.018	0.0078	0.0078
Phosphorus, total	mg/L		0.0041	0.044	0.016	0.017	0.014	0.014
Orthophosphate, dissolved	mg/L		0.00050	0.0012	0.00017	0.00016	0.00016	0.00015
Potassium, total	mg/L		0.36	0.77	0.87	0.90	0.73	0.76
Potassium, dissolved	mg/L		0.35	0.84	100	110	46	46
Selenium, total	mg/L	0.002	0.000025	0.000095	0.000067	0.000069	0.000059	0.000060
Selenium, dissolved	mg/L		0.000025	0.00011	0.041	0.043	0.018	0.018
Silica, dissolved	mg/L				51	53	24	24
Sodium, total	mg/L		7.0	13	73	76	60	63
Sodium, dissolved	mg/L		7.4	13	2600	2700	1200	1200
Strontium, total	mg/L	7.0	0.17	0.24	0.030	0.029	0.028	0.028
Strontium, dissolved	mg/L		0.16	0.24	4.1	4.4	1.9	1.8
Silver, total	mg/L	0.0015	0.0000050	0.000022	0.0000092	0.0000094	0.0000078	0.0000080
Silver, dissolved	mg/L		0.0000050	0.000012	0.00014	0.00014	0.000066	0.000066
Tin, total	mg/L		0.000050	0.00010	0.00020	0.00021	0.00017	0.00018
Tin, dissolved	mg/L		0.000050	0.00010	0.053	0.055	0.023	0.023
Thallium, total	mg/L	0.00088	0.0000050	0.000010	0.0000017	0.0000016	0.0000016	0.0000015
Thallium, dissolved	mg/L		0.0000050	0.000010	0.00044	0.00046	0.00024	0.00024
Uranium, total	mg/L	0.0085	0.000078	0.00025	0.00040	0.00041	0.00033	0.00034
Uranium, dissolved	mg/L		0.000075	0.00025	0.015	0.016	0.0068	0.0067
Vanadium, total	mg/L		0.00061	0.0027	0.00084	0.00086	0.00072	0.00074
Vanadium, dissolved	mg/L		0.00025	0.0013	0.041	0.043	0.018	0.018
Zinc, total	mg/L	0.029	0.0015	0.0059	0.0028	0.0028	0.0023	0.0024
Zinc, dissolved	mg/L		0.0015	0.0025	0.028	0.029	0.014	0.014

Green highlight is a WQG exceedance

Source: https://srk.sharepoint.com/sites/NA1CT027.003/Internal/500_Water_Balance/Results/Feb2022_NewSourceTerms/Results_MPSeepage_WaterQuality_EAModel_rev07_20220209.xlsm

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Table G-11. Percent Change in Mean Annual Discharge for Alternative Assessment Case 1: High Groundwater Seepage Conditions Relative to Base Case Conditions, including Maximum Increase, Maximum Decrease and Average Change, over each Project Stage

% Change in Mean Annual Discharge relative to Base Case Conditions										
Stream	Node	Construction			Operation			Post-Closure		
		Maximum Increase	Average Change	Maximum Decrease	Maximum Increase	Average Change	Maximum Decrease	Maximum Increase	Average Change	Maximum Decrease
Tenas Creek	WQS01	n.a	0.0%	0.0%	n.a	0.0%	0.0%	n.a	0.0%	0.0%
	WQS02	n.a	0.0%	0.0%	n.a	-1.3%	-1.8%	n.a	-0.3%	-0.4%
	WQS22	n.a	0.0%	0.0%	n.a	-5.5%	-6.8%	n.a	-3.6%	-3.8%
	WQS04	n.a	0.0%	0.0%	n.a	-6.5%	-7.8%	n.a	-4.1%	-4.2%
Four Creek	WQS03	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n.a	0.0%	0.0%
	WQS21	n.a	-1.5%	-1.5%	44.8%	29.6%	-2.3%	28.1%	27.4%	n.a
	WQS20	n.a	-1.5%	-1.5%	43.2%	27.7%	-2.3%	27.1%	26.4%	n.a
	WQS03DS	n.a	-1.1%	-1.1%	n.a	-12.6%	-16.0%	n.a	-6.8%	-7.7%
Goathorn Creek	WQS13	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	n.a	-0.1%	-0.1%
	WQS06_US	n.a	0.0%	0.0%	n.a	0.0%	-0.1%	n.a	-0.1%	-0.1%
	WQS06	n.a	0.0%	0.0%	3.7%	0.9%	-0.2%	0.5%	0.4%	n.a
	WQS05	n.a	0.0%	0.0%	n.a	-1.4%	-2.8%	n.a	-0.5%	-0.6%
Telkwa River	WQS09	n.a	0.0%	0.0%	0.8%	0.1%	-0.4%	0.8%	0.7%	n.a
Bulkley River	WQS11	0.0%	0.0%	n.a	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	WQS12	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: : \\van-svr0.van.na.srk.ad\Projects\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Results_Streams_Change\toMAD_07132021_sab.xlsx

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Appendix G: Alternative Cases

Table G-12. Tenas Creek Project Case Streamflow Effect as Monthly Change over Base Case Conditions for Alternative Case 1: High Groundwater Seepage

Scenario		Tenas Creek Monthly % Change											
Period	Month	WQS01			WQS02			WQS22			WQS04		
		Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease
Construction	January		-0.03			-0.43			-0.05			-0.01	
	February		-0.03			-0.46			-0.05			-0.01	
	March		-0.03			-0.49			-0.05			-0.01	
	April		-0.02			-0.38			-0.02			0.00	
	May		0.00			-0.01			0.00			0.00	
	June		0.00			-0.02			0.00			0.00	
	July		0.00			-0.06			-0.01			0.00	
	August		-0.02			-0.28			-0.03			-0.01	
	September		0.00			-0.05			-0.01			0.00	
	October		0.00			-0.06			-0.01			0.00	
	November		-0.02			-0.37			-0.03			-0.01	
	December		-0.05			-0.80			-0.08			-0.01	
Operations	January	0.0	-0.4	-0.5	9.7	-0.1	-6.5	33.1	5.0	-12.2	29.1	4.5	-10.5
	February	0.0	-0.4	-0.5	9.8	-0.1	-6.4	33.4	5.1	-11.9	29.3	4.6	-10.2
	March	0.0	-0.4	-0.5	9.9	0.0	-6.3	33.7	5.2	-11.7	29.6	4.7	-10.0
	April	0.0	-0.2	-0.3	3.9	-0.9	-4.5	4.9	-5.6	-13.3	3.1	-5.9	-12.7
	May	0.0	0.0	-	0.0	-1.4	-1.6	0.0	-6.2	-7.1	0.0	-7.1	-8.1
	June	0.0	0.0	-	0.0	-1.3	-1.6	0.0	-4.4	-5.4	0.0	-5.7	-6.7
	July	0.0	0.0	-	-	-1.3	-2.0	0.0	-4.5	-7.0	0.0	-5.7	-8.1
	August	0.0	-0.2	-0.3	3.1	-1.2	-4.5	9.5	-2.6	-12.2	6.4	-3.9	-12.5
	September	0.0	0.0	-	-	-1.3	-2.0	0.0	-4.9	-7.3	0.0	-6.0	-8.3
	October	0.0	0.0	-	-	-1.4	-1.9	0.0	-5.4	-7.7	0.0	-6.5	-8.6
	November	0.0	-0.1	-0.1	0.7	-1.4	-3.2	1.1	-4.7	-9.9	0.0	-5.8	-10.5
	December	-	-0.4	-0.5	10.3	0.2	-6.6	33.9	5.5	-12.8	29.5	4.8	-11.1
Post-Closure	January	-	-0.3	-0.3	11.6	11.6	-	35.1	35.1	-	30.8	30.8	-
	February	-	-0.3	-0.3	11.6	11.6	-	35.1	35.1	-	30.8	30.8	-
	March	-	-0.3	-0.3	11.6	11.6	-	35.1	35.1	-	30.8	30.8	-
	April	-	-0.1	-0.1	3.4	3.0	-	3.5	2.5	-	2.3	1.5	-
	May	0.0	0.0	-	-	-0.7	-0.7	-	-5.2	-5.2	-	-5.4	-5.5
	June	0.0	0.0	-	-	-0.6	-0.6	-	-3.1	-3.3	-	-3.6	-3.7
	July	0.0	0.0	-	0.5	0.3	-	-	-1.1	-1.5	-	-1.8	-2.2
	August	-	-0.1	-0.2	6.1	4.7	-	14.1	12.2	-	11.6	9.8	-
	September	0.0	0.0	-	0.1	0.0	-	-	-2.4	-2.7	-	-3.0	-3.3
	October	0.0	0.0	-	-	-0.3	-0.3	-	-3.3	-3.8	-	-3.8	-4.2
	November	0.0	-0.1	-0.1	1.4	1.3	-	1.9	1.3	-	0.7	0.3	-
	December	-	-0.3	-0.3	10.9	10.8	-	32.8	32.3	-	28.5	28.1	-

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Results_Streams_MonthlyChange_07132021_sab.xlsm

Note: Blank rows represent periods where an increase or decrease in flows is not expected based on model results

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Table G-13. Four Creek Project Case Streamflow Effect as Monthly Change over Base Case Conditions for Alternative Case 1: High Groundwater Seepage

Scenario		Four Creek Monthly % Change											
Period	Month	WQS03			WQS21			WQS21			WQS03DS		
		Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease
Construction	January	-	0.00	-	-	-5.99	-	-	-5.99	-	-	-4.39	-
	February	-	0.00	-	-	-6.45	-	-	-6.45	-	-	-4.73	-
	March	-	0.00	-	-	-6.91	-	-	-6.91	-	-	-5.07	-
	April	-	0.00	-	-	-2.23	-	-	-2.23	-	-	-1.64	-
	May	-	0.00	-	-	-0.80	-	-	-0.80	-	-	-0.59	-
	June	-	0.00	-	-	-2.22	-	-	-2.22	-	-	-1.63	-
	July	-	0.00	-	-	-1.45	-	-	-1.45	-	-	-1.06	-
	August	-	0.00	-	-	-5.01	-	-	-5.01	-	-	-3.67	-
	September	-	0.00	-	-	-1.18	-	-	-1.18	-	-	-0.86	-
	October	-	0.00	-	-	-3.38	-	-	-3.38	-	-	-2.48	-
	November	-	0.00	-	-	-9.53	-	-	-9.53	-	-	-6.99	-
	December	-	0.00	-	-	-11.23	-	-	-11.23	-	-	-8.24	-
Operations	January	0.0	0.0	0.0	-	-76.9	-100.0	-	-76.9	-100.0	85.0	16.8	-16.8
	February	0.0	0.0	0.0	-	-77.2	-100.0	-	-77.2	-100.0	85.6	17.1	-16.8
	March	0.0	0.0	0.0	-	-77.6	-100.0	-	-77.6	-100.0	86.2	17.4	-16.7
	April	0.0	0.0	0.0	31.3	12.9	-4.4	29.9	11.4	-4.4	-	-8.3	-14.1
	May	0.0	0.0	0.0	48.8	34.0	-0.9	47.2	32.1	-0.9	2.7	-13.7	-21.0
	June	0.0	0.0	0.0	46.9	23.3	-3.3	45.3	21.4	-3.3	-	-11.3	-16.3
	July	0.0	0.0	0.0	47.3	25.6	-2.5	45.5	23.7	-2.5	-	-11.8	-15.4
	August	0.0	0.0	0.0	43.4	-2.0	-41.9	41.6	-3.9	-43.4	37.6	-2.9	-19.3
	September	0.0	0.0	0.0	47.8	28.4	-2.0	45.8	26.5	-2.0	-	-12.8	-15.1
	October	0.0	0.0	0.0	44.0	15.3	-6.0	41.9	13.4	-7.7	1.3	-9.7	-17.6
	November	0.0	0.0	0.0	3.3	-50.6	-74.8	2.3	-51.6	-75.6	68.5	11.6	-18.3
	December	0.0	0.0	0.0	-	-80.7	-100.0	-	-80.7	-100.0	91.9	20.6	-16.6
Post-Closure	January	0.0	0.0	0.0	-	-100.0	-100.0	-	-100.0	-100.0	121.3	121.3	-
	February	0.0	0.0	0.0	-	-100.0	-100.0	-	-100.0	-100.0	121.3	121.3	-
	March	0.0	0.0	0.0	-	-100.0	-100.0	-	-100.0	-100.0	121.3	121.3	-
	April	0.0	0.0	0.0	18.6	16.7	-	17.7	15.8	-	4.7	3.8	-
	May	0.0	0.0	0.0	31.9	31.8	-	30.9	30.8	-	-	-11.5	-11.6
	June	0.0	0.0	0.0	22.3	20.5	-	21.3	19.5	-	6.4	2.2	-
	July	0.0	0.0	0.0	21.1	19.4	-	20.1	18.4	-	7.2	3.5	-
	August	0.0	0.0	0.0	0.9	-10.9	-39.6	-	-11.9	-40.4	68.6	40.0	-
	September	0.0	0.0	0.0	25.7	24.9	-	24.7	23.9	-	-	-3.1	-4.1
	October	0.0	0.0	0.0	14.1	11.7	-	13.1	10.7	-	18.1	12.9	-
	November	0.0	0.0	0.0	-	-62.8	-67.6	-	-63.3	-68.1	95.0	90.4	-
	December	0.0	0.0	0.0	-	-100.0	-100.0	-	-100.0	-100.0	121.3	121.3	-

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Results_Streams_MonthlyChange_07132021_sab.xlsm

Note: Blank rows represent periods where an increase or decrease in flows is not expected based on model results.

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Table G-14. Goathorn Creek Project Case Streamflow Effect as Monthly Change over Base Case Conditions for Alternative Case 1: High Groundwater Seepage

Scenario		Goathorn Creek Monthly % Change								
Period	Month	WQS06US			WQS06			WQS05		
		Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease
Construction	January		-0.01			-2.57			-0.06	
	February		-0.01			-2.58			-0.06	
	March		-0.01			-2.58			-0.07	
	April		-0.01			-2.59			-0.07	
	May		0.00			-2.51			0.00	
	June		0.00			-2.51			-0.01	
	July		0.00			-2.51			-0.01	
	August		-0.01			-2.53			-0.04	
	September		0.00			-2.51			-0.01	
	October		-0.01			-2.52			-0.02	
	November		-0.02			-2.62			-0.10	
	December		-0.02			-2.63			-0.11	
Operations	January	0.0	-0.1	-0.2	-	-2.2	-2.8	6.4	1.0	-2.1
	February	0.0	-0.1	-0.2	-	-2.2	-2.8	6.5	1.1	-2.0
	March	0.0	-0.1	-0.2	-	-2.2	-2.8	6.5	1.1	-2.0
	April	0.0	-0.1	-0.2	-	-4.3	-5.0	-	-3.4	-5.8
	May	0.0	0.0	-	4.1	-0.2	-2.5	4.2	-1.9	-3.5
	June	0.0	0.0	-	1.0	-1.3	-2.7	0.2	-1.2	-2.6
	July	0.0	0.0	-	4.2	-1.5	-2.9	3.9	-0.1	-1.6
	August	0.0	-0.1	-0.1	18.8	-0.6	-2.8	12.4	1.4	-1.7
	September	0.0	0.0	-	3.9	-1.4	-2.9	3.2	-0.4	-2.0
	October	0.0	0.0	-	9.0	0.1	-2.5	4.4	-0.7	-3.3
	November	0.0	-0.1	-0.2	-	-2.4	-3.0	3.0	-0.7	-3.4
	December	0.0	-0.1	-0.2	-	-2.1	-2.8	7.0	1.3	-2.1
Post-Closure	January	-	-0.3	-0.3	-	-0.3	-0.3	7.1	7.1	-
	February	-	-0.3	-0.3	-	-0.3	-0.3	7.1	7.1	-
	March	-	-0.3	-0.3	-	-0.3	-0.3	7.1	7.1	-
	April	-	-0.1	-0.2	-	-3.2	-3.4	-	-0.4	-0.5
	May	0.0	0.0	-	-	-1.2	-1.5	-	-1.4	-1.6
	June	0.0	0.0	-	-	-2.4	-2.4	-	-0.9	-1.0
	July	0.0	-0.1	-0.1	-	-2.3	-2.4	0.6	0.5	-
	August	-	-0.1	-0.2	-	-1.7	-2.0	4.2	3.5	-
	September	0.0	0.0	-	-	-2.4	-2.5	-	-0.2	-0.2
	October	0.0	-0.1	-0.1	-	-2.2	-2.2	-	-0.5	-0.5
	November	-	-0.2	-0.2	-	-1.0	-1.0	3.5	3.3	-
	December	-	-0.3	-0.3	-	-0.3	-0.3	7.1	7.1	-

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Results_Streams_MonthlyChange_07132021_sab.xlsm

Note: Blank rows represent periods where an increase or decrease in flows is not expected based on model results.

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Table G-15. Bulkley and Telkwa River Project Case Streamflow Effect as Monthly Change over Base Case Conditions for Alternative Case 1: High Groundwater Seepage

Scenario		Telkwa River Monthly % Change			Bulkley River Monthly % Change					
Period	Month	WQS09			WQS11			WQS12		
		Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease	Maximum Increase	Average	Maximum Decrease
Construction	January		-0.04			0.00			0.00	
	February		-0.04			0.00			0.00	
	March		-0.05			0.00			0.00	
	April		-0.05			0.00			0.00	
	May		-0.01			0.00			0.00	
	June		-0.01			0.00			0.00	
	July		-0.01			0.00			0.00	
	August		-0.03			0.00			0.00	
	September		-0.01			0.00			0.00	
	October		-0.03			0.00			0.00	
	November		-0.07			0.00			0.00	
	December		-0.08			0.00			0.00	
Operations	January	4.8	0.8	-1.5	0.0	0.0	-	0.1	0.0	-
	February	4.8	0.8	-1.5	0.0	0.0	-	0.1	0.0	-
	March	4.9	0.8	-1.4	0.0	0.0	-	0.1	0.0	-
	April	3.5	0.5	-1.4	0.0	0.0	-	0.0	-0.1	-0.1
	May	0.2	-0.1	-0.4	0.0	0.0	-	0.1	0.0	-0.1
	June	0.2	0.0	-0.2	0.0	0.0	-	0.0	0.0	-
	July	0.8	0.1	-0.3	0.0	0.0	-	0.0	0.0	-
	August	2.6	0.5	-0.9	0.0	0.0	-	0.1	0.0	-
	September	0.7	0.1	-0.4	0.0	0.0	-	0.0	0.0	-
	October	0.9	0.1	-0.6	0.0	0.0	-	0.0	0.0	-
	November	3.1	0.5	-1.3	0.0	0.0	-	0.0	0.0	-
	December	5.2	1.0	-1.5	0.0	0.0	-	0.1	0.0	-
Post-Closure	January	5.3	5.3	-	0.0	0.0	-	0.1	0.1	-
	February	5.3	5.3	-	0.0	0.0	-	0.1	0.1	-
	March	5.3	5.3	-	0.0	0.0	-	0.1	0.1	-
	April	2.5	2.3	-	0.0	0.0	-	0.0	0.0	-
	May	0.1	0.1	-	0.0	0.0	-	0.0	0.0	-
	June	0.3	0.3	-	0.0	0.0	-	0.0	0.0	-
	July	1.2	1.1	-	0.0	0.0	-	0.0	0.0	-
	August	3.2	2.6	-	0.0	0.0	-	0.0	0.0	-
	September	0.8	0.7	-	0.0	0.0	-	0.0	0.0	-
	October	0.9	0.8	-	0.0	0.0	-	0.0	0.0	-
	November	2.9	2.8	-	0.0	0.0	-	0.0	0.0	-
	December	5.3	5.3	-	0.0	0.0	-	0.1	0.1	-

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Results_Streams_MonthlyChange_07132021_sab.xlsm

Note: Blank rows represent periods where an increase or decrease in flows is not expected based on model results.

Tenas Project Water and Load Balance Report
Appendix G: Alternative Cases

Table G-16. Goathorn Creek and Telkwa River Project Case Streamflow Effect as Monthly Change over Base Case Conditions for Alternative Case 4: 3 Consecutive Wet Years (2041,2042,2043)

Project Case		Goathorn Creek		Telkwa River
		WQS06	WQS05	WQS09
Period	Month	Maximum Percent Increase over Baseline Conditions [%]	Maximum Percent Increase over Baseline Conditions [%]	Maximum Percent Increase over Baseline Conditions [%]
Operations	January	-	0.6	0.6
	February	-	0.7	0.6
	March	-	0.7	0.6
	April	-	-	0.0
	May	4.0	0.0	0.0
	June	1.3	0.3	0.0
	July	4.1	3.7	0.3
	August	18.5	11.8	0.3
	September	3.8	3.0	0.1
	October	8.9	4.1	0.1
	November	-	-	0.3
	December	-	0.8	0.7

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Results_Streams_MonthlyChange_07132021_sab.xlsm

Note: Blank rows represent periods where an increase or decrease in flows is not expected based on model results.

Tenas Project Water and Load Balance Report
Appendix G: Alternative Cases

Table G-17. Effect to Low Flow Conditions with Alternative Assessment Case 5: 7Q10 Baseflow

Stream	Node	Baseline 7Q10 [m3/s]	Modelled 7Q10 with Ratio [m3/s]			% Change to 7Q10 over Baseline		
			Construction	Operation	Closure and Post- Closure	Construction	Operation	Closure and Post- Closure
Tenas Creek	WQS01	0.003	0.00	0.00	0.00	0%	0%	0%
	WQS02	0.004	0.00	0.00	0.00	0%	-4%	2%
	WQS22	0.006	0.01	0.01	0.01	0%	-6%	3%
	WQ04	0.006	0.01	0.01	0.01	0%	-5%	3%
Four Creek	WQS03	0.000	0.00	0.00	0.00	0%	-30%	-23%
	WQS21	0.000	0.00	0.00	0.00	0%	-34%	-25%
	WQS20	0.000	0.00	0.00	0.00	-1%	-32%	-22%
	WQS03_DS	0.001	0.00	0.00	0.00	-1%	-4%	5%
Goathorn Creek	WQS13	0.174	0.17	0.17	0.17	0%	0%	0%
	WQS06_US	0.191	0.19	0.19	0.19	0%	0%	0%
	WQS06	0.220	0.22	0.22	0.22	0%	0%	0%
	WQS05	0.348	0.35	0.34	0.35	0%	-2%	1%
Telkwa River	WQS09	4.216	4.21	4.15	4.26	0%	-2%	1%
Bulkley River	WQS11	16.503	16.50	16.50	16.50	0%	0%	0%
	WQS12	19.563	19.56	19.55	19.56	0%	0%	0%

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\ Streams_LowFlow_EA20_07122021.xlsm

Table G-18

Parameter	Units	SPO	WQG	Tenas Creek										
				Baseline	WQS02									
					Closure									
					Alternative Case 1: High groundwater					Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Total Hardness	mg-CaCO ₃ /L			72	103	115	150	81	101	132	186	81	116	213
Alkalinity, total	mg-CaCO ₃ /L			83	110	420	780	130	330	430	720	130	350	1400
Chloride	mg/L		150	0.25	0.50	9.1	19	1.3	6.5	9.2	17	1.4	7.3	34
Fluoride	mg/L		0.12	0.031	0.045	0.060	0.082	0.035	0.049	0.045	0.055	0.033	0.038	0.13
Ammonia, total	mg-N/L		1.2	0.0025	0.0074	0.21	0.43	0.021	0.11	0.10	0.22	0.015	0.079	0.95
Nitrate	mg/L		3	0.0050	0.060	1.6	3.3	0.14	0.81	0.76	1.7	0.099	0.59	7.5
Nitrite	mg/L	0.0524	0.02	0.00050	0.0020	0.038	0.077	0.0036	0.019	0.018	0.039	0.0027	0.014	0.17
Sulfate	mg/L		218	2.6	7.4	230	500	30	170	270	530	37	220	960
Aluminum, total	mg/L	0.236	0.1	0.056	1.8	0.087	0.12	0.061	0.072	0.088	0.11	0.061	0.076	0.18
Aluminum, dissolved	mg/L		0.05	0.016	0.14	0.042	0.075	0.019	0.031	0.043	0.068	0.020	0.035	0.14
Antimony, total	mg/L			0.00013	0.00024	0.00062	0.0011	0.00018	0.00047	0.0011	0.0022	0.00025	0.00094	0.0021
Antimony, dissolved	mg/L		0.009	0.00011	0.00023	0.00065	0.0012	0.00020	0.00049	0.0012	0.0023	0.00027	0.00096	0.0022
Arsenic, total	mg/L		0.005	0.00048	0.00090	0.00086	0.0012	0.00054	0.00074	0.0014	0.0023	0.00061	0.0012	0.0019
Arsenic, dissolved	mg/L			0.00041	0.00054	0.00079	0.0011	0.00047	0.00067	0.0013	0.0023	0.00054	0.0011	0.0018
Barium, total	mg/L		1	0.034	0.047	0.052	0.065	0.038	0.048	0.049	0.058	0.037	0.044	0.097
Barium, dissolved	mg/L			0.033	0.043	0.051	0.064	0.037	0.047	0.048	0.057	0.036	0.043	0.096
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000064	0.000071	0.000053	0.000058	0.000059	0.000063	0.000053	0.000054	0.000082
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000064	0.000071	0.000053	0.000058	0.000059	0.000063	0.000053	0.000054	0.000082
Boron, total	mg/L		1.2	0.015	0.050	0.15	0.29	0.031	0.11	0.16	0.28	0.034	0.13	0.53
Boron, dissolved	mg/L			0.013	0.050	0.14	0.28	0.029	0.11	0.15	0.28	0.031	0.12	0.53
Cadmium, total	mg/L		0.00009	0.0000050	0.000021	0.00014	0.00026	0.000018	0.000080	0.00075	0.0015	0.000092	0.00055	0.00059
Cadmium, dissolved	mg/L	0.00019	0.00017	0.0000025	0.0000058	0.00013	0.00026	0.000015	0.000077	0.00075	0.0015	0.000089	0.00055	0.00059
Calcium, total	mg/L			22	31	28	32	24	26	28	30	23	25	39
Calcium, dissolved	mg/L			21	31	27	31	22	25	26	29	22	24	38
Chromium, total	mg/L		0.0089	0.00032	0.0018	0.0016	0.0029	0.00049	0.0012	0.0021	0.0039	0.00056	0.0018	0.0053
Chromium, dissolved	mg/L			0.00025	0.00041	0.0015	0.0029	0.00041	0.0012	0.0021	0.0038	0.00049	0.0017	0.0052
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00099	0.00071	0.0014	0.00012	0.00048	0.0015	0.0032	0.00024	0.0012	0.0030
Cobalt, dissolved	mg/L			0.000050	0.00011	0.00071	0.0014	0.00012	0.00048	0.0015	0.0032	0.00024	0.0012	0.0030
Copper, total	mg/L		0.003	0.0011	0.0050	0.0028	0.0045	0.0013	0.0023	0.0034	0.0055	0.0014	0.0029	0.0075

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	Tenas Creek											
			WQG	Baseline		WQS02								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Copper, dissolved	mg/L			0.0011	0.0030	0.0028	0.0045	0.0013	0.0023	0.0034	0.0055	0.0014	0.0029	0.0075
Iron, total	mg/L		0.3	0.048	1.2	0.070	0.093	0.052	0.061	0.072	0.090	0.052	0.063	0.14
Iron, dissolved	mg/L		0.30	0.015	0.14	0.033	0.056	0.018	0.027	0.035	0.053	0.018	0.029	0.10
Lead, total	mg/L		0.0050	0.000025	0.00039	0.00023	0.00045	0.000051	0.00017	0.00050	0.0010	0.000086	0.00040	0.00093
Lead, dissolved	mg/L			0.000025	0.000050	0.00023	0.00045	0.000051	0.00017	0.00050	0.0010	0.000086	0.00040	0.00093
Lithium, total	mg/L			0.00050	0.0012	0.086	0.18	0.011	0.062	0.091	0.17	0.012	0.072	0.34
Lithium, dissolved	mg/L			0.00050	0.0010	0.086	0.18	0.011	0.062	0.091	0.17	0.012	0.072	0.34
Magnesium, total	mg/L			4.2	6.3	11	17	5.1	8.7	15	27	5.8	13	28
Magnesium, dissolved	mg/L			4.1	6.3	10	17	5.0	8.5	15	26	5.7	13	28
Manganese, total	mg/L		0.12	0.0050	0.058	0.045	0.086	0.0090	0.028	0.060	0.12	0.012	0.048	0.18
Manganese, dissolved	mg/L			0.0020	0.0062	0.042	0.083	0.0059	0.025	0.057	0.12	0.0090	0.045	0.17
Mercury, total	mg/L		0.00001	0.0000025	0.0000089	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000055	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00012	0.00019	0.0023	0.0046	0.00040	0.0017	0.0026	0.0050	0.00045	0.0021	0.0087
Molybdenum, dissolved	mg-N/L			0.00010	0.00019	0.0069	0.0091	0.0047	0.0059	0.0072	0.0093	0.0047	0.0063	0.013
Nickel, total	mg/L		0.080	0.00025	0.0017	0.0027	0.0055	0.00054	0.0019	0.0040	0.0080	0.00074	0.0032	0.011
Nickel, dissolved	mg/L			0.00025	0.00054	0.0027	0.0055	0.00054	0.0019	0.0040	0.0080	0.00074	0.0032	0.011
Phosphorus, total	mg/L			0.0042	0.046	0.0068	0.0086	0.0046	0.0058	0.0055	0.0064	0.0045	0.0049	0.012
Orthophosphate, dissolved	mg/L			0.0010	0.0040	0.0012	0.0012	0.0010	0.0011	0.0012	0.0012	0.0010	0.0010	0.0013
Potassium, total	mg/L			0.23	1.0	9.6	20	1.4	6.9	10	19	1.5	8.0	36
Potassium, dissolved	mg/L			0.19	0.30	9.5	20	1.3	6.9	10.0	19	1.4	7.9	36
Selenium, total	mg/L	0.008	0.002	0.000051	0.00020	0.0040	0.0083	0.00052	0.0028	0.0047	0.0090	0.00064	0.0037	0.016
Selenium, dissolved	mg/L			0.000040	0.000073	0.0040	0.0083	0.00051	0.0028	0.0047	0.0090	0.00063	0.0037	0.016
Silica, dissolved	mg/L			7.0	8.0	13	18	7.9	11	13	17	7.9	11	26
Sodium, total	mg/L			3.5	4.8	230	480	32	170	230	440	33	190	890
Sodium, dissolved	mg/L			3.5	4.8	230	480	32	170	230	440	33	190	890
Strontium, total	mg/L		7.0	0.11	0.13	0.57	1.1	0.17	0.43	0.64	1.1	0.18	0.53	2.0
Strontium, dissolved	mg/L			0.10	0.14	0.56	1.0	0.16	0.42	0.63	1.1	0.17	0.52	1.9
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	Tenas Creek											
			WQG	Baseline		WQS02								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.00014	0.00027	0.000019	0.000087	0.00076	0.0015	0.000093	0.00056	0.00059
Thallium, dissolved	mg/L			0.0000050	0.000010	0.00014	0.00027	0.000019	0.000087	0.00076	0.0015	0.000093	0.00056	0.00059
Uranium, total	mg/L		0.0085	0.00011	0.00025	0.0016	0.0031	0.00029	0.0011	0.0021	0.0041	0.00037	0.0017	0.0058
Uranium, dissolved	mg/L			0.00011	0.00024	0.0016	0.0031	0.00029	0.0011	0.0021	0.0041	0.00037	0.0017	0.0058
Vanadium, total	mg/L			0.00094	0.0037	0.0049	0.0090	0.0014	0.0037	0.0054	0.0094	0.0015	0.0044	0.016
Vanadium, dissolved	mg/L			0.00072	0.0010	0.0046	0.0087	0.0012	0.0035	0.0052	0.0092	0.0013	0.0042	0.016
Zinc, total	mg/L		0.0075	0.0015	0.0060	0.0051	0.0092	0.0020	0.0041	0.0071	0.013	0.0023	0.0059	0.017
Zinc, dissolved	mg/L			0.0015	0.0015	0.0051	0.0092	0.0020	0.0041	0.0071	0.013	0.0023	0.0059	0.017

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Table G19

Parameter	Units	SPO	WQG	Tenas Creek										
				Baseline	WQS22									
					Closure									
					Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow	
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Total Hardness	mg-CaCO ₃ /L			72	103	123	155	82	103	152	213	86	129	239
Alkalinity, total	mg-CaCO ₃ /L			83	110	460	780	140	330	500	820	150	410	1600
Chloride	mg/L		150	0.25	0.50	9.8	19	1.5	6.5	11	20	1.7	8.7	40
Fluoride	mg/L		0.12	0.031	0.045	0.067	0.085	0.037	0.050	0.053	0.064	0.035	0.041	0.15
Ammonia, total	mg-N/L		1.2	0.0025	0.0074	0.21	0.41	0.023	0.11	0.12	0.25	0.018	0.093	1.1
Nitrate	mg/L		3	0.0050	0.060	1.7	3.2	0.16	0.79	0.91	2.0	0.12	0.69	8.7
Nitrite	mg/L	0.0524	0.02	0.00050	0.0020	0.038	0.075	0.0041	0.019	0.021	0.046	0.0033	0.016	0.20
Sulfate	mg/L		218	2.6	7.4	250	500	35	170	320	620	47	260	1100
Aluminum, total	mg/L	0.236	0.1	0.056	1.8	0.096	0.12	0.063	0.074	0.10	0.13	0.065	0.083	0.20
Aluminum, dissolved	mg/L		0.05	0.016	0.14	0.048	0.075	0.020	0.031	0.050	0.080	0.021	0.040	0.16
Antimony, total	mg/L			0.00013	0.00024	0.00067	0.0011	0.00019	0.00047	0.0013	0.0026	0.00029	0.0011	0.0025
Antimony, dissolved	mg/L		0.009	0.00011	0.00023	0.00070	0.0012	0.00021	0.00049	0.0014	0.0026	0.00031	0.0011	0.0025
Arsenic, total	mg/L		0.005	0.00048	0.00090	0.00094	0.0012	0.00057	0.00075	0.0016	0.0027	0.00067	0.0014	0.0021
Arsenic, dissolved	mg/L			0.00041	0.00054	0.00086	0.0011	0.00049	0.00068	0.0015	0.0026	0.00059	0.0013	0.0021
Barium, total	mg/L		1	0.034	0.047	0.057	0.067	0.039	0.049	0.056	0.066	0.039	0.048	0.11
Barium, dissolved	mg/L			0.033	0.043	0.055	0.066	0.038	0.048	0.055	0.064	0.038	0.047	0.11
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000070	0.000075	0.000055	0.000059	0.000068	0.000071	0.000055	0.000057	0.000091
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000070	0.000075	0.000055	0.000059	0.000068	0.000071	0.000055	0.000057	0.000091
Boron, total	mg/L		1.2	0.015	0.050	0.16	0.29	0.035	0.11	0.18	0.33	0.039	0.15	0.62
Boron, dissolved	mg/L			0.013	0.050	0.16	0.28	0.032	0.11	0.18	0.33	0.037	0.15	0.61
Cadmium, total	mg/L		0.00009	0.0000050	0.000021	0.00014	0.00026	0.000020	0.000079	0.00087	0.0018	0.00012	0.00066	0.00069
Cadmium, dissolved	mg/L	0.00019	0.00017	0.0000025	0.0000058	0.00014	0.00025	0.000017	0.000077	0.00087	0.0018	0.00011	0.00066	0.00069
Calcium, total	mg/L			22	31	31	34	24	27	31	34	24	27	43
Calcium, dissolved	mg/L			21	31	30	33	23	26	30	33	23	25	41
Chromium, total	mg/L		0.0089	0.00032	0.0018	0.0017	0.0029	0.00052	0.0012	0.0025	0.0045	0.00064	0.0021	0.0061
Chromium, dissolved	mg/L			0.00025	0.00041	0.0016	0.0029	0.00045	0.0012	0.0024	0.0045	0.00057	0.0020	0.0061
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00099	0.00074	0.0014	0.00014	0.00048	0.0018	0.0037	0.00029	0.0015	0.0035
Cobalt, dissolved	mg/L			0.000050	0.00011	0.00074	0.0014	0.00014	0.00048	0.0018	0.0037	0.00029	0.0015	0.0035
Copper, total	mg/L		0.003	0.0011	0.0050	0.0031	0.0045	0.0014	0.0023	0.0040	0.0064	0.0016	0.0033	0.0086

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	Tenas Creek											
			WQG	Baseline		WQS22								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Copper, dissolved	mg/L			0.0011	0.0030	0.0031	0.0045	0.0014	0.0023	0.0040	0.0064	0.0016	0.0033	0.0086
Iron, total	mg/L		0.3	0.048	1.2	0.078	0.096	0.054	0.062	0.082	0.10	0.055	0.068	0.15
Iron, dissolved	mg/L		0.30	0.015	0.14	0.038	0.057	0.018	0.027	0.040	0.062	0.019	0.033	0.12
Lead, total	mg/L		0.0050	0.000025	0.00039	0.00024	0.00044	0.000056	0.00017	0.00058	0.0012	0.00010	0.00048	0.0011
Lead, dissolved	mg/L			0.000025	0.000050	0.00024	0.00044	0.000056	0.00017	0.00058	0.0012	0.00010	0.00048	0.0011
Lithium, total	mg/L			0.00050	0.0012	0.093	0.18	0.013	0.061	0.11	0.20	0.015	0.086	0.40
Lithium, dissolved	mg/L			0.00050	0.0010	0.093	0.18	0.013	0.061	0.11	0.20	0.015	0.086	0.40
Magnesium, total	mg/L			4.2	6.3	11	17	5.4	8.7	18	31	6.4	15	32
Magnesium, dissolved	mg/L			4.1	6.3	11	17	5.3	8.6	18	30	6.3	15	32
Manganese, total	mg/L		0.12	0.0050	0.058	0.046	0.083	0.0098	0.028	0.069	0.14	0.014	0.056	0.20
Manganese, dissolved	mg/L			0.0020	0.0062	0.043	0.080	0.0066	0.025	0.065	0.14	0.011	0.053	0.20
Mercury, total	mg/L		0.00001	0.0000025	0.0000089	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000055	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00012	0.00019	0.0025	0.0046	0.00045	0.0017	0.0031	0.0058	0.00055	0.0025	0.010
Molybdenum, dissolved	mg-N/L			0.00010	0.00019	0.0075	0.0094	0.0049	0.0060	0.0083	0.011	0.0050	0.0069	0.014
Nickel, total	mg/L		0.080	0.00025	0.0017	0.0029	0.0053	0.00059	0.0019	0.0046	0.0094	0.00088	0.0038	0.013
Nickel, dissolved	mg/L			0.00025	0.00054	0.0029	0.0053	0.00059	0.0019	0.0046	0.0094	0.00088	0.0038	0.013
Phosphorus, total	mg/L			0.0042	0.046	0.0075	0.0090	0.0048	0.0059	0.0065	0.0074	0.0047	0.0052	0.014
Orthophosphate, dissolved	mg/L			0.0010	0.0040	0.0013	0.0013	0.0011	0.0011	0.0013	0.0013	0.0011	0.0011	0.0014
Potassium, total	mg/L			0.23	1.0	10	20	1.6	6.9	12	22	1.8	9.5	42
Potassium, dissolved	mg/L			0.19	0.30	10	20	1.5	6.8	12	22	1.8	9.4	42
Selenium, total	mg/L	0.008	0.002	0.000051	0.00020	0.0043	0.0083	0.00060	0.0028	0.0055	0.011	0.00081	0.0045	0.018
Selenium, dissolved	mg/L			0.000040	0.000073	0.0043	0.0083	0.00059	0.0028	0.0055	0.011	0.00080	0.0044	0.018
Silica, dissolved	mg/L			7.0	8.0	14	18	8.3	11	15	19	8.4	12	30
Sodium, total	mg/L			3.5	4.8	250	480	37	170	280	510	42	220	1000
Sodium, dissolved	mg/L			3.5	4.8	250	480	37	170	280	510	42	220	1000
Strontium, total	mg/L		7.0	0.11	0.13	0.62	1.0	0.18	0.43	0.75	1.3	0.21	0.61	2.3
Strontium, dissolved	mg/L			0.10	0.14	0.60	1.0	0.17	0.42	0.74	1.3	0.19	0.60	2.3
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	Tenas Creek											
			WQG	Baseline		WQS22								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.00014	0.00026	0.000022	0.000087	0.00088	0.0018	0.00012	0.00067	0.00070
Thallium, dissolved	mg/L			0.0000050	0.000010	0.00014	0.00026	0.000022	0.000087	0.00088	0.0018	0.00012	0.00067	0.00070
Uranium, total	mg/L		0.0085	0.00011	0.00025	0.0017	0.0031	0.00032	0.0011	0.0025	0.0047	0.00045	0.0020	0.0068
Uranium, dissolved	mg/L			0.00011	0.00024	0.0017	0.0031	0.00032	0.0011	0.0025	0.0047	0.00045	0.0020	0.0068
Vanadium, total	mg/L			0.00094	0.0037	0.0053	0.0089	0.0016	0.0037	0.0064	0.011	0.0017	0.0052	0.018
Vanadium, dissolved	mg/L			0.00072	0.0010	0.0050	0.0087	0.0013	0.0035	0.0061	0.011	0.0015	0.0049	0.018
Zinc, total	mg/L		0.0075	0.0015	0.0060	0.0056	0.0092	0.0021	0.0041	0.0082	0.015	0.0025	0.0068	0.020
Zinc, dissolved	mg/L			0.0015	0.0015	0.0056	0.0092	0.0021	0.0041	0.0082	0.015	0.0025	0.0068	0.020

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Table G-20

Parameter	Units	SPO	WQG	Tenas Creek										
				Baseline	WQS04									
					Closure									
					Alternative Case 1: High groundwater					Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Total Hardness	mg-CaCO ₃ /L			72	103	129	162	85	105	157	215	89	129	239
Alkalinity, total	mg-CaCO ₃ /L			83	110	480	840	140	350	500	830	150	410	1600
Chloride	mg/L		150	0.25	0.50	10	20	1.6	7.0	11	20	1.8	8.9	40
Fluoride	mg/L		0.12	0.031	0.045	0.070	0.090	0.038	0.053	0.054	0.066	0.036	0.042	0.15
Ammonia, total	mg-N/L		1.2	0.0025	0.0074	0.22	0.42	0.024	0.11	0.12	0.25	0.018	0.094	1.1
Nitrate	mg/L		3	0.0050	0.060	1.7	3.3	0.16	0.83	0.89	1.9	0.12	0.71	8.6
Nitrite	mg/L	0.0524	0.02	0.00050	0.0020	0.039	0.076	0.0042	0.020	0.021	0.045	0.0033	0.017	0.20
Sulfate	mg/L		218	2.6	7.4	270	540	37	180	320	630	48	260	1100
Aluminum, total	mg/L	0.236	0.1	0.056	1.8	0.099	0.13	0.065	0.075	0.10	0.14	0.066	0.085	0.20
Aluminum, dissolved	mg/L		0.05	0.016	0.14	0.049	0.078	0.021	0.033	0.051	0.083	0.022	0.042	0.16
Antimony, total	mg/L			0.00013	0.00024	0.00071	0.0012	0.00020	0.00050	0.0013	0.0026	0.00030	0.0011	0.0025
Antimony, dissolved	mg/L		0.009	0.00011	0.00023	0.00073	0.0013	0.00022	0.00052	0.0014	0.0026	0.00032	0.0012	0.0025
Arsenic, total	mg/L		0.005	0.00048	0.00090	0.00098	0.0013	0.00058	0.00078	0.0017	0.0027	0.00068	0.0014	0.0022
Arsenic, dissolved	mg/L			0.00041	0.00054	0.00089	0.0012	0.00050	0.00070	0.0016	0.0027	0.00060	0.0013	0.0021
Barium, total	mg/L		1	0.034	0.047	0.059	0.071	0.040	0.050	0.058	0.068	0.040	0.049	0.11
Barium, dissolved	mg/L			0.033	0.043	0.058	0.069	0.039	0.049	0.057	0.067	0.039	0.048	0.11
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000073	0.000079	0.000057	0.000061	0.000070	0.000074	0.000056	0.000058	0.000093
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000073	0.000079	0.000057	0.000061	0.000070	0.000074	0.000056	0.000058	0.000093
Boron, total	mg/L		1.2	0.015	0.050	0.17	0.31	0.036	0.12	0.18	0.33	0.040	0.15	0.62
Boron, dissolved	mg/L			0.013	0.050	0.16	0.31	0.034	0.11	0.18	0.33	0.038	0.15	0.61
Cadmium, total	mg/L		0.00009	0.0000050	0.000021	0.00014	0.00026	0.000021	0.000083	0.00089	0.0018	0.00012	0.00067	0.00070
Cadmium, dissolved	mg/L	0.00019	0.00017	0.0000025	0.0000058	0.00014	0.00026	0.000018	0.000081	0.00088	0.0018	0.00012	0.00067	0.00069
Calcium, total	mg/L			22	31	32	35	25	27	33	35	25	27	43
Calcium, dissolved	mg/L			21	31	31	34	24	26	31	34	24	26	42
Chromium, total	mg/L		0.0089	0.00032	0.0018	0.0018	0.0032	0.00054	0.0013	0.0025	0.0045	0.00066	0.0021	0.0062
Chromium, dissolved	mg/L			0.00025	0.00041	0.0017	0.0031	0.00046	0.0012	0.0024	0.0045	0.00058	0.0020	0.0061
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00099	0.00076	0.0015	0.00014	0.00050	0.0018	0.0037	0.00030	0.0015	0.0035
Cobalt, dissolved	mg/L			0.000050	0.00011	0.00076	0.0015	0.00014	0.00050	0.0018	0.0037	0.00030	0.0015	0.0035
Copper, total	mg/L		0.003	0.0011	0.0050	0.0032	0.0048	0.0015	0.0024	0.0040	0.0065	0.0016	0.0034	0.0087

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	Tenas Creek											
			WQG	Baseline		WQS04								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Copper, dissolved	mg/L			0.0011	0.0030	0.0032	0.0048	0.0015	0.0024	0.0040	0.0065	0.0016	0.0034	0.0087
Iron, total	mg/L		0.3	0.048	1.2	0.081	0.100	0.055	0.063	0.085	0.11	0.056	0.069	0.16
Iron, dissolved	mg/L		0.30	0.015	0.14	0.039	0.059	0.019	0.028	0.041	0.064	0.020	0.034	0.12
Lead, total	mg/L		0.0050	0.000025	0.00039	0.00025	0.00047	0.000058	0.00018	0.00059	0.0012	0.00011	0.00049	0.0011
Lead, dissolved	mg/L			0.000025	0.000050	0.00025	0.00047	0.000058	0.00018	0.00059	0.0012	0.00011	0.00049	0.0011
Lithium, total	mg/L			0.00050	0.0012	0.098	0.20	0.013	0.065	0.11	0.20	0.016	0.088	0.40
Lithium, dissolved	mg/L			0.00050	0.0010	0.098	0.20	0.013	0.065	0.11	0.20	0.016	0.088	0.40
Magnesium, total	mg/L			4.2	6.3	12	18	5.5	9.1	18	31	6.5	15	32
Magnesium, dissolved	mg/L			4.1	6.3	12	18	5.4	9.0	18	31	6.4	15	32
Manganese, total	mg/L		0.12	0.0050	0.058	0.047	0.084	0.010	0.029	0.070	0.14	0.014	0.057	0.20
Manganese, dissolved	mg/L			0.0020	0.0062	0.044	0.081	0.0068	0.026	0.066	0.14	0.011	0.054	0.20
Mercury, total	mg/L		0.00001	0.0000025	0.0000089	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000055	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00012	0.00019	0.0026	0.0050	0.00047	0.0019	0.0031	0.0059	0.00056	0.0026	0.010
Molybdenum, dissolved	mg-N/L			0.00010	0.00019	0.0078	0.0098	0.0050	0.0062	0.0085	0.011	0.0051	0.0070	0.015
Nickel, total	mg/L		0.080	0.00025	0.0017	0.0030	0.0057	0.00061	0.0020	0.0046	0.0094	0.00090	0.0039	0.013
Nickel, dissolved	mg/L			0.00025	0.00054	0.0030	0.0057	0.00061	0.0020	0.0046	0.0094	0.00090	0.0039	0.013
Phosphorus, total	mg/L			0.0042	0.046	0.0079	0.0095	0.0050	0.0061	0.0067	0.0076	0.0048	0.0053	0.014
Orthophosphate, dissolved	mg/L			0.0010	0.0040	0.0013	0.0014	0.0011	0.0011	0.0014	0.0014	0.0011	0.0011	0.0015
Potassium, total	mg/L			0.23	1.0	11	22	1.6	7.3	12	22	1.9	9.7	42
Potassium, dissolved	mg/L			0.19	0.30	11	22	1.6	7.3	12	22	1.8	9.6	42
Selenium, total	mg/L	0.008	0.002	0.000051	0.00020	0.0045	0.0091	0.00063	0.0030	0.0055	0.011	0.00083	0.0045	0.018
Selenium, dissolved	mg/L			0.000040	0.000073	0.0045	0.0091	0.00062	0.0030	0.0055	0.011	0.00082	0.0045	0.018
Silica, dissolved	mg/L			7.0	8.0	15	19	8.5	11	15	20	8.6	12	30
Sodium, total	mg/L			3.5	4.8	270	530	39	180	280	510	42	230	1000
Sodium, dissolved	mg/L			3.5	4.8	270	530	39	180	280	510	42	230	1000
Strontium, total	mg/L		7.0	0.11	0.13	0.65	1.1	0.19	0.45	0.76	1.3	0.21	0.63	2.3
Strontium, dissolved	mg/L			0.10	0.14	0.63	1.1	0.18	0.44	0.74	1.3	0.20	0.61	2.3
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	Tenas Creek											
			WQG	Baseline		WQS04								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.00014	0.00027	0.000022	0.000092	0.00089	0.0018	0.00012	0.00069	0.00070
Thallium, dissolved	mg/L			0.0000050	0.000010	0.00014	0.00027	0.000022	0.000092	0.00089	0.0018	0.00012	0.00069	0.00070
Uranium, total	mg/L		0.0085	0.00011	0.00025	0.0018	0.0034	0.00033	0.0012	0.0025	0.0048	0.00046	0.0021	0.0068
Uranium, dissolved	mg/L			0.00011	0.00024	0.0018	0.0034	0.00033	0.0012	0.0025	0.0048	0.00046	0.0021	0.0068
Vanadium, total	mg/L			0.00094	0.0037	0.0055	0.0097	0.0016	0.0039	0.0064	0.011	0.0018	0.0053	0.018
Vanadium, dissolved	mg/L			0.00072	0.0010	0.0053	0.0095	0.0014	0.0037	0.0061	0.011	0.0015	0.0050	0.018
Zinc, total	mg/L		0.0075	0.0015	0.0060	0.0058	0.0096	0.0022	0.0043	0.0083	0.015	0.0026	0.0069	0.020
Zinc, dissolved	mg/L			0.0015	0.0015	0.0058	0.0096	0.0022	0.0043	0.0083	0.015	0.0026	0.0069	0.020

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Table G-21

Parameter	Units	SPO	WQG	Four Creek										
				Baseline		WQS20								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Total Hardness	mg-CaCO ₃ /L			118	163	251	170	152	39	152	176	133	124	192
Alkalinity, total	mg-CaCO ₃ /L			130	190	280	190	170	43	170	190	150	140	210
Chloride	mg/L		150	0.25	0.50	0.54	0.36	0.32	0.083	0.33	0.37	0.28	0.26	0.40
Fluoride	mg/L		0.12	0.059	0.068	0.13	0.086	0.076	0.020	0.077	0.087	0.067	0.062	0.095
Ammonia, total	mg-N/L		0.95	0.0025	0.0092	0.0054	0.0036	0.0032	0.00083	0.0033	0.0037	0.0028	0.0026	0.0040
Nitrate	mg/L		3	0.013	0.058	0.028	0.019	0.017	0.0043	0.017	0.019	0.015	0.014	0.021
Nitrite	mg/L	0.0524	0.02	0.00050	0.0010	0.0011	0.00072	0.00065	0.00017	0.00065	0.00074	0.00057	0.00052	0.00081
Sulfate	mg/L		309	1.9	28	4.1	2.8	2.5	0.63	2.5	2.8	2.2	2.0	3.1
Aluminum, total	mg/L	0.236	0.1	0.099	1.2	0.21	0.14	0.13	0.033	0.13	0.15	0.11	0.10	0.16
Aluminum, dissolved	mg/L		0.05	0.032	0.49	0.069	0.046	0.041	0.011	0.042	0.047	0.036	0.034	0.052
Antimony, total	mg/L			0.000050	0.00012	0.00011	0.000072	0.000065	0.000017	0.000065	0.000074	0.000057	0.000052	0.000081
Antimony, dissolved	mg/L		0.009	0.000050	0.00010	0.00011	0.000072	0.000065	0.000017	0.000065	0.000074	0.000057	0.000052	0.000081
Arsenic, total	mg/L		0.005	0.00074	0.0011	0.0016	0.0011	0.00096	0.00025	0.00097	0.0011	0.00084	0.00078	0.0012
Arsenic, dissolved	mg/L			0.00064	0.00086	0.0014	0.00093	0.00083	0.00021	0.00084	0.00095	0.00073	0.00067	0.0010
Barium, total	mg/L		1	0.071	0.13	0.15	0.10	0.092	0.024	0.093	0.11	0.081	0.074	0.11
Barium, dissolved	mg/L			0.075	0.13	0.16	0.11	0.097	0.025	0.098	0.11	0.085	0.079	0.12
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.00011	0.000072	0.000065	0.000017	0.000065	0.000074	0.000057	0.000052	0.000081
Beryllium, dissolved	mg/L			0.000050	0.00010	0.00011	0.000072	0.000065	0.000017	0.000065	0.000074	0.000057	0.000052	0.000081
Boron, total	mg/L		1.2	0.012	0.020	0.026	0.017	0.015	0.0040	0.016	0.018	0.014	0.013	0.019
Boron, dissolved	mg/L			0.011	0.019	0.024	0.016	0.014	0.0037	0.014	0.016	0.013	0.012	0.018
Cadmium, total	mg/L		0.00009	0.000063	0.000019	0.000014	0.000091	0.000081	0.000021	0.000082	0.000093	0.000072	0.000066	0.00010
Cadmium, dissolved	mg/L	0.00026	0.00024	0.000052	0.000012	0.000011	0.000075	0.000067	0.000017	0.000068	0.000077	0.000059	0.000055	0.000084
Calcium, total	mg/L			24	34	51	35	31	8.0	31	36	27	25	39
Calcium, dissolved	mg/L			23	36	49	33	30	7.6	30	34	26	24	37
Chromium, total	mg/L		0.0089	0.00026	0.0016	0.00056	0.00038	0.00034	0.000086	0.00034	0.00038	0.00030	0.00027	0.00042
Chromium, dissolved	mg/L			0.00015	0.00079	0.00032	0.00022	0.00019	0.000050	0.00020	0.00022	0.00017	0.00016	0.00024
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00047	0.00011	0.000072	0.000065	0.000017	0.000065	0.000074	0.000057	0.000052	0.000081
Cobalt, dissolved	mg/L			0.000050	0.00015	0.00011	0.000072	0.000065	0.000017	0.000065	0.000074	0.000057	0.000052	0.000081
Copper, total	mg/L		0.0047	0.0014	0.0044	0.0030	0.0020	0.0018	0.00046	0.0018	0.0021	0.0016	0.0015	0.0023

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	Four Creek											
			WQG	Baseline		WQS20								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Copper, dissolved	mg/L			0.0014	0.0034	0.0030	0.0020	0.0018	0.00046	0.0018	0.0021	0.0016	0.0015	0.0023
Iron, total	mg/L		0.3	0.095	1.1	0.20	0.14	0.12	0.032	0.12	0.14	0.11	0.100	0.15
Iron, dissolved	mg/L		0.30	0.015	0.41	0.032	0.022	0.019	0.0050	0.020	0.022	0.017	0.016	0.024
Lead, total	mg/L		0.0050	0.000025	0.00028	0.000054	0.000036	0.000032	0.0000083	0.000033	0.000037	0.000028	0.000026	0.000040
Lead, dissolved	mg/L			0.000025	0.000091	0.000054	0.000036	0.000032	0.0000083	0.000033	0.000037	0.000028	0.000026	0.000040
Lithium, total	mg/L			0.0015	0.0019	0.0032	0.0022	0.0019	0.00050	0.0020	0.0022	0.0017	0.0016	0.0024
Lithium, dissolved	mg/L			0.0014	0.0019	0.0030	0.0020	0.0018	0.00046	0.0018	0.0021	0.0016	0.0015	0.0023
Magnesium, total	mg/L			14	19	30	20	18	4.6	18	21	16	15	23
Magnesium, dissolved	mg/L			13	20	28	19	17	4.3	17	19	15	14	21
Manganese, total	mg/L		0.12	0.0025	0.024	0.0054	0.0036	0.0032	0.00083	0.0033	0.0037	0.0028	0.0026	0.0040
Manganese, dissolved	mg/L			0.00067	0.0074	0.0014	0.00097	0.00087	0.00022	0.00088	0.00099	0.00076	0.00070	0.0011
Mercury, total	mg/L		0.00001	0.0000025	0.000013	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000093	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00023	0.00038	0.00049	0.00033	0.00030	0.000076	0.00030	0.00034	0.00026	0.00024	0.00037
Molybdenum, dissolved	mg-N/L			0.00019	0.00036	0.0088	0.0059	0.0053	0.0014	0.0054	0.0061	0.0047	0.0043	0.0066
Nickel, total	mg/L		0.080	0.00025	0.0018	0.00054	0.00036	0.00032	0.000083	0.00033	0.00037	0.00028	0.00026	0.00040
Nickel, dissolved	mg/L			0.00025	0.0011	0.00054	0.00036	0.00032	0.000083	0.00033	0.00037	0.00028	0.00026	0.00040
Phosphorus, total	mg/L			0.0041	0.044	0.0088	0.0059	0.0053	0.0014	0.0054	0.0061	0.0047	0.0043	0.0066
Orthophosphate, dissolved	mg/L			0.00050	0.0012	0.0011	0.00072	0.00065	0.00017	0.00065	0.00074	0.00057	0.00052	0.00081
Potassium, total	mg/L			0.36	0.77	0.77	0.52	0.46	0.12	0.47	0.53	0.41	0.38	0.58
Potassium, dissolved	mg/L			0.35	0.84	0.75	0.51	0.45	0.12	0.46	0.52	0.40	0.37	0.56
Selenium, total	mg/L	0.008	0.002	0.000025	0.000095	0.000054	0.000036	0.000032	0.0000083	0.000033	0.000037	0.000028	0.000026	0.000040
Selenium, dissolved	mg/L			0.000025	0.00011	0.000054	0.000036	0.000032	0.0000083	0.000033	0.000037	0.000028	0.000026	0.000040
Silica, dissolved	mg/L													
Sodium, total	mg/L			7.0	13	15	10	9.0	2.3	9.2	10	8.0	7.3	11
Sodium, dissolved	mg/L			7.4	13	16	11	9.6	2.5	9.7	11	8.4	7.8	12
Strontium, total	mg/L		7.0	0.17	0.24	0.36	0.25	0.22	0.056	0.22	0.25	0.19	0.18	0.27
Strontium, dissolved	mg/L			0.16	0.24	0.34	0.23	0.21	0.053	0.21	0.24	0.18	0.17	0.26
Silver, total	mg/L		0.00005	0.0000050	0.000022	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000012	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	Four Creek											
			WQG	Baseline		WQS20								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.000011	0.0000072	0.0000065	0.0000017	0.0000065	0.0000074	0.0000057	0.0000052	0.0000081
Thallium, dissolved	mg/L			0.0000050	0.000010	0.000011	0.0000072	0.0000065	0.0000017	0.0000065	0.0000074	0.0000057	0.0000052	0.0000081
Uranium, total	mg/L		0.0085	0.000078	0.00025	0.00017	0.00011	0.00010	0.000026	0.00010	0.00012	0.000089	0.000082	0.00013
Uranium, dissolved	mg/L			0.000075	0.00025	0.00016	0.00011	0.000097	0.000025	0.000098	0.00011	0.000085	0.000079	0.00012
Vanadium, total	mg/L			0.00061	0.0027	0.0013	0.00088	0.00079	0.00020	0.00080	0.00090	0.00069	0.00064	0.00098
Vanadium, dissolved	mg/L			0.00025	0.0013	0.00054	0.00036	0.00032	0.000083	0.00033	0.00037	0.00028	0.00026	0.00040
Zinc, total	mg/L		0.023	0.0015	0.0059	0.0032	0.0022	0.0019	0.00050	0.0020	0.0022	0.0017	0.0016	0.0024
Zinc, dissolved	mg/L			0.0015	0.0025	0.0032	0.0022	0.0019	0.00050	0.0020	0.0022	0.0017	0.0016	0.0024

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Table G-22

Parameter	Units	SPO	WQG	Four Creek										
				Baseline		WQS21								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Total Hardness	mg-CaCO ₃ /L			118	163	242	1333	145	83	152	167	127	124	179
Alkalinity, total	mg-CaCO ₃ /L			130	190	270	1500	160	91	170	180	140	140	200
Chloride	mg/L		150	0.25	0.50	0.51	2.9	0.31	0.18	0.32	0.35	0.28	0.26	0.38
Fluoride	mg/L		0.12	0.059	0.068	0.12	0.68	0.074	0.041	0.076	0.083	0.065	0.062	0.090
Ammonia, total	mg-N/L		0.95	0.0025	0.0092	0.0051	0.029	0.0031	0.0018	0.0032	0.0035	0.0028	0.0026	0.0038
Nitrate	mg/L		3	0.013	0.058	0.027	0.15	0.016	0.0091	0.017	0.018	0.014	0.014	0.020
Nitrite	mg/L	0.0524	0.02	0.00050	0.0010	0.0010	0.0057	0.00062	0.00035	0.00064	0.00070	0.00055	0.00052	0.00076
Sulfate	mg/L		309	1.9	28	3.9	22	2.4	1.3	2.4	2.7	2.1	2.0	2.9
Aluminum, total	mg/L	0.236	0.1	0.099	1.2	0.20	1.1	0.12	0.070	0.13	0.14	0.11	0.10	0.15
Aluminum, dissolved	mg/L		0.05	0.032	0.49	0.066	0.37	0.040	0.023	0.041	0.045	0.035	0.034	0.049
Antimony, total	mg/L			0.000050	0.00012	0.00010	0.00057	0.000062	0.000035	0.000064	0.000070	0.000055	0.000052	0.000076
Antimony, dissolved	mg/L		0.009	0.000050	0.00010	0.00010	0.00057	0.000062	0.000035	0.000064	0.000070	0.000055	0.000052	0.000076
Arsenic, total	mg/L		0.005	0.00074	0.0011	0.0015	0.0085	0.00092	0.00052	0.00095	0.0010	0.00082	0.00078	0.0011
Arsenic, dissolved	mg/L			0.00064	0.00086	0.0013	0.0073	0.00080	0.00045	0.00082	0.00090	0.00071	0.00067	0.00097
Barium, total	mg/L		1	0.071	0.13	0.15	0.81	0.089	0.050	0.091	0.099	0.078	0.074	0.11
Barium, dissolved	mg/L			0.075	0.13	0.15	0.86	0.094	0.053	0.096	0.11	0.083	0.079	0.11
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.00010	0.00057	0.000062	0.000035	0.000064	0.000070	0.000055	0.000052	0.000076
Beryllium, dissolved	mg/L			0.000050	0.00010	0.00010	0.00057	0.000062	0.000035	0.000064	0.000070	0.000055	0.000052	0.000076
Boron, total	mg/L		1.2	0.012	0.020	0.025	0.14	0.015	0.0084	0.015	0.017	0.013	0.013	0.018
Boron, dissolved	mg/L			0.011	0.019	0.023	0.13	0.014	0.0077	0.014	0.015	0.012	0.012	0.017
Cadmium, total	mg/L		0.00009	0.0000063	0.000019	0.000013	0.000072	0.0000079	0.0000044	0.0000081	0.0000088	0.0000069	0.0000066	0.0000096
Cadmium, dissolved	mg/L	0.00026	0.00024	0.0000052	0.000012	0.000011	0.000060	0.0000065	0.0000037	0.0000067	0.0000073	0.0000057	0.0000054	0.0000079
Calcium, total	mg/L			24	34	49	270	30	17	31	34	26	25	37
Calcium, dissolved	mg/L			23	36	47	260	29	16	30	32	25	24	35
Chromium, total	mg/L		0.0089	0.00026	0.0016	0.00053	0.0030	0.00032	0.00018	0.00033	0.00036	0.00029	0.00027	0.00040
Chromium, dissolved	mg/L			0.00015	0.00079	0.00031	0.0017	0.00019	0.00011	0.00019	0.00021	0.00017	0.00016	0.00023
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00047	0.00010	0.00057	0.000062	0.000035	0.000064	0.000070	0.000055	0.000052	0.000076
Cobalt, dissolved	mg/L			0.000050	0.00015	0.00010	0.00057	0.000062	0.000035	0.000064	0.000070	0.000055	0.000052	0.000076
Copper, total	mg/L		0.0047	0.0014	0.0044	0.0029	0.016	0.0017	0.00098	0.0018	0.0020	0.0015	0.0015	0.0021

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	Four Creek											
			WQG	Baseline		WQS21								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Copper, dissolved	mg/L			0.0014	0.0034	0.0029	0.016	0.0017	0.00098	0.0018	0.0020	0.0015	0.0015	0.0021
Iron, total	mg/L		0.3	0.095	1.1	0.20	1.1	0.12	0.067	0.12	0.13	0.10	0.100	0.14
Iron, dissolved	mg/L		0.30	0.015	0.41	0.031	0.17	0.019	0.011	0.019	0.021	0.017	0.016	0.023
Lead, total	mg/L		0.0050	0.000025	0.00028	0.000051	0.00029	0.000031	0.000018	0.000032	0.000035	0.000028	0.000026	0.000038
Lead, dissolved	mg/L			0.000025	0.000091	0.000051	0.00029	0.000031	0.000018	0.000032	0.000035	0.000028	0.000026	0.000038
Lithium, total	mg/L			0.0015	0.0019	0.0031	0.017	0.0019	0.0011	0.0019	0.0021	0.0017	0.0016	0.0023
Lithium, dissolved	mg/L			0.0014	0.0019	0.0029	0.016	0.0017	0.00098	0.0018	0.0020	0.0015	0.0015	0.0021
Magnesium, total	mg/L			14	19	29	160	17	9.8	18	20	15	15	21
Magnesium, dissolved	mg/L			13	20	27	150	16	9.1	17	18	14	14	20
Manganese, total	mg/L		0.12	0.0025	0.024	0.0051	0.029	0.0031	0.0018	0.0032	0.0035	0.0028	0.0026	0.0038
Manganese, dissolved	mg/L			0.00067	0.0074	0.0014	0.0077	0.00084	0.00047	0.00086	0.00094	0.00074	0.00070	0.0010
Mercury, total	mg/L		0.00001	0.0000025	0.000013	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000093	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00023	0.00038	0.00047	0.0026	0.00029	0.00016	0.00030	0.00032	0.00025	0.00024	0.00035
Molybdenum, dissolved	mg-N/L			0.00019	0.00036	0.0084	0.047	0.0051	0.0029	0.0053	0.0057	0.0045	0.0043	0.0062
Nickel, total	mg/L		0.080	0.00025	0.0018	0.00051	0.0029	0.00031	0.00018	0.00032	0.00035	0.00028	0.00026	0.00038
Nickel, dissolved	mg/L			0.00025	0.0011	0.00051	0.0029	0.00031	0.00018	0.00032	0.00035	0.00028	0.00026	0.00038
Phosphorus, total	mg/L			0.0041	0.044	0.0084	0.047	0.0051	0.0029	0.0053	0.0057	0.0045	0.0043	0.0062
Orthophosphate, dissolved	mg/L			0.00050	0.0012	0.0010	0.0057	0.00062	0.00035	0.00064	0.00070	0.00055	0.00052	0.00076
Potassium, total	mg/L			0.36	0.77	0.74	4.1	0.45	0.25	0.46	0.50	0.40	0.38	0.55
Potassium, dissolved	mg/L			0.35	0.84	0.72	4.0	0.44	0.25	0.45	0.49	0.39	0.37	0.53
Selenium, total	mg/L	0.008	0.002	0.000025	0.000095	0.000051	0.00029	0.000031	0.000018	0.000032	0.000035	0.000028	0.000026	0.000038
Selenium, dissolved	mg/L			0.000025	0.00011	0.000051	0.00029	0.000031	0.000018	0.000032	0.000035	0.000028	0.000026	0.000038
Silica, dissolved	mg/L			no data	no data									
Sodium, total	mg/L			7.0	13	14	80	8.7	4.9	9.0	9.8	7.7	7.3	11
Sodium, dissolved	mg/L			7.4	13	15	85	9.2	5.2	9.5	10	8.2	7.8	11
Strontium, total	mg/L		7.0	0.17	0.24	0.35	1.9	0.21	0.12	0.22	0.24	0.19	0.18	0.26
Strontium, dissolved	mg/L			0.16	0.24	0.33	1.8	0.20	0.11	0.21	0.22	0.18	0.17	0.24
Silver, total	mg/L		0.00005	0.0000050	0.000022	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000012	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	Four Creek											
			WQG	Baseline		WQS21								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.000010	0.000057	0.0000062	0.0000035	0.0000064	0.0000070	0.0000055	0.0000052	0.0000076
Thallium, dissolved	mg/L			0.0000050	0.000010	0.000010	0.000057	0.0000062	0.0000035	0.0000064	0.0000070	0.0000055	0.0000052	0.0000076
Uranium, total	mg/L		0.0085	0.000078	0.00025	0.00016	0.00089	0.000097	0.000055	0.00010	0.00011	0.000086	0.000082	0.00012
Uranium, dissolved	mg/L			0.000075	0.00025	0.00015	0.00086	0.000094	0.000053	0.000096	0.00011	0.000083	0.000079	0.00011
Vanadium, total	mg/L			0.00061	0.0027	0.0013	0.0070	0.00076	0.00043	0.00078	0.00085	0.00067	0.00064	0.00093
Vanadium, dissolved	mg/L			0.00025	0.0013	0.00051	0.0029	0.00031	0.00018	0.00032	0.00035	0.00028	0.00026	0.00038
Zinc, total	mg/L		0.023	0.0015	0.0059	0.0031	0.017	0.0019	0.0011	0.0019	0.0021	0.0017	0.0016	0.0023
Zinc, dissolved	mg/L			0.0015	0.0025	0.0031	0.017	0.0019	0.0011	0.0019	0.0021	0.0017	0.0016	0.0023

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Table G-23

Parameter	Units	SPO	WQG	Four Creek										
				Baseline		WQS03_DS								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Total Hardness	mg-CaCO ₃ /L			118	163	175	182	149	131	273	346	164	188	295
Alkalinity, total	mg-CaCO ₃ /L			130	190	360	430	200	240	760	1200	260	490	1700
Chloride	mg/L		150	0.25	0.50	5.1	7.7	1.4	2.8	15	29	2.8	9.3	38
Fluoride	mg/L		0.12	0.059	0.068	0.083	0.084	0.075	0.065	0.087	0.095	0.074	0.065	0.099
Ammonia, total	mg-N/L		0.95	0.0025	0.0092	0.079	0.11	0.019	0.040	0.13	0.21	0.023	0.077	0.62
Nitrate	mg/L		3	0.013	0.058	0.61	0.87	0.13	0.30	1.0	1.6	0.18	0.60	4.9
Nitrite	mg/L	0.0524	0.02	0.00050	0.0010	0.014	0.020	0.0034	0.0071	0.024	0.038	0.0043	0.014	0.11
Sulfate	mg/L		309	1.9	28	140	210	31	72	490	920	82	290	1100
Aluminum, total	mg/L	0.236	0.1	0.099	1.2	0.17	0.19	0.13	0.12	0.27	0.36	0.14	0.18	0.50
Aluminum, dissolved	mg/L		0.05	0.032	0.49	0.083	0.10	0.047	0.052	0.18	0.29	0.061	0.11	0.42
Antimony, total	mg/L			0.000050	0.00012	0.00036	0.00050	0.00013	0.00021	0.0023	0.0041	0.00042	0.0014	0.0024
Antimony, dissolved	mg/L		0.009	0.000050	0.00010	0.00036	0.00050	0.00013	0.00021	0.0023	0.0041	0.00042	0.0014	0.0024
Arsenic, total	mg/L		0.005	0.00074	0.0011	0.0012	0.0013	0.00096	0.00087	0.0030	0.0044	0.0012	0.0020	0.0025
Arsenic, dissolved	mg/L			0.00064	0.00086	0.0010	0.0011	0.00084	0.00077	0.0029	0.0043	0.0011	0.0019	0.0024
Barium, total	mg/L		1	0.071	0.13	0.10	0.11	0.091	0.080	0.13	0.15	0.093	0.092	0.17
Barium, dissolved	mg/L			0.075	0.13	0.11	0.11	0.095	0.084	0.13	0.15	0.098	0.097	0.18
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000069	0.000070	0.000063	0.000054	0.000074	0.000081	0.000063	0.000056	0.000086
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000069	0.000070	0.000063	0.000054	0.000074	0.000081	0.000063	0.000056	0.000086
Boron, total	mg/L		1.2	0.012	0.020	0.089	0.13	0.031	0.051	0.26	0.48	0.056	0.16	0.59
Boron, dissolved	mg/L			0.011	0.019	0.087	0.12	0.030	0.050	0.26	0.48	0.055	0.16	0.59
Cadmium, total	mg/L		0.00009	0.000063	0.000019	0.000098	0.00015	0.000025	0.000049	0.0016	0.0030	0.00027	0.00097	0.00077
Cadmium, dissolved	mg/L	0.00026	0.00024	0.000052	0.000012	0.000096	0.00014	0.000024	0.000048	0.0016	0.0030	0.00027	0.00097	0.00077
Calcium, total	mg/L			24	34	34	35	30	26	40	46	31	29	49
Calcium, dissolved	mg/L			23	36	33	34	29	25	39	44	30	28	48
Chromium, total	mg/L		0.0089	0.00026	0.0016	0.0010	0.0014	0.00048	0.00065	0.0039	0.0068	0.00090	0.0024	0.0059
Chromium, dissolved	mg/L			0.00015	0.00079	0.00090	0.0013	0.00034	0.00053	0.0037	0.0067	0.00076	0.0022	0.0058
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00047	0.00046	0.00065	0.00014	0.00025	0.0032	0.0059	0.00058	0.0019	0.0033
Cobalt, dissolved	mg/L			0.000050	0.00015	0.00046	0.00065	0.00014	0.00025	0.0032	0.0059	0.00058	0.0019	0.0033
Copper, total	mg/L		0.0047	0.0014	0.0044	0.0027	0.0031	0.0019	0.0019	0.0063	0.0095	0.0025	0.0041	0.0089

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	Four Creek											
			WQG	Baseline		WQS03_DS								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Copper, dissolved	mg/L			0.0014	0.0034	0.0027	0.0031	0.0019	0.0019	0.0063	0.0095	0.0025	0.0041	0.0089
Iron, total	mg/L		0.3	0.095	1.1	0.14	0.15	0.12	0.11	0.19	0.24	0.13	0.14	0.29
Iron, dissolved	mg/L		0.30	0.015	0.41	0.039	0.047	0.022	0.025	0.081	0.13	0.029	0.052	0.20
Lead, total	mg/L		0.0050	0.000025	0.00028	0.00017	0.00023	0.000059	0.000094	0.0011	0.0020	0.00020	0.00064	0.0011
Lead, dissolved	mg/L			0.000025	0.000091	0.00017	0.00023	0.000059	0.000094	0.0011	0.0020	0.00020	0.00064	0.0011
Lithium, total	mg/L			0.0015	0.0019	0.050	0.076	0.012	0.027	0.16	0.30	0.028	0.096	0.38
Lithium, dissolved	mg/L			0.0014	0.0019	0.050	0.076	0.012	0.027	0.16	0.30	0.028	0.096	0.38
Magnesium, total	mg/L			14	19	22	23	18	16	42	56	21	28	42
Magnesium, dissolved	mg/L			13	20	20	22	17	15	41	55	20	27	41
Manganese, total	mg/L		0.12	0.0025	0.024	0.022	0.033	0.0070	0.012	0.10	0.19	0.020	0.063	0.17
Manganese, dissolved	mg/L			0.00067	0.0074	0.020	0.031	0.0047	0.010	0.10	0.19	0.017	0.061	0.17
Mercury, total	mg/L		0.00001	0.0000025	0.000013	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000093	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00023	0.00038	0.0016	0.0022	0.00060	0.00099	0.0051	0.0091	0.0011	0.0032	0.010
Molybdenum, dissolved	mg-N/L			0.00019	0.00036	0.0066	0.0071	0.0054	0.0049	0.011	0.013	0.0059	0.0072	0.015
Nickel, total	mg/L		0.080	0.00025	0.0018	0.0017	0.0024	0.00060	0.00096	0.0076	0.014	0.0015	0.0046	0.012
Nickel, dissolved	mg/L			0.00025	0.0011	0.0017	0.0024	0.00060	0.00096	0.0076	0.014	0.0015	0.0046	0.012
Phosphorus, total	mg/L			0.0041	0.044	0.0059	0.0060	0.0052	0.0046	0.0062	0.0068	0.0052	0.0046	0.0073
Orthophosphate, dissolved	mg/L			0.00050	0.0012	0.00068	0.00069	0.00063	0.00053	0.00074	0.00081	0.00063	0.00056	0.00086
Potassium, total	mg/L			0.36	0.77	5.4	8.0	1.5	3.0	17	31	3.1	10	39
Potassium, dissolved	mg/L			0.35	0.84	5.4	8.0	1.5	3.0	17	31	3.1	10	39
Selenium, total	mg/L	0.008	0.002	0.000025	0.000095	0.0022	0.0034	0.00051	0.0012	0.0085	0.016	0.0014	0.0051	0.017
Selenium, dissolved	mg/L			0.000025	0.00011	0.0022	0.0034	0.00051	0.0012	0.0085	0.016	0.0014	0.0051	0.017
Silica, dissolved	mg/L			no data	no data	2.7	4.2	0.65	1.6	8.2	15	1.4	5.0	21
Sodium, total	mg/L			7.0	13	130	190	36	73	380	710	70	230	950
Sodium, dissolved	mg/L			7.4	13	130	190	36	73	380	710	71	230	950
Strontium, total	mg/L		7.0	0.17	0.24	0.49	0.58	0.27	0.31	1.2	2.0	0.37	0.77	2.3
Strontium, dissolved	mg/L			0.16	0.24	0.47	0.57	0.26	0.30	1.2	2.0	0.36	0.76	2.3
Silver, total	mg/L		0.00005	0.0000050	0.000022	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000012	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	Four Creek											
			WQG	Baseline		WQS03_DS								
						Closure								
						Alternative Case 1: High groundwater				Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.00010	0.00015	0.000025	0.000051	0.0017	0.0031	0.00027	0.00098	0.00079
Thallium, dissolved	mg/L			0.0000050	0.000010	0.00010	0.00015	0.000025	0.000051	0.0017	0.0031	0.00027	0.00098	0.00079
Uranium, total	mg/L		0.0085	0.000078	0.00025	0.00091	0.0013	0.00027	0.00051	0.0039	0.0073	0.00072	0.0024	0.0065
Uranium, dissolved	mg/L			0.000075	0.00025	0.00091	0.0013	0.00027	0.00051	0.0039	0.0073	0.00072	0.0024	0.0065
Vanadium, total	mg/L			0.00061	0.0027	0.0029	0.0039	0.0012	0.0018	0.0087	0.016	0.0021	0.0054	0.017
Vanadium, dissolved	mg/L			0.00025	0.0013	0.0024	0.0035	0.00078	0.0014	0.0082	0.015	0.0016	0.0050	0.017
Zinc, total	mg/L		0.023	0.0015	0.0059	0.0041	0.0048	0.0023	0.0027	0.013	0.022	0.0036	0.0081	0.019
Zinc, dissolved	mg/L			0.0015	0.0025	0.0041	0.0048	0.0023	0.0027	0.013	0.022	0.0036	0.0081	0.019

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Table G-24

Parameter	Units	SPO	Goathorn Creek																
			WQG	Baseline		WQS05													
						Operations									Post-Closure				
						Alternative Case 2: High source terms				Alternative Case 4: 3 wet years				Alternative Case 5: Low flow	Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Total Hardness	mg-CaCO ₃ /L		68	102	155	110	82	76	94	108	81	76	109	101	119	83	82	113	
Alkalinity, total	mg-CaCO ₃ /L		52	87	380	110	89	65	160	100	92	65	100	120	150	83	110	120	
Chloride	mg/L		150	0.25	0.50	8.6	0.75	0.82	0.29	2.8	0.51	0.93	0.29	0.54	1.6	2.5	0.65	1.6	1.3
Fluoride	mg/L		0.12	0.032	0.041	0.043	0.049	0.037	0.036	0.042	0.049	0.037	0.035	0.050	0.044	0.051	0.037	0.036	0.052
Ammonia, total	mg-N/L		1.5	0.0025	0.0070	0.085	0.0066	0.0079	0.0029	0.027	0.0052	0.010	0.0029	0.0067	0.018	0.028	0.0057	0.014	0.028
Nitrate	mg/L		3	0.041	0.076	0.69	0.066	0.077	0.039	0.23	0.053	0.094	0.039	0.068	0.16	0.24	0.057	0.12	0.24
Nitrite	mg/L	0.0524	0.02	0.00050	0.0020	0.015	0.0013	0.0014	0.00057	0.0048	0.00100	0.0018	0.00058	0.0013	0.0033	0.0051	0.0011	0.0025	0.0051
Sulfate	mg/L		218	24	37	300	38	36	22	85	28	37	22	31	67	92	31	60	53
Aluminum, total	mg/L	0.236	0.1	0.092	0.75	0.18	0.12	0.100	0.095	0.14	0.12	0.10	0.094	0.13	0.12	0.13	0.098	0.099	0.13
Aluminum, dissolved	mg/L		0.05	0.014	0.13	0.034	0.023	0.018	0.016	0.025	0.023	0.018	0.016	0.023	0.024	0.028	0.018	0.020	0.026
Antimony, total	mg/L			0.000073	0.00014	0.0015	0.00017	0.00014	0.000067	0.00020	0.00012	0.00011	0.000067	0.00012	0.00024	0.00034	0.00011	0.00021	0.00015
Antimony, dissolved	mg/L		0.009	0.000050	0.00011	0.0015	0.00020	0.00016	0.000091	0.00023	0.00015	0.00013	0.000091	0.00015	0.00027	0.00036	0.00014	0.00023	0.00018
Arsenic, total	mg/L		0.005	0.00023	0.00068	0.0017	0.00054	0.00040	0.00031	0.00047	0.00050	0.00037	0.00031	0.00049	0.00050	0.00065	0.00038	0.00042	0.00052
Arsenic, dissolved	mg/L			0.00017	0.00035	0.0016	0.00044	0.00032	0.00024	0.00034	0.00040	0.00028	0.00024	0.00039	0.00042	0.00055	0.00030	0.00035	0.00042
Barium, total	mg/L		1	0.058	0.072	0.077	0.077	0.060	0.060	0.070	0.076	0.059	0.059	0.079	0.074	0.080	0.060	0.060	0.081
Barium, dissolved	mg/L			0.059	0.073	0.077	0.078	0.060	0.061	0.071	0.076	0.059	0.060	0.079	0.075	0.081	0.061	0.060	0.082
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000067	0.000077	0.000057	0.000055	0.000065	0.000076	0.000056	0.000055	0.000078	0.000069	0.000079	0.000058	0.000054	0.000080
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000067	0.000077	0.000057	0.000055	0.000065	0.000076	0.000056	0.000055	0.000078	0.000069	0.000079	0.000058	0.000054	0.000080
Boron, total	mg/L		1.2	0.0050	0.050	0.15	0.019	0.017	0.0077	0.045	0.015	0.018	0.0078	0.015	0.028	0.041	0.014	0.027	0.022
Boron, dissolved	mg/L			0.0050	0.050	0.15	0.018	0.016	0.0073	0.044	0.014	0.017	0.0074	0.014	0.028	0.042	0.014	0.027	0.022
Cadmium, total	mg/L		0.00009	0.000010	0.000049	0.0012	0.000061	0.000051	0.000011	0.000031	0.000013	0.000015	0.000010	0.000017	0.00013	0.00020	0.000032	0.00010	0.000027
Cadmium, dissolved	mg/L	0.00019	0.00016	0.0000081	0.000036	0.0012	0.000058	0.000049	0.0000087	0.000028	0.000010	0.000013	0.0000079	0.000014	0.00013	0.00020	0.000030	0.000098	0.000026
Calcium, total	mg/L			21	30	29	33	24	23	27	33	24	23	33	29	34	25	23	34
Calcium, dissolved	mg/L			22	32	30	33	25	24	28	33	24	24	34	30	34	25	24	35
Chromium, total	mg/L		0.0089	0.00020	0.00091	0.0026	0.00046	0.00039	0.00025	0.00074	0.00039	0.00038	0.00025	0.00040	0.00055	0.00068	0.00034	0.00049	0.00047
Chromium, dissolved	mg/L			0.00010	0.00027	0.0023	0.00032	0.00027	0.00014	0.00051	0.00025	0.00024	0.00014	0.00025	0.00043	0.00060	0.00023	0.00039	0.00033
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00055	0.0022	0.00017	0.00015	0.000057	0.00026	0.000085	0.00011	0.000056	0.000095	0.00030	0.00045	0.00011	0.00025	0.00014
Cobalt, dissolved	mg/L			0.000050	0.00011	0.0021	0.00016	0.00014	0.000057	0.00019	0.000082	0.000091	0.000056	0.000091	0.00030	0.00045	0.00011	0.00025	0.00014
Copper, total	mg/L		0.0028	0.0015	0.0054	0.0046	0.0022	0.0017	0.0016	0.0022	0.0021	0.0017	0.0016	0.0022	0.0022	0.0025	0.0017	0.0018	0.0023

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	WQG	Goathorn Creek																
				Baseline	WQS05															
					Operations										Post-Closure					
					Alternative Case 2: High source terms				Alternative Case 4: 3 wet years				Alternative Case 5: Low flow	Alternative Case 2: High source terms				Alternative Case 5: Low flow		
					P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Copper, dissolved	mg/L		0.0014	0.0039	0.0043	0.0021	0.0016	0.0015	0.0020	0.0020	0.0016	0.0015	0.0021	0.0021	0.0024	0.0016	0.0018	0.0022		
Iron, total	mg/L	0.3	0.085	0.78	0.34	0.12	0.11	0.088	0.25	0.12	0.13	0.087	0.12	0.11	0.14	0.094	0.099	0.14		
Iron, dissolved	mg/L	0.30	0.015	0.13	0.035	0.023	0.018	0.017	0.022	0.023	0.018	0.016	0.024	0.023	0.027	0.018	0.019	0.025		
Lead, total	mg/L	0.0050	0.000025	0.00023	0.00080	0.00070	0.000062	0.000028	0.00012	0.000042	0.000051	0.000028	0.000046	0.00011	0.00015	0.000047	0.000094	0.000059		
Lead, dissolved	mg/L		0.000025	0.000050	0.00074	0.000068	0.000057	0.000028	0.000076	0.000040	0.000040	0.000028	0.000044	0.00011	0.00016	0.000045	0.000091	0.000057		
Lithium, total	mg/L		0.00050	0.0011	0.089	0.0047	0.0060	0.00071	0.025	0.0020	0.0068	0.00075	0.0024	0.013	0.022	0.0039	0.013	0.010		
Lithium, dissolved	mg/L		0.00050	0.0010	0.089	0.0047	0.0060	0.00071	0.025	0.0020	0.0068	0.00075	0.0024	0.014	0.024	0.0042	0.014	0.011		
Magnesium, total	mg/L		3.9	6.5	20	6.8	5.3	4.6	6.4	6.3	5.0	4.5	6.5	7.0	8.2	5.1	5.9	6.8		
Magnesium, dissolved	mg/L		3.8	7.4	19	6.6	5.2	4.5	6.3	6.1	4.8	4.4	6.3	6.9	8.1	5.0	5.8	6.7		
Manganese, total	mg/L	0.12	0.0059	0.033	0.073	0.011	0.0094	0.0063	0.015	0.0088	0.0087	0.0063	0.0094	0.016	0.020	0.0083	0.013	0.012		
Manganese, dissolved	mg/L		0.0026	0.0084	0.065	0.0062	0.0055	0.0028	0.0090	0.0039	0.0044	0.0027	0.0043	0.012	0.017	0.0046	0.0097	0.0075		
Mercury, total	mg/L	0.00001	0.0000025	0.0000064	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025		
Mercury, dissolved	mg/L		0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025		
Molybdenum, total	mg-N/L	0.073	0.00047	0.00062	0.0033	0.00065	0.00060	0.00045	0.0012	0.00056	0.00061	0.00045	0.00060	0.00091	0.0011	0.00053	0.00079	0.00074		
Molybdenum, dissolved	mg-N/L		0.00046	0.00062	0.0080	0.0068	0.0052	0.0049	0.0058	0.0067	0.0051	0.0048	0.0069	0.0062	0.0073	0.0052	0.0051	0.0071		
Nickel, total	mg/L	0.080	0.00025	0.0011	0.0051	0.00058	0.00052	0.00028	0.0010	0.00041	0.00047	0.00028	0.00044	0.00090	0.0012	0.00042	0.00077	0.00060		
Nickel, dissolved	mg/L		0.00025	0.00060	0.0048	0.00057	0.00049	0.00028	0.00082	0.00041	0.00042	0.00028	0.00043	0.00092	0.0013	0.00042	0.00077	0.00060		
Phosphorus, total	mg/L		0.0045	0.019	0.0075	0.0068	0.0052	0.0049	0.0067	0.0067	0.0053	0.0049	0.0069	0.0060	0.0070	0.0052	0.0049	0.0071		
Orthophosphate, dissolved	mg/L		0.00050	0.0040	0.00092	0.0010	0.00071	0.00064	0.00084	0.0010	0.00070	0.00064	0.0010	0.00094	0.0010	0.00072	0.00062	0.0011		
Potassium, total	mg/L		0.39	1.0	9.8	0.93	0.99	0.41	3.1	0.64	1.1	0.41	0.69	1.8	2.7	0.76	1.7	1.4		
Potassium, dissolved	mg/L		0.36	0.48	9.8	0.88	0.95	0.38	3.1	0.59	1.0	0.38	0.64	1.8	2.8	0.75	1.8	1.5		
Selenium, total	mg/L	0.008	0.000086	0.00020	0.0050	0.00033	0.00037	0.000094	0.0012	0.00017	0.00037	0.000094	0.00019	0.00075	0.0012	0.00026	0.00072	0.00053		
Selenium, dissolved	mg/L		0.000076	0.00012	0.0050	0.00031	0.00035	0.000083	0.0012	0.00015	0.00036	0.000083	0.00017	0.00077	0.0013	0.00026	0.00074	0.00055		
Silica, dissolved	mg/L		5.6	6.2	11	9.4	7.0	6.3	8.3	9.3	6.9	6.3	9.5	8.4	10	7.0	6.8	9.8		
Sodium, total	mg/L		2.3	4.8	210	14	17	3.2	70	7.6	20	3.3	8.3	33	57	12	35	28		
Sodium, dissolved	mg/L		2.4	4.8	210	14	17	3.3	70	7.7	20	3.4	8.4	36	60	12	37	29		
Strontium, total	mg/L	7.0	0.076	0.11	0.66	0.16	0.13	0.093	0.22	0.14	0.13	0.092	0.14	0.18	0.22	0.12	0.16	0.17		
Strontium, dissolved	mg/L		0.077	0.12	0.66	0.15	0.13	0.092	0.22	0.14	0.12	0.091	0.14	0.18	0.22	0.12	0.16	0.17		
Silver, total	mg/L	0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050		
Silver, dissolved	mg/L		0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050		
Tin, total	mg/L		0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050		

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	WQG	Goathorn Creek																
				Baseline		WQS05													Post-Closure	
						Operations														
						Alternative Case 2: High source terms				Alternative Case 4: 3 wet years				Alternative Case 5: Low flow	Alternative Case 2: High source terms					
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000010	0.0012	0.000056	0.000048	0.0000064	0.000027	0.0000086	0.000011	0.0000056	0.000012	0.00012	0.00020	0.000029	0.000097	0.000023	
Thallium, dissolved	mg/L			0.0000050	0.000010	0.0012	0.000056	0.000048	0.0000064	0.000027	0.0000086	0.000011	0.0000056	0.000012	0.00012	0.00020	0.000029	0.000098	0.000023	
Uranium, total	mg/L		0.0085	0.000054	0.00014	0.0024	0.00021	0.00020	0.000073	0.00048	0.00013	0.00018	0.000073	0.00014	0.00037	0.00057	0.00015	0.00034	0.00023	
Uranium, dissolved	mg/L			0.000051	0.00014	0.0024	0.00021	0.00020	0.000070	0.00048	0.00013	0.00018	0.000070	0.00013	0.00038	0.00058	0.00015	0.00035	0.00023	
Vanadium, total	mg/L			0.00025	0.0020	0.0052	0.00094	0.00077	0.00041	0.0017	0.00082	0.00080	0.00042	0.00081	0.0011	0.0014	0.00066	0.0010	0.0010	
Vanadium, dissolved	mg/L			0.00025	0.00052	0.0049	0.00081	0.00068	0.00037	0.0015	0.00069	0.00069	0.00037	0.00069	0.0011	0.0014	0.00060	0.00098	0.00091	
Zinc, total	mg/L		0.0075	0.0015	0.0061	0.0090	0.0026	0.0021	0.0017	0.0030	0.0023	0.0020	0.0016	0.0024	0.0028	0.0033	0.0019	0.0024	0.0027	
Zinc, dissolved	mg/L			0.0015	0.0021	0.0085	0.0026	0.0020	0.0017	0.0026	0.0023	0.0019	0.0016	0.0024	0.0028	0.0033	0.0019	0.0024	0.0027	

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Table G-25

Parameter	Units	SPO	WQG	Goathorn Creek															
				Baseline	WQS06														
					Operations										Post-Closure				
					Alternative Case 2: High source terms					Alternative Case 4: 3 wet years				Alternative Case 5: Low flow	Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Total Hardness	mg-CaCO ₃ /L			68	102	151	103	79	74	89	93	75	74	103	87	101	76	76	95
Alkalinity, total	mg-CaCO ₃ /L			52	87	410	91	84	60	180	73	87	59	91	110	200	65	86	130
Chloride	mg/L		150	0.25	0.50	9.5	0.69	1.0	0.28	3.7	0.46	1.1	0.28	0.47	1.8	4.3	0.48	1.1	2.3
Fluoride	mg/L		0.12	0.032	0.041	0.039	0.050	0.035	0.035	0.038	0.042	0.035	0.035	0.050	0.040	0.042	0.035	0.035	0.042
Ammonia, total	mg-N/L		1.5	0.0025	0.0070	0.094	0.0060	0.0098	0.0027	0.035	0.0048	0.012	0.0029	0.0060	0.0072	0.016	0.0036	0.0067	0.016
Nitrate	mg/L		3	0.041	0.076	0.77	0.073	0.10	0.043	0.29	0.064	0.12	0.044	0.073	0.079	0.13	0.049	0.069	0.13
Nitrite	mg/L	0.0524	0.02	0.00050	0.0020	0.017	0.0011	0.0018	0.00055	0.0061	0.00091	0.0022	0.00056	0.0011	0.0013	0.0027	0.00067	0.0012	0.0027
Sulfate	mg/L		218	24	37	340	42	47	25	110	34	46	25	34	59	120	31	46	67
Aluminum, total	mg/L	0.236	0.1	0.092	0.75	0.17	0.12	0.11	0.098	0.16	0.12	0.11	0.097	0.12	0.11	0.13	0.10	0.10	0.12
Aluminum, dissolved	mg/L		0.05	0.014	0.13	0.032	0.024	0.017	0.016	0.026	0.019	0.017	0.016	0.024	0.021	0.024	0.016	0.018	0.021
Antimony, total	mg/L			0.000073	0.00014	0.0017	0.00012	0.00014	0.000054	0.00023	0.000071	0.000097	0.000054	0.000073	0.00014	0.00029	0.000072	0.00013	0.00016
Antimony, dissolved	mg/L		0.009	0.000050	0.00011	0.0017	0.00015	0.00016	0.000077	0.00025	0.00010	0.00012	0.000077	0.00010	0.00016	0.00031	0.000094	0.00015	0.00017
Arsenic, total	mg/L		0.005	0.00023	0.00068	0.0018	0.00045	0.00034	0.00027	0.00043	0.00035	0.00029	0.00027	0.00045	0.00034	0.00048	0.00027	0.00032	0.00039
Arsenic, dissolved	mg/L			0.00017	0.00035	0.0017	0.00036	0.00026	0.00021	0.00030	0.00028	0.00021	0.00020	0.00036	0.00027	0.00038	0.00021	0.00025	0.00029
Barium, total	mg/L		1	0.058	0.072	0.071	0.079	0.062	0.062	0.068	0.075	0.061	0.062	0.079	0.072	0.077	0.063	0.061	0.076
Barium, dissolved	mg/L			0.059	0.073	0.072	0.081	0.063	0.063	0.069	0.076	0.062	0.063	0.081	0.073	0.078	0.064	0.062	0.078
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000061	0.000065	0.000053	0.000053	0.000058	0.000064	0.000052	0.000053	0.000065	0.000062	0.000066	0.000054	0.000052	0.000065
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000061	0.000065	0.000053	0.000053	0.000058	0.000064	0.000052	0.000053	0.000065	0.000062	0.000066	0.000054	0.000052	0.000065
Boron, total	mg/L		1.2	0.0050	0.050	0.16	0.013	0.017	0.0058	0.054	0.0085	0.018	0.0059	0.0088	0.028	0.063	0.0082	0.016	0.034
Boron, dissolved	mg/L			0.0050	0.050	0.16	0.013	0.017	0.0058	0.054	0.0085	0.018	0.0058	0.0088	0.028	0.063	0.0087	0.018	0.035
Cadmium, total	mg/L		0.00009	0.000010	0.000049	0.0013	0.000061	0.000066	0.000011	0.000038	0.000014	0.000018	0.000011	0.000016	0.000067	0.00012	0.000019	0.000052	0.000020
Cadmium, dissolved	mg/L	0.00019	0.00016	0.0000081	0.000036	0.0013	0.000059	0.000064	0.0000091	0.000035	0.000011	0.000016	0.0000086	0.000014	0.000065	0.00012	0.000017	0.000051	0.000019
Calcium, total	mg/L			21	30	26	28	23	22	25	27	22	22	28	26	28	23	22	28
Calcium, dissolved	mg/L			22	32	27	29	24	23	26	28	23	23	29	27	29	24	23	29
Chromium, total	mg/L		0.0089	0.00020	0.00091	0.0028	0.00035	0.00039	0.00022	0.00084	0.00028	0.00037	0.00022	0.00028	0.00046	0.00087	0.00026	0.00036	0.00057
Chromium, dissolved	mg/L			0.00010	0.00027	0.0025	0.00022	0.00026	0.00011	0.00058	0.00015	0.00022	0.00011	0.00015	0.00032	0.00067	0.00015	0.00025	0.00038
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00055	0.0025	0.00016	0.00018	0.000055	0.00032	0.000074	0.00012	0.000054	0.000081	0.00017	0.00036	0.000078	0.00015	0.00021
Cobalt, dissolved	mg/L			0.000050	0.00011	0.0024	0.00015	0.00017	0.000055	0.00023	0.000071	0.000098	0.000054	0.000076	0.00017	0.00030	0.000075	0.00015	0.00015
Copper, total	mg/L		0.0028	0.0015	0.0054	0.0046	0.0020	0.0018	0.0016	0.0023	0.0019	0.0017	0.0016	0.0019	0.0019	0.0021	0.0017	0.0017	0.0020

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1C027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsx

Parameter	Units	SPO	WQG	Goathorn Creek																
				Baseline	WQS06															
					Operations										Post-Closure					
					Alternative Case 2: High source terms				Alternative Case 4: 3 wet years				Alternative Case 5: Low flow	Alternative Case 2: High source terms			Alternative Case 5: Low flow			
					P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Copper, dissolved	mg/L			0.0014	0.0039	0.0043	0.0019	0.0017	0.0015	0.0020	0.0018	0.0016	0.0015	0.0018	0.0018	0.0020	0.0015	0.0016	0.0019	
Iron, total	mg/L		0.3	0.085	0.78	0.35	0.12	0.12	0.091	0.29	0.12	0.14	0.091	0.12	0.14	0.22	0.10	0.11	0.22	
Iron, dissolved	mg/L		0.30	0.015	0.13	0.034	0.019	0.017	0.016	0.021	0.019	0.017	0.016	0.019	0.019	0.022	0.016	0.017	0.021	
Lead, total	mg/L		0.0050	0.000025	0.00023	0.00089	0.000064	0.000073	0.000027	0.00014	0.000036	0.000057	0.000027	0.000039	0.000070	0.00014	0.000037	0.000064	0.000094	
Lead, dissolved	mg/L			0.000025	0.000050	0.00082	0.000062	0.000065	0.000027	0.000088	0.000034	0.000042	0.000027	0.000036	0.000066	0.00010	0.000034	0.000059	0.000057	
Lithium, total	mg/L			0.00050	0.0011	0.099	0.0046	0.0081	0.00069	0.033	0.0020	0.0088	0.00077	0.0022	0.016	0.039	0.0023	0.0074	0.020	
Lithium, dissolved	mg/L			0.00050	0.0010	0.099	0.0046	0.0081	0.00069	0.033	0.0020	0.0088	0.00077	0.0022	0.016	0.039	0.0027	0.0086	0.020	
Magnesium, total	mg/L			3.9	6.5	21	8.1	5.3	4.7	6.4	6.3	4.8	4.6	8.1	5.4	7.6	4.6	5.1	6.1	
Magnesium, dissolved	mg/L			3.8	7.4	20	7.7	5.1	4.5	6.3	6.0	4.6	4.4	7.7	5.4	7.4	4.5	5.0	5.9	
Manganese, total	mg/L		0.12	0.0059	0.033	0.079	0.010	0.010	0.0061	0.018	0.0079	0.0093	0.0061	0.0081	0.010	0.016	0.0071	0.0095	0.011	
Manganese, dissolved	mg/L			0.0026	0.0084	0.072	0.0058	0.0064	0.0027	0.011	0.0036	0.0049	0.0027	0.0039	0.0066	0.011	0.0035	0.0060	0.0063	
Mercury, total	mg/L		0.00001	0.0000025	0.0000064	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	
Molybdenum, total	mg-N/L		0.073	0.00047	0.00062	0.0036	0.00070	0.00073	0.00049	0.0014	0.00063	0.00072	0.00049	0.00064	0.00078	0.0013	0.00055	0.00067	0.00088	
Molybdenum, dissolved	mg-N/L			0.00046	0.00062	0.0074	0.0058	0.0050	0.0048	0.0055	0.0058	0.0048	0.0047	0.0058	0.0056	0.0061	0.0049	0.0048	0.0059	
Nickel, total	mg/L		0.080	0.00025	0.0011	0.0056	0.00052	0.00058	0.00027	0.0012	0.00036	0.00052	0.00027	0.00037	0.00064	0.0013	0.00034	0.00053	0.00080	
Nickel, dissolved	mg/L			0.00025	0.00060	0.0053	0.00050	0.00055	0.00027	0.00097	0.00035	0.00045	0.00027	0.00036	0.00056	0.0011	0.00033	0.00052	0.00064	
Phosphorus, total	mg/L			0.0045	0.019	0.0069	0.0058	0.0050	0.0048	0.0067	0.0058	0.0052	0.0047	0.0058	0.0056	0.0059	0.0049	0.0048	0.0059	
Orthophosphate, dissolved	mg/L			0.00050	0.0040	0.00061	0.00065	0.00053	0.00053	0.00058	0.00064	0.00052	0.00053	0.00065	0.00062	0.00065	0.00054	0.00051	0.00065	
Potassium, total	mg/L			0.39	1.0	11	0.91	1.2	0.42	4.0	0.64	1.3	0.43	0.66	2.1	4.6	0.61	1.1	2.5	
Potassium, dissolved	mg/L			0.36	0.48	11	0.87	1.2	0.39	4.0	0.61	1.3	0.40	0.62	2.0	4.6	0.62	1.2	2.5	
Selenium, total	mg/L	0.008	0.002	0.000086	0.00020	0.0056	0.00032	0.00048	0.000094	0.0016	0.00017	0.00047	0.000097	0.00018	0.00079	0.0019	0.00018	0.00043	0.00095	
Selenium, dissolved	mg/L			0.000076	0.00012	0.0056	0.00031	0.00047	0.000084	0.0016	0.00016	0.00046	0.000087	0.00017	0.00079	0.0019	0.00018	0.00047	0.00096	
Silica, dissolved	mg/L			5.6	6.2	10	7.2	6.2	5.7	7.7	7.1	6.2	5.7	7.1	6.9	7.6	6.0	6.0	7.4	
Sodium, total	mg/L			2.3	4.8	240	13	22	3.0	92	6.7	25	3.2	7.1	45	110	7.3	20	56	
Sodium, dissolved	mg/L			2.4	4.8	240	13	22	3.1	92	6.8	25	3.3	7.2	45	110	8.3	24	57	
Strontium, total	mg/L		7.0	0.076	0.11	0.70	0.13	0.13	0.086	0.24	0.11	0.12	0.085	0.13	0.15	0.27	0.093	0.12	0.17	
Strontium, dissolved	mg/L			0.077	0.12	0.70	0.12	0.13	0.086	0.24	0.11	0.12	0.086	0.12	0.15	0.27	0.095	0.12	0.17	
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	
Tin, total	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	WQG	Goathorn Creek																
				Baseline		WQS06											Post-Closure			
						Operations				Alternative Case 5: Low flow										
											Alternative Case 2: High source terms				Alternative Case 4: 3 wet years					
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	
Tin, dissolved	mg/L	0.0022	0.0008	0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	
Thallium, total	mg/L			0.0000050	0.000010	0.0013	0.000056	0.000062	0.0000060	0.000033	0.0000075	0.000013	0.0000054	0.000010	0.000062	0.00011	0.000014	0.000049	0.000022	
Thallium, dissolved	mg/L			0.0000050	0.000010	0.0013	0.000056	0.000062	0.0000060	0.000033	0.0000075	0.000013	0.0000054	0.000010	0.000063	0.00011	0.000014	0.000049	0.000022	
Uranium, total	mg/L			0.000054	0.00014	0.0027	0.00017	0.00022	0.000061	0.00060	0.000092	0.00020	0.000061	0.000095	0.00031	0.00071	0.000094	0.00020	0.00037	
Uranium, dissolved	mg/L	0.0085	0.0014	0.000051	0.00014	0.0027	0.00017	0.00022	0.000058	0.00060	0.000088	0.00019	0.000058	0.000092	0.00031	0.00071	0.000096	0.00022	0.00037	
Vanadium, total	mg/L			0.00025	0.0020	0.0056	0.00053	0.00067	0.00029	0.0019	0.00039	0.00069	0.00029	0.00043	0.00100	0.0021	0.00037	0.00062	0.0013	
Vanadium, dissolved	mg/L			0.00025	0.00052	0.0054	0.00052	0.00063	0.00027	0.0017	0.00038	0.00063	0.00027	0.00038	0.00092	0.0020	0.00037	0.00064	0.0011	
Zinc, total	mg/L			0.0075	0.0015	0.0061	0.0096	0.0022	0.0021	0.0016	0.0032	0.0020	0.0020	0.0016	0.0020	0.0021	0.0030	0.0017	0.0020	0.0023
Zinc, dissolved	mg/L			0.0015	0.0021	0.0090	0.0022	0.0020	0.0016	0.0027	0.0020	0.0019	0.0016	0.0020	0.0021	0.0027	0.0017	0.0019	0.0021	

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Table G-26

Parameter	Units	SPO	Telkwa River																			
			WQG	Baseline		WQS09											Post-Closure					
						Operations								Alternative Case 5: Low flow								
						Alternative Case 2: High source terms				Alternative Case 4: 3 wet years												
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter			
Total Hardness	mg-CaCO ₃ /L			39	64	68	68	49	46	55	65	48	48	68	65	65	49	46	64			
Alkalinity, total	mg-CaCO ₃ /L			38	62	84	67	48	45	60	64	48	46	66	65	66	48	49	63			
Chloride	mg/L			0.25	0.50	1.0	0.45	0.33	0.29	0.52	0.41	0.34	0.29	0.43	0.48	0.55	0.32	0.39	0.43			
Fluoride	mg/L			0.12	0.029	0.038	0.045	0.048	0.035	0.040	0.047	0.034	0.034	0.048	0.046	0.047	0.035	0.034	0.046			
Ammonia, total	mg-N/L			1.7	0.0025	0.0095	0.010	0.0044	0.0033	0.0029	0.0051	0.0042	0.0034	0.0029	0.0044	0.0049	0.0050	0.0032	0.0037			
Nitrate	mg/L			3	0.013	0.076	0.072	0.025	0.020	0.017	0.032	0.024	0.020	0.017	0.026	0.031	0.032	0.018	0.023			
Nitrite	mg/L	0.0524		0.02	0.00050	0.0050	0.0019	0.00087	0.00066	0.00057	0.00097	0.00083	0.00067	0.00058	0.00087	0.00096	0.00097	0.00063	0.00071			
Sulfate	mg/L			218	5.6	9.0	31	12	8.7	7.6	13	10	8.5	7.6	11	14	14	8.4	10			
Aluminum, total	mg/L	0.236		0.1	0.17	1.7	0.26	0.27	0.20	0.19	0.23	0.26	0.19	0.19	0.27	0.26	0.26	0.20	0.19			
Aluminum, dissolved	mg/L			0.05	0.027	0.088	0.041	0.043	0.031	0.030	0.036	0.042	0.031	0.030	0.043	0.041	0.042	0.031	0.030			
Antimony, total	mg/L				0.000050	0.000050	0.00019	0.000091	0.000065	0.000058	0.000079	0.000083	0.000062	0.000058	0.000085	0.000089	0.000092	0.000063	0.000069			
Antimony, dissolved	mg/L			0.009	0.000050	0.000050	0.00019	0.000093	0.000067	0.000060	0.000080	0.000086	0.000064	0.000060	0.000088	0.000092	0.000094	0.000065	0.000070			
Arsenic, total	mg/L			0.005	0.00024	0.00055	0.00048	0.00041	0.00029	0.00028	0.00034	0.00040	0.00029	0.00028	0.00040	0.00038	0.00040	0.00029	0.00029			
Arsenic, dissolved	mg/L				0.00016	0.00025	0.00035	0.00028	0.00020	0.00019	0.00023	0.00027	0.00019	0.00019	0.00027	0.00026	0.00027	0.00020	0.00020			
Barium, total	mg/L			1	0.040	0.049	0.063	0.067	0.049	0.047	0.056	0.065	0.048	0.047	0.067	0.065	0.065	0.049	0.047			
Barium, dissolved	mg/L				0.034	0.048	0.055	0.058	0.042	0.040	0.048	0.056	0.041	0.041	0.058	0.056	0.056	0.042	0.041			
Beryllium, total	mg/L			0.00013	0.000050	0.000050	0.000077	0.000082	0.000059	0.000057	0.000068	0.000080	0.000059	0.000057	0.000082	0.000078	0.000080	0.000060	0.000057			
Beryllium, dissolved	mg/L				0.000050	0.000050	0.000077	0.000082	0.000059	0.000057	0.000068	0.000080	0.000059	0.000057	0.000082	0.000078	0.000080	0.000060	0.000057			
Boron, total	mg/L			1.2	0.0050	0.050	0.018	0.0092	0.0067	0.0059	0.0095	0.0086	0.0067	0.0059	0.0088	0.0093	0.0097	0.0065	0.0073			
Boron, dissolved	mg/L				0.0050	0.050	0.018	0.0092	0.0067	0.0059	0.0095	0.0086	0.0067	0.0059	0.0088	0.0093	0.0097	0.0065	0.0073			
Cadmium, total	mg/L			0.00009	0.000011	0.000036	0.00011	0.000023	0.000016	0.000012	0.000016	0.000017	0.000013	0.000012	0.000018	0.000024	0.000027	0.000014	0.000019			
Cadmium, dissolved	mg/L	0.00012		0.00011	0.0000063	0.0000099	0.000099	0.000015	0.000010	0.000073	0.000010	0.000010	0.000078	0.000073	0.000011	0.000018	0.000022	0.000090	0.000014			
Calcium, total	mg/L			12	20	20	21	15	14	17	20	15	15	21	20	20	15	14	20			
Calcium, dissolved	mg/L			12	21	20	21	15	14	17	20	15	15	21	20	20	15	14	20			
Chromium, total	mg/L			0.0089	0.00020	0.0010	0.00049	0.00034	0.00025	0.00023	0.00031	0.00033	0.00025	0.00023	0.00034	0.00033	0.00034	0.00025	0.00025			
Chromium, dissolved	mg/L				0.000050	0.00021	0.00025	0.00010	0.000074	0.000064	0.000100	0.000093	0.000071	0.000064	0.000096	0.00011	0.00011	0.000071	0.000082			
Cobalt, total	mg/L	0.0174		0.004	0.000050	0.00088	0.00024	0.000092	0.000066	0.000057	0.000082	0.000081	0.000062	0.000057	0.000084	0.000093	0.000095	0.000063	0.000072			
Cobalt, dissolved	mg/L				0.000050	0.00010	0.00024	0.000091	0.000065	0.000057	0.000077	0.000081	0.000061	0.000057	0.000083	0.000094	0.000095	0.000063	0.000072			
Copper, total	mg/L			0.002	0.0011	0.0042	0.0019	0.0018	0.0013	0.0013	0.0016	0.0018	0.0013	0.0013	0.0018	0.0018	0.0018	0.0013	0.0013			

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	WQG	Telkwa River																	
				Baseline	WQS09													Post-Closure			
					Operations								Alternative Case 5: Low flow								
					Alternative Case 2: High source terms				Alternative Case 4: 3 wet years												
					P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer
Copper, dissolved	mg/L			0.00067	0.0017	0.0013	0.0012	0.00086	0.00082	0.0010	0.0011	0.00084	0.00083	0.0012	0.0012	0.0011	0.00085	0.00084	0.0011		
Iron, total	mg/L		0.3	0.31	1.5	0.47	0.48	0.35	0.33	0.42	0.47	0.35	0.34	0.48	0.46	0.47	0.35	0.34	0.46		
Iron, dissolved	mg/L		0.30	0.076	0.27	0.11	0.12	0.086	0.082	0.099	0.12	0.085	0.082	0.12	0.11	0.12	0.086	0.082	0.11		
Lead, total	mg/L		0.0044	0.00014	0.0014	0.00026	0.00022	0.00016	0.00015	0.00019	0.00021	0.00016	0.00015	0.00022	0.00021	0.00022	0.00016	0.00016	0.00021		
Lead, dissolved	mg/L			0.000025	0.00010	0.000093	0.000044	0.000032	0.000029	0.000037	0.000040	0.000030	0.000029	0.000042	0.000044	0.000045	0.000031	0.000033	0.000040		
Lithium, total	mg/L			0.00050	0.0010	0.0075	0.0012	0.00097	0.00059	0.0024	0.00093	0.00100	0.00059	0.00099	0.0017	0.0033	0.00083	0.0015	0.0020		
Lithium, dissolved	mg/L			0.00050	0.00050	0.0075	0.0012	0.00097	0.00059	0.0024	0.00093	0.00100	0.00059	0.00099	0.0017	0.0033	0.00085	0.0016	0.0020		
Magnesium, total	mg/L			2.1	3.5	4.5	3.7	2.7	2.6	3.1	3.6	2.6	2.6	3.7	3.6	3.6	2.7	2.7	3.5		
Magnesium, dissolved	mg/L			2.0	3.8	4.4	3.6	2.6	2.5	3.0	3.4	2.5	2.5	3.5	3.5	3.5	2.6	2.6	3.4		
Manganese, total	mg/L		0.12	0.020	0.078	0.034	0.032	0.023	0.022	0.027	0.031	0.023	0.022	0.031	0.030	0.031	0.023	0.022	0.030		
Manganese, dissolved	mg/L			0.0074	0.021	0.016	0.012	0.0086	0.0080	0.010	0.011	0.0084	0.0081	0.012	0.011	0.012	0.0086	0.0086	0.011		
Mercury, total	mg/L		0.00001	0.0000025	0.0000070	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025		
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025		
Molybdenum, total	mg-N/L		0.073	0.00053	0.00073	0.0010	0.00086	0.00063	0.00059	0.00076	0.00083	0.00062	0.00060	0.00085	0.00083	0.00085	0.00063	0.00062	0.00082		
Molybdenum, dissolved	mg-N/L			0.00052	0.00068	0.0092	0.0097	0.0070	0.0067	0.0081	0.0095	0.0069	0.0067	0.0097	0.0092	0.0094	0.0070	0.0068	0.0093		
Nickel, total	mg/L		0.025	0.00025	0.0011	0.00075	0.00043	0.00031	0.00029	0.00039	0.00040	0.00031	0.00029	0.00042	0.00043	0.00044	0.00031	0.00032	0.00040		
Nickel, dissolved	mg/L			0.00025	0.00025	0.00073	0.00043	0.00031	0.00029	0.00038	0.00040	0.00030	0.00029	0.00041	0.00043	0.00044	0.00031	0.00032	0.00040		

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	WQG	Telkwa River																
				Baseline		WQS09														
						Operations											Post-Closure			
						Alternative Case 2: High source terms				Alternative Case 4: 3 wet years				Alternative Case 5: Low flow	Alternative Case 2: High source terms				Alternative Case 5: Low flow	
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	
Tin, dissolved	mg/L			0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.0000050	0.000098	0.000013	0.0000089	0.0000058	0.0000083	0.0000081	0.0000062	0.0000057	0.0000086	0.000015	0.000020	0.0000075	0.000012	0.0000085	
Thallium, dissolved	mg/L			0.0000050	0.0000050	0.000098	0.000013	0.0000089	0.0000058	0.0000083	0.0000081	0.0000062	0.0000057	0.0000086	0.000015	0.000020	0.0000075	0.000012	0.0000085	
Uranium, total	mg/L		0.0085	0.000056	0.000092	0.00027	0.00010	0.000076	0.000065	0.00011	0.000094	0.000074	0.000065	0.000096	0.00011	0.00011	0.000073	0.000085	0.000096	
Uranium, dissolved	mg/L			0.000043	0.000083	0.00025	0.000084	0.000061	0.000051	0.000089	0.000074	0.000059	0.000051	0.000076	0.000090	0.000096	0.000058	0.000072	0.000077	
Vanadium, total	mg/L			0.00064	0.0036	0.0013	0.0011	0.00076	0.00071	0.00094	0.0010	0.00076	0.00071	0.0010	0.00099	0.0010	0.00076	0.00076	0.00100	
Vanadium, dissolved	mg/L			0.00025	0.00055	0.00074	0.00045	0.00032	0.00029	0.00043	0.00042	0.00032	0.00030	0.00043	0.00044	0.00046	0.00032	0.00034	0.00042	
Zinc, total	mg/L		0.0075	0.0015	0.0072	0.0028	0.0025	0.0018	0.0017	0.0021	0.0024	0.0018	0.0017	0.0025	0.0024	0.0024	0.0018	0.0018	0.0024	
Zinc, dissolved	mg/L			0.0015	0.0015	0.0028	0.0025	0.0018	0.0017	0.0021	0.0024	0.0018	0.0017	0.0025	0.0024	0.0024	0.0018	0.0018	0.0024	

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Table G-27

Parameter	Units	SPO	Bulkley River												
			WQG	Baseline		WQS11									
						Operations					Post-Closure				
						Alternative Case 2: High source terms				Alternative Case 5: Low flow	Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Total Hardness	mg-CaCO ₃ /L			28	38	28	29	28	28	29	29	29	28	28	29
Alkalinity, total	mg-CaCO ₃ /L			27	35	28	28	27	27	28	28	28	27	27	28
Chloride	mg/L		150	0.25	0.86	0.26	0.26	0.25	0.25	0.26	0.26	0.26	0.25	0.25	0.26
Fluoride	mg/L		0.12	0.023	0.035	0.024	0.024	0.023	0.023	0.024	0.024	0.024	0.023	0.023	0.024
Ammonia, total	mg-N/L		1.7	0.0050	0.017	0.0052	0.0052	0.0050	0.0050	0.0052	0.0052	0.0052	0.0050	0.0050	0.0052
Nitrate	mg/L		3	0.013	0.041	0.013	0.014	0.013	0.013	0.014	0.014	0.014	0.013	0.013	0.014
Nitrite	mg/L	0.0524	0.02	0.0020	0.0050	0.0021	0.0021	0.0020	0.0020	0.0021	0.0021	0.0021	0.0020	0.0020	0.0021
Sulfate	mg/L		128	4.0	5.0	4.1	4.2	4.0	4.0	4.2	4.2	4.2	4.0	4.0	4.2
Aluminum, total	mg/L	0.236	0.1	0.13	1.3	0.13	0.14	0.13	0.13	0.14	0.14	0.14	0.13	0.13	0.14
Aluminum, dissolved	mg/L		0.05	0.017	0.13	0.018	0.018	0.017	0.017	0.018	0.018	0.018	0.017	0.017	0.018
Antimony, total	mg/L			0.000050	0.00011	0.000052	0.000052	0.000050	0.000050	0.000052	0.000052	0.000052	0.000050	0.000050	0.000052
Antimony, dissolved	mg/L		0.009	0.000050	0.00010	0.000052	0.000052	0.000050	0.000050	0.000052	0.000052	0.000052	0.000050	0.000050	0.000052
Arsenic, total	mg/L		0.005	0.00024	0.00070	0.00025	0.00025	0.00024	0.00024	0.00025	0.00025	0.00025	0.00024	0.00024	0.00025
Arsenic, dissolved	mg/L			0.00016	0.00033	0.00017	0.00017	0.00016	0.00016	0.00017	0.00017	0.00017	0.00016	0.00016	0.00017
Barium, total	mg/L		1	0.026	0.038	0.027	0.027	0.026	0.026	0.027	0.027	0.027	0.026	0.026	0.027
Barium, dissolved	mg/L			0.023	0.032	0.024	0.024	0.023	0.023	0.024	0.024	0.024	0.023	0.023	0.024
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000052	0.000052	0.000050	0.000050	0.000052	0.000052	0.000052	0.000050	0.000050	0.000052
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000052	0.000052	0.000050	0.000050	0.000052	0.000052	0.000052	0.000050	0.000050	0.000052
Boron, total	mg/L		1.2	0.0050	0.010	0.0052	0.0052	0.0050	0.0050	0.0052	0.0052	0.0052	0.0050	0.0050	0.0052
Boron, dissolved	mg/L			0.0050	0.010	0.0052	0.0052	0.0050	0.0050	0.0052	0.0052	0.0052	0.0050	0.0050	0.0052
Cadmium, total	mg/L		0.00009	0.0000079	0.000021	0.0000082	0.0000082	0.0000079	0.0000079	0.0000082	0.0000082	0.0000082	0.0000079	0.0000079	0.0000082
Cadmium, dissolved	mg/L	0.00009	0.00008	0.0000025	0.0000065	0.0000026	0.0000026	0.0000025	0.0000025	0.0000026	0.0000026	0.0000026	0.0000025	0.0000025	0.0000026
Calcium, total	mg/L			8.8	11	9.1	9.2	8.8	8.8	9.2	9.1	9.2	8.8	8.8	9.2
Calcium, dissolved	mg/L			8.8	12	9.1	9.2	8.8	8.8	9.2	9.1	9.2	8.8	8.8	9.2
Chromium, total	mg/L		0.0089	0.00025	0.0012	0.00026	0.00026	0.00025	0.00025	0.00026	0.00026	0.00026	0.00025	0.00025	0.00026
Chromium, dissolved	mg/L			0.000050	0.00023	0.000052	0.000052	0.000050	0.000050	0.000052	0.000052	0.000052	0.000050	0.000050	0.000052
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00068	0.000052	0.000052	0.000050	0.000050	0.000052	0.000052	0.000052	0.000050	0.000050	0.000052
Cobalt, dissolved	mg/L			0.000050	0.00010	0.000052	0.000052	0.000050	0.000050	0.000052	0.000052	0.000052	0.000050	0.000050	0.000052
Copper, total	mg/L		0.002	0.00090	0.0029	0.00093	0.00094	0.00090	0.00090	0.00094	0.00093	0.00094	0.00090	0.00090	0.00094

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsx

Parameter	Units	SPO	Bulkley River												
			WQG	Baseline		WQS11									
						Operations					Post-Closure				
						Alternative Case 2: High source terms				Alternative Case 5: Low flow	Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Copper, dissolved	mg/L		0.00067	0.0020	0.00069	0.00070	0.00067	0.00067	0.00070	0.00070	0.00070	0.00067	0.00067	0.00070	
Iron, total	mg/L	0.3	0.18	1.3	0.19	0.19	0.18	0.18	0.19	0.19	0.19	0.18	0.18	0.19	
Iron, dissolved	mg/L	0.30	0.024	0.16	0.025	0.025	0.024	0.024	0.025	0.025	0.025	0.024	0.024	0.025	
Lead, total	mg/L	0.004	0.000095	0.00051	0.000098	0.000099	0.000095	0.000095	0.000099	0.000099	0.000099	0.000095	0.000095	0.000099	
Lead, dissolved	mg/L		0.000025	0.000050	0.000026	0.000026	0.000025	0.000025	0.000026	0.000026	0.000026	0.000025	0.000025	0.000026	
Lithium, total	mg/L		0.00050	0.0010	0.00052	0.00052	0.00050	0.00050	0.00052	0.00052	0.00052	0.00050	0.00050	0.00052	
Lithium, dissolved	mg/L		0.00050	0.0010	0.00052	0.00052	0.00050	0.00050	0.00052	0.00052	0.00052	0.00050	0.00050	0.00052	
Magnesium, total	mg/L		1.4	2.5	1.4	1.5	1.4	1.4	1.5	1.5	1.5	1.4	1.4	1.5	
Magnesium, dissolved	mg/L		1.3	2.7	1.3	1.4	1.3	1.3	1.4	1.4	1.4	1.3	1.3	1.4	
Manganese, total	mg/L	0.12	0.016	0.059	0.017	0.017	0.016	0.016	0.017	0.017	0.017	0.016	0.016	0.017	
Manganese, dissolved	mg/L		0.0052	0.020	0.0054	0.0054	0.0052	0.0052	0.0054	0.0054	0.0054	0.0052	0.0052	0.0054	
Mercury, total	mg/L	0.00001	0.0000025	0.0000055	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	
Mercury, dissolved	mg/L		0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	
Molybdenum, total	mg-N/L	0.073	0.00037	0.00055	0.00038	0.00039	0.00037	0.00037	0.00039	0.00038	0.00039	0.00037	0.00037	0.00039	
Molybdenum, dissolved	mg-N/L		0.00037	0.00045	0.0059	0.0059	0.0057	0.0057	0.0059	0.0059	0.0059	0.0057	0.0057	0.0059	
Nickel, total	mg/L	0.025	0.00025	0.0014	0.00026	0.00026	0.00025	0.00025	0.00026	0.00026	0.00026	0.00025	0.00025	0.00026	
Nickel, dissolved	mg/L		0.00025	0.0013	0.00026	0.00026	0.00025	0.00025	0.00026	0.00026	0.00026	0.00025	0.00025	0.00026	
Phosphorus, total	mg/L		0.0057	0.043	0.0059	0.0059	0.0057	0.0057	0.0059	0.0059	0.0059	0.0057	0.0057	0.0059	
Orthophosphate, dissolved	mg/L		0.0013	0.0040	0.0013	0.0014	0.0013	0.0013	0.0014	0.0014	0.0014	0.0013	0.0013	0.0014	
Potassium, total	mg/L		0.33	0.68	0.34	0.34	0.33	0.33	0.34	0.34	0.34	0.33	0.33	0.34	
Potassium, dissolved	mg/L		0.32	0.52	0.33	0.33	0.32	0.32	0.33	0.33	0.33	0.32	0.32	0.33	
Selenium, total	mg/L	0.008	0.002	0.000025	0.00020	0.000026	0.000026	0.000025	0.000025	0.000026	0.000026	0.000026	0.000025	0.000025	0.000026
Selenium, dissolved	mg/L			0.000025	0.000050	0.000026	0.000026	0.000025	0.000025	0.000026	0.000026	0.000026	0.000025	0.000025	0.000026
Silica, dissolved	mg/L			no data	no data	0.000098	0.00024	0.000026	0.000036	0.00023					
Sodium, total	mg/L			1.0	2.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Sodium, dissolved	mg/L			1.0	2.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Strontium, total	mg/L		7.0	0.040	0.061	0.041	0.042	0.040	0.040	0.042	0.042	0.040	0.040	0.042	
Strontium, dissolved	mg/L			0.040	0.055	0.041	0.042	0.040	0.040	0.042	0.042	0.040	0.040	0.042	
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	
Tin, total	mg/L			0.000050	0.00012	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm

Parameter	Units	SPO	Bulkley River												
			WQG	Baseline		WQS11									
						Operations					Post-Closure				
						Alternative Case 2: High source terms				Alternative Case 5: Low flow	Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000014	0.0000052	0.0000052	0.0000050	0.0000050	0.0000052	0.0000052	0.0000052	0.0000050	0.0000050	0.0000052
Thallium, dissolved	mg/L			0.0000050	0.000010	0.0000052	0.0000052	0.0000050	0.0000050	0.0000052	0.0000052	0.0000052	0.0000050	0.0000050	0.0000052
Uranium, total	mg/L		0.0085	0.000036	0.000094	0.000037	0.000038	0.000036	0.000036	0.000038	0.000037	0.000038	0.000036	0.000036	0.000038
Uranium, dissolved	mg/L			0.000028	0.000052	0.000029	0.000029	0.000028	0.000028	0.000029	0.000029	0.000029	0.000028	0.000028	0.000029
Vanadium, total	mg/L			0.00057	0.0050	0.00059	0.00059	0.00057	0.00057	0.00059	0.00059	0.00059	0.00057	0.00057	0.00059
Vanadium, dissolved	mg/L			0.00025	0.00060	0.00026	0.00026	0.00025	0.00025	0.00026	0.00026	0.00026	0.00025	0.00025	0.00026
Zinc, total	mg/L		0.0075	0.0015	0.0055	0.0016	0.0016	0.0015	0.0015	0.0016	0.0016	0.0016	0.0015	0.0015	0.0016
Zinc, dissolved	mg/L			0.0013	0.0045	0.0013	0.0014	0.0013	0.0013	0.0014	0.0014	0.0014	0.0013	0.0013	0.0014

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsx

Table G-28

Parameter	Units	SPO	Bulkley River												
			WQG	Baseline		WQS12									
						Operations					Post-Closure				
						Alternative Case 2: High source terms				Alternative Case 5: Low flow	Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Total Hardness	mg-CaCO ₃ /L			28	38	34	35	31	32	34	34	35	31	32	35
Alkalinity, total	mg-CaCO ₃ /L			27	35	33	34	30	31	33	33	35	30	31	34
Chloride	mg/L		150	0.25	0.86	0.30	0.29	0.26	0.27	0.29	0.28	0.32	0.26	0.28	0.30
Fluoride	mg/L		0.12	0.023	0.035	0.027	0.028	0.025	0.026	0.028	0.027	0.028	0.025	0.025	0.028
Ammonia, total	mg-N/L		1.7	0.0050	0.017	0.0054	0.0055	0.0047	0.0049	0.0055	0.0051	0.0056	0.0047	0.0049	0.0056
Nitrate	mg/L		3	0.013	0.041	0.017	0.016	0.014	0.014	0.015	0.015	0.018	0.014	0.015	0.018
Nitrite	mg/L	0.0524	0.02	0.0020	0.0050	0.0020	0.0021	0.0018	0.0019	0.0021	0.0020	0.0021	0.0018	0.0018	0.0021
Sulfate	mg/L		128	4.0	5.0	6.1	5.2	4.7	4.8	5.1	4.9	6.0	4.7	5.2	5.4
Aluminum, total	mg/L	0.236	0.1	0.13	1.3	0.15	0.16	0.14	0.14	0.16	0.15	0.16	0.14	0.14	0.16
Aluminum, dissolved	mg/L		0.05	0.017	0.13	0.021	0.022	0.019	0.020	0.021	0.021	0.022	0.019	0.020	0.021
Antimony, total	mg/L			0.000050	0.00011	0.000060	0.000059	0.000052	0.000053	0.000058	0.000055	0.000062	0.000052	0.000055	0.000058
Antimony, dissolved	mg/L		0.009	0.000050	0.00010	0.000060	0.000059	0.000052	0.000054	0.000059	0.000056	0.000062	0.000053	0.000055	0.000058
Arsenic, total	mg/L		0.005	0.00024	0.00070	0.00026	0.00028	0.00025	0.00026	0.00028	0.00026	0.00028	0.00025	0.00026	0.00028
Arsenic, dissolved	mg/L			0.00016	0.00033	0.00018	0.00019	0.00017	0.00017	0.00019	0.00018	0.00019	0.00017	0.00017	0.00018
Barium, total	mg/L		1	0.026	0.038	0.032	0.033	0.029	0.030	0.032	0.032	0.033	0.030	0.030	0.033
Barium, dissolved	mg/L			0.023	0.032	0.028	0.029	0.026	0.027	0.028	0.028	0.029	0.026	0.027	0.029
Beryllium, total	mg/L		0.00013	0.000050	0.00010	0.000055	0.000059	0.000051	0.000053	0.000058	0.000055	0.000059	0.000052	0.000053	0.000057
Beryllium, dissolved	mg/L			0.000050	0.00010	0.000055	0.000059	0.000051	0.000053	0.000058	0.000055	0.000059	0.000052	0.000053	0.000057
Boron, total	mg/L		1.2	0.0050	0.010	0.0060	0.0059	0.0052	0.0053	0.0058	0.0056	0.0063	0.0053	0.0055	0.0059
Boron, dissolved	mg/L			0.0050	0.010	0.0060	0.0059	0.0052	0.0053	0.0058	0.0055	0.0063	0.0053	0.0055	0.0059
Cadmium, total	mg/L		0.00009	0.0000079	0.000021	0.000014	0.000010	0.0000091	0.0000090	0.0000096	0.0000096	0.000012	0.0000089	0.000010	0.0000098
Cadmium, dissolved	mg/L	0.00009	0.00008	0.0000025	0.0000065	0.0000085	0.0000043	0.0000037	0.0000034	0.0000035	0.0000041	0.0000061	0.0000035	0.0000045	0.0000038
Calcium, total	mg/L			8.8	11	11	11	9.7	10	11	11	11	9.8	10	11
Calcium, dissolved	mg/L			8.8	12	11	11	9.7	10	11	11	11	9.8	10	11
Chromium, total	mg/L		0.0089	0.00025	0.0012	0.00027	0.00029	0.00025	0.00026	0.00028	0.00026	0.00029	0.00025	0.00026	0.00028
Chromium, dissolved	mg/L			0.000050	0.00023	0.000063	0.000060	0.000053	0.000054	0.000059	0.000056	0.000065	0.000053	0.000057	0.000060
Cobalt, total	mg/L	0.0174	0.004	0.000050	0.00068	0.000063	0.000059	0.000052	0.000053	0.000058	0.000055	0.000063	0.000052	0.000055	0.000058
Cobalt, dissolved	mg/L			0.000050	0.00010	0.000063	0.000059	0.000052	0.000053	0.000058	0.000055	0.000063	0.000052	0.000055	0.000058
Copper, total	mg/L		0.002	0.00090	0.0029	0.0010	0.0011	0.00097	0.00100	0.0011	0.0010	0.0011	0.00097	0.00100	0.0011

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsx

Parameter	Units	SPO	Bulkley River												
			WQG	Baseline		WQS12									
						Operations					Post-Closure				
						Alternative Case 2: High source terms				Alternative Case 5: Low flow	Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Copper, dissolved	mg/L			0.00067	0.0020	0.00074	0.00079	0.00070	0.00072	0.00079	0.00074	0.00080	0.00070	0.00072	0.00078
Iron, total	mg/L		0.3	0.18	1.3	0.22	0.23	0.21	0.21	0.23	0.22	0.23	0.21	0.21	0.23
Iron, dissolved	mg/L		0.30	0.024	0.16	0.038	0.038	0.034	0.034	0.036	0.039	0.038	0.034	0.034	0.037
Lead, total	mg/L		0.004	0.000095	0.00051	0.00011	0.00012	0.00010	0.00011	0.00012	0.00011	0.00012	0.00011	0.00011	0.00012
Lead, dissolved	mg/L			0.000025	0.000050	0.000030	0.000029	0.000026	0.000027	0.000029	0.000027	0.000031	0.000026	0.000027	0.000029
Lithium, total	mg/L			0.00050	0.0010	0.00094	0.00064	0.00057	0.00053	0.00060	0.00064	0.00085	0.00055	0.00069	0.00069
Lithium, dissolved	mg/L			0.00050	0.0010	0.00094	0.00064	0.00057	0.00053	0.00060	0.00064	0.00086	0.00055	0.00070	0.00069
Magnesium, total	mg/L			1.4	2.5	1.7	1.8	1.6	1.6	1.7	1.7	1.8	1.6	1.7	1.8
Magnesium, dissolved	mg/L			1.3	2.7	1.6	1.7	1.5	1.5	1.6	1.6	1.7	1.5	1.5	1.7
Manganese, total	mg/L		0.12	0.016	0.059	0.018	0.019	0.017	0.018	0.019	0.018	0.019	0.017	0.018	0.019
Manganese, dissolved	mg/L			0.0052	0.020	0.0061	0.0064	0.0057	0.0059	0.0063	0.0061	0.0066	0.0058	0.0059	0.0063
Mercury, total	mg/L		0.00001	0.0000025	0.0000055	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Mercury, dissolved	mg/L			0.0000025	0.0000050	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025	0.0000025
Molybdenum, total	mg-N/L		0.073	0.00037	0.00055	0.00044	0.00046	0.00041	0.00042	0.00045	0.00044	0.00047	0.00041	0.00042	0.00045
Molybdenum, dissolved	mg-N/L			0.00037	0.00045	0.0063	0.0067	0.0059	0.0061	0.0067	0.0063	0.0067	0.0059	0.0061	0.0066
Nickel, total	mg/L		0.025	0.00025	0.0014	0.00029	0.00029	0.00026	0.00027	0.00029	0.00027	0.00030	0.00026	0.00027	0.00029
Nickel, dissolved	mg/L			0.00025	0.0013	0.00029	0.00029	0.00026	0.00027	0.00029	0.00027	0.00030	0.00026	0.00027	0.00029
Phosphorus, total	mg/L			0.0057	0.043	0.0063	0.0067	0.0059	0.0061	0.0067	0.0063	0.0067	0.0059	0.0060	0.0066
Orthophosphate, dissolved	mg/L			0.0013	0.0040	0.0015	0.0016	0.0014	0.0014	0.0016	0.0015	0.0016	0.0014	0.0014	0.0016
Potassium, total	mg/L			0.33	0.68	0.39	0.39	0.34	0.35	0.38	0.36	0.41	0.34	0.36	0.39
Potassium, dissolved	mg/L			0.32	0.52	0.38	0.37	0.33	0.33	0.37	0.35	0.40	0.33	0.35	0.37
Selenium, total	mg/L	0.008	0.002	0.000025	0.00020	0.000064	0.000041	0.000039	0.000037	0.000039	0.000044	0.000054	0.000038	0.000045	0.000044
Selenium, dissolved	mg/L			0.000025	0.000050	0.000061	0.000040	0.000037	0.000035	0.000038	0.000041	0.000053	0.000036	0.000043	0.000042
Silica, dissolved	mg/L			no data	no data	1.8	1.4	1.2	1.2	1.2	1.9	1.4	1.3	1.3	1.4
Sodium, total	mg/L			1.0	2.5	2.1	1.3	1.2	1.1	1.2	1.4	1.8	1.1	1.5	1.5
Sodium, dissolved	mg/L			1.0	2.5	2.1	1.3	1.2	1.1	1.2	1.4	1.9	1.2	1.5	1.5
Strontium, total	mg/L		7.0	0.040	0.061	0.050	0.051	0.046	0.047	0.050	0.049	0.053	0.046	0.048	0.051
Strontium, dissolved	mg/L			0.040	0.055	0.049	0.050	0.045	0.046	0.049	0.048	0.052	0.045	0.046	0.050
Silver, total	mg/L		0.00005	0.0000050	0.000020	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Silver, dissolved	mg/L			0.0000050	0.000010	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050	0.0000050
Tin, total	mg/L			0.000050	0.00012	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsx

Parameter	Units	SPO	Bulkley River												
			WQG	Baseline		WQS12									
						Operations					Post-Closure				
						Alternative Case 2: High source terms				Alternative Case 5: Low flow	Alternative Case 2: High source terms				Alternative Case 5: Low flow
				P50	P95	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter	Max Summer	Max Winter	Average Summer	Average Winter	Max Winter
Tin, dissolved	mg/L			0.000050	0.00010	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Thallium, total	mg/L	0.0022	0.0008	0.0000050	0.000014	0.000010	0.0000066	0.0000055	0.0000053	0.0000058	0.0000060	0.0000082	0.0000054	0.0000064	0.0000059
Thallium, dissolved	mg/L			0.0000050	0.000010	0.000010	0.0000066	0.0000055	0.0000053	0.0000058	0.0000060	0.0000082	0.0000054	0.0000064	0.0000059
Uranium, total	mg/L		0.0085	0.000036	0.000094	0.000053	0.000047	0.000042	0.000042	0.000045	0.000045	0.000052	0.000042	0.000045	0.000047
Uranium, dissolved	mg/L			0.000028	0.000052	0.000044	0.000037	0.000033	0.000033	0.000035	0.000035	0.000042	0.000033	0.000036	0.000037
Vanadium, total	mg/L			0.00057	0.0050	0.00064	0.00068	0.00060	0.00061	0.00067	0.00064	0.00069	0.00060	0.00062	0.00067
Vanadium, dissolved	mg/L			0.00025	0.00060	0.00029	0.00030	0.00026	0.00027	0.00029	0.00028	0.00031	0.00026	0.00027	0.00029
Zinc, total	mg/L		0.0075	0.0015	0.0055	0.0016	0.0018	0.0015	0.0016	0.0017	0.0016	0.0018	0.0016	0.0016	0.0017
Zinc, dissolved	mg/L			0.0013	0.0045	0.0015	0.0016	0.0014	0.0014	0.0015	0.0015	0.0016	0.0014	0.0014	0.0015

Green highlight is a WQG exceedance

Red highlight is an SPO exceedance

Source: Z:\01_SITES\Telkwa Coal\1CT027.003_2020 EA Water Management\500_Water_Balance\Results\Feb2022_NewSourceTerms\Results_Streams_WaterQuality_EAModel_v29_20220207.xlsm