



# 2022 Implementation Plan Adjustment

## *Integrated Effects Assessment*

Submitted to:

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## ATTACHMENTS

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## 1.0 INTRODUCTION

ADEPT Environmental Sciences Ltd. (ADEPT) is pleased to provide Teck Coal Limited (Teck) with the following integrated effects assessment for the 2022 Implementation Plan Adjustment (2022 IPA). The assessment presented herein was conducted to evaluate potential effects to aquatic health associated with projected water quality concentrations in excess of the compliance limits and Site Performance Objectives (SPOs) outlined in *Environmental Management Act Amended Permit 107517* (1 December 2021).

The integrated effects assessment was conducted using methods developed for the Elk Valley Water Quality Plan (EVWQP) and applied in the 2019 IPA, with updates to reflect more recent refinements to aquatic health assessment tools. In brief,

- The assessment used an integrated effects table (IET) approach originally developed for the EVWQP and reported in Annex H (Integrated Assessment Report) of Teck (2014). The IETs for benthic invertebrates, fish, and amphibians<sup>1</sup> were recently updated as part of a program described in Golder (2021a) to progressively reduce uncertainties in Management Question 2 (MQ2) of Teck's Water Quality Adaptive Management Plan (Teck 2018, 2021). MQ2 asks: *Will the aquatic ecosystem be protected by meeting the long-term site performance objectives?* The IETs support answering MQ2 by transparently aggregating model output and ecological effects data in a format used as part of the approved EVWQP. Updated IET methods are discussed in Section 2.1.
- Projected water quality was evaluated for each individual year from 2021 to 2028 and for maximum projected water quality between 2029 and 2053 (hereafter, "assessment periods"). Maximum monthly average 90<sup>th</sup> percentile (P90) concentrations were assessed for each assessment period because these provide an upper-bound estimate of the level of exposure aquatic organisms are expected to experience; hence, they are effective for use in assessing potential effects to aquatic species related to projected concentrations in excess of the compliance limits and SPOs. Integrated assessments were conducted for nitrate, sulphate, and selenium. An integrated assessment was not conducted for cadmium because projected cadmium concentrations are lower than SPOs and compliance limits. Water quality projections are discussed in Section 2.2.
- Potential effects of nitrate and sulphate were calculated using updated effects information developed as part of the MQ2 program (Golder 2022). Effects equations for sensitive species and life stages of benthic invertebrates, fish, and amphibians were updated in Golder (2022) to incorporate new published and site-specific toxicity information. Golder (2022) also conducted a species sensitivity distribution (SSD) analysis to confirm that the updated effects equations adequately characterize potential effects to the most sensitive species and to refine approaches to characterizing potential effects to benthic invertebrate communities. Methods for the assessment of nitrate and sulphate are discussed in Section 2.3.
- The approach to calculating potential effects of selenium followed that developed for the EVWQP, which involved comparing tissue effects benchmarks for sensitive biota to predictions of selenium bioaccumulation. Golder (2022) confirmed that tissue effects information developed for the EVWQP remains an appropriate basis for evaluating potential effects. However, understanding of how mining affects selenium bioaccumulation has advanced since the EVWQP. The tools used to predict bioaccumulation were updated to incorporate that understanding by explicitly considering the effect of selenium speciation. Methods for the assessment of selenium are discussed in Section 2.4.

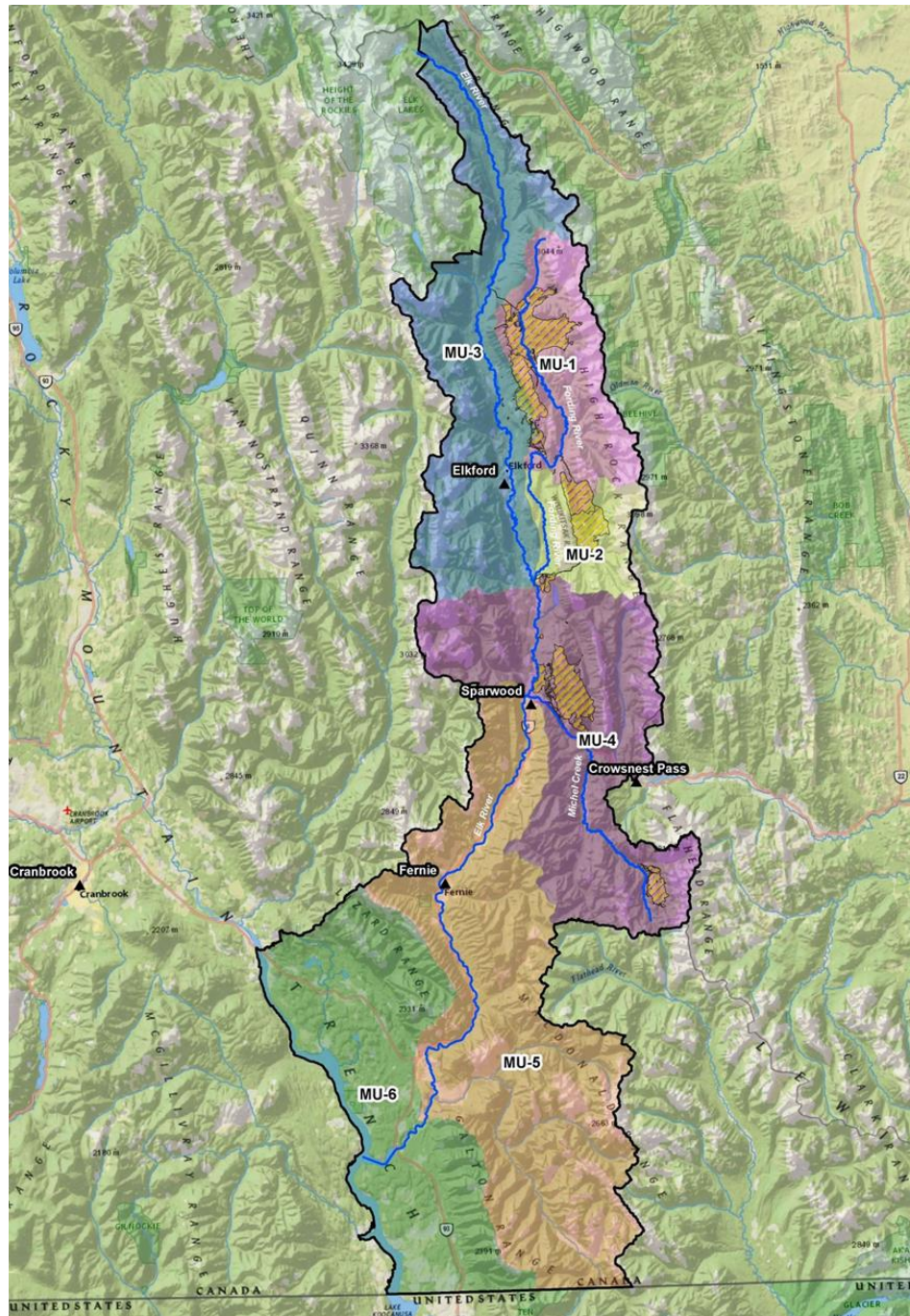
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<sup>1</sup> Additional IETs were developed in the EVWQP to evaluate potential effects of selenium on aquatic-feeding birds. These IETs were not updated in Golder (2021a) because previous evaluations for the EVWQP and 2019 IPA have found that fish consistently provide a more sensitive evaluation of potential effects of selenium.

- Spatially integrated results for projected concentrations of each constituent in each assessment period were summarized for comparison to area-based assessment criteria developed for the EVWQP and applied in the 2019 IPA. As in the EVWQP and 2019 IPA, spatially integrated results were calculated at a Management Unit (MU) level (Figure 1). Assessment criteria were applied to each MU in each assessment period. Assessment criteria are discussed in Section 2.5.

Results of the integrated assessment are provided in Section 3 and key findings are summarized in Section 4. Uncertainties in the assessment are discussed in Section 5.

**Figure 1: Management Units of the Elk Valley (Teck 2014)**





## 2.0 METHODS

### 2.1 Integrated Effects Tables

IETs were originally developed for the EVWQP (Teck 2014) as a tool to spatially aggregate assessment results in support of area based management. The IETs divide each MU into spatial subunits to evaluate potential effects of projected water quality in segments of mainstem rivers, mine-influenced tributaries, non-mine influenced (reference) tributaries, and associated off-channel habitats. Tributaries that are likely to be ephemeral and not influenced by mining were not included in the integrated assessment because quality of aquatic habitat in these areas is expected to be low and their inclusion would bias the influence of reference tributaries in the assessment. Upstream tributary areas that are isolated from the Fording or Elk River mainstems, such as those in upper Kilmarnock Creek, were not incorporated into the integrated assessment because they are not accessible to fish in the river mainstems, nor would they be a source of benthic drift to downstream areas. Excluding these areas avoided dilution of spatially integrated effects through inclusion of unconnected reference areas. All other mine-affected and connected reference areas were included as subunits in the IETs.

The delineation of spatial subunits in each MU was recently updated in Golder (2021a) to better align with biological monitoring locations and thereby facilitate comparison of projections to monitoring data summarized in the Aquatic Data Integration Tool (ADIT; Golder 2020a). As discussed in Golder (2021a), the updated IETs include all connected lotic (flowing-water) habitat in MUs 1 through 5, which comprises the great majority of aquatic habitat in the Elk Valley and the areas of the watershed exposed to mine-affected water quality. Lentic areas are not currently included in the IETs because existing water quality models do not provide predictions for these areas. The current IET approach therefore focuses on lotic areas, which aligns with the current state of the ADIT. Inclusion of lentic areas in the ADIT is limited by differences between lotic and lentic areas in species assemblages, exposure to potential stressors, and monitoring programs, some of which are still under development. As a result of these differences, lentic habitats require different monitoring and interpretive tools from lotic habitats. Incorporation of lentic areas into the ADIT is under development in co-ordination with development of lentic monitoring programs. The assessment herein applies the updated IETs prepared by Golder (2021a), and therefore focuses on lotic areas. The IETs evaluate potential effects to both sensitive lotic species (benthic invertebrates and fish) and sensitive lentic species (amphibians), and therefore assume that assessing the distribution of exposures in lotic areas provides a reasonable basis for assessing overall conditions across each MU, including lentic areas where present. This approach is expected to be reasonable for nitrate and sulphate and to represent a relatively small uncertainty for selenium because of the predominance of lotic habitat in all MUs. Uncertainty associated with exposure in lentic areas is discussed in Section 5.

In the process of updating spatial subunits in the IETs, Golder (2021a) also implemented updated information on total and fish-accessible habitat in all MUs and proportional fish use in MU1. Habitat area and fish accessibility information was developed by Ecofish Research Ltd. (Ecofish 2020) using a basin-level regression model fit to records from the BC Stream Inventory Sample Site in the Elk Valley. Fish use information was calculated by Teck from data reported in Cope et al. (2016) for adults in winter, spring, and summer-fall and redds in spring, reflecting the seasonality of spatial distribution of fish in this area. Based on input from Ecofish, information collected by Cope et al. (2016) was interpreted at a spatial scale of 11 river segments in the upper Fording River. Percent fish usage in each subunit of the IET was then estimated by apportioning the fish use of each segment across the subunits within that segment, proportional to the relative size of each subunit in terms of fish accessible habitat. Both area-weighted and use-weighted calculations of integrated effects to fish in MU1 are evaluated herein.

The EVWQP did not include an integrated effects table for Koocanusa Reservoir (MU6) because long-term targets for the reservoir were set at BC WQGs and were projected to be attained. An assessment of the modelling

node in Koocanusa Reservoir (RG\_DSELK) was added to the 2019 IPA to evaluate projected concentrations of selenium that were greater than the BC WQG. The same approach was taken herein. As in the 2019 IPA, projected concentrations of nitrate and sulphate in Koocanusa Reservoir were below BC WQGs and therefore did not warrant further assessment.

## 2.2 Water Quality Projections

Projected concentrations of nitrate, sulphate, selenium, and hardness (for the calculation of nitrate effects) were obtained from the water quality modelling analysis described in Section 2.2 of the 2022 IPA main report. Constituent concentrations in tributaries and other subunits unaffected by mining were set to average reference conditions and were assumed to remain unchanged over time, consistent with the approach used in the EVWQP and 2019 IPA. Constituent concentrations in other subunits were projected using the 2020 Regional Water Quality Model, as described in Section 2.2 of the 2022 IPA main report. Projected water quality was evaluated as maximum monthly P90 concentrations for each individual year from 2021 to 2028 and for the maximum monthly P90 concentration between 2029 and 2053.

Because not all subunits in the updated IETs contain a RWQM modelling node, projected water quality in some subunits was estimated from adjacent subunits. This estimation was conducted to maximize the amount of habitat in each MU that could be assessed and included in the spatially integrated effects calculation. In most cases, water quality was assumed to be the same as the nearest upstream subunit with a modelling node. This extrapolation assumes that there are no material sources of dilution or material inputs of mine-related constituents between the subunits in question. The former assumption may in some areas result in an over-estimation of projected water quality. The latter assumption is expected to be reasonable in most areas, given that the RWQM was designed to model all material inputs of mine-related constituents (i.e., if a material input was present, a modelling node would have been placed there). In a few cases, it was estimated that the nearest downstream subunit with a modelling node would provide a more reliable estimate of projected water quality.<sup>2</sup>

In the EVWQP IETs, potential effects were calculated for the most sensitive species and life stages using projected water quality in any month, regardless of whether the most sensitive life stages are present at the time when peak projected water quality occurs. The IETs were subsequently updated in the 2019 IPA to consider water quality in relevant seasons for each receptor. This update reflects the understanding that exposure windows vary by constituent, receptor, life stage, and MU. Use of a single maximum monthly concentration has the potential to introduce false positives, in that potential effects could be predicted because peak projected water quality occurs when the most sensitive life stage or receptor is not present. To reduce the potential for such false positives, the updated IETs considered the seasonality of the receptor pathway. This approach is consistent with Environment Canada (2012) Ecological Risk Assessment guidance that states that “[e]valuation of the use of the site should take into account seasonality as some potential receptors may only use the site for a portion of their life cycle”. In alignment with this principle, projected concentrations were assessed for the months during which the receptor or relevant sensitive life stage would be exposed, as summarized in Table 1.

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<sup>2</sup> Subunits for which water quality was estimated from the nearest downstream subunit were Michel Creek downstream of Bodie Creek (biological monitoring station MIDBO, estimated from MICOMP), Grave Creek downstream of Harmer Creek (GRCK, estimated from GRDS), Greenhills Creek upstream of Greenhills Sedimentation Pond (GHCKU, estimated from GHCKD), and the Fording River upstream of Line Creek (FRUL, estimated from FO23).

**Table 1: Assessment Windows (Table 1 of Annex I, 2019 IPA [Golder 2019a])**

Receptor	Constituent	Assessment Window	Rationale
Invertebrates	Nitrate, Sulphate, Selenium	All months	Invertebrates are present year-around.
Fish	Nitrate, Sulphate	MU1: May to August (early life stages), all months (other life stages)  MU2 to MU6: all months	Fish benchmarks are based on effects to embryos and alevins of sensitive fish species; assessment windows align with when early life stages could be present. Additional chronic benchmarks will be developed in Task 8 using toxicity testing data for juveniles and/or adults so that potential effects to fish can be evaluated using relevant benchmarks in all months.  In MU1, WCT is the only fish species present. Early life stages of WCT are present from mid May to August.  In other MUs, there are fish species with different spawning windows; early life stages could be present in any month.
	Selenium	All months	Timing of egg provisioning (when selenium is bioaccumulated) has not been sufficiently characterized to define an exposure window for reproductive effects. Growth of juvenile fish was assumed to occur in all months. Therefore, all months were considered potentially relevant to exposure of fish.
Amphibians	Nitrate, Sulphate, Selenium	April to August	Amphibians in the Elk Valley are spring spawners. Sensitive early life stages are present from spawning until metamorphosis, which occurs in summer.

**Notes:** IPA = Implementation Plan Adjustment; MU = management unit; WCT = westslope cutthroat trout. For fish in MU1, the month range is from the fish periodicity table for the upper Fording River (mid May to August), which is an expanded window relative to the 2019 IPA (June to August). As noted in Section 1, aquatic-feeding birds were not included in the present analysis because updated IETs are not available, but this is not expected to result in under-estimation of effects because fish have been found to provide a more sensitive evaluation of selenium than birds.

Maximum projected monthly average concentrations were identified independently for each subunit and assessment window, and were not temporally consistent across the MU within the time period of interest. For example, maximum concentrations in one subunit between January and December may be projected to occur in March while those in a different subunit may be projected to occur in August. These temporally disconnected results were combined in a single integrated effects assessment table to enable an assessment of integrated effects across the MU in question for each assessment period. This approach was used to constrain the number of assessment tables considered in the analysis, while at the same time minimizing the risk of under-estimating projected effects of projected concentrations in excess of compliance limits and SPOs.

### 2.3 Assessment of Nitrate and Sulphate

Potential effects of nitrate and sulphate were evaluated using updated effects information developed in Golder (2022) and implemented in the IETs in Golder (2021a) as part of the MQ2 program. Updated concentration-response models for sensitive invertebrates, fish, and amphibians were derived using an updated compilation of site-specific and literature laboratory toxicity data, including data available at the time of the EVWQP and subsequent to the EVWQP. Updated SSDs were also derived to evaluate updated effects concentrations for sensitive species relative to the distribution of sensitivity of other species. The analysis in Golder (2022) indicated the following:

- EVWQP benchmarks for effects of nitrate and sulphate on sensitive early life stages of fish were updated using site-specific testing conducted after the EVWQP. The evaluation confirmed that rainbow trout (*Oncorhynchus mykiss*) remains an appropriately sensitive species for development of fish benchmarks for both constituents. Updated effect concentrations were concluded to give an improved understanding of the concentration-response relationships for fish exposed to nitrate and sulphate in the Elk Valley.



- EVWQP benchmarks for effects of nitrate on sensitive invertebrates overpredicted effects in some site-specific testing conducted after the EVWQP. The evaluation confirmed that *C. dubia* remains an appropriately sensitive species for development of invertebrate benchmarks. Updated effect concentrations were concluded to give an improved and more reliable understanding of the concentration-response relationship for invertebrates exposed to nitrate in the Elk Valley.
- EVWQP benchmarks for effects of sulphate on sensitive invertebrates were updated using site-specific testing conducted after the EVWQP. The evaluation confirmed that *C. dubia* is an appropriately sensitive species for development of benchmarks, but also found that the tested mayfly species was similarly sensitive. The incorporation of additional recent site-specific *C. dubia* reproduction data resulted in a reversal in the ranked sensitivity of *C. dubia* and the mayfly *Neocloeon triangulifer*, such that the latter was, by a small margin, the most sensitive organism to sulphate exposures. Comparisons between *C. dubia* and mayfly datasets and concentration-response models used to derive updated effect concentrations alongside the EVWQP concentration-response models indicated that both species exhibited broadly similar sensitivity to sulphate. The available data do not provide a definitive basis for concluding that either organism is more sensitive than the other. Updated effect concentrations were calculated by Golder for both species and the more sensitive was adopted for the present analysis.
- EVWQP benchmarks for effects of nitrate and sulphate on amphibians were updated using site-specific testing conducted after the EVWQP. The evaluation confirmed that Northern leopard frog (*Lithobates pipiens*) remains an appropriately sensitive species for development of amphibian benchmarks. The evaluation concluded that more recent site-specific testing indicated similar sensitivity to sulphate but greater sensitivity to nitrate relative to the literature studies considered in the EVWQP. Updated effect concentrations were concluded to give an improved and more reliable understanding of the concentration-response relationship for amphibians exposed to nitrate and sulphate in the Elk Valley. For both nitrate and sulphate, Golder (2022) noted that estimated 10% effects concentrations for larval amphibian growth were interpolated within the no-effect concentration range and concluded that the updated concentration-response functions likely overestimate effects in this range. The analysis indicated that 20% effects concentrations provided a more reliable indication of potential effects.

The updated IETs prepared by Golder (2021a) implemented the updated toxicity information summarized above to calculate predicted effects to sensitive fish, benthic invertebrate, and amphibian species. This approach is consistent with the approach used in the EVWQP and is supported by the analysis in Golder (2022), which concluded that the updated toxicity relationships, by incorporating more information than was available at the time of the EVWQP, would provide improved and more reliable predictions of potential effects.

The updated IETs prepared by Golder (2021a) also implemented refinements to the calculation of the benthic invertebrate community endpoint. In the EVWQP, potential effects to benthic invertebrate communities (i.e., beyond the most sensitive species, with a greater potential to result in shifts in community structure) were evaluated using toxicity information for the second-most sensitive invertebrate species. The analysis in Golder (2022) provided a more informative basis for this evaluation in the form of updated SSDs. The updated toxicity compilation for nitrate contained sufficient information to develop an invertebrate-only SSD. Golder (2021a) implemented this invertebrate-only SSD to calculate the proportion of invertebrate species that could potentially be affected by nitrate. The updated toxicity compilation for sulphate did not contain sufficient information to develop an invertebrate-only SSD, but Golder (2022) noted a close overlap between the all-species SSD and the concentration-response curves for sensitive species (*N. triangulifer* and *C. dubia*), which indicates that increasing magnitude of effects to sensitive species also indicates potential effects to an increasing proportion of species. Following this logic, Golder (2021a) implemented the sensitive species concentration-response curve to calculate the proportion of benthic invertebrate species that could potentially be affected by sulphate.

Updates to nitrate and sulphate effects calculations in the IETs are summarized in Table 2.

**Table 2: Updates to Effects Calculations in Integrated Effects Tables**

Endpoint	EVWQP Approach	Updated Approach
<b>Benthic Invertebrates</b>		
Sensitive species	Estimate potential effects to the most sensitive species	Estimate potential effects to the most sensitive species using updated equations per results of MQ2 (Golder 2022)
Community	Apply rating based on potential effects to the most sensitive species and second most sensitive species	Estimate proportion of invertebrate species potentially affected using a species sensitivity distribution (nitrate) or approximated using predicted effects on sensitive species (sulphate)
<b>Fish and Amphibians</b>		
Direct effects to sensitive species	Estimate potential effects to the most sensitive species	Estimate potential effects to the most sensitive species using updated equations per results of MQ2 (Golder 2022)

## 2.4 Assessment of Selenium

Potential effects of selenium were calculated by combining tissue effects information for sensitive biota with predictions of selenium bioaccumulation. The approach was the same as that used in the EVWQP and 2019 IPA, with refinements as described below.

Studies of selenium toxicity conducted after the EVWQP have confirmed that tissue effects information developed for the EVWQP remains an appropriate basis for evaluating potential effects to sensitive species and life stages of aquatic life. Golder (2022) conducted an updated review of selenium toxicity literature and concluded that relevant and reliable selenium toxicity studies conducted after the EVWQP reported effects concentrations higher than those adopted as tissue benchmarks for the EVWQP. Therefore, the analysis herein applied the EVWQP tissue benchmarks (for benthic invertebrate reproduction) and concentration-response relationships (for fish reproduction).

In contrast, studies of selenium bioaccumulation conducted after the EVWQP have provided a refined understanding of how mining affects selenium bioaccumulation (Golder 2021b; ADEPT 2022). Specifically, these studies have found that most lotic areas in the Elk Valley exhibit a pattern of selenium bioaccumulation that can be attributed to the inorganic selenium species selenate (the dominant species) and selenite (typically present as about 1% of total selenium). Localized effects on selenium bioaccumulation immediately downstream of sedimentation ponds and the West Line Creek Active Water Treatment Facility (AWTF) have been attributed to the presence of the organoselenium species dimethylselenoxide and methylseleninic acid.

The refined understanding of how speciation affects bioaccumulation has been used to develop updated models to predict bioaccumulation. Golder (2020b) updated the statistical bioaccumulation models originally developed for the EVWQP to describe the prevailing pattern of bioaccumulation in lotic areas not affected by organoselenium (i.e., the majority of aquatic habitat in the Elk Valley). The updated lotic model derived by Golder (2020b) provided improved model performance for such areas relative to the EVWQP bioaccumulation model. In areas affected by organoselenium, more accurate predictions of bioaccumulation are provided by the speciation bioaccumulation model developed by de Bruyn and Luoma (2021). Golder (2021b) showed that sites with  $<0.025 \mu\text{g/L}$  organoselenium (as the sum of dimethylselenoxide and methylseleninic acid) conformed to the Golder (2020b) updated lotic model, whereas sites with  $\geq 0.025 \mu\text{g/L}$  organoselenium tended to exhibit higher bioaccumulation than predicted by the updated lotic model, and should be evaluated using the de Bruyn and Luoma (2021) model.

The assessment herein implemented the updated bioaccumulation models as follows:

- Projected maximum monthly selenium concentrations at all modelling locations were translated into tissue selenium concentrations using the updated lotic bioaccumulation model (Golder 2020b). This approach is the same as that used in the EVWQP, with the exception of using an updated model that is specific to areas unaffected by organoselenium. This calculation gives tissue selenium concentrations predicted to result from exposure to projected maximum monthly aqueous selenium concentrations, but does not account for localized effects of organoselenium.
- Spatial patterns of organoselenium in each MU were characterized using the maximum organoselenium concentration reported at each monitoring location in 2021. These organoselenium concentrations were compiled by ADEPT (2022) and were available for most mine-affected subunits in the IET. Missing values were replaced with the higher of the nearest upstream or downstream subunits; this extrapolation was applied to two subunits on the Fording River, two on the Elk River, and one on Grave Creek. Organoselenium concentrations in unaffected subunits were assumed to be negligible.
- The influence of organoselenium on bioaccumulation was calculated using the de Bruyn and Luoma (2021) model for each subunit. This calculation gives the incremental increase in tissue selenium concentrations predicted to result from exposure to the maximum 2021 reported organoselenium concentration for each subunit.
- The incremental increase calculated by the de Bruyn and Luoma (2021) model was added to the result of the Golder (2020b) model to give a predicted tissue selenium concentration that reflects both inorganic selenium species and organoselenium. The sum of these two terms was adopted as the estimated benthic invertebrate tissue selenium concentration for each subunit in each assessment period.

The approach outlined above allowed the assessment to consider projected future changes in aqueous total selenium concentrations from the RWQM, while also explicitly accounting for localized effects of organoselenium. It was necessary for this assessment to assume that the spatial pattern and magnitude of organoselenium concentrations measured in 2021 would provide a reasonable approximation of future organoselenium concentrations. This assumption was necessary because tools do not currently exist to project future changes to organoselenium concentrations. As discussed by ADEPT (2022), the processes that result in organoselenium generation are complex and not fully understood, and also appear to be highly site-specific, occurring to varying degrees in different areas such as downstream of some sedimentation ponds. Uncertainty associated with this assumption is discussed in Section 5.

As in the 2019 IPA, the assessment of selenium in Koocanusa Reservoir (MU6) considered that a range of lotic and lentic conditions may exist in this area. Analyses conducted by Golder (2018) indicated that zooplankton, benthic invertebrate, and fish selenium concentrations collected in Koocanusa Reservoir conform to the EVWQP bioaccumulation model for lotic areas. However, it has not been ruled out that some portions of the reservoir may exhibit lentic bioaccumulation conditions. To evaluate this possible range of conditions, peak projected selenium concentrations at RG\_DSELK were translated into modelled benthic invertebrate selenium concentrations using the update lotic (as in other MUs) and lentic bioaccumulation models derived by Golder (2020b). Results from the two models were considered to represent the range of possible conditions at different locations in the reservoir.

Benthic invertebrate tissue selenium concentrations calculated following the approaches outlined above were evaluated by comparing to EVWQP benchmarks for invertebrates and juvenile fish. Fish egg selenium concentrations were calculated using the invertebrate to fish eggs trophic transfer model from the EVWQP (Section 3.2 in Annex E of Teck 2014) and were then used to calculate potential effects on fish reproduction using concentration-response relationships from the EVWQP (Section 3.1 in Annex E of Teck 2014). As in the EVWQP,

the concentration-response relationship for WCT (*Oncorhynchus clarkii lewisi*) was used in the upper Fording River (MU1) and the concentration-response relationship for brown trout (*Salmo trutta*) was used in all other MUs as a surrogate for other potentially sensitive fish species. The approach herein differed from that in the EVWQP by directly applying modelled estimates of exposure and potential effects in each subunit (using the refined assessment tools described above), rather than using the selenium effects curves developed for the EVWQP. Uncertainty associated with this difference in approaches is discussed in Section 5.

Amphibians were not specifically assessed for selenium in the EVWQP or 2019 IPA because sufficient information was not available to reliably predict and evaluate tissue selenium concentrations. The updated toxicity literature review conducted by Golder (2022) also did not identify any relevant and reliable toxicity information for amphibians. The EVWQP concluded that predicted selenium effects on fish would likely provide a conservative assessment for amphibians, and that approach was taken herein.

## 2.5 Assessment Criteria

Spatially integrated results from the IETs were evaluated relative to assessment criteria developed for the EVWQP and applied in the 2019 IPA. As in the EVWQP and 2019 IPA, spatially integrated results were calculated separately for each MU and assessment criteria were applied to each MU in each assessment period.

Potential effects expressed as a percentage were spatially integrated using an area-weighted approach to identify the percent effect across the entire MU (e.g., a 5% predicted integrated effect of nitrate on *C. dubia* reproduction across MU1). The spatial integration assumed that all habitat is of equal value and receives equal use. The calculation involved multiplying the percent effect in each subunit by the habitat present in the subunit, adding all of the resulting values, and then dividing by the total habitat available in the MU. In the upper Fording River (MU1), a supplemental spatial integration for fish was conducted weighted by relative use of different areas by fish, which was characterized as discussed in Section 2.1. In Kooncanusa Reservoir (MU6), conditions throughout the MU were assumed to be represented by projected water quality at RG\_DSELK.

Spatially integrated values were compared to critical effect sizes of 10 and 20% to assess protection of aquatic life. A critical effect size is a level of effect, defined on the basis of controlled laboratory experiments of sublethal effects to sensitive test species, below which changes to populations or communities of sensitive aquatic species in the environment are not expected to occur. The US EPA identifies 20% as a critical effect size for most cases. It represents an effect on laboratory organisms that is sometimes statistically distinct from reference or control conditions but that is not expected to cause meaningful and measurable changes in a natural population (US EPA 1999, 2013). Suter et al. (1995) also use a critical effect size of 20% but acknowledge that the minimum detectable effect varies by species, habitat and sampling method. For mobile species, they conclude that a difference of less than 20% can seldom be reliably detected and represent a *de minimis* effects level. A USGS study by Mebane (2010) similarly identifies a 20% critical effect size for benthic invertebrates in any environment and for fish when exposed to a single stressor, although they suggest a smaller effect size of 10% for fish when multiple stressors are present.

Based on the above and consistent with the approach used in the EVWQP and the 2019 IPA, potential effects on sensitive aquatic receptors in each subunit were first assessed as follows. Concentrations of selenium, sulphate, and nitrate were evaluated using concentration-response curves where available. Where a concentration-response curve was not available (i.e., for evaluating potential effects of selenium on invertebrates), concentrations were compared to level 1 benchmarks representing a 10% effect size and to level 2 benchmarks representing a 20% effect size. Results of the comparison were expressed either as a percentage potential effect

on the receptor organism and most sensitive life-history endpoint (e.g., an 8% effect on *C. dubia* reproduction) or as a categorical result (e.g., <level 1 benchmark).

The evaluation of integrated effects applied the following integrated effects assessment criteria, which are derived from the corresponding critical effect sizes:

For the protection of benthic invertebrate community structure and abundance:

- a predicted integrated effect size of <20% to the benthic invertebrate community endpoint across the MU (if concentration-response information is available)
- a predicted effect size of <20% in all mainstem subunits of the Elk and Fording rivers (if concentration-response information is available) or concentrations less than the level 2 benthic invertebrate community benchmark (if not)

For the protection of fish and amphibian populations:

- a predicted integrated effect size of <10% across the MU for the most sensitive fish or amphibian life-history endpoint
- a predicted effect size of <10% in all mainstem subunits of the Elk and Fording rivers

Benthic invertebrate criteria focused on maintaining effect sizes <20% for the most sensitive species and life-history endpoint because Suter et al. (1995), Mebane (2010) and US EPA (1999, 2013) suggest that these will be protective and prevent measurable and ecologically meaningful changes to benthic invertebrate communities. Lower effect sizes were used for fish and amphibians in recognition of the analysis of Mebane (2010), which indicated that effect sizes of 10% are recommended for fish when multiple stressors are present.

If all integrated assessment criteria were met, then predicted conditions are expected to be protective of aquatic health in the MU. Exceeding one or more of these integrated assessment criteria for an MU does not necessarily mean that aquatic health would not be protected; however, it does require consideration of any such exceedances to evaluate the level of risk.

## 3.0 RESULTS

### 3.1 Nitrate

Integrated assessment results for nitrate are summarized in Table 3 (benthic invertebrates), Table 4 (fish), and Table 5 (amphibians). IETs are provided in Appendix A.

**Table 3. Integrated Assessment Results for Nitrate Effects on Benthic Invertebrates**

Assessment Period	Integrated Effect on Community Endpoint					Proportion of Mainstem <L2 Community Effect				
	MU1	MU2	MU3	MU4	MU5	MU1	MU2	MU3	MU4	MU5
2021	4%	2%	0%	0%	0%	100%	100%	100%	100%	100%
2022	3%	2%	0%	0%	0%	100%	100%	100%	100%	100%
2023	3%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2024	1%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2025	1%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2026	1%	0%	0%	0%	0%	100%	100%	100%	100%	100%
2027	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%
2028	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%
2029-2053	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%



**Table 4. Integrated Assessment Results for Nitrate Effects on Fish**

Assessment Period	Integrated Effect on Most Sensitive Endpoint					Proportion of Mainstem <10% Effect				
	MU1 <sup>(a)</sup>	MU2	MU3	MU4	MU5	MU1	MU2	MU3	MU4	MU5
2021	2% / 6%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2022	2% / 5%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2023	0% / 1%	0%	0%	0%	0%	100%	100%	100%	100%	100%
2024	0% / 0%	0%	0%	0%	0%	100%	100%	100%	100%	100%
2025	0% / 0%	0%	0%	0%	0%	100%	100%	100%	100%	100%
2026	0% / 0%	0%	0%	0%	0%	100%	100%	100%	100%	100%
2027	0% / 0%	0%	0%	0%	0%	100%	100%	100%	100%	100%
2028	0% / 0%	0%	0%	0%	0%	100%	100%	100%	100%	100%
2029-2053	0% / 0%	0%	0%	0%	0%	100%	100%	100%	100%	100%

<sup>(a)</sup> Results for MU1 are shown weighted by area (first value) and by fish use (second value)

**Table 5. Integrated Assessment Results for Nitrate Effects on Amphibians**

Assessment Period	Integrated Effect on Most Sensitive Endpoint					Proportion of Mainstem <10% Effect				
	MU1	MU2	MU3	MU4	MU5	MU1	MU2	MU3	MU4	MU5
2021	2%	2%	0%	0%	0%	100%	100%	100%	100%	100%
2022	2%	2%	0%	0%	0%	100%	100%	100%	100%	100%
2023	2%	2%	0%	0%	0%	100%	100%	100%	100%	100%
2024	1%	2%	0%	0%	0%	100%	100%	100%	100%	100%
2025	1%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2026	1%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2027	1%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2028	1%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2029-2053	1%	1%	0%	0%	0%	100%	100%	100%	100%	100%

Assessment criteria were met for benthic invertebrates, fish, and amphibians in all years across all five MUs. These results are consistent with the 2019 IPA.

The effect of incorporating fish use information into the IET in MU1 was to increase the predicted integrated effect of nitrate in 2021, 2022, and 2023. This increase was related to the higher estimated use of LCO Dry Creek for spawning (about 6% of total fish spawning in MU1) relative to the area of LCO Dry Creek (about 2% of total fish accessible habitat in MU1). Projected nitrate concentrations in LCO Dry Creek in 2021 and 2022 were relatively high, and the relatively higher weighting given to this area in the fish use calculation resulted in higher spatially integrated effects. After 2022, projected nitrate concentrations in this area decline and the fish use integration was no longer as markedly distinct from the area weighted integration.

## 3.2 Sulphate

Integrated assessment results for sulphate are summarized in Table 6 (benthic invertebrates), Table 7 (fish), and Table 8 (amphibians). IETs are provided in Appendix A.

**Table 6. Integrated Assessment Results for Sulphate Effects on Benthic Invertebrates**

Assessment Period	Integrated Effect on Community Endpoint					Proportion of Mainstem <L2 Community Effect				
	MU1	MU2	MU3	MU4	MU5	MU1	MU2	MU3	MU4	MU5
2021	2%	0%	0%	0%	0%	100%	100%	100%	100%	100%
2022	2%	0%	0%	0%	0%	100%	100%	100%	100%	100%
2023	2%	0%	0%	0%	0%	100%	100%	100%	100%	100%
2024	2%	0%	0%	1%	0%	100%	100%	100%	100%	100%
2025	2%	0%	0%	1%	0%	100%	100%	100%	100%	100%
2026	2%	0%	0%	1%	0%	100%	100%	100%	100%	100%
2027	2%	0%	0%	1%	0%	100%	100%	100%	100%	100%
2028	2%	0%	0%	1%	0%	100%	100%	100%	100%	100%
2029-2053	2%	0%	0%	2%	0%	100%	100%	100%	100%	100%

**Table 7. Integrated Assessment Results for Sulphate Effects on Fish**

Assessment Period	Integrated Effect on Most Sensitive Endpoint					Proportion of Mainstem <10% Effect				
	MU1 <sup>(a)</sup>	MU2	MU3	MU4	MU5	MU1	MU2	MU3	MU4	MU5
2021	2% / 3%	1%	0%	1%	0%	100%	100%	100%	100%	100%
2022	2% / 3%	1%	0%	1%	0%	100%	100%	100%	100%	100%
2023	2% / 3%	1%	0%	1%	0%	100%	100%	100%	100%	100%
2024	2% / 3%	1%	0%	1%	0%	100%	100%	100%	100%	100%
2025	3% / 4%	2%	0%	1%	0%	100%	100%	100%	100%	100%
2026	3% / 4%	1%	0%	1%	0%	100%	100%	100%	100%	100%
2027	2% / 3%	1%	0%	1%	0%	100%	100%	100%	100%	100%
2028	2% / 3%	2%	0%	1%	0%	100%	100%	100%	100%	100%
2029-2053	3% / 5%	2%	0%	1%	0%	100%	100%	100%	100%	100%

<sup>(a)</sup> Results for MU1 are shown weighted by area (first value) and by fish use (second value)

**Table 8. Integrated Assessment Results for Sulphate Effects on Amphibians**

Assessment Period	Integrated Effect on Most Sensitive Endpoint					Proportion of Mainstem <10% Effect <sup>(a)</sup>				
	MU1	MU2	MU3	MU4	MU5	MU1	MU2	MU3	MU4	MU5
2021	2%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2022	2%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2023	2%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2024	2%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2025	2%	2%	0%	0%	0%	100%	100%	100%	100%	100%
2026	2%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2027	2%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2028	2%	1%	0%	0%	0%	100%	100%	100%	100%	100%
2029-2053	2%	1%	0%	0%	0%	100%	100%	100%	100%	100%

Assessment criteria were met for benthic invertebrates, fish, and amphibians in all years across all five MUs. These results are consistent with the 2019 IPA.

The effect of incorporating fish use information into the spatial integration in MU1 was a small increase in the predicted integrated effect of sulphate in all assessment periods, reflecting a slightly different weighting of subunits relative to the area based calculation. There was no single subunit that had a relatively large influence on the calculation (as was identified for nitrate).

### 3.3 Selenium

Integrated assessment results for selenium are summarized in Table 9 (benthic invertebrates) and Table 10 (fish). IETs are provided in Appendix A.

**Table 9. Integrated Assessment Results for Selenium Effects on Benthic Invertebrates**

Assessment Period	Integrated Effect on Community Endpoint					Proportion of Mainstem <L2 Community Effect				
	MU1	MU2	MU3	MU4	MU5	MU1	MU2	MU3	MU4	MU5
2021	nc	nc	nc	nc	nc	100%	100%	100%	100%	100%
2022	nc	nc	nc	nc	nc	100%	100%	100%	100%	100%
2023	nc	nc	nc	nc	nc	100%	100%	100%	100%	100%
2024	nc	nc	nc	nc	nc	100%	100%	100%	100%	100%
2025	nc	nc	nc	nc	nc	100%	100%	100%	100%	100%
2026	nc	nc	nc	nc	nc	100%	100%	100%	100%	100%
2027	nc	nc	nc	nc	nc	100%	100%	100%	100%	100%
2028	nc	nc	nc	nc	nc	100%	100%	100%	100%	100%
2029-2053	nc	nc	nc	nc	nc	100%	100%	100%	100%	100%

nc = not calculated because effect not expressed as percentage

**Table 10. Integrated Assessment Results for Selenium Effects on Fish**

Assessment Period	Integrated Effect on Most Sensitive Endpoint					Proportion of Mainstem <10% Effect				
	MU1 <sup>(a)</sup>	MU2	MU3	MU4	MU5	MU1	MU2	MU3	MU4	MU5
2021	2% / 0%	5%	2%	2%	2%	100%	100%	100%	100%	100%
2022	2% / 0%	5%	2%	2%	2%	100%	100%	100%	100%	100%
2023	2% / 0%	5%	2%	2%	2%	100%	100%	100%	100%	100%
2024	2% / 0%	5%	2%	2%	2%	100%	100%	100%	100%	100%
2025	2% / 0%	5%	2%	2%	2%	100%	100%	100%	100%	100%
2026	2% / 0%	5%	2%	2%	2%	100%	100%	100%	100%	100%
2027	2% / 0%	4%	2%	2%	2%	100%	100%	100%	100%	100%
2028	2% / 0%	4%	2%	2%	2%	100%	100%	100%	100%	100%
2029-2053	2% / 0%	4%	2%	2%	2%	100%	100%	100%	100%	100%

<sup>(a)</sup> Results for MU1 are shown weighted by area (first value) and by fish use (second value)

Assessment criteria were met for benthic invertebrates and fish in all assessment periods across MUs 1 through 5. These results are consistent with or improved relative to the 2019 IPA.

The effect of incorporating fish use information into the spatial integration in MU1 was a small decrease in the predicted integrated effect of selenium in all model years. This change reflects relatively low estimated use by adult fish of mine-affected tributaries, and therefore relatively low estimated exposure to the benthic invertebrate selenium concentrations that occur immediately downstream of some sedimentation ponds.

Assessment results for selenium in Koocanusa Reservoir (MU6 at RG\_DSELK) are summarized in Table 11.

**Table 11. Assessment Results for Selenium Effects in Koocanusa Reservoir (MU6)**

Assessment Period	Projected Total [Se] (µg/L)	Modelled BI [Se] (mg/kg dw)	Modelled Fish Egg [Se] (mg/kg dw)	Predicted Effect on Invertebrates		Predicted Effect on Sensitive Fish Species	
				Sensitive Species Endpoint	Community Endpoint	Reproduction	Juvenile Growth
2021	2.9	5.7 / 10.7	11.0 / 18.2	<L1 / <L1	<L1 / <L1	2% / 11%	3% / 10%
2022	2.8	5.6 / 10.6	11.0 / 17.9	<L1 / <L1	<L1 / <L1	2% / 11%	3% / 9%
2023	2.5	5.6 / 10.1	11.0 / 17.0	<L1 / <L1	<L1 / <L1	2% / 9%	2% / 8%
2024	2.3	5.6 / 9.8	10.9 / 16.4	<L1 / <L1	<L1 / <L1	2% / 8%	2% / 8%
2025	2.3	5.6 / 9.8	10.9 / 16.4	<L1 / <L1	<L1 / <L1	2% / 8%	2% / 8%
2026	2.2	5.6 / 9.6	10.9 / 16.1	<L1 / <L1	<L1 / <L1	2% / 7%	2% / 8%
2027	2.2	5.6 / 9.6	10.9 / 16.1	<L1 / <L1	<L1 / <L1	2% / 7%	2% / 8%
2028	1.9	5.5 / 9.1	10.9 / 15.1	<L1 / <L1	<L1 / <L1	2% / 6%	2% / 7%
2029-2053	1.9	5.5 / 9.1	10.9 / 15.1	<L1 / <L1	<L1 / <L1	2% / 6%	2% / 7%

Model results are shown for assumed lotic bioaccumulation conditions (first value) and lentic bioaccumulation conditions (second value); [Se] = selenium concentration; BI = benthic invertebrate; L1 = level 1 benchmark

As discussed in Section 2.5, projected water quality at RG\_DSELK was used to evaluate potential effects on invertebrates and fish in Koocanusa Reservoir, applying the same assessment criteria as in other MUs (<10% predicted effect on the most sensitive fish endpoint; <20% predicted effect on the invertebrate community endpoint). Assessment criteria in Koocanusa Reservoir were met for benthic invertebrates in all years and for fish in all assessment periods (assuming lotic bioaccumulation conditions) or after 2022 (assuming lentic bioaccumulation conditions). Considering that the analysis of Golder (2018) indicated that available data from Koocanusa Reservoir conform to the lotic bioaccumulation model, it is expected that integrated conditions across MU6 in all assessment periods would meet assessment criteria for fish comparable to those applied to the other MUs.

## 4.0 SUMMARY OF KEY FINDINGS

The objective of this analysis was to evaluate projected water quality greater than compliance limits and SPOs. Constituent-specific assessments were conducted using the same approach used in the 2019 IPA, with refinements to incorporate updated aquatic health assessment tools as described in Section 2. The interpretation summarized below considers that the assessment criteria applied in this analysis were derived in the EVWQP to reflect attainment of area-based protection goals for aquatic health. Where assessment criteria are met, those protection goals are considered to have been attained.

Key findings of the integrated assessment are:

- Nitrate – Assessment criteria were met for benthic invertebrates, fish, and amphibians for all assessment periods (2021-2053) in all assessed MUs (1-5).
- Sulphate – Assessment criteria were met for benthic invertebrates, fish, and amphibians for all assessment periods (2021-2053) in all assessed MUs (1-5).
- Selenium – Assessment criteria were met for benthic invertebrates, fish, and amphibians for all assessment periods (2021-2053) in all assessed MUs (1-6).

Based on the above results, projected water quality conditions as presented in the 2022 IPA are expected to be protective of aquatic health in the MUs.

## 5.0 UNCERTAINTY

Key areas of uncertainty in the integrated effects assessment, and steps taken to evaluate and manage uncertainty, are discussed below.

### **Incorporation of refined assessment tools to reduce uncertainty**

The IEA update incorporates a number of learnings since the last update, which has reduced uncertainty in the assessment in the following ways:

- Improved understanding of the influence of organoselenium on bioaccumulation has reduced model variability. Sites influenced by organoselenium can be modelled separately from sites that are not influenced by organoselenium species, which reduces model variability and corresponding uncertainty that was associated with trying to model all sites with a single model. Using the refined approach, sites not influenced by organoselenium have lower modelled tissue concentrations compared to the EVWQP bioaccumulation model, whereas sites influenced by organoselenium have generally higher concentrations. In both cases, the updated modelling approach provides a better match to measured values compared to the previous approach (Golder 2020b; de Bruyn and Luoma 2021).
- Reduced variability in modelled bioaccumulation has allowed for simplification in estimation of percent effects to fish in each subunit. The relatively high variability in modelled selenium tissue concentrations resulting from the single bioaccumulation model used in the EVWQP warranted a complex approach to calculate effects in a way that integrated across that expected variability in exposure. With the lower residual variability associated with the updated approach to modelling bioaccumulation, the methodology could be simplified to a calculation of percent effects associated with mean modelled tissue concentrations. This change in methodology is also supported by analyses conducted as a follow-up to the 2019 IPA (Golder 2019b). Specifically, Golder (2019b) concluded that modelled mean fish egg selenium concentrations tend to over-estimate the distribution of measured concentrations in MU1. The modelled (wide) variability around the modelled mean egg selenium concentrations (as assumed in the EVWQP effects calculation) was not observed in measured data.
- Updated concentration response relationships for calculating effects of nitrate and sulphate on benthic invertebrates, fish, and amphibians were developed under a program to progressively reduce uncertainties in MQ2 of Teck's Water Quality Adaptive Management Plan (Golder 2022). Effects equations for sensitive species and life stages were updated in Golder (2022) to incorporate new published and site-specific toxicity information, in combination with the information that was available at the time benchmarks were derived for the EVWQP. Golder (2022) also conducted an updated SSD analysis to confirm that the updated concentration response relationships remain predictive of potential effects to sensitive species.

### **Approach to evaluating lentic areas**

The IETs used for this analysis included all connected lotic habitat in MUs 1 through 5. Although lotic areas comprise the great majority of aquatic habitat in the Elk Valley and the areas most exposed to mine-affected water quality, there are lentic areas in all MUs that could also be exposed to mine-affected water quality. Lentic areas are not currently included in the IETs because existing water quality models do not provide predictions for these areas. Therefore, there is uncertainty with respect to potential effects to sensitive aquatic life in lentic areas.

The integrated effects assessment approach manages this uncertainty in several ways:

- The benchmarks and updated effects information used in the assessment were derived to be predictive of potential effects to the most sensitive benthic invertebrate, fish, and amphibian species that could occur in either lotic or lentic areas.



- Analyses conducted for the EVWQP (Appendix B of Annex E of the EVWQP) showed that water quality in lentic areas in the Elk Valley exhibits a range of mine influence, with some highly connected lentic areas having water quality similar to adjacent lotic areas, some less connected lentic areas exhibiting non-mine affected (reference) water quality, and some intermediate between these conditions. Therefore, projected water quality in lotic areas is expected to provide a reasonable and/or conservative characterization of the water quality that would occur in lentic areas.
- Amphibian species in the Elk Valley breed in lentic areas, and therefore sensitive early life stages would be exposed to water quality in lentic areas. The assessment of amphibians assumed exposure to lotic water quality in all areas, which is likely a conservative basis for evaluating potential effects of nitrate and sulphate in lentic areas for reasons discussed in the previous bullet.

The main residual uncertainty related to lentic areas is the potential for selenium bioaccumulation to be greater than that observed in adjacent lotic areas, with an associated increase in potential effects on sensitive species of benthic invertebrates and fish relative to assessment results for adjacent lotic areas. This uncertainty may be somewhat reduced by the observation that more highly connected lentic areas (with selenium concentrations more closely reflecting adjacent lotic areas) will necessarily have relatively low hydraulic residence times, and therefore are more likely to exhibit “semi-lentic” bioaccumulation conditions (Golder 2020b). However, assessment tools do not currently exist to make site-specific predictions of water quality, bioaccumulation, and potential effects in most lentic areas in the Elk Valley. Therefore, to the extent that some lentic areas may exhibit higher bioaccumulation than adjacent lotic areas, the effect of these conditions on integrated effects across the MU (which may not be large, given the relatively small area of lentic habitat in each MU) would not be captured.

A sensitivity analysis was conducted to evaluate the potential for the approach taken herein to underestimate spatially integrated effects of selenium. The sensitivity analysis was conducted for fish reproduction, which is the most sensitive endpoint for selenium, and focused on the upper Fording River (MU1), which is the area with the highest current and projected aqueous selenium concentrations. Therefore, this analysis is expected to provide the greatest estimated effect of lentic areas on spatially integrated effects. The sensitivity analysis was conducted as follows:

- As in Annex H (Integrated Effects Assessment) of the EVWQP, 9 ha in MU1 (approximately 10% of the total fish-accessible habitat in MU1) was characterized as being off-channel habitat. These areas include side channels, back channels, seasonally connected oxbows, and areas such as marshes, ponds, and beaver impoundments that have a surface water connection to the mainstem Fording River. The EVWQP analysis of selenium bioaccumulation concluded that these areas exhibit a range of bioaccumulation characteristics, with the majority being similar to lotic areas or exhibiting “semi-lentic” bioaccumulation. However, sufficient information does not currently exist to predict which areas exhibit what level of selenium bioaccumulation.
- The area characterized as off-channel habitat was assumed to be used by fish in proportion to its estimated area. This assumption is expected to potentially over-estimate the exposure of fish to selenium in these areas because it does not account for seasonal changes in connectivity and suitability (e.g., some such areas dry up in summer and/or freeze up in winter) or uncertainty in food availability and other elements of suitability for fish feeding (noting that exposure of fish to selenium is necessarily via diet).
- Per the analysis in Annex E (Benchmark Derivation Report for Selenium) of the EVWQP, one-third of off-channel habitat was estimated to have water quality equal to the Fording River mainstem, one-third was estimated to have unaffected water quality, and one-third was estimated to have water quality intermediate between these extremes. For the sensitivity analysis, mainstem water quality was characterized as the mean aqueous selenium concentration across subunits of the upper Fording River in each assessment period.

- The updated “fully lentic” bioaccumulation model from Golder (2020b) was applied to model benthic invertebrate selenium concentrations in each of the three categories of off-channel exposure (mainstem, reference, and intermediate). This calculation is expected to over-estimate selenium exposure because, as shown by analyses in the EVWQP and Golder (2020b), most off-channel areas do not have the biogeochemical characteristics that result in fully lentic patterns of bioaccumulation. Therefore, this calculation provides a potentially large over-estimation of the influence of lentic areas on the spatially integrated effects calculation for selenium.
- The calculation described above resulted in an increase in spatially integrated effects of selenium in MU1 from 2% to 7% in all assessment periods. There was no effect of this calculation on the proportion of mainstem habitat meeting assessment criteria. Thus, inclusion of assumed lentic areas as described above did not change the overall outcome, which was that the assessment criterion was attained in all assessment periods. As noted in the previous bullets, this calculation is expected to give a conservative over-estimate of the potential influence of lentic areas on the spatially integrated assessment.

Uncertainty around selenium bioaccumulation in lentic areas is being progressively reduced through ongoing monitoring of tissue selenium concentrations and development of a lentic ADIT to aid in interpretation of monitoring data. Periodic updates to bioaccumulation modelling approaches also seek to improve tools for predicting conditions in lentic areas.

### **Characterization of organoselenium concentrations**

The approach used in the selenium assessment considered projected future changes in aqueous total selenium concentrations from the 2020 RWQM, while also accounting for localized effects of organoselenium. This approach provides an improved characterization of spatial patterns of bioaccumulation over the statistical modelling used in the EVWQP, that is informed by extensive speciation monitoring and studies of the bioaccumulative potential of organoselenium species. However, it was necessary for this assessment to assume that the spatial pattern of maximum organoselenium concentrations described in 2021 would provide a reasonable approximation of future organoselenium concentrations. This assumption was necessary because tools do not currently exist to project future changes to organoselenium concentrations. Therefore, there is uncertainty in the assessment of selenium in future years associated with potential future changes to organoselenium concentrations.

Approaches to manage this uncertainty include the following:

- Selenium speciation is routinely monitored under the regional Selenium Speciation Monitoring Program (SeSMP) and under various local and operational programs in areas with identified uncertainty in potential speciation changes (ADEPT 2022). These programs consider all identified areas with relatively high organoselenium concentrations, including sedimentation pond outfalls, AWTFs, and saturated rockfill (SRF) facilities. An element of all programs is evaluating trends over time that would warrant further investigation and/or management action.
- Mitigation technologies have been identified for selenium speciation, including the advanced oxidation process (AOP) implemented at the West Line Creek AWTF. These technologies provide a means to reduce organoselenium concentrations as needed to manage selenium risk.
- Seasonal bypass of sedimentation ponds in the LCO Dry Creek Water Management System was shown to be an effective means of reducing organoselenium generation. A similar approach may be implemented in other areas where sedimentation ponds are not needed for control of suspended solids.

- Studies are being undertaken in the SeSMP to better understand the mechanisms that result in organoselenium generation and the characteristics and conditions in sedimentation ponds that promote these mechanisms. The intent is that this understanding will identify options to reduce organoselenium concentrations through modifications to sedimentation pond characteristics and/or operation.

## Signature Page

**ADEPT Environmental Sciences Ltd.**

A handwritten signature in black ink, appearing to be 'Adrian de Bruyn', with a long horizontal flourish extending to the right.

Adrian de Bruyn, PhD, RPBio  
*Owner, Senior Environmental Scientist*

AMD/amd

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# **ATTACHMENT A**

## **Integrated Effects Tables**

Table A-1: Integrated Effects Table for Fish - 2021

Management Unit	Area Description	WQ Station Code	Biological Area Code	Avg Row Fish Habitat (ha)	Relative Fish Use				Hardness (mg/L as CaCO <sub>3</sub> )			Nitrate - Winter		Nitrate - Spring		Nitrate - Summer-Fall		Nitrate - ELS		Sulphate - Winter		Sulphate - Spring		Sulphate - Summer-Fall		Sulphate - ELS		Organoselenium		Selenium - Winter				Selenium - Spring				Selenium - Summer-Fall							
					Adults Winter	Adults Spring	Adults Summer-Fall	Spawning	Winter	Summer-Fall	ELS	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	Max 2021 Organosel (µg/L)	Modelled Bi Se Increment (mg/kg dw)	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth	
<b>Mainstem Fording River</b>																																													
us Henrietta Cr. and FRO	FR_UFR1	FQ26	7.4	3.8%	7.7%	7.0%	0%	186	116	153	116	0.066	0%	0.037	0%	0.01	0%	0.016	0%	43	0%	33	0%	35	0%	28	0%	<0.01	0.0	0.8	5.2	10.9	0%	2%	0.8	5.1	10.9	0%	2%	0.6	5.1	10.9	0%	2%	
us Henrietta Cr.	FR_FR1	FQDHE	2.9	3.4%	10%	7.0%	12%	344	194	258	194	6.8	0%	5.9	1%	3.2	0%	3.3	0%	236	1%	207	1%	136	0%	121	0%	<0.01	0.0	39	6.8	11.0	0%	4%	34	6.7	11.0	0%	4%	21	6.5	11.0	0%	4%	
us Clode Cr.		FOULC	0.23					344	194	258	194	6.8	0%	5.9	1%	3.2	0%	3.3	0%	236	1%	207	1%	136	0%	121	0%	<0.01	0.0	39	6.8	11.02	0%	4%	34	6.74	11.0	0%	4%	21	6.51	10.99	0%	4%	
us North Greenhills Diversion		FOUNG	1.4					344	194	258	194	6.8	0%	5.9	1%	3.2	0%	3.3	0%	236	1%	207	1%	136	0%	121	0%	<0.01	0.0	39	6.8	11.0	0%	4%	34	6.7	11.0	0%	4%	21	6.5	11.0	0%	4%	
us North Greenhills Diversion	FR_FRABEC1	FODNGD	0.56					344	194	258	194	6.8	0%	5.9	1%	3.2	0%	3.3	0%	236	1%	207	1%	136	0%	121	0%	<0.01	0.0	39	6.8	11.02	0%	4%	34	6.74	11.0	0%	4%	21	6.51	10.99	0%	4%	
Multiplate Culvert	FR_MULTIPATE	MP1	0.89	20%	20%	12%	12%	344	194	258	194	6.8	0%	5.9	1%	3.2	0%	3.3	0%	236	1%	207	1%	136	0%	121	0%	<0.01	0.0	39	6.8	11.02	0%	4%	34	6.74	11.0	0%	4%	21	6.51	10.99	0%	4%	
us Shandley Cr.		FOUSH	1.5					344	194	258	194	6.8	0%	5.9	1%	3.2	0%	3.3	0%	236	1%	207	1%	136	0%	121	0%	<0.01	0.0	39	6.8	11.0	0%	4%	34	6.7	11.0	0%	4%	21	6.5	11.0	0%	4%	
us Kilarnock Cr.	FR_FR2	FOUKI	0.92					777	341	641	341	32	3%	26	7%	20	3%	19	3%	511	9%	436	6%	341	3%	307	2%	<0.01	0.0	103	7	12	0%	4%	86	7	12	0%	4%	71	7	12	0%	4%	
us Kilarnock & us Swift Cr.	GH_FR3	FOBKS	2.5					777	341	641	341	32	3%	26	7%	20	3%	19	3%	511	9%	436	6%	341	3%	307	2%	<0.01	0.0	103	7.3	11.9	0%	4%	86	7.2	11.7	0%	4%	71	7.1	11.6	0%	4%	
us Intre AWTTS		SCOUTDS	0.066					777	341	641	341	32	3%	26	7%	20	3%	19	3%	511	9%	436	6%	341	3%	307	2%	0.012	0.9	103	8.2	13.6	0%	4%	86	8.1	13.4	0%	4%	71	8.0	13.2	0%	4%	
us Swift Cr. us Cataract Cr.	FR_FR4_GH_FR	FOBSC	0.68	2.7%	3.1%	10%	1.3%	951	405	793	405	31	2%	26	3%	20	2%	19	1%	684	20%	576	13%	466	7%	425	6%	0.022	1.7	149	9	15	0%	7%	122	9	15	0%	7%	117	9	15	0%	7%	
us Cataract, us Porter	FR_FRCP1	FOBCP	1.4					939	432	784	432	32	3%	26	3%	21	1%	19	1%	669	19%	566	13%	460	7%	418	5%	0.025	2.0	148	9	16	0%	7%	122	9	16	0%	7%	115	9	16	0%	7%	
1 km SW of Fording R Compliance	FR_FRCP1SW		1.4					939	432	784	432	32	3%	26	3%	21	1%	19	1%	669	19%	566	13%	460	7%	418	5%	0.025	2.0	148	9.4	15.8	0%	7%	122	9.3	15.6	0%	7%	115	9.3	15.6	0%	7%	
us Porter	FR_FRRD	FRUPO	2.2					939	432	784	432	32	3%	26	3%	21	1%	19	1%	669	19%	566	13%	460	7%	418	5%	<0.01	0.0	148	7.5	12.2	0%	5%	122	7.4	12.0	0%	5%	115	7.3	12.0	0%	5%	
us Porter Cr. us Chauncy Cr.	GH_FR2	FOPDO	1.9				47%	830	533	710	533	28	2%	29	2%	23	1%	20	1%	515	10%	531	11%	424	6%	376	4%	0.012	0.0	117	7	12	0%	4%	120	7	12	0%	4%	97	7	12	0%	4%	
us Chauncy Creek	FR_FRABCH	FOZ2	1.9					814	516	694	516	28	2%	28	2%	22	1%	19	1%	498	9%	509	9%	414	5%	355	3%	0.012	0.9	113	8	14	0%	6%	114	8	14	0%	6%	94	8	14	0%	6%	
us Chauncy Cr. us Ewin Cr.	FR_FR5	FOUEW	11	4.9%	9.2%	17%	5.8%	814	516	694	516	28	2%	28	2%	22	1%	19	1%	498	9%	509	9%	414	5%	355	3%	<0.01	0.0	113	7.3	12.0	0%	4%	114	7.3	12.0	0%	4%	94	7.2	11.8	0%	4%	
Fording River us Dry Creek	LC_FRUS	FOZ8	4.9	2.3%	3.8%	7.7%	0.6%	814	516	694	516	28	2%	28	2%	22	1%	19	1%	498	9%	509	9%	414	re	355	3%	0.028	2.2	113	9.5	16.0	0%	8%	114	9.5	16.0	0%	8%	94	9.4	15.8	0%	8%	
us Dry Cr. us GHQ	LC_FRB	FOZ9	8.9	4.2%	9.2%	7.3%	9.1%	814	516	694	516	28	2%	28	2%	22	1%	19	1%	498	9%	509	9%	414	5%	355	3%	0.029	2.3	113	9.6	16.1	0%	8%	114	9.6	16.1	0%	8%	94	9.5	15.9	0%	8%	
us GHQ and Greenhills Cr.	GH_FR1	FODGH	2.5	7.6%	4.6%	6.2%	1.3%	665	375	610	375	20	1%	17	1%	18	1%	16	1%	370	4%	313	2%	339	3%	302	2%	0.033	2.6	80	10	16	0%	8%	66	10	16	0%	8%	75	10	16	0%	8%	
<b>Tributaries</b>																																													
Henrietta Creek	FR_HC3	HEMUP	1.7	0%	0%	0%	0%	186	116	153	116	0.066	0%	0.037	0%	0.01	0%	0.016	0%	43	0%	33	0%	35	0%	28	0%	<0.01	0.0	0.8	5.2	10.9	0%	2%	0.8	5.1	10.9	0%	2%	0.6	5.1	10.9	0%	2%	
Chauncy Creek	RG_CH1	CHCK	8	0%	0%	0.3%	0%	186	116	153	116	0.066	0%	0.037	0%	0.01	0%	0.016	0%	43	0%	33	0%	35	0%	28	0%	<0.01	0.0	0.8	5.2	10.9	0%	2%	0.8	5.1	10.9	0%	2%	0.6	5.1	10.9	0%	2%	
Ewin Creek		EWCK	15	0%	0%	0%	0%	186	116	153	116	0.066	0%	0.037	0%	0.01	0%	0.016	0%	43	0%	33	0%	35	0%	28	0%	<0.01	0.0	0.8	5.2	10.9	0%	2%	0.8	5.1	10.9	0%	2%	0.6	5.1	10.9	0%	2%	
MU1	Other reference tributaries		13	0%	0%	0%	0%	186	116	153	116	0.066	0%	0.037	0%	0.01	0%	0.016	0%	43	0%	33	0%	35	0%	28	0%	<0.01	0.0	0.8	5.2	10.9	0%	2%	0.8	5.1	10.9	0%	2%	0.6	5.1	10.9	0%	2%	
	Henrietta Creek	FR_HC1	HENFO	3.0	12%	3.1%	9.7%	1.3%	392	221	284	221	8	0%	9	1%	4.2	0%	7.5	1%	280	2%	295	2%	170	0%	256	1%	0.026	2.0	47	9	15	0%	7%	50	9	15	0%	7%	27	9	14	0%	7%
	Rish Pond Creek	FR_FC1	FRFC1	0.29	0%	0.8%	0%	1.3%																																					
	Clode Creek	FR_DC1	CLODE	0.3	0%	6.2%	0%	1.3%	1263	1188	1285	1188	106	59%	100	54%	97	52%	91	47%	634	17%	599	15%	606	15%	568	13%	0.031	2.4	217	10	17	1%	8%	205	10	17	1%	8%					
	Lake Mountain Creek	FR_N																																											

Table A-2: Integrated Effects Table for Fish - 2022

Management Unit	Area Description	WQ Station Code	Biological Area Code	Avg Row Fish Habitat (ha)	Relative Fish Use					Hardness (mg/L as CaCO <sub>3</sub> )			Nitrate - Winter		Nitrate - Spring		Nitrate - Summer-Fall		Nitrate - ELS		Sulphate - Winter		Sulphate - Spring		Sulphate - Summer-Fall		Sulphate - ELS		Organoselenium		Selenium - Winter					Selenium - Spring					Selenium - Summer-Fall						
					Adults Winter	Adults Spring	Adults Summer-Fall	Spawning	ELS	Winter	Spring	Summer-Fall	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	Max 2021 Organosel (µg/L)	Modelled Bi Se Increment (mg/kg dw)	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth		
<b>Mainstem Fording River</b>																																															
us Henrietta Cr. and FRO	FR_UFR1	FQ26	7.4	3.8%	7.7%	7.0%	0%	186	116	153	116	0.066	0%	0.037	0%	0.01	0%	0.016	0%	43	0%	33	0%	35	0%	28	0%	<0.01	0.0	0.8	5.2	10.9	0%	2%	0.8	5.1	10.9	0%	2%	0.6	5.1	10.9	0%	2%			
us Henrietta Cr.	FR_FR1	FQDHE	2.9	3.4%	10%	7.0%	12%	346	193	256	193	5.8	0%	4.7	0%	2.7	0%	3.0	0%	241	1%	202	1%	137	0%	127	0%	<0.01	0.0	39	6.8	11.0	0%	4%	32	6.7	11.0	0%	4%	20	6.5	11.0	0%	4%			
us Clode Cr.		FOULC	0.23					346	193	256	193	5.8	0%	4.7	0%	2.7	0%	3.0	0%	241	1%	202	1%	137	0%	127	0%	<0.01	0.0	39	6.81	11.02	0%	4%	32	6.71	11.0	0%	4%	20	6.5	10.99	0%	4%			
us North Greenhills Diversion		FOUNG	1.4					346	193	256	193	5.8	0%	4.7	0%	2.7	0%	3.0	0%	241	1%	202	1%	137	0%	127	0%	<0.01	0.0	39	6.8	11.0	0%	4%	32	6.7	11.0	0%	4%	20	6.5	11.0	0%	4%			
us North Greenhills Diversion	FR_FRABEC1	FODNGD	0.56					346	193	256	193	5.8	0%	4.7	0%	2.7	0%	3.0	0%	241	1%	202	1%	137	0%	127	0%	<0.01	0.0	39	6.81	11.02	0%	4%	32	6.71	11.0	0%	4%	20	6.5	10.99	0%	4%			
Multilaple Culvert	FR_MULTIPATE	MP1	0.89	20%	20%	12%	12%	346	193	256	193	5.8	0%	4.7	0%	2.7	0%	3.0	0%	241	1%	202	1%	137	0%	127	0%	<0.01	0.0	39	6.81	11.02	0%	4%	32	6.71	11.0	0%	4%	20	6.5	10.99	0%	4%			
us Shandley Cr.		FOUSH	1.5					346	193	256	193	5.8	0%	4.7	0%	2.7	0%	3.0	0%	241	1%	202	1%	137	0%	127	0%	<0.01	0.0	39	6.8	11.0	0%	4%	32	6.7	11.0	0%	4%	20	6.5	11.0	0%	4%			
us Kilmarock Cr.	FR_FR2	FOUKI	0.92					790	352	638	352	31	3%	26	6%	20	3%	18	2%	516	10%	445	6%	346	3%	306	2%	<0.01	0.0	105	7	12	0%	4%	88	7	12	0%	4%	72	7	12	0%	4%			
us Kilmarock & us Swift Cr.	FR_FR3	FOBKS	2.5					790	352	638	352	31	3%	26	6%	20	3%	18	2%	516	10%	445	6%	346	3%	306	2%	<0.01	0.0	105	7.3	11.9	0%	4%	88	7.2	11.8	0%	4%	72	7.1	11.8	0%	4%			
us Intre AVIT-S		SCOUTDS	0.066					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
us Swift Cr. us Cataract Cr.	FR_FR4_GH_FR	FOBSC	0.68	2.7%	3.1%	10%	1.3%	956	422	790	422	31	2%	26	3%	19	1%	19	1%	690	21%	587	14%	446	6%	426	6%	0.022	1.7	151	9	15	0%	7%	125	9	15	0%	7%	117	9	15	0%	7%			
us Cataract, us Porter	FR_FRCP1	FOBCP	1.4					949	454	782	454	31	3%	26	2%	19	1%	19	1%	678	20%	579	13%	442	6%	419	5%	0.025	2.0	150	9	16	0%	7%	124	9	16	0%	7%	115	9	16	0%	7%			
1 km SW of Fording R Compliance	FRCP1SW							949	454	782	454	31	3%	26	2%	19	1%	19	1%	678	20%	579	13%	442	6%	419	5%	0.025	2.0	150	9.4	15.8	0%	7%	124	9.4	15.6	0%	7%	115	9.3	15.6	0%	7%			
us Porter	FR_FRD	FRUPO	2.2					949	454	782	454	31	3%	26	2%	19	1%	19	1%	678	20%	579	13%	442	6%	419	5%	<0.01	0.0	150	7.5	12.2	0%	5%	124	7.4	12.1	0%	5%	115	7.4	12.0	0%	5%			
us Porter Cr. us Chauncy Cr.	GH_PC2	PODPO	1.9				47%	844	560	713	560	30	2%	29	2%	21	1%	21	1%	553	12%	551	12%	426	6%	397	5%	<0.01	0.0	127	7	12	0%	4%	125	7	12	0%	4%	96	7	12	0%	4%			
us Chauncy Creek	FR_FRABCH	FOZ2	1.9					826	543	697	543	29	2%	28	2%	21	1%	19	1%	534	11%	533	11%	416	5%	359	3%	0.012	0.9	122	8	14	0%	6%	120	8	14	0%	6%	93	8	13	0%	6%			
us Chauncy Cr. us Ewin Cr.	FR_FR5	FOUEW	11	4.9%	9.2%	17%	5.8%	826	543	697	543	29	2%	28	2%	21	1%	19	1%	534	11%	533	11%	416	5%	359	3%	<0.01	0.0	122	7.4	12.1	0%	4%	120	7.4	12.0	0%	4%	93	7.2	11.8	0%	4%			
Fording River us Dry Creek	LC_FRUS	FOZ8	4.9	2.3%	3.8%	7%	0.6%	826	543	697	543	29	2%	28	2%	21	1%	19	1%	534	11%	533	11%	416	re	359	3%	0.028	2.2	122	9.6	16.0	0%	8%	120	9.6	16.0	0%	8%	93	9.4	15.8	0%	8%			
us Dry Cr. us GHQ	LC_FRB	FOZ9	8.9	4.2%	9.2%	7.3%	9.1%	826	543	697	543	29	2%	28	2%	21	1%	19	1%	534	11%	533	11%	416	5%	359	3%	0.029	2.3	122	9.7	16.2	0%	8%	120	9.6	16.2	0%	8%	93	9.5	15.9	0%	8%			
us GHQ and Greenhills Cr.	GH_FR1	FODGH	2.5	7.6%	4.6%	6.2%	1.3%	684	389	625	389	20	1%	17	1%	17	1%	16	1%	395	6%	329	3%	339	3%	314	2%	0.033	2.6	85	10	16	0%	8%	69	10	16	0%	8%	78	10	16	1%	8%			
<b>Tributaries</b>																																															
Henrietta Creek	FR_HC3	HEMUP	1.7	0%	0%	0%	0%	186	116	153	116	0.066	0%	0.037	0%	0.01	0%	0.016	0%	43	0%	33	0%	35	0%	28	0%	<0.01	0.0	0.8	5.2	10.9	0%	2%	0.8	5.1	10.9	0%	2%	0.6	5.1	10.9	0%	2%			
Chauncy Creek	RG_CH1	CHCK	8	0%	0%	0.3%	0%	186	116	153	116	0.066	0%	0.037	0%	0.01	0%	0.016	0%	43	0%	33	0%	35	0%	28	0%	<0.01	0.0	0.8	5.2	10.9	0%	2%	0.8	5.1	10.9	0%	2%	0.6	5.1	10.9	0%	2%			
Ewin Creek		EWCK	15	0%	0%	0%	0%	186	116	153	116	0.066	0%	0.037	0%	0.01	0%	0.016	0%	43	0%	33	0%	35	0%	28	0%	<0.01	0.0	0.8	5.2	10.9	0%	2%	0.8	5.1	10.9	0%	2%	0.6	5.1	10.9	0%	2%			
MU1	Other reference tributaries		13	0%	0%	0%	0%	186	116	153	116	0.066	0%	0.037	0%	0.01	0%	0.016	0%	43	0%	33	0%	35	0%	28	0%	<0.01	0.0	0.8	5.2	10.9	0%	2%	0.8	5.1	10.9	0%	2%	0.6	5.1	10.9	0%	2%			
	Henrietta Creek	FR_HC1	HENFO	3.0	12%	3.1%	9.7%	1.3%	390	229	288	229	7	0%	8	1%	3.5	0%	6.9	1%	293	2%	310	2%	172	0%	280	2%	0.026	2.0	49	9	15	0%	7%	52	9	15	0%	7%	27	9	14	0%	7%		
	Rish Pond Creek	FR_FC1	FR_FCI	0.29	0%	0.8%	0%	1.3%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Clode Creek	FR_DC1	CLODE	0.3	0%	6.2%	0%	1.3%	1303	1223	1314	1223	105	58%	98	53%	97	52%	92	47%	663	19%	625	16%	633	17%	596	14%	0.031	2.4	227	10	17	1%	9%	214	10	17	1%	9%	214	10	17	1%	9%		
	Lake Mountain																																														



[illegible]

**Notes:** Red font indicates values estimated from other upstream or downstream subunits. Grey font indicates values less than detection limit. Italicized rows are reference areas.

**Table A-4: Integrated Effects Table for Fish - 2024**

Management Unit	Area Description	WQ Station Code	Biological Area Code	Avg Row Fish Habitat (m)	Relative Fish Use				Hardness (mg/L as CaCO <sub>3</sub> )				Nitrate - Winter				Nitrate - Spring				Nitrate - Summer-Fall				Nitrate - ELS				Sulphate - Winter				Sulphate - Spring				Sulphate - Summer/Fall				Sulphate - ELS				Organoselenium				Selenium - Winter								Selenium - Spring								Selenium - Summer/Fall																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
					Adults Winter	Adults Spring	Adults Summer-Summer-Fall	Spawning	Winter	Spring	Summer-Fall	ELS	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[SO <sub>4</sub> ] (mg/L S)	Sensitive Species	[SO <sub>4</sub> ] (mg/L S)	Sensitive Species	[SO <sub>4</sub> ] (mg/L S)	Sensitive Species	[SO <sub>4</sub> ] (mg/L S)	Sensitive Species	Max 2021 Organosel (µg/L)	Modelled Bi Se Increment (mg/kg dw)	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
MU1	Mainstem Fording River																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

**Notes:** Red font indicates values estimated from other upstream or downstream subunits. Grey font indicates values less than detection limit. Italicized rows are reference areas.



Table A-5: Integrated Effects Table for Fish - 2025

Management Unit	Area Description	WQ Station Code	Biological Area Code	Avg Row Fish Habitat (ft)	Relative Fish Use				Hardness (mg/L as CaCO <sub>3</sub> )		Nitrate - Winter		Nitrate - Spring		Nitrate - Summer-Fall		Nitrate - ELS		Sulphate - Winter		Sulphate - Spring		Sulphate - Summer-Fall		Sulphate - ELS		Organoselenium		Selenium - Winter				Selenium - Spring				Selenium - Summer/Fall								
					Adults Winter	Adults Spring	Adults Summer-Fall	Spawning	Winter	Spring	Summer-Fall	ELS	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	Max 2021 Organosel (µg/L)	Modelled Bi Se Increment (mg/kg dw)	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth		
MU1	<b>Mainstem Fording River</b>																																												
	us Henrietta Cr. and FRO	FR_UFR1	F02B	7.4	3.8%	7.7%	7.0%	0%	186	116	153	116	0.066	0%	0.037	0%	0.01	0%	0.016	0%	43	0%	33	0%	35	0%	28	0%	<0.01	0.0	0.8	5.2	10.9	0%	2%	0.8	5.1	10.9	0%	2%	0.6	5.1	10.9	0%	2%
	us Henrietta Cr.	FR_UFR1	F0DHE	2.9	3.4%	10%	7.0%	12%	347	189	259	189	3.3	0%	3.0	0%	1.5	0%	1.7	0%	245	1%	226	1%	138	0%	130	0%	<0.01	0.0	38	6.8	11.0	0%	4%	35	6.7	11.0	0%	4%	20	6.5	11.0	0%	4%
	us Clode Cr.		FOULC	0.23					347	189	259	189	3.3	0%	3.0	0%	1.5	0%	1.7	0%	245	1%	226	1%	138	0%	130	0%	<0.01	0.0	38	6.79	11.01	0%	4%	35	6.75	11.0	0%	4%	20	6.48	10.99	0%	4%
	us North Greenhills Diversion		FOUNG	1.4					347	189	259	189	3.3	0%	3.0	0%	1.5	0%	1.7	0%	245	1%	226	1%	138	0%	130	0%	<0.01	0.0	38	6.8	11.0	0%	4%	35	6.7	11.0	0%	4%	20	6.5	11.0	0%	4%
	us North Greenhills Diversion	FR_FRABEC1	FODNGD	0.56					347	189	259	189	3.3	0%	3.0	0%	1.5	0%	1.7	0%	245	1%	226	1%	138	0%	130	0%	<0.01	0.0	38	6.79	11.01	0%	4%	35	6.75	11.0	0%	4%	20	6.48	10.99	0%	4%
	Multilaple Culvert	FR_MULTIPATE	NP1	0.89	20%	20%	12%	12%	347	189	259	189	3.3	0%	3.0	0%	1.5	0%	1.7	0%	245	1%	226	1%	138	0%	130	0%	<0.01	0.0	38	6.79	11.01	0%	4%	35	6.75	11.0	0%	4%	20	6.48	10.99	0%	4%
	us Shandley Cr.		FOUSH	1.5					347	189	259	189	3.3	0%	3.0	0%	1.5	0%	1.7	0%	245	1%	226	1%	138	0%	130	0%	<0.01	0.0	38	6.8	11.0	0%	4%	35	6.7	11.0	0%	4%	20	6.5	11.0	0%	4%
	us Kilmarock Cr.	FR_FR2	FOUKI	0.92					799	350	648	350	12	0%	10	0%	8	0%	7	0%	548	11%	464	7%	354	3%	319	2%	<0.01	0.0	48	7	11	0%	4%	40	7	11	0%	4%	40	7	11	0%	4%
	us Kilmarock & us Swift Cr.	FR_FR3	FOBKS	2.5					799	350	648	350	12	0%	10	0%	8	0%	7	0%	548	11%	464	7%	354	3%	319	2%	<0.01	0.0	48	6.9	11.2	0%	4%	40	6.8	11.0	0%	4%	40	6.8	11.0	0%	4%
	us Nature AVIT-S		SCOUTDS	0.066					799	350	648	350	12	0%	10	0%	8	0%	7	0%	548	11%	464	7%	354	3%	319	2%	0.012	0.9	48	7.9	12.9	0%	5%	40	7.8	12.7	0%	5%	40	7.8	12.		



Table A-6: Integrated Effects Table for Fish - 2026

Management Unit	Area Description	WQ Station Code	Biological Area Code	Avg Row Fish Habitat (ft)	Relative Fish Use					Hardness (mg/L as CaCO <sub>3</sub> )		Nitrate - Winter		Nitrate - Spring		Nitrate - Summer-Fall		Nitrate - ELS		Sulphate - Winter		Sulphate - Spring		Sulphate - Summer-Fall		Sulphate - ELS		Organoselenium		Selenium - Winter					Selenium - Spring					Selenium - Summer/Fall					
					Adults Winter	Adults Spring	Adults Summer-Fall	Spawning	ELS	Winter	Spring	Summer-Fall	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	Max 2021 Organosel (µg/L)	Modelled Bi Se Increment (mg/kg dw)	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth		
MU1	<b>Mainstem Fording River</b>																																												
	us Henrietta Cr. and FRO	FR_UFR1	F026	7.4	3.8%	7.7%	7.0%	0%	186	116	153	116	0.066	0%	0.037	0%	0.01	0%	0.016	0%	43	0%	33	0%	35	0%	28	0%	<0.01	0.0	0.8	5.2	10.9	0%	2%	0.8	5.1	10.9	0%	2%	0.6	5.1	10.9	0%	2%
	us Henrietta Cr.	FR_UFR1	F026	2.9	3.4%	10%	7.0%	12%	345	190	257	190	2.7	0%	2.3	0%	1.2	0%	1.4	0%	247	1%	211	1%	138	0%</																			

Table A-7: Integrated Effects Table for Fish - 2027

Management Unit	Area Description	WQ Station Code	Biological Area Code	Avg Row Fish Habitat (ft)	Relative Fish Use					Hardness (mg/L as CaCO <sub>3</sub> )		Nitrate - Winter		Nitrate - Spring		Nitrate - Summer-Fall		Nitrate - ELS		Sulphate - Winter		Sulphate - Spring		Sulphate - Summer-Fall		Sulphate - ELS		Organoselenium		Selenium - Winter					Selenium - Spring					Selenium - Summer/Fall					
					Adults Winter	Adults Spring	Adults Summer-Fall	Spawning	ELS	Winter	Spring	Summer-Fall	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[NO <sub>3</sub> ] (mg/L N)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	[SO <sub>4</sub> ] (mg/L)	Sensitive Species	Max 2021 Organosel (µg/L)	Modelled Bi Se Increment (mg/kg dw)	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth	[Se] (µg/L)	Modelled Bi Se (mg/kg dw)	Modelled Fish egg Se (mg/kg dw)	Fish Reproduction	Juvenile Growth		
MU1	<b>Mainstem Fording River</b>																																												
	us Henrietta Cr. and FRO	FR_UFR1	F026	7.4	3.8%	7.7%	7.0%	0%	186	116	153	116	0.066	0%	0.037	0%	0.01	0%	0.016	0%	43	0%	33	0%	35	0%	28	0%	<0.01	0.0	0.8	5.2	10.9	0%	2%	0.8	5.1	10.9	0%	2%	0.6	5.1	10.9	0%	2%
	us Henrietta Cr.	FR_UFR1	F026	2.9	3.4%	10%	7.0%	12%	340	192	253	192	2.2	0%	1.9	0%	1.0	0%	1.1	0%	248	1%	213	1%	137																				



Table A-8: Integrated Effects Table for Fish - 2028

Management Unit	Area Description	WQ Station Code	Biological Area Code	Avg Flow Fish Habitat (ha)	Relative Fish Use			Hardness (mg/L as CaCO <sub>3</sub> )			Nitrate - Winter			Nitrate - Spring			Nitrate - Summer/Fall		
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Table A-9: Integrated Effects Table for Fish – 2029-2053

Management Unit	Area Description	WQ Station Code	Biological Area Code	Avg Row Fish Habitat (ha)	Relative Fish Use					Hardness (mg/L as CaCO <sub>3</sub> )		Nitrate - Winter		Nitrate - Spring		Nitrate - Summer-Fall	
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Table A-10: Integrated Effects Table for Benthic Invertebrates - 2021

Management Unit	Area Description	IWO Station Code	Biological Area Code	Avg Flow Total Habitat (ha)	Hardness (mg/L as CaCO <sub>3</sub> )	Nitrate			Sulphate			Selenium					
						[NO <sub>3</sub> ] (mg/L N)	Sensitive Species ( <i>C. dubia</i> )	Community Endpoint (invert. SSD)	[SO <sub>4</sub> ] (mg/L)	Sensitive Species ( <i>N. trianguifer</i> )	Community Endpoint (approx. SSD)	Max 2021 OrganoSe (µg/L)	Modelled BI Se Increment (mg/kg dw)	Total [Se] (µg/L)	Modelled BI Se (mg/kg dw)	Sensitive Species ( <i>N. trianguifer</i> )	Community ( <i>H. azteca</i> )
MU1	<b>Mainstem Fording River</b>																
	u/s Henretta Cr. and FRO	FR_UFR1	FO26	16	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	d/s Henretta Cr.	FR_FR1	FODHE	2.9	194	6.8	7%	1%	236	0%	0%	<0.01	0.0	39	6.8	<L1	<L1
	u/s Clode Cr.		FOUCL	0.23	194	6.8	7%	1%	236	0%	0%	<0.01	0.0	39	6.8	<L1	<L1
	u/s North Greenhills Diversion		FOUNGD	1.5	194	6.8	7%	1%	236	0%	0%	<0.01	0.0	39	6.8	<L1	<L1
	d/s North Greenhills Diversion	FR_FRABEC1	FODNGD	0.56	194	6.8	7%	1%	236	0%	0%	<0.01	0.0	39	6.8	<L1	<L1
	Multiplate Culvert	FR_MULTIPATE	MP1	0.89	194	6.8	7%	1%	236	0%	0%	<0.01	0.0	39	6.8	<L1	<L1
	u/s Shandley Cr.		FOUSH	1.5	194	6.8	7%	1%	236	0%	0%	<0.01	0.0	39	6.8	<L1	<L1
	u/s Kilmarnock Cr.	FR_FR2	FOUKI	0.92	341	32	38%	14%	511	1%	1%	<0.01	0.0	103	7	<L1	<L1
	d/s Kilmarnock & u/s Swift Cr.	GH_FR3	FOBKS	2.5	341	32	38%	14%	511	1%	1%	<0.01	0.0	103	7.3	<L1	<L1
	d/s future AWITF-S		SCOUTDS	0.08	341	32	38%	14%	511	1%	1%	0.012	0.9	103	8.2	<L1	<L1
	d/s Swift Cr., u/s Cataract Cr.	FR_FR4_GH_FR	FOBSC	0.71	405	31	24%	10%	684	3%	3%	0.022	1.7	149	9	<L1	<L1
	d/s Cataract, u/s Porter	FR_FRCP1	FOBCP	1.4	432	32	21%	10%	669	3%	3%	0.025	2.0	148	9	<L1	<L1
	1 km SW of Fording R Compliance		FRCP1SW	1.4	432	32	21%	10%	669	3%	3%	0.025	2.0	148	9.4	<L1	<L1
	u/s Porter	FR_FRRD	FRUPO	2.2	432	32	21%	10%	669	3%	3%	<0.01	0.0	148	7.5	<L1	<L1
	d/s Porter Cr., u/s Chauncey Cr.	GH_PC2	FODPO	1.9	533	29	10%	6%	531	1%	1%	<0.01	0.0	120	7	<L1	<L1
	u/s Chauncey Creek	FR_FRABCH	FO22	2.0	516	28	10%	6%	509	1%	1%	0.012	0.9	114	8	<L1	<L1
	d/s Chauncey Cr., u/s Ewin Cr.	FR_FR5	FOUEW	11	516	28	10%	6%	509	1%	1%	<0.01	0.0	114	7.3	<L1	<L1
	Fording River u/s Dry Creek	LC_FRUS	FO28	5.0	516	28	10%	6%	509	1%	1%	0.028	2.2	114	9.5	<L1	<L1
	d/s Dry Cr., u/s GHO	LC_FR8	FO29	8.9	516	28	10%	6%	509	1%	1%	0.029	2.3	114	9.6	<L1	<L1
	d/s GHO and Greenhills Cr.	GH_FR1	FODGH	2.5	375	20	11%	5%	370	0%	0%	0.033	2.6	80	9.7	<L1	<L1
	<b>Tributaries</b>																
	Henretta Creek	FR_HC3	HENUP	10	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	Chauncey Creek	RG_CH1	CHCK	23	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Ewin Creek		EWCK	45	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Other reference tributaries			40	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Henretta Creek	FR_HC1	HENFO	5.4	221	9	8%	2%	295	0%	0%	0.026	2.0	50	9	<L1	<L1
	Fish Pond Creek	FR_FC1	FR_FC1	0.29	-	-	-	-	-	-	-	<0.01	0.0	-	-	-	-
	Clode Creek	FR_CC1	CLODE	0.98	1188	106	56%	18%	634	2%	2%	0.031	2.4	217	10	<L1	<L1
	Lake Mountain Creek	FR_LMP1	NGD1	1.5	452	78.1	72%	31%	879	9%	9%	-	0.0	233	8	<L1	<L1
	Kilmarnock Creek	FR_KC1	KICK	2.4	504	123	85%	41%	1230	34%	34%	<0.01	0.0	400	8	<L1	<L1
	Swift Creek	GH_SC1	SWCK	0.8	2329.45	27	3%	0%	1983	84%	84%	0.151	11.8	712	20	L2-L3	<L1
	Cataract Creek	GH_CC1	CATCK	0.33	2631.43	34	6%	0%	2040	85%	85%	0.151	11.8	678	20	L2-L3	<L1
	Porter Creek	GH_PC1	POCK	0.26	747	1.5	0%	0%	527	1%	1%	<0.01	0.0	92	7	<L1	<L1
	LCO Dry Creek	LC_DCDS	LC_DCDS	5.8	281	90.6	95%	46%	466	0%	0%	0.171	13.4	174	21	L2-L3	<L1
	LCO Dry Creek	LC_DC1	LC_DC1	0.68	182	51.6	95%	40%	269	0%	0%	0.055	4.3	100	12	<L1	<L1
	Unnamed Creek		LC_UC	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-
	Greenhills Creek		GHCKU	4.1	684	10	0%	0%	1140	26%	26%	0.031	2.4	232	10.2	<L1	<L1
	Greenhills Creek	GH_GH1	GHCKD	0.24	684	10	0%	0%	1140	26%	26%	0.328	25.7	232	33	>L3	<L1
	<b>MU1 Summary</b>																
	Overall %effect (characterized areas)						8%	4%		2%	2%					-	-
	Proportion of MU1 with effect of	<L1					88%	92%		95%	95%					96%	99%
		L1-L2					1%	3%		0%	0%					0%	0%
		L2-L3					4%	5%		3%	3%					3%	0%
		>L3					5%	0%		1%	1%					0%	0%
		Uncharacterized areas					1%	1%		1%	1%					1%	1%
	Proportion of Fording with effect of (characterized areas)	<L2					86%	100%		100%	100%					100%	100%
MU2	<b>Mainstem Fording River</b>																
	d/s Josephine Falls		FO9	9.1	375	20	11%	5%	370	0%	0%	0.033	2.6	80	9.7	<L1	<L1
	d/s Grace Cr.	LC_LC6	FRUL	15	339	15	8%	3%	318	0%	0%	0.034	2.7	61	10	<L1	<L1
	d/s Line Cr.	LC_LC5	FO23	5.9	339	15	8%	3%	318	0%	0%	0.021	1.6	61	9	<L1	<L1
	<b>Tributaries</b>																
	Grace Cr.	LC_GRCK	LC_GRCK	7.7	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	u/s LCO	LC_LC1	L124	15	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	South Line Cr.	LC_SLC	SLINE	11	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	Other reference tributaries		-	14	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	u/s West Line Cr.	LC_LCUSWLC	LCUT	2.8	382	26	20%	8%	484	1%	1%	<0.01	0.0	86	7	<L1	<L1
	d/s West Line Cr.	LC_LC3	LILC3	0.76	410	18	7%	3%	581	1%	1%	0.015	1.2	65	8	<L1	<L1
	d/s pond discharge	WL_DCP_SP24	LISP24	0.75	304	12	6%	2%	420	0%	0%	0.018	1.4	63	8.46	<L1	<L1
	d/s South Line Cr. Confluence	LC_LCDSLCC	LIDSL	2.2	304	12	6%	2%	420	0%	0%	0.036	2.7	63	10	<L1	<L1
	d/s LIDSL	LC_LCCS	LIDCOM	8.9	284	10	5%	1%	340	0%	0%	0.010	0.8	52	7.7	<L1	<L1
	d/s LIDSL	LC_LC4	L18	4.3	284	9.8	5%	1%	340	0%	0%	<0.01	0.0	52	7	<L1	<L1
	<b>MU2 Summary</b>																
	Overall %effect (characterized areas)						4%	2%		0%	0%					-	-
	Proportion of MU2 with effect of	<L1					88%	100%		100%	100%					100%	100%
		L1-L2					12%	0%		0%	0%					0%	0%
		L2-L3					0%	0%		0%	0%					0%	0%
		>L3					0%	0%		0%	0%					0%	0%
		Uncharacterized areas					0%	0%		0%	0%					0%	0%
	Proportion of Fording with effect of (characterized areas)	<L2					100%	100%		100%	100%					100%	100%
MU3	<b>Mainstem Elk River</b>																
	u/s GHO	GH_ER2	ELUGH	303	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	d/s Thompson Cr.	GH_ERC	EL20	18	164	1.33	0%	0%	82	0%	0%	0.00	0.0	5.8	5.9	<L1	<L1
	u/s Bowin Cr.	GH_ER1	ELDEL	14	162	1.24	0%	0%	78	0%	0%	<0.01	0.0	5.5	5.9	<L1	<L1
	d/s Elkford Sewage Ponds		ELDEL	41	162	1	0%	0%	78	0%	0%	-	0.0	5	6	<L1	<L1
	u/s Fording R.		ELUFO	13	162	1	0%	0%	78	0%	0%	-	0.0	5	5.9	<L1	<L1
	<b>Tributaries</b>																
	Michelson Cr.	GH_MC1	-	1.1	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Unnamed tributary west of Elk River		UCWER	17	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Other reference tributaries		-	168	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	

Table A-11: Integrated Effects Table for Benthic Invertebrates - 2022

Management Unit	Area Description	IWO Station Code	Biological Area Code	Avg Flow Total Habitat (ha)	Hardness (mg/L as CaCO <sub>3</sub> )	Nitrate			Sulphate			Selenium					
						[NO <sub>3</sub> ] (mg/L N)	Sensitive Species (C. dubia)	Community Endpoint (invert. SSD)	[SO <sub>4</sub> ] (mg/L)	Sensitive Species (N. trianguifer)	Community Endpoint (approx. SSD)	Max 2021 OrganoSe (µg/L)	Modelled BI Se Increment (mg/kg dw)	Total [Se] (µg/L)	Modelled BI Se (mg/kg dw)	Sensitive Species (N. trianguifer)	Community (H. azteca)
MU1	<b>Mainstem Fording River</b>																
	u/s Henrietta Cr. and FRO	FR_UFR1	FO26	16	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	d/s Henrietta Cr.	FR_FR1	FODHE	2.9	193	5.8	4%	1%	241	0%	0%	<0.01	0.0	39	6.8	<L1	<L1
	u/s Clode Cr.		FOUCL	0.23	193	5.8	4%	1%	241	0%	0%	<0.01	0.0	39	6.81	<L1	<L1
	u/s North Greenhills Diversion		FOUNGD	1.5	193	5.8	4%	1%	241	0%	0%	<0.01	0.0	39	6.8	<L1	<L1
	d/s North Greenhills Diversion	FR_FRABEC1	FOONGD	0.56	193	5.8	4%	1%	241	0%	0%	<0.01	0.0	39	6.81	<L1	<L1
	Multiplate Culvert	FR_MULTIPATE	MP1	0.89	193	5.8	4%	1%	241	0%	0%	<0.01	0.0	39	6.81	<L1	<L1
	u/s Shandley Cr.		FOUSH	1.5	193	5.8	4%	1%	241	0%	0%	<0.01	0.0	39	6.8	<L1	<L1
	u/s Kilmarock Cr.	FR_FR2	FOUKI	0.92	352	31	35%	13%	516	1%	1%	<0.01	0.0	105	7	<L1	<L1
	d/s Kilmarock & u/s Swift Cr.	GH_FR3	FOBKS	2.5	352	31	35%	13%	516	1%	1%	<0.01	0.0	105	7.3	<L1	<L1
	d/s future AWIT-S		SCOUTDS	0.08	352	31	35%	13%	516	1%	1%	0.012	0.9	105	8.2	<L1	<L1
	d/s Swift Cr., u/s Cataract Cr.	FR_FR4_GH_FR	FOBSC	0.71	422	31	21%	10%	680	3%	3%	0.022	1.7	151	9	<L1	<L1
	d/s Cataract, u/s Porter	FR_FRCP1	FOBCP	1.4	454	31	18%	9%	678	3%	3%	0.025	2.0	150	9	<L1	<L1
	1 km SW of Fording R Compliance		FRCP1SW	1.4	454	31	18%	9%	678	3%	3%	0.025	2.0	150	9.4	<L1	<L1
	u/s Porter	FR_FRRD	FRUPO	2.2	454	31	18%	9%	678	3%	3%	<0.01	0.0	150	7.5	<L1	<L1
	d/s Porter Cr., u/s Chauncey Cr.	GH_PC2	FODPO	1.9	560	30	8%	6%	553	1%	1%	<0.01	0.0	127	7	<L1	<L1
	u/s Chauncey Creek	FR_FRABCH	FO22	2.0	543	29	9%	5%	534	1%	1%	0.012	0.9	122	8	<L1	<L1
	d/s Chauncey Cr., u/s Ewin Cr.	FR_FR5	FOUEW	11	543	29	9%	5%	534	1%	1%	<0.01	0.0	122	7.4	<L1	<L1
	Fording River u/s Dry Creek	LC_FRUS	FO28	5.0	543	29	9%	5%	534	1%	1%	0.028	2.2	122	9.6	<L1	<L1
	d/s Dry Cr., u/s GHO	LC_FR8	FO29	8.9	543	29	9%	5%	534	1%	1%	0.029	2.3	122	9.7	<L1	<L1
	d/s GHO and Greenhills Cr.	GH_FR1	FODGH	2.5	389	20	11%	5%	395	0%	0%	0.033	2.6	85	9.8	<L1	<L1
	<b>Tributaries</b>																
	Henrietta Creek	FR_HC3	HENUP	10	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	Chauncey Creek	RG_CH1	CHCK	23	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Ewin Creek		EWCK	45	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Other reference tributaries			40	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Henrietta Creek	FR_HC1	HENFO	5.4	229	8	5%	1%	310	0%	0%	0.026	2.0	52	9	<L1	<L1
	Fish Pond Creek	FR_FC1	FR_FC1	0.29	-	-	-	-	-	-	-	<0.01	0.0	-	-	-	-
	Clode Creek	FR_CC1	CLODE	0.98	1223	105	56%	17%	663	3%	3%	0.031	2.4	227	10	<L1	<L1
	Lake Mountain Creek	FR_LMP1	NGD1	1.5	465	80.8	72%	31%	883	10%	10%	-	0.0	235	8	<L1	<L1
	Kilmarock Creek	FR_KC1	KICK	2.4	547	123	81%	39%	1297	40%	40%	<0.01	0.0	420	8	<L1	<L1
	Swift Creek	GH_SC1	SWCK	0.8	2435.34	28	3%	0%	2081	86%	86%	0.151	11.8	748	20	L2-L3	<L1
	Cataract Creek	GH_CC1	CATCK	0.33	2802.89	36	7%	0%	2160	88%	88%	0.151	11.8	718	20	L2-L3	<L1
	Porter Creek	GH_PC1	POCK	0.26	764	1.3	0%	0%	542	1%	1%	<0.01	0.0	94	7	<L1	<L1
	LCO Dry Creek	LC_DCDS	LC_DCDS	5.8	323	96.6	93%	44%	548	1%	1%	0.171	13.4	198	21	L2-L3	<L1
	LCO Dry Creek	LC_DC1	LIDSL	0.68	195	58.3	95%	42%	333	0%	0%	0.055	4.3	120	12	<L1	<L1
	Unnamed Creek		LC_UC	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-
	Greenhills Creek		GHCKU	4.1	706	9	0%	0%	1172	29%	29%	0.031	2.4	238	10.2	<L1	<L1
	Greenhills Creek	GH_GH1	GHCKD	0.24	706	9	0%	0%	1172	29%	29%	0.328	25.7	238	33	>L3	<L1
	<b>MU1 Summary</b>																
	Overall %effect (characterized areas)						7%	3%		2%	2%					-	-
	Proportion of MU1 with effect of	<L1					88%	92%		95%	95%					96%	99%
		L1-L2					4%	2%		0%	0%					0%	0%
		L2-L3					2%	5%		3%	3%					3%	0%
		>L3					5%	0%		1%	1%					0%	0%
		Uncharacterized areas					1%	1%		1%	1%					1%	1%
	Proportion of Fording with effect of	<L2					93%	100%		100%	100%					100%	100%
MU2	<b>Mainstem Fording River</b>																
	d/s Josephine Falls		FO9	9.1	389	20	11%	5%	395	0%	0%	0.033	2.6	85	9.8	<L1	<L1
	d/s Grace Cr.	LC_LC6	FRUL	15	357	16	8%	3%	338	0%	0%	0.034	2.7	64	10	<L1	<L1
	d/s Line Cr.	LC_LC5	FO23	5.9	357	16	8%	3%	338	0%	0%	0.021	1.6	64	9	<L1	<L1
	<b>Tributaries</b>																
	Grace Cr.	LC_GRCK	LC_GRCK	7.7	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	u/s LCO	LC_LC1	L124	15	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	South Line Cr.	LC_SLC	SLINE	11	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	Other reference tributaries		-	14	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	u/s West Line Cr.	LC_LCUSWLC	LCUT	2.8	427	27	16%	7%	502	1%	1%	<0.01	0.0	89	7	<L1	<L1
	d/s West Line Cr.	LC_LC3	LILC3	0.76	456	21	7%	4%	593	2%	2%	0.015	1.2	70	8	<L1	<L1
	d/s pond discharge	WL_DCP_SP24	LISP24	0.75	345	13	5%	2%	428	0%	0%	0.018	1.4	63	8.45	<L1	<L1
	d/s South Line Cr. Confluence	LC_LCDDSSLC	LIDSL	2.2	345	13	5%	2%	428	0%	0%	0.036	2.7	63	10	<L1	<L1
	d/s LIDSL	LC_LC3	LIDCOM	8.9	323	11	4%	1%	343	0%	0%	0.010	0.8	51	7.7	<L1	<L1
	d/s LIDSL	LC_LC4	L18	4.3	323	11.0	4%	1%	343	0%	0%	<0.01	0.0	51	7	<L1	<L1
	<b>MU2 Summary</b>																
	Overall %effect (characterized areas)						4%	2%		0%	0%					-	-
	Proportion of MU2 with effect of	<L1					88%	100%		100%	100%					100%	100%
		L1-L2					12%	0%		0%	0%					0%	0%
		L2-L3					0%	0%		0%	0%					0%	0%
		>L3					0%	0%		0%	0%					0%	0%
		Uncharacterized areas					0%	0%		0%	0%					0%	0%
	Proportion of Fording with effect of	<L2					100%	100%		100%	100%					100%	100%
MU3	<b>Mainstem Elk River</b>																
	u/s GHO	GH_ER2	ELUGH	303	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	d/s Thompson Cr.	GH_ERC	EL20	18	166	1.42	0%	0%	88	0%	0%	0.00	0.0	6.6	6.0	<L1	<L1
	u/s Bowin Cr.	GH_ER1	ELUEL	14	165	1.33	0%	0%	84	0%	0%	<0.01	0.0	6.2	6.0	<L1	<L1
	d/s Elkford Sewage Ponds		ELDEL	41	165	1	0%	0%	84	0%	0%	-	0.0	6	6	<L1	<L1
	u/s Fording R.		ELUFO	13	165	1	0%	0%	84	0%	0%	-	0.0	6	6.0	<L1	<L1
	<b>Tributaries</b>																
	Michelson Cr.	GH_MC1	-	1.1	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Unnamed tributary west of Elk River		UCWER	17	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Other reference tributaries		-	168	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1



Table A-12: Integrated Effects Table for Benthic Invertebrates - 2023

Management Unit	Area Description	IWO Station Code	Biological Area Code	Avg Flow Total Habitat (ha)	Hardness (mg/L as CaCO <sub>3</sub> )	Nitrate			Sulphate			Selenium					
						[NO <sub>3</sub> ] (mg/L N)	Sensitive Species ( <i>C. dubia</i> )	Community Endpoint (invert. SSD)	[SO <sub>4</sub> ] (mg/L)	Sensitive Species ( <i>N. trianguifer</i> )	Community Endpoint (approx. SSD)	Max 2021 OrganoSe (µg/L)	Modelled BI Se Increment (mg/kg dw)	Total [Se] (µg/L)	Modelled BI Se (mg/kg dw)	Sensitive Species ( <i>N. trianguifer</i> )	Community ( <i>H. azteca</i> )
MU1	<b>Mainstem Fording River</b>																
	<i>u/s Henrietta Cr. and FRO</i>	FR_UFR1	FO26	16	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	<i>d/s Henrietta Cr.</i>	FR_FR1	FODHE	2.9	196	4.7	3%	0%	240	0%	0%	<0.01	0.0	38	6.8	<L1	<L1
	<i>u/s Clode Cr.</i>		FOUCL	0.23	196	4.7	3%	0%	240	0%	0%	<0.01	0.0	38	6.79	<L1	<L1
	<i>u/s North Greenhills Diversion</i>		FOUNGD	1.5	196	4.7	3%	0%	240	0%	0%	<0.01	0.0	38	6.8	<L1	<L1
	<i>d/s North Greenhills Diversion</i>	FR_FRABEC1	FOONGD	0.56	196	4.7	3%	0%	240	0%	0%	<0.01	0.0	38	6.79	<L1	<L1
	<i>Multiplate Culvert</i>	FR_MULTIPATE	MP1	0.89	196	4.7	3%	0%	240	0%	0%	<0.01	0.0	38	6.79	<L1	<L1
	<i>u/s Shandley Cr.</i>		FOUSH	1.5	196	4.7	3%	0%	240	0%	0%	<0.01	0.0	38	6.8	<L1	<L1
	<i>u/s Kilmarock Cr.</i>	FR_FR2	FOUKI	0.92	334	28	32%	12%	505	1%	1%	<0.01	0.0	98	7	<L1	<L1
	<i>d/s Kilmarock &amp; u/s Swift Cr.</i>	GH_FR3	FOBKS	2.5	334	28	32%	12%	505	1%	1%	<0.01	0.0	98	7.3	<L1	<L1
	<i>d/s Future AWIT-S</i>		SCOUTDS	0.08	334	28	32%	12%	505	1%	1%	0.012	0.9	98	8.2	<L1	<L1
	<i>d/s Swift Cr., u/s Cataract Cr.</i>	FR_FR4_GH_FR	FOBSC	0.71	380	25	18%	8%	686	3%	3%	0.022	1.7	85	9	<L1	<L1
	<i>d/s Cataract, u/s Porter</i>	FR_FRCP1	FOBCP	1.4	423	26	15%	7%	679	3%	3%	0.025	2.0	88	9	<L1	<L1
	<i>1 km SW of Fording R Compliance</i>		FRCP1SW	1.4	423	26	15%	7%	679	3%	3%	0.025	2.0	88	9.2	<L1	<L1
	<i>u/s Porter</i>	FR_FRRD	FRUPO	2.2	423	26	15%	7%	679	3%	3%	<0.01	0.0	88	7.2	<L1	<L1
	<i>d/s Porter Cr., u/s Chauncey Cr.</i>	GH_PC2	FODPO	1.9	571	25	5%	4%	562	1%	1%	<0.01	0.0	90	7	<L1	<L1
	<i>u/s Chauncey Creek</i>	FR_FRABCH	FO22	2.0	548	24	5%	4%	536	1%	1%	0.012	0.9	87	8	<L1	<L1
	<i>d/s Chauncey Cr., u/s Ewin Cr.</i>	FR_FR5	FOUEW	11	548	24	5%	4%	536	1%	1%	<0.01	0.0	87	7.2	<L1	<L1
	<i>Fording River u/s Dry Creek</i>	LC_FRUS	FO28	5.0	548	24	5%	4%	536	1%	1%	0.028	2.2	87	9.4	<L1	<L1
	<i>d/s Dry Cr., u/s GHO</i>	LC_FR8	FO29	8.9	548	24	5%	4%	536	1%	1%	0.029	2.3	87	9.5	<L1	<L1
	<i>d/s GHO and Greenhills Cr.</i>	GH_FR1	FOOGH	2.5	390	18	8%	3%	403	0%	0%	0.033	2.6	69	9.7	<L1	<L1
	<b>Tributaries</b>																
	<i>Henrietta Creek</i>	FR_HC3	HENUP	10	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	<i>Chauncey Creek</i>	RG_CH1	CHCK	23	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	<i>Ewin Creek</i>		EWCK	45	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	<i>Other reference tributaries</i>			40	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	<i>Henrietta Creek</i>	FR_HC1	HENFO	5.4	227	6	3%	0%	315	0%	0%	0.026	2.0	52	9	<L1	<L1
	<i>Fish Pond Creek</i>	FR_FC1	FR_FC1	0.29	-	-	-	-	-	-	-	<0.01	0.0	-	-	-	-
	<i>Clode Creek</i>	FR_CC1	CLODE	0.98	1234	57	20%	6%	799	6%	6%	0.031	2.4	133	10	<L1	<L1
	<i>Lake Mountain Creek</i>	FR_LMP1	NGD1	1.5	1001	86.5	43%	16%	928	12%	12%	-	0.0	251	8	<L1	<L1
	<i>Kilmarock Creek</i>	FR_KC1	KICK	2.4	637	114	68%	33%	1428	51%	51%	<0.01	0.0	389	8	<L1	<L1
	<i>Swift Creek</i>	GH_SC1	SWCK	0.8	2553.53	28	4%	0%	2172	89%	89%	0.151	11.8	778	20	L2-L3	<L1
	<i>Cataract Creek</i>	GH_CC1	CATCK	0.33	2894.45	38	8%	0%	2243	90%	90%	0.151	11.8	746	20	L2-L3	<L1
	<i>Porter Creek</i>	GH_PC1	POCK	0.26	772	1.1	0%	0%	553	1%	1%	<0.01	0.0	96	7	<L1	<L1
	<i>LCO Dry Creek</i>	LC_DCDS	LC_DCDS	5.8	335	75.2	87%	36%	513	1%	1%	0.171	13.4	169	21	L2-L3	<L1
	<i>LCO Dry Creek</i>	LC_DC1	LIDSL	0.68	196	47.8	92%	36%	339	0%	0%	0.055	4.3	108	12	<L1	<L1
	<i>Unnamed Creek</i>		LC_UC	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Greenhills Creek</i>		GHCKU	4.1	698	8	0%	0%	1181	30%	30%	0.031	2.4	236	10.2	<L1	<L1
	<i>Greenhills Creek</i>	GH_GH1	GHCKD	0.24	698	8	0%	0%	1181	30%	30%	0.328	25.7	236	33	>L3	<L1
	<b>MU1 Summary</b>																
	<b>Overall %effect (characterized areas)</b>						6%	3%		2%	2%					-	-
	<b>Proportion of MU1 with effect of</b>	<L1					89%	93%		95%	95%					96%	99%
		L1-L2					3%	2%		1%	1%					0%	0%
		L2-L3					3%	4%		2%	2%					3%	0%
		>L3					4%	0%		2%	2%					0%	0%
		Uncharacterized areas					1%	1%		1%	1%					1%	1%
	<b>Proportion of Fording with effect of (characterized areas)</b>	<L2					95%	100%		100%	100%					100%	100%
MU2	<b>Mainstem Fording River</b>																
	<i>d/s Josephine Falls</i>		FO9	9.1	390	18	8%	3%	403	0%	0%	0.033	2.6	69	9.7	<L1	<L1
	<i>d/s Grace Cr.</i>	LC_LC6	FRUL	15	364	14	6%	2%	347	0%	0%	0.034	2.7	55	10	<L1	<L1
	<i>d/s Line Cr.</i>	LC_LC5	FO23	5.9	364	14	6%	2%	347	0%	0%	0.021	1.6	55	9	<L1	<L1
	<b>Tributaries</b>																
	<i>Grace Cr.</i>	LC_GRCK	LC_GRCK	7.7	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	<i>u/s LCO</i>	LC_LC1	L124	15	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	<i>South Line Cr.</i>	LC_SLC	SLINE	11	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	<i>Other reference tributaries</i>		-	14	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	<i>u/s West Line Cr.</i>	LC_LCUSWLC	LCUT	2.8	419	29	19%	9%	550	1%	1%	<0.01	0.0	98	7	<L1	<L1
	<i>d/s West Line Cr.</i>	LC_LC3	LILC3	0.76	446	20	7%	3%	639	2%	2%	0.015	1.2	74	8	<L1	<L1
	<i>d/s pond discharge</i>	WL_DCP_SP24	LISP24	0.75	337	13	6%	2%	459	0%	0%	0.018	1.4	69	8.5	<L1	<L1
	<i>d/s South Line Cr. Confluence</i>	LC_LCDSLCC	LIDSL	2.2	337	13	6%	2%	459	0%	0%	0.036	2.7	69	10	<L1	<L1
	<i>d/s LIDSL</i>	LC_LC3	LIDCOM	8.9	312	11	5%	1%	374	0%	0%	0.010	0.8	56	7.8	<L1	<L1
	<i>d/s LIDSL</i>	LC_LC4	L18	4.3	312	11.2	5%	1%	374	0%	0%	<0.01	0.0	56	7	<L1	<L1
	<b>MU2 Summary</b>																
	<b>Overall %effect (characterized areas)</b>						3%	1%		0%	0%					-	-
	<b>Proportion of MU2 with effect of</b>	<L1					97%	100%		100%	100%					100%	100%
		L1-L2					3%	0%		0%	0%					0%	0%
		L2-L3					0%	0%		0%	0%					0%	0%
		>L3					0%	0%		0%	0%					0%	0%
		Uncharacterized areas					0%	0%		0%	0%					0%	0%
	<b>Proportion of Fording with effect of (characterized areas)</b>	<L2					100%	100%		100%	100%					100%	100%
MU3	<b>Mainstem Elk River</b>																
	<i>u/s GHO</i>	GH_ER2	ELUGH	303	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	<i>d/s Thompson Cr.</i>	GH_ERC	EL20	18	166	1.43	0%	0%	89	0%	0%	0.00	0.0	6.8	6.0	<L1	<L1
	<i>u/s Bowin Cr.</i>	GH_ER1	ELDEL	14	164	1.34	0%	0%	84	0%	0%	<0.01	0.0	6.4	6.0	<L1	<L1
	<i>d/s Elkford Sewage Ponds</i>		ELDEL	41	164	1	0%	0%	84	0%	0%	-	0.0	6	6	<L1	<L1
	<i>u/s Fording R.</i>		ELUFO	13	164	1	0%	0%	84	0%	0%	-	0.0	6	6.0	<L1	<L1
	<b>Tributaries</b>																
	<i>Michelson Cr.</i>	GH_MC1	-	1.1	116	0.066	0%	0%</									



Table A-13: Integrated Effects Table for Benthic Invertebrates - 2024

Management Unit	Area Description	WO Station Code	Biological Area Code	Avg Flow Total Habitat (ha)	Hardness (mg/L as CaCO <sub>3</sub> )	Nitrate			Sulphate			Selenium						
						[NO <sub>3</sub> ] (mg/L N)	Sensitive Species ( <i>C. dubia</i> )	Community Endpoint (invert. SSD)	[SO <sub>4</sub> ] (mg/L)	Sensitive Species ( <i>N. triangulifer</i> )	Community Endpoint (approx. SSD)	Max. 2021 OrganoSe (µg/L)	Modelled BI Se Increment (mg/kg dw)	Total [Se] (µg/L)	Modelled BI Se (mg/kg dw)	Sensitive Species ( <i>N. triangulifer</i> )	Community ( <i>H. azteca</i> )	
MU1	<b>Mainstem Fording River</b>																	
	u/s Henretta Cr. and FRO	FR_UFR1	FO26	16	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1	
	d/s Henretta Cr.	FR_FR1	FODHE	2.9	187	3.9	2%	0%	244	0%	0%	<0.01	0.0	38	6.8	<L1	<L1	
	u/s Clode Cr.		FOUCL	0.23	187	3.9	2%	0%	244	0%	0%	<0.01	0.0	38	6.79	<L1	<L1	
	u/s North Greenhills Diversion		FOUNGD	1.5	187	3.9	2%	0%	244	0%	0%	<0.01	0.0	38	6.8	<L1	<L1	
	d/s North Greenhills Diversion	FR_FRABEC1	FODNGD	0.56	187	3.9	2%	0%	244	0%	0%	<0.01	0.0	38	6.79	<L1	<L1	
	Multiple Culvert	FR_MULTIPATE	MP1	0.89	187	3.9	2%	0%	244	0%	0%	<0.01	0.0	38	6.79	<L1	<L1	
	u/s Shandley Cr.		FOUSH	1.5	187	3.9	2%	0%	244	0%	0%	<0.01	0.0	38	6.8	<L1	<L1	
	u/s Kilmarnock Cr.	FR_FR2	FOUKI	0.92	348	13	5%	2%	526	1%	1%	<0.01	0.0	49	7	<L1	<L1	
	d/s Kilmarnock & u/s Swift Cr.	GH_FR3	FOBKS	2.5	348	13	5%	2%	526	1%	1%	<0.01	0.0	49	6.9	<L1	<L1	
	d/s future AWTF-S		SCOUTDS	0.08	348	13	5%	2%	526	1%	1%	0.012	0.9	49	7.9	<L1	<L1	
	d/s Swift Cr., u/s Cataract Cr.	FR_FR4, GH_FR	FOBSC	0.71	395	12	3%	1%	701	3%	3%	0.022	1.7	49	9	<L1	<L1	
	d/s Cataract, u/s Porter	FR_FRCP1	FOBCP	1.4	437	14	3%	1%	699	3%	3%	0.025	2.0	55	9	<L1	<L1	
	1 km SW of Fording R Compliance		FRCP1SW	1.4	437	14	3%	1%	699	3%	3%	0.025	2.0	55	8.9	<L1	<L1	
	u/s Porter	FR_FRRD	FRUPO	2.2	437	14	3%	1%	699	3%	3%	<0.01	0.0	55	7.0	<L1	<L1	
	d/s Porter Cr., u/s Chauncey Cr.	GH_PC2	FODPO	1.9	589	20	3%	2%	583	1%	1%	<0.01	0.0	74	7	<L1	<L1	
	u/s Chauncey Creek	FR_FRABCH	FO22	2.0	565	20	3%	2%	557	1%	1%	0.012	0.9	73	8	<L1	<L1	
	d/s Chauncey Cr., u/s Ewin Cr.	FR_FR5	FOUEW	11	565	20	3%	2%	557	1%	1%	<0.01	0.0	73	7.1	<L1	<L1	
	Fording River u/s Dry Creek	LC_FRUS	FO28	5.0	565	20	3%	2%	557	1%	1%	0.028	2.2	73	9.3	<L1	<L1	
	d/s Dry Cr., u/s GHO	LC_FRB	FO29	8.9	565	20	3%	2%	557	1%	1%	0.029	2.3	73	9.4	<L1	<L1	
	u/s GHO and Greenhills Cr.	GH_FR1	FODGH	2.5	407	15	5%	2%	416	0%	0%	0.033	2.6	60	9.6	<L1	<L1	
	<b>Tributaries</b>																	
	Henretta Creek	FR_HC3	HENUP	10	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1	
	Chauncey Creek	RG_CH1	CHCK	23	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1	
	Ewin Creek		EWCK	45	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1	
	Other reference tributaries		-	40	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1	
	Henretta Creek	FR_HC1	HENFO	5.4	222	5	2%	0%	314	0%	0%	0.026	2.0	51	9	<L1	<L1	
	Fish Pond Creek	FR_FC1	FR_FC1	0.29	-	-	-	-	-	-	-	<0.01	0.0	-	-	-	-	
	Clode Creek	FR_CC1	CLODE	0.98	1074	14	1%	0%	816	7%	7%	0.031	2.4	28	9	<L1	<L1	
	Lake Mountain Creek	FR_LMP1	NGD1	1.5	1206	102.6	54%	16%	1127	25%	25%	-	0.0	307	8	<L1	<L1	
	Kilmarnock Creek	FR_KC1	KICK	2.4	666	126	71%	35%	1468	55%	55%	<0.01	0.0	417	8	<L1	<L1	
	Swift Creek	GH_SC1	SWCK	0.8	2645.69	26	3%	0%	2216	90%	90%	0.151	11.8	794	20	L2-L3	<L1	
	Cataract Creek	GH_CC1	CATCK	0.33	2902.48	34	6%	0%	2227	90%	90%	0.151	11.8	737	20	L2-L3	<L1	
Porter Creek	GH_PC1	POCK	0.26	770	0.9	0%	0%	555	1%	1%	<0.01	0.0	96	7	<L1	<L1		
LCO Dry Creek	LC_DCDS	LC_DCDS	5.8	330	15.7	9%	3%	441	0%	0%	0.171	13.4	58	20	L2-L3	<L1		
LCO Dry Creek	LC_DC1	LC_DC1	0.68	195	10.5	18%	4%	293	0%	0%	0.055	4.3	38	11	<L1	<L1		
Unnamed Creek		LC_UC	1.2	-	-	-	-	-	-	-	-	0.0	-	-	-	-		
Greenhills Creek		GHCKU	4.1	712	6	0%	0%	1177	29%	29%	0.031	2.4	233	10.2	<L1	<L1		
Greenhills Creek	GH_GH1	GHCKD	0.24	712	6	0%	0%	1177	29%	29%	0.328	25.7	233	33	>L3	<L1		
<b>MU1 Summary</b>																		
Overall %effect (characterized areas)							2%	1%		2%	2%					-	-	
Proportion of MU1 with effect of	<L1						97%	97%		95%	95%					96%	99%	
	L1-L2						0%	1%		0%	0%					0%	0%	
	L2-L3						0%	1%		3%	3%					3%	0%	
	>L3						2%	0%		2%	2%					0%	0%	
	Uncharacterized areas						1%	1%		1%	1%					1%	1%	
Proportion of Fording with effect of (characterized areas)	<L2						100%	100%		100%	100%					100%	100%	
MU2	<b>Mainstem Fording River</b>																	
	u/s Josephine Falls		FO9	9.1	407	15	5%	2%	416	0%	0%	0.033	2.6	60	9.6	<L1	<L1	
	d/s Grace Cr.	LC_LC6	FRUL	15	368	12	4%	1%	356	0%	0%	0.034	2.7	50	10	<L1	<L1	
	d/s Line Cr.	LC_LC5	FO23	5.9	368	12	4%	1%	356	0%	0%	0.021	1.6	50	9	<L1	<L1	
	<b>Tributaries</b>																	
	Grace Cr.	LC_GRCK	LC_GRCK	7.7	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1	
	u/s LCO	LC_LC1	LI24	15	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1	
	South Line Cr.	LC_SLC	SLINE	11	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1	
	Other reference tributaries		-	14	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1	
	u/s West Line Cr.	LC_LCUSWLC	LCUT	2.8	404	23	12%	6%	530	1%	1%	<0.01	0.0	91	7	<L1	<L1	
	d/s West Line Cr.	LC_LC3	LILC3	0.76	445	16	4%	2%	640	2%	2%	0.015	1.2	69	8	<L1	<L1	
	d/s pond discharge	WL_DCP_SP24	LISP24	0.75	340	11	3%	1%	460	0%	0%	0.018	1.4	66	8.48	<L1	<L1	
	d/s South Line Cr. Confluence	LC_LCDDSLCC	LIDSL	2.2	340	11	3%	1%	460	0%	0%	0.036	2.7	66	10	<L1	<L1	
	d/s LIDSL	LC_LCC	LIDCOM	8.9	314	9	3%	1%	375	0%	0%	0.010	0.8	55	7.8	<L1	<L1	
	d/s LIDSL	LC_LC4	LIL8	4.3	314	9.0	3%	1%	375	0%	0%	<0.01	0.0	55	7	<L1	<L1	
	<b>MU2 Summary</b>																	
	Overall %effect (characterized areas)							2%	1%		0%	0%					-	-
	Proportion of MU2 with effect of	<L1						97%	100%		100%	100%					100%	100%
		L1-L2						3%	0%		0%	0%					0%	0%
		L2-L3						0%	0%		0%	0%					0%	0%
		>L3						0%	0%		0%	0%					0%	0%
		Uncharacterized areas						0%	0%		0%	0%					0%	0%
	Proportion of Fording with effect of (characterized areas)	<L2						100%	100%		100%	100%					100%	100%
MU3	<b>Mainstem Elk River</b>																	
	u/s GHO	GH_ER2	ELUGH	303	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1	
	d/s Thompson Cr.	GH_ERC	EL20	18	166	1.32	0%	0%	86	0%	0%	0.00	0.0	6.9	6.0	<L1	<L1	
	u/s Bowin Cr.	GH_ER1	ELUEL	14	164	1.24	0%	0%	82	0%	0%	<0						

Table A-144: Integrated Effects Table for Benthic Invertebrates - 2025

Management Unit	Area Description	WO Station Code	Biological Area Code	Avg Flow Total (m³/s)	Hardness (mg/L as CaCO <sub>3</sub> )	Nitrate			Sulphate			Selenium						
						[NO <sub>3</sub> ] (mg/L N)	Sensitive Species ( <i>C. dubia</i> )	Community Endpoint (invert. SSD)	[SO <sub>4</sub> ] (mg/L)	Sensitive Species ( <i>N. triangulifer</i> )	Community Endpoint (approx. SSD)	Max. 2021 OrganoSe (µg/L)	Modelled BI Se Increment (mg/kg dw)	Total [Se] (µg/L)	Modelled BI Se (mg/kg dw)	Sensitive Species ( <i>N. triangulifer</i> )	Community ( <i>H. azteca</i> )	
MU1	Mainstem Fording River																	
	<i>u/s</i> Henretta Cr. and FRO	FR_UFR1	FO26	16	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1	
	<i>d/s</i> Henretta Cr.	FR_FR1	FODHE	2.9	189	3.3	1%	0%	245	0%	0%	<0.01	0.0	38	6.8	<L1	<L1	
	<i>u/s</i> Clode Cr.		FOUCL	0.23	189	3.3	1%	0%	245	0%	0%	<0.01	0.0	38	6.79	<L1	<L1	
	<i>u/s</i> North Greenhills Diversion		FOUNGD	1.5	189	3.3	1%	0%	245	0%	0%	<0.01	0.0	38	6.8	<L1	<L1	
	<i>d/s</i> North Greenhills Diversion	FR_FRABEC1	FODNGD	0.56	189	3.3	1%	0%	245	0%	0%	<0.01	0.0	38	6.79	<L1	<L1	
	Multiple Culvert	FR_MULTIPATE	MP1	0.89	189	3.3	1%	0%	245	0%	0%	<0.01	0.0	38	6.79	<L1	<L1	
	<i>u/s</i> Shandley Cr.		FOUSH	1.5	189	3.3	1%	0%	245	0%	0%	<0.01	0.0	38	6.8	<L1	<L1	
	<i>u/s</i> Kilmarnock Cr.	FR_FR2	FOUKI	0.92	350	12	4%	1%	548	1%	1%	<0.01	0.0	48	7	<L1	<L1	
	<i>d/s</i> Kilmarnock & <i>u/s</i> Swift Cr.	GH_FR3	FOBKS	2.5	350	12	4%	1%	548	1%	1%	<0.01	0.0	48	6.9	<L1	<L1	
	<i>d/s</i> future AWTF-S		SCOUTDS	0.08	350	12	4%	1%	548	1%	1%	0.012	0.9	48	7.9	<L1	<L1	
	<i>d/s</i> Swift Cr., <i>u/s</i> Cataract Cr.	FR_FR4, GH_FR	FOBSC	0.71	391	11	2%	1%	716	4%	4%	0.022	1.7	48	9	<L1	<L1	
	<i>d/s</i> Cataract, <i>u/s</i> Porter	FR_FRCP1	FOBCP	1.4	438	13	2%	1%	715	4%	4%	0.025	2.0	55	9	<L1	<L1	
	1 km SW of Fording R Compliance		FRCP1SW	1.4	438	13	2%	1%	715	4%	4%	0.025	2.0	55	8.9	<L1	<L1	
	<i>u/s</i> Porter	FR_FRRD	FRUPO	2.2	438	13	2%	1%	715	4%	4%	<0.01	0.0	55	7.0	<L1	<L1	
	<i>d/s</i> Porter Cr., <i>u/s</i> Chauncey Cr.	GH_PC2	FODPO	1.9	602	18	2%	1%	598	2%	2%	<0.01	0.0	71	7	<L1	<L1	
	<i>u/s</i> Chauncey Creek	FR_FRABCH	FOZ2	2.0	578	18	2%	1%	572	1%	1%	0.012	0.9	70	8	<L1	<L1	
	<i>d/s</i> Chauncey Cr., <i>u/s</i> Ewin Cr.	FR_FR5	FOUEW	11	578	18	2%	1%	572	1%	1%	<0.01	0.0	70	7.1	<L1	<L1	
	Fording River <i>u/s</i> Dry Creek	LC_FRUS	FOZ8	5.0	578	18	2%	1%	572	1%	1%	0.028	2.2	70	9.3	<L1	<L1	
	<i>d/s</i> Dry Cr., <i>u/s</i> GHO	LC_FRB	FOZ9	8.9	578	18	2%	1%	572	1%	1%	0.029	2.3	70	9.4	<L1	<L1	
	<i>d/s</i> GHO and Greenhills Cr.	GH_FR1	FODGH	2.5	413	14	3%	1%	428	0%	0%	0.033	2.6	58	9.6	<L1	<L1	
	Tributaries																	
	Henretta Creek	FR_HC3	HENUP	10	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1	
	Chauncey Creek	RG_CH1	CHCK	23	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1	
	Ewin Creek		EWCK	45	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1	
	Other reference tributaries		-	40	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1	
	Henretta Creek	FR_HC1	HENFO	5.4	226	4	1%	0%	313	0%	0%	0.026	2.0	50	9	<L1	<L1	
	Fish Pond Creek	FR_FC1	FR_FC1	0.29	-	-	-	-	-	-	-	<0.01	0.0	-	-	-	-	
	Clode Creek	FR_CC1	CLODE	0.98	1083	13	1%	0%	831	7%	7%	0.031	2.4	27	9	<L1	<L1	
	Lake Mountain Creek	FR_LMP1	NGD1	1.5	1384	109.1	58%	15%	1230	34%	34%	-	0.0	333	8	<L1	<L1	
	Kilmarnock Creek	FR_KC1	KICK	2.4	668	121	68%	34%	1501	57%	57%	<0.01	0.0	430	8	<L1	<L1	
	Swift Creek	GH_SC1	SWCK	0.8	2808.75	28	4%	0%	2268	91%	91%	0.151	11.8	821	20	L2-L3	<L1	
Cataract Creek	GH_CC1	CATCK	0.33	2907.81	31	5%	0%	2202	89%	89%	0.151	11.8	724	20	L2-L3	<L1		
Porter Creek	GH_PC1	POCK	0.26	772	0.7	0%	0%	555	1%	1%	<0.01	0.0	96	7	<L1	<L1		
LCO Dry Creek	LC_DCDS	LC_DCDS	5.8	362	14.4	6%	2%	454	0%	0%	0.171	13.4	55	20	L2-L3	<L1		
LCO Dry Creek	LC_DC1	LC_DC1	0.68	194	10.0	16%	3%	315	0%	0%	0.055	4.3	39	11	<L1	<L1		
Unnamed Creek		LC_UC	1.2	-	-	-	-	-	-	-	-	0.0	-	-	-	-		
Greenhills Creek		GHCKU	4.1	702	5	0%	0%	1175	29%	29%	0.031	2.4	231	10.2	<L1	<L1		
Greenhills Creek	GH_GH1	GHCKD	0.24	702	5	0%	0%	1175	29%	29%	0.328	25.7	231	33	>L3	<L1		
MU1 Summary																		
Overall %effect (characterized areas)							2%	1%		2%	2%					-	-	
Proportion of MU1 with effect of						<L1	97%	97%		95%	95%					96%	99%	
						L1-L2	0%	1%		0%	0%			0%	0%			
						L2-L3	0%	1%		3%	3%			3%	0%			
						>L3	2%	0%		2%	2%			0%	0%			
Uncharacterized areas							1%	1%		1%	1%			1%	1%			
Proportion of Fording with effect of (characterized areas)						<L2		100%	100%		100%	100%			100%	100%		
MU2	Mainstem Fording River																	
	<i>d/s</i> Josephine Falls		FO9	9.1	413	14	3%	1%	428	0%	0%	0.033	2.6	58	9.6	<L1	<L1	
	<i>d/s</i> Grace Cr.	LC_LC6	FRUL	15	376	11	3%	1%	367	0%	0%	0.034	2.7	48	10	<L1	<L1	
	<i>d/s</i> Line Cr.	LC_LC5	FO23	5.9	376	11	3%	1%	367	0%	0%	0.021	1.6	48	9	<L1	<L1	
	Tributaries																	
	Grace Cr.	LC_GRCK	LC_GRCK	7.7	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1	
	<i>u/s</i> LCO	LC_LC1	LI24	15	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1	
	South Line Cr.	LC_SLC	SLINE	11	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1	
	Other reference tributaries		-	14	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1	
	<i>u/s</i> West Line Cr.	LC_LCUSWLC	LCUT	2.8	405	20	9%	4%	531	1%	1%	<0.01	0.0	90	7	<L1	<L1	
	<i>d/s</i> West Line Cr.	LC_LC3	LILC3	0.76	449	15	3%	1%	656	2%	2%	0.015	1.2	72	8	<L1	<L1	
	<i>d/s</i> pond discharge	WL_DCP_SP24	LISP24	0.75	343	10	3%	1%	470	1%	1%	0.018	1.4	68	8.49	<L1	<L1	
	<i>d/s</i> South Line Cr. Confluence	LC_LCDDSSLC	LIDSL	2.2	343	10	3%	1%	470	1%	1%	0.036	2.7	68	10	<L1	<L1	
	<i>d/s</i> LIDSL	LC_LCC	LIDCOM	8.9	317	8	2%	0%	386	0%	0%	0.010	0.8	57	7.8	<L1	<L1	
	<i>d/s</i> LIDSL	LC_LC4	LID	4.3	317	8.4	2%	0%	386	0%	0%	<0.01	0.0	57	7	<L1	<L1	
	MU2 Summary																	
	Overall %effect (characterized areas)							2%	1%		0%	0%				-	-	
	Proportion of MU2 with effect of						<L1	100%	100%		100%	100%				100%	100%	
							L1-L2	0%	0%		0%	0%			0%	0%		
							L2-L3	0%	0%		0%	0%			0%	0%		
							>L3	0%	0%		0%	0%			0%	0%		
	Uncharacterized areas							0%	0%		0%	0%			0%	0%		
	Proportion of Fording with effect of (characterized areas)						<L2		100%	100%		100%	100%			100%	100%	
MU3	Mainstem Elk River																	
	<i>u/s</i> GHO	GH_ER2	ELUGH	303	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1	
	<i>d/s</i> Thompson Cr.	GH_ERC	EL20	18	165	1.15	0%	0%	85	0%	0%	0.00	0.0	6.8	6.0	<L1	<L1	
	<i>u/s</i> Bowin Cr.	GH_ER1	ELDEL	14	163	1.08	0%	0%	81	0%	0%	<0.01	0.0	6.3	6.0	<L1	<L1	
	<i>d/s</i> Elkford Sewage Ponds		ELDEL	41	163	1	0%	0%	81	0%	0%	-	0.0	6	6	<L1	<L1	
	<i>u/s</i> Fording R.		ELUFO	13	163	1	0%	0%	81	0%	0%	-	0.0	6	6.0	<L1	<L1	
	Tributaries																	
	Michelson Cr.	GH_MC1	-	1.1	116	0.066	0%	0%	4									



Table A-15: Integrated Effects Table for Benthic Invertebrates - 2026

Management Unit	Area Description	IWO Station Code	Biological Area Code	Avg Flow Total Habitat (ha)	Hardness (mg/L as CaCO <sub>3</sub> )	Nitrate			Sulphate			Selenium					
						[NO <sub>3</sub> ] (mg/L N)	Sensitive Species ( <i>C. dubia</i> )	Community Endpoint (invert. SSD)	[SO <sub>4</sub> ] (mg/L)	Sensitive Species ( <i>N. trianguifer</i> )	Community Endpoint (approx. SSD)	Max 2021 OrganoSe (µg/L)	Modelled BI Se Increment (mg/kg dw)	Total [Se] (µg/L)	Modelled BI Se (mg/kg dw)	Sensitive Species ( <i>N. trianguifer</i> )	Community ( <i>H. azteca</i> )
MU1	<b>Mainstem Fording River</b>																
	<i>u/s Henrietta Cr. and FRO</i>	FR_UFR1	FO26	16	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	<i>d/s Henrietta Cr.</i>	FR_FR1	FODHE	2.9	190	2.7	1%	0%	247	0%	0%	<0.01	0.0	38	6.8	<L1	<L1
	<i>u/s Clode Cr.</i>		FOUCL	0.23	190	2.7	1%	0%	247	0%	0%	<0.01	0.0	38	6.79	<L1	<L1
	<i>u/s North Greenhills Diversion</i>		FOUNGD	1.5	190	2.7	1%	0%	247	0%	0%	<0.01	0.0	38	6.8	<L1	<L1
	<i>d/s North Greenhills Diversion</i>	FR_FRABEC1	FOONGD	0.56	190	2.7	1%	0%	247	0%	0%	<0.01	0.0	38	6.79	<L1	<L1
	<i>Multiplate Culvert</i>	FR_MULTIPATE	MP1	0.89	190	2.7	1%	0%	247	0%	0%	<0.01	0.0	38	6.79	<L1	<L1
	<i>u/s Shandley Cr.</i>		FOUSH	1.5	190	2.7	1%	0%	247	0%	0%	<0.01	0.0	38	6.8	<L1	<L1
	<i>u/s Kilmarock Cr.</i>	FR_FR2	FOUKI	0.92	351	11	3%	1%	555	1%	1%	<0.01	0.0	45	7	<L1	<L1
	<i>u/s Kilmarock &amp; u/s Swift Cr.</i>	GH_FR3	FOBKS	2.5	351	11	3%	1%	555	1%	1%	<0.01	0.0	45	6.9	<L1	<L1
	<i>d/s Future AWIT-S</i>		SCOUTDS	0.08	351	11	3%	1%	555	1%	1%	0.012	0.9	45	7.8	<L1	<L1
	<i>d/s Swift Cr., u/s Cataract Cr.</i>	FR_FR4_GH_FR	FOBSC	0.71	388	10	2%	1%	712	4%	4%	0.022	1.7	45	9	<L1	<L1
	<i>d/s Cataract, u/s Porter</i>	FR_FRCP1	FOBCP	1.4	432	12	2%	1%	707	4%	4%	0.025	2.0	51	9	<L1	<L1
	<i>1 km SW of Fording R Compliance</i>		FRCP1SW	1.4	432	12	2%	1%	707	4%	4%	0.025	2.0	51	8.9	<L1	<L1
	<i>u/s Porter</i>	FR_FRRD	FRUPO	2.2	432	12	2%	1%	707	4%	4%	<0.01	0.0	51	6.9	<L1	<L1
	<i>d/s Porter Cr., u/s Chauncey Cr.</i>	GH_PC2	FODPO	1.9	604	17	2%	1%	588	1%	1%	<0.01	0.0	69	7	<L1	<L1
	<i>u/s Chauncey Creek</i>	FR_FRABCH	FO22	2.0	582	17	2%	1%	570	1%	1%	0.012	0.9	67	8	<L1	<L1
	<i>d/s Chauncey Cr., u/s Ewin Cr.</i>	FR_FR5	FOUEW	11	582	17	2%	1%	570	1%	1%	<0.01	0.0	67	7.1	<L1	<L1
	<i>Fording River u/s Dry Creek</i>	LC_FRUS	FO28	5.0	582	17	2%	1%	570	1%	1%	0.028	2.2	67	9.3	<L1	<L1
	<i>d/s Dry Cr., u/s GHO</i>	LC_FR8	FO29	8.9	582	17	2%	1%	570	1%	1%	0.029	2.3	67	9.3	<L1	<L1
	<i>d/s GHO and Greenhills Cr.</i>	GH_FR1	FODGH	2.5	405	12	3%	1%	434	0%	0%	0.033	2.6	54	9.6	<L1	<L1
	<b>Tributaries</b>																
	<i>Henrietta Creek</i>	FR_HC3	HENUP	10	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	<i>Chauncey Creek</i>	RG_CH1	CHCK	23	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	<i>Ewin Creek</i>		EWCK	45	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	<i>Other reference tributaries</i>			40	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	<i>Henrietta Creek</i>	FR_HC1	HENFO	5.4	224	4	1%	0%	313	0%	0%	0.026	2.0	49	9	<L1	<L1
	<i>Fish Pond Creek</i>	FR_FC1	FR_FC1	0.29	-	-	-	-	-	-	-	<0.01	0.0	-	-	-	-
	<i>Clode Creek</i>	FR_CC1	CLODE	0.98	1084	11	0%	0%	857	8%	8%	0.031	2.4	19	9	<L1	<L1
	<i>Lake Mountain Creek</i>	FR_LMP1	NGD1	1.5	1409	91.6	46%	11%	1236	35%	35%	-	0.0	324	8	<L1	<L1
	<i>Kilmarock Creek</i>	FR_KC1	KICK	2.4	658	117	67%	33%	1494	57%	57%	<0.01	0.0	440	8	<L1	<L1
	<i>Swift Creek</i>	GH_SC1	SWCK	0.8	2822.3	31	5%	0%	2216	90%	90%	0.151	11.8	814	20	L2-L3	<L1
	<i>Cataract Creek</i>	GH_CC1	CATCK	0.33	2907.63	28	4%	0%	2173	89%	89%	0.151	11.8	711	20	L2-L3	<L1
	<i>Porter Creek</i>	GH_PC1	POCK	0.26	771	0.6	0%	0%	555	1%	1%	<0.01	0.0	95	7	<L1	<L1
	<i>LCO Dry Creek</i>	LC_DCDS	LC_DCDS	5.8	343	13.6	6%	2%	458	0%	0%	0.171	13.4	55	20	L2-L3	<L1
	<i>LCO Dry Creek</i>	LC_DC1	LC_DC1	0.68	193	9.7	16%	3%	327	0%	0%	0.055	4.3	39	11	<L1	<L1
	<i>Unnamed Creek</i>		LC_UC	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Greenhills Creek</i>		GHCKU	4.1	722	4	0%	0%	1173	29%	29%	0.031	2.4	229	10.1	<L1	<L1
	<i>Greenhills Creek</i>	GH_GH1	GHCKD	0.24	722	4	0%	0%	1173	29%	29%	0.328	25.7	229	33	>L3	<L1
	<b>MU1 Summary</b>																
	<b>Overall %effect (characterized areas)</b>						2%	1%		2%	2%					-	-
	<b>Proportion of MU1 with effect of</b>	<L1					97%	97%		95%	95%					96%	99%
		L1-L2					0%	1%		0%	0%					0%	0%
		L2-L3					1%	1%		3%	3%					3%	0%
		>L3					1%	0%		2%	2%					0%	0%
		Uncharacterized areas					1%	1%		1%	1%					1%	1%
	<b>Proportion of Fording with effect of (characterized areas)</b>	<L2					100%	100%		100%	100%					100%	100%

Table A-16: Integrated Effects Table for Benthic Invertebrates - 2027

Management Unit	Area Description	IWO Station Code	Biological Area Code	Avg Flow Total Habitat (ha)	Hardness (mg/L as CaCO <sub>3</sub> )	Nitrate			Sulphate			Selenium					
						[NO <sub>3</sub> ] (mg/L N)	Sensitive Species ( <i>C. dubia</i> )	Community Endpoint (invert. SSD)	[SO <sub>4</sub> ] (mg/L)	Sensitive Species ( <i>N. trianguifer</i> )	Community Endpoint (approx. SSD)	Max 2021 OrganoSe (µg/L)	Modelled BI Se Increment (mg/kg dw)	Total [Se] (µg/L)	Modelled BI Se (mg/kg dw)	Sensitive Species ( <i>N. trianguifer</i> )	Community ( <i>H. azteca</i> )
MU1	<b>Mainstem Fording River</b>																
	u/s Henretta Cr. and FRO	FR_UFR1	FO26	16	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	d/s Henretta Cr.	FR_FR1	FODHE	2.9	192	2.2	0%	0%	248	0%	0%	<0.01	0.0	37	6.8	<L1	<L1
	u/s Clode Cr.		FOUCL	0.23	192	2.2	0%	0%	248	0%	0%	<0.01	0.0	37	6.79	<L1	<L1
	u/s North Greenhills Diversion		FOUNGD	1.5	192	2.2	0%	0%	248	0%	0%	<0.01	0.0	37	6.8	<L1	<L1
	d/s North Greenhills Diversion	FR_FRABEC1	FOONGD	0.56	192	2.2	0%	0%	248	0%	0%	<0.01	0.0	37	6.79	<L1	<L1
	Multiplate Culvert	FR_MULTIPATE	MP1	0.89	192	2.2	0%	0%	248	0%	0%	<0.01	0.0	37	6.79	<L1	<L1
	u/s Shandley Cr.		FOUSH	1.5	192	2.2	0%	0%	248	0%	0%	<0.01	0.0	37	6.8	<L1	<L1
	u/s Kilmarnock Cr.	FR_FR2	FOUKI	0.92	350	10	3%	1%	574	1%	1%	<0.01	0.0	44	7	<L1	<L1
	d/s Kilmarnock & u/s Swift Cr.	GH_FR3	FOBKS	2.5	350	10	3%	1%	574	1%	1%	<0.01	0.0	44	6.9	<L1	<L1
	d/s Future AWIT-S		SCOUTDS	0.08	350	10	3%	1%	574	1%	1%	0.012	0.9	44	7.8	<L1	<L1
	d/s Swift Cr., u/s Cataract Cr.	FR_FR4_GH_FR	FOBSC	0.71	383	10	2%	0%	588	2%	2%	0.022	1.7	44	9	<L1	<L1
	d/s Cataract, u/s Porter	FR_FRCP1	FOBCP	1.4	430	11	2%	1%	601	2%	2%	0.025	2.0	49	9	<L1	<L1
	1 km SW of Fording R Compliance		FRCP1SW	1.4	430	11	2%	1%	601	2%	2%	0.025	2.0	49	8.9	<L1	<L1
	u/s Porter	FR_FRRD	FRUPO	2.2	430	11	2%	1%	601	2%	2%	<0.01	0.0	49	6.9	<L1	<L1
	d/s Porter Cr., u/s Chauncey Cr.	GH_PC2	FODPO	1.9	606	16	1%	1%	534	1%	1%	<0.01	0.0	66	7	<L1	<L1
	u/s Chauncey Creek	FR_FRABCH	FO22	2.0	588	15	1%	1%	520	1%	1%	0.012	0.9	64	8	<L1	<L1
	d/s Chauncey Cr., u/s Ewin Cr.	FR_FR5	FOUEW	11	588	15	1%	1%	520	1%	1%	<0.01	0.0	64	7.0	<L1	<L1
	Fording River u/s Dry Creek	LC_FRUS	FO28	5.0	588	15	1%	1%	520	1%	1%	0.028	2.2	64	9.2	<L1	<L1
	d/s Dry Cr., u/s GHO	LC_FR8	FO29	8.9	588	15	1%	1%	520	1%	1%	0.029	2.3	64	9.3	<L1	<L1
	d/s GHO and Greenhills Cr.	GH_FR1	FODGH	2.5	410	11	2%	1%	415	0%	0%	0.033	2.6	52	9.5	<L1	<L1
	<b>Tributaries</b>																
	Henretta Creek	FR_HC3	HENUP	10	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	Chauncey Creek	RG_CH1	CHCK	23	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Ewin Creek		EWCK	45	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Other reference tributaries			40	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Henretta Creek	FR_HC1	HENFO	5.4	222	3	0%	0%	313	0%	0%	0.026	2.0	49	9	<L1	<L1
	Fish Pond Creek	FR_FC1	FR_FC1	0.29	-	-	-	-	-	-	-	<0.01	0.0	-	-	-	-
	Clode Creek	FR_CC1	CLODE	0.98	955	11	0%	0%	865	9%	9%	0.031	2.4	19	9	<L1	<L1
	Lake Mountain Creek	FR_LMP1	NGD1	1.5	-	-	-	-	-	-	-	-	0.0	-	-	-	-
	Kilmarnock Creek	FR_KC1	KICK	2.4	670	37	8%	6%	981	15%	15%	<0.01	0.0	147	7	<L1	<L1
	Swift Creek	GH_SC1	SWCK	0.8	2911.8	33	5%	0%	2228	90%	90%	0.151	11.8	844	20	L2-L3	<L1
	Cataract Creek	GH_CC1	CATCK	0.33	2935.38	25	3%	0%	2159	88%	88%	0.151	11.8	703	20	L2-L3	<L1
	Porter Creek	GH_PC1	POCK	0.26	770	0.5	0%	0%	554	1%	1%	<0.01	0.0	95	7	<L1	<L1
	LCO Dry Creek	LC_DCDS	LC_DCDS	5.8	363	12.2	4%	1%	419	0%	0%	0.171	13.4	49	20	L2-L3	<L1
	LCO Dry Creek	LC_DC1	LDC1	0.68	193	9.0	13%	3%	305	0%	0%	0.055	4.3	37	11	<L1	<L1
	Unnamed Creek	LC_UC	LC_UC	1.2	-	-	-	-	-	-	-	-	0.0	-	-	-	-
	Greenhills Creek		GHCKU	4.1	711	4	0%	0%	1172	29%	29%	0.031	2.4	227	10.1	<L1	<L1
	Greenhills Creek	GH_GH1	GHCKD	0.24	711	4	0%	0%	1172	29%	29%	0.328	25.7	227	33	>L3	<L1
	<b>MU1 Summary</b>																
	Overall %effect (characterized areas)						1%	0%		2%	2%					-	-
	Proportion of MU1 with effect of	<L1					98%	99%		95%	95%					95%	99%
		L1-L2					0%	0%		1%	1%					0%	0%
		L2-L3					0%	0%		2%	2%					3%	0%
		>L3					0%	0%		1%	1%					0%	0%
		Uncharacterized areas					1%	1%		1%	1%					1%	1%
	Proportion of Fording with effect of (characterized areas)	<L2					100%	100%		100%	100%					100%	100%
MU2	<b>Mainstem Fording River</b>																
	d/s Josephine Falls		FO9	9.1	410	11	2%	1%	415	0%	0%	0.033	2.6				



Table A-17: Integrated Effects Table for Benthic Invertebrates - 2028

Management Unit	Area Description	IWO Station Code	Biological Area Code	Avg Flow Total Habitat (ha)	Hardness (mg/L as CaCO <sub>3</sub> )	Nitrate			Sulphate			Selenium					
						[NO <sub>3</sub> ] (mg/L N)	Sensitive Species (C. dubia)	Community Endpoint (invert. SSD)	[SO <sub>4</sub> ] (mg/L)	Sensitive Species (N. trianguifer)	Community Endpoint (approx. SSD)	Max 2021 OrganoSe (µg/L)	Modelled BI Se Increment (mg/kg dw)	Total [Se] (µg/L)	Modelled BI Se (mg/kg dw)	Sensitive Species (N. trianguifer)	Community (H. azteca)
MU1	<b>Mainstem Fording River</b>																
	u/s Henretta Cr. and FRO	FR_UFR1	FO26	16	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	d/s Henretta Cr.	FR_FR1	FODHE	2.9	193	1.8	0%	0%	240	0%	0%	<0.01	0.0	36	6.8	<L1	<L1
	u/s Clode Cr.		FOUCL	0.23	193	1.8	0%	0%	240	0%	0%	<0.01	0.0	36	6.76	<L1	<L1
	u/s North Greenhills Diversion		FOUNGD	1.5	193	1.8	0%	0%	240	0%	0%	<0.01	0.0	36	6.8	<L1	<L1
	d/s North Greenhills Diversion	FR_FRABEC1	FOONGD	0.56	193	1.8	0%	0%	240	0%	0%	<0.01	0.0	36	6.76	<L1	<L1
	Multiplate Culvert	FR_MULTIPATE	MP1	0.89	193	1.8	0%	0%	240	0%	0%	<0.01	0.0	36	6.76	<L1	<L1
	u/s Shandley Cr.		FOUSH	1.5	193	1.8	0%	0%	240	0%	0%	<0.01	0.0	36	6.8	<L1	<L1
	u/s Kilmarock Cr.	FR_FR2	FOUKI	0.92	366	10	2%	1%	594	2%	2%	<0.01	0.0	45	7	<L1	<L1
	u/s Kilmarock & u/s Swift Cr.	GH_FR3	FOBKS	2.5	366	10	2%	1%	594	2%	2%	<0.01	0.0	45	6.9	<L1	<L1
	d/s Future AWIT-S		SCOUTDS	0.08	366	10	2%	1%	594	2%	2%	0.012	0.9	45	7.8	<L1	<L1
	d/s Swift Cr., u/s Cataract Cr.	FR_FR4_GH_FR	FOBSC	0.71	404	10	2%	0%	622	2%	2%	0.022	1.7	45	9	<L1	<L1
	d/s Cataract, u/s Porter	FR_FRCP1	FOBCP	1.4	449	11	1%	0%	621	2%	2%	0.025	2.0	47	9	<L1	<L1
	1 km SW of Fording R Compliance		FRCP1SW	1.4	449	11	1%	0%	621	2%	2%	0.025	2.0	47	8.9	<L1	<L1
	u/s Porter	FR_FRRD	FRUPO	2.2	449	11	1%	0%	621	2%	2%	<0.01	0.0	47	6.9	<L1	<L1
	d/s Porter Cr., u/s Chauncey Cr.	GH_PC2	FODPO	1.9	606	13	1%	0%	526	1%	1%	<0.01	0.0	54	7	<L1	<L1
	u/s Chauncey Creek	FR_FRABCH	FO22	2.0	581	12	1%	0%	511	1%	1%	0.012	0.9	52	8	<L1	<L1
	d/s Chauncey Cr., u/s Ewin Cr.	FR_FR5	FOUEW	11	581	12	1%	0%	511	1%	1%	<0.01	0.0	52	7.0	<L1	<L1
	Fording River u/s Dry Creek	LC_FRUS	FO28	5.0	581	12	1%	0%	511	1%	1%	0.028	2.2	52	9.1	<L1	<L1
	d/s Dry Cr., u/s GHO	LC_FR8	FO29	8.9	581	12	1%	0%	511	1%	1%	0.029	2.3	52	9.2	<L1	<L1
	d/s GHO and Greenhills Cr.	GH_FR1	FODGH	2.5	414	10	1%	0%	405	0%	0%	0.033	2.6	44	9.5	<L1	<L1
	<b>Tributaries</b>																
	Henretta Creek	FR_HC3	HENUP	10	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	Chauncey Creek	RG_CH1	CHCK	23	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Ewin Creek		EWCK	45	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Other reference tributaries			40	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Henretta Creek	FR_HC1	HENFO	5.4	224	2	0%	0%	314	0%	0%	0.026	2.0	49	9	<L1	<L1
	Fish Pond Creek	FR_FC1	FR_FC1	0.29	-	-	-	-	-	-	-	<0.01	0.0	-	-	-	-
	Clode Creek	FR_CC1	CLODE	0.98	1009	11	0%	0%	891	10%	10%	0.031	2.4	21	9	<L1	<L1
	Lake Mountain Creek	FR_LMP1	NGD1	1.5	-	-	-	-	-	-	-	-	0.0	-	-	-	-
	Kilmarock Creek	FR_KC1	KICK	2.4	683	33	6%	5%	974	14%	14%	<0.01	0.0	148	7	<L1	<L1
	Swift Creek	GH_SC1	SWCK	0.8	2943.78	33	5%	0%	2259	90%	90%	0.151	11.8	864	20	L2-L3	<L1
	Cataract Creek	GH_CC1	CATCK	0.33	2959.79	24	2%	0%	2199	89%	89%	0.151	11.8	715	20	L2-L3	<L1
	Porter Creek	GH_PC1	POCK	0.26	769	0.4	0%	0%	554	1%	1%	<0.01	0.0	95	7	<L1	<L1
	LCO Dry Creek	LC_DCDS	LC_DCDS	5.8	389	10.3	2%	1%	412	0%	0%	0.171	13.4	43	20	L2-L3	<L1

Table A-18: Integrated Effects Table for Benthic Invertebrates – 2029-2053

Management Unit	Area Description	IWO Station Code	Biological Area Code	Avg Flow Total Habitat (ha)	Hardness (mg/L as CaCO <sub>3</sub> )	Nitrate			Sulphate			Selenium					
						[NO <sub>3</sub> ] (mg/L N)	Sensitive Species (C. dubia)	Community Endpoint (invert. SSD)	[SO <sub>4</sub> ] (mg/L)	Sensitive Species (N. trianguifer)	Community Endpoint (approx. SSD)	Max 2021 OrganoSe (µg/L)	Modelled BI Se Increment (mg/kg dw)	Total [Se] (µg/L)	Modelled BI Se (mg/kg dw)	Sensitive Species (N. trianguifer)	Community (H. azteca)
MU1	<b>Mainstem Fording River</b>																
	u/s Henretta Cr. and FRO	FR_UFR1	FO26	16	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	d/s Henretta Cr.	FR_FR1	FODHE	2.9	206	3.3	1%	0%	292	0%	0%	<0.01	0.0	46	6.9	<L1	<L1
	u/s Clode Cr.		FOUCL	0.23	206	3.3	1%	0%	292	0%	0%	<0.01	0.0	46	6.89	<L1	<L1
	u/s North Greenhills Diversion		FOUNGD	1.5	206	3.3	1%	0%	292	0%	0%	<0.01	0.0	46	6.9	<L1	<L1
	d/s North Greenhills Diversion	FR_FRABEC1	FODNGD	0.56	206	3.3	1%	0%	292	0%	0%	<0.01	0.0	46	6.89	<L1	<L1
	Multiplate Culvert	FR_MULTIPATE	MP1	0.89	206	3.3	1%	0%	292	0%	0%	<0.01	0.0	46	6.89	<L1	<L1
	u/s Shandley Cr.		FOUSH	1.5	206	3.3	1%	0%	292	0%	0%	<0.01	0.0	46	6.9	<L1	<L1
	u/s Kilmarock Cr.	FR_FR2	FOUKI	0.92	418	11	2%	1%	681	3%	3%	<0.01	0.0	72	7	<L1	<L1
	d/s Kilmarock & u/s Swift Cr.	GH_FR3	FOBKS	2.5	418	11	2%	1%	681	3%	3%	<0.01	0.0	72	7.1	<L1	<L1
	d/s future AWITF-S		SCOUTDS	0.08	418	11	2%	1%	681	3%	3%	0.012	0.9	72	8.0	<L1	<L1
	d/s Swift Cr., u/s Cataract Cr.	FR_FR4_GH_FR	FOBSC	0.71	452	10	1%	0%	708	4%	4%	0.022	1.7	69	9	<L1	<L1
	d/s Cataract, u/s Porter	FR_FRCP1	FOBCP	1.4	491	11	1%	0%	700	3%	3%	0.025	2.0	68	9	<L1	<L1
	1 km SW of Fording R Compliance		FRCP1SW	1.4	491	11	1%	0%	700	3%	3%	0.025	2.0	68	9.0	<L1	<L1
	u/s Porter	FR_FRRD	FRUPO	2.2	491	11	1%	0%	700	3%	3%	<0.01	0.0	68	7.1	<L1	<L1
	d/s Porter Cr., u/s Chauncey Cr.	GH_PC2	FODPO	1.9	641	12	0%	0%	565	1%	1%	<0.01	0.0	61	7	<L1	<L1
	u/s Chauncey Creek	FR_FRABCH	FOZ2	2.0	620	11	0%	0%	544	1%	1%	0.012	0.9	58	8	<L1	<L1
	d/s Chauncey Cr., u/s Ewin Cr.	FR_FR5	FOUEW	11	620	11	0%	0%	544	1%	1%	<0.01	0.0	58	7.0	<L1	<L1
	Fording River u/s Dry Creek	LC_FRUS	FOZ8	5.0	620	11	0%	0%	544	1%	1%	0.028	2.2	58	9.2	<L1	<L1
	d/s Dry Cr., u/s GHO	LC_FR8	FOZ9	8.9	620	11	0%	0%	544	1%	1%	0.029	2.3	58	9.3	<L1	<L1
	d/s GHO and Greenhills Cr.	GH_FR1	FODGH	2.5	448	9	1%	0%	428	0%	0%	0.033	2.6	50	9.5	<L1	<L1
	<b>Tributaries</b>																
	Henretta Creek	FR_HC3	HENUP	10	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5.2	<L1	<L1
	Chauncey Creek	RG_CH1	CHCK	23	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Ewin Creek		EWCK	45	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Other reference tributaries			40	116	0.066	0%	0%	43	0%	0%	<0.01	0.0	0.8	5	<L1	<L1
	Henretta Creek	FR_HC1	HENFO	5.4	242	4	1%	0%	367	0%	0%	0.026	2.0	60	9	<L1	<L1
	Fish Pond Creek	FR_FC1	FR_FC1	0.29	-	-	-	-	-	-	-	<0.01	0.0	-	-	-	-
	Clode Creek	FR_CC1	CLODE	0.98	1968	12	0%	0%	1450	53%	53%	0.031	2.4	28	9	<L1	<L1
	Lake Mountain Creek	FR_LMP1	NGD1	1.5	-	-	-	-	-	-	-	-	0.0	-	-	-	-
	Kilmarock Creek	FR_KC1	KICK	2.4	697	30	4%	4%	980	15%	15%	<0.01	0.0	170	8	<L1	<L1
	Swift Creek	GH_SC1	SWCK	0.8	3166.59	48	14%	0%	2443	93%	93%	0.151	11.8	1215	21	L2-L3	<L1
	Cataract Creek	GH_CC1	CATCK	0.33	3258.9	22	2%	0%	2470	94%	94%	0.151	11.8	838	20	L2-L3	<L1
	Porter Creek	GH_PC1	POCK														



Table A-19: Integrated Effects Table for Amphibians – 2021

Management Unit	Area Description	VO Station Code	Biological Area Code	Avg Flow Total Habitat (ha)	Hardness (mg/L as CaCO <sub>3</sub> )	Nitrate		Sulphate	
						[NO <sub>3</sub> ] (mg/L N)	Sensitive Species ( <i>L. pipiens</i> )	[SO <sub>4</sub> ] (mg/L)	Sensitive Species ( <i>L. pipiens</i> )
MU1	<b>Mainstem Fording River</b>								
	<i>u/s Henretta Cr. and FRO</i>	FR_UFR1	FO26	16	116	0.037	0%	33	0%
	d/s Henretta Cr.	FR_FR1	FODHE	2.9	194	5.9	3%	207	1%
	<i>u/s Clode Cr.</i>		FOUCL	0.23	194	5.9	3%	207	1%
	<i>u/s North Greenhills Diversion</i>		FOUNGO	1.5	194	5.9	3%	207	1%
	d/s North Greenhills Diversion	FR_FRABEC1	FODNGO	0.56	194	5.9	3%	207	1%
	Multiplate Culvert	FR_MULTIPLATE	MP1	0.89	194	5.9	3%	207	1%
	<i>u/s Shandley Cr.</i>		FOUSH	1.5	194	5.9	3%	207	1%
	<i>u/s Kilmamock Cr.</i>	FR_FR2	FOUK1	0.92	341	26	8%	436	4%
	d/s Kilmamock & u/s Swift Cr.	GH_FR3	FOBKS	2.5	341	26	8%	436	4%
	d/s future AWTF-S		SCOUTDS	0.078	341	26	8%	436	4%
	d/s Swift Cr., u/s Cataract Cr.	FR_FR4, GH_FR	FOBSC	0.71	405	26	7%	576	6%
	d/s Cataract, u/s Porter	FR_FRCP1	FOBCP	1.4	432	26	6%	566	6%
	1 km SW of Fording R Compliance		FRCP1SW	1.4	432	26	6%	566	6%
	<i>u/s Porter</i>	FR_FRRD	FRUPO	2.2	432	26	6%	566	6%
	d/s Porter Cr., u/s Chauncey Cr.	GH_PC2	FODPO	1.9	533	29	6%	531	5%
	<i>u/s Chauncey Creek</i>	FR_FRABCH	FOZZ	2.0	516	28	6%	509	5%
	d/s Chauncey Cr., u/s Ewin Cr.	FR_FR5	FOUFW	11	516	28	6%	509	5%
	Fording River u/s Dry Creek	LC_FRUS	FOZ8	5.0	516	28	6%	509	5%
	d/s Dry Cr., u/s GHO	LC_FRB	FOZ9	8.9	516	28	6%	509	5%
	d/s GHO and Greenhills Cr.	GH_FR1	FODGH	2.5	375	17	5%	313	2%
	<b>Tributaries</b>								
	<i>Henretta Creek</i>	FR_HC3	HENUP	10.0	116	0.037	0%	33	0%
	<i>Chauncey Creek</i>	RG_CH1	CHCK	23	116	0.037	0%	33	0%
	<i>Ewin Creek</i>		EWCK	45	116	0.037	0%	33	0%
	<i>Other reference tributaries</i>	-	-	40	116	0.037	0%	33	0%
	<i>Henretta Creek</i>	FR_HC1	HENFO	5.4	221	8.7	4%	295	2%
	<i>Fish Pond Creek</i>	FR_FC1	FR_FC1	0.29	-	-	-	-	-
	<i>Clode Creek</i>	FR_CC1	CLODE	0.98	1188	100	9%	599	6%
	<i>Lake Mountain Creek</i>	FR_NGD1	NGD1	1.5	452	56.3	12%	639	7%
	<i>Kilmamock Creek</i>	FR_KC1	KCK	2.4	504	107	20%	1072	14%
	<i>Swift Creek</i>	GH_SC1-2	SWCK	0.8	2329	25	1%	1863	27%
	<i>Cataract Creek</i>	GH_CC1	CATCK	0.33	2631	33	1%	2014	30%
	<i>Porter Creek</i>	GH_PC1	POCK	0.26	747	1.5	0%	527	5%
	<i>LCO Dry Creek</i>	LC_DCDS	LC_DCDS	5.8	281	65.94	21%	373.0	3%
	<i>LCO Dry Creek</i>	LC_DC1	LC_DC1	0.68	182	35.13	18%	201.2	1%
	<i>Unnamed Creek</i>		LC_UC	1.2	-	-	-	-	-
	<i>Greenhills Creek</i>		GHCKU	4.1	684	7.2	1%	870	11%
	<i>Greenhills Creek</i>	GH_GH1	GHCKD	0.24	684	7.2	1%	870	11%
	<b>MU1 Summary</b>								
	Overall %effect (characterized areas)						2%		2%
	Proportion of MU1 with effect of	<L1					94%		95%
		L1-L2					2%		3%
		L2-L3					3%		1%
		>L3					0%		0%
		Uncharacterized areas					1%		1%
	Proportion of Fording with effect (characterized areas)					<L1	100%		100%
MU2	<b>Mainstem Fording River</b>								
	<i>d/s Josephine Falls</i>		FO9	9.1	375	17	5%	313	2%
	<i>d/s Grace Cr.</i>	LC_LC6	FRUL	15	339	13	4%	264	2%
	<i>d/s Line Cr.</i>	LC_LC5	FO23	5.9	339	13	4%	264	2%
	<b>Tributaries</b>								
	<i>Grace Cr.</i>	LC_GRCK	LC_GRCK	7.7	116	0.037	0%	33	0%
	<i>u/s LCO</i>	LC_LC1	L24	15	116	0.037	0%	33	0%
	<i>South Line Cr.</i>	LC_SLC	LINE	11	116	0.037	0%	33	0%
	<i>Other reference tributaries</i>	-	-	14	116	0.037	0%	33	0%
	<i>u/s West Line Cr.</i>	LC_LCUSWLC	LCUT	2.8	382				



Table A-20: Integrated Effects Table for Amphibians – 2022

Management Unit	Area Description	WQ Station Code	Biological Area Code	Avg Flow Total Habitat (ha)	Hardness (mg/L as CaCO <sub>3</sub> )	Nitrate		Sulphate	
						[NO <sub>3</sub> ] (mg/L N)	Sensitive Species ( <i>L. pipiens</i> )	[SO <sub>4</sub> ] (mg/L)	Sensitive Species ( <i>L. pipiens</i> )
MU1	Mainstem Fording River								
	<i>u/s Henretta Cr. and FRO</i>	FR_UFR1	FO26	16	116	0.037	0%	33	0%
	<i>d/s Henretta Cr.</i>	FR_FR1	FODHE	2.9	193	4.7	3%	202	1%
	<i>u/s Clode Cr.</i>		FOUCL	0.23	193	4.7	3%	202	1%
	<i>u/s North Greenhills Diversion</i>		FOUNGD	1.5	193	4.7	3%	202	1%
	<i>d/s North Greenhills Diversion</i>	FR_FRABEC1	FODNGD	0.56	193	4.7	3%	202	1%
	Multiplate Culvert	FR_MULTIPATE	MP1	0.89	193	4.7	3%	202	1%
	<i>u/s Shandley Cr.</i>		FOUSH	1.5	193	4.7	3%	202	1%
	<i>u/s Kilmamock Cr.</i>	FR_FR2	FOUKJ	0.92	352	26	8%	445	4%
	<i>d/s Kilmamock &amp; u/s Swift Cr.</i>	GH_FR3	FOBKS	2.5	352	26	8%	445	4%
	<i>d/s future AWTF-S</i>		SCOUTDS	0.078	352	26	8%	445	4%
	<i>d/s Swift Cr., u/s Cataract Cr.</i>	FR_FR4, GH_FR	FOBSC	0.71	422	26	6%	587	6%
	<i>d/s Cataract, u/s Porter</i>	FR_FRCP1	FOBCP	1.4	454	26	6%	579	6%
	1 km SW of Fording R Compliance		FRCP1SW	1.4	454	26	6%	579	6%
	<i>u/s Porter</i>	FR_FRRD	FRUPO	2.2	454	26	6%	579	6%
	<i>d/s Porter Cr., u/s Chauncey Cr.</i>	GH_PC2	FODFO	1.9	560	29	6%	551	6%
	<i>u/s Chauncey Creek</i>	FR_FRABCH	FOZZ	2.0	543	28	6%	533	5%
	<i>d/s Chauncey Cr., u/s Ewin Cr.</i>	FR_FR5	FOUEW	11	543	28	6%	533	5%
	Fording River u/s Dry Creek	LC_FRUS	FOZ8	5.0	543	28	6%	533	5%
	<i>d/s Dry Cr., u/s GHO</i>	LC_FRB	FOZ9	8.9	543	28	6%	533	5%
	<i>d/s GHO and Greenhills Cr.</i>	GH_FR1	FODGH	2.5	389	17	5%	329	3%
	Tributaries								
	<i>Henretta Creek</i>	FR_HC3	HENUP	10.0	116	0.037	0%	33	0%
	<i>Chauncey Creek</i>	RG_CH1	CHCK	23	116	0.037	0%	33	0%
	<i>Ewin Creek</i>		EWCK	45	116	0.037	0%	33	0%
	<i>Other reference tributaries</i>	-	-	40	116	0.037	0%	33	0%
	<i>Henretta Creek</i>	FR_HC1	HENFO	5.4	229	7.7	4%	310	2%
	<i>Fish Pond Creek</i>	FR_FC1	FR_FC1	0.29	-	-	-	-	-
	<i>Clode Creek</i>	FR_CC1	CLODE	0.98	1223	98	8%	625	7%
	<i>Lake Mountain Creek</i>	FR_NGD1	NGD1	1.5	465	57.2	12%	636	7%
	<i>Kilmamock Creek</i>	FR_KC1	KICK	2.4	547	106	18%	1121	15%
	<i>Swift Creek</i>	GH_SC1-2	SWCK	0.8	2435	26	1%	1947	29%
	<i>Cataract Creek</i>	GH_CC1	CATCK	0.33	2803	36	1%	2160	32%
	<i>Porter Creek</i>	GH_PC1	POCK	0.26	764	1.3	0%	542	5%
	<i>LCO Dry Creek</i>	LC_DCDS	LC_DCDS	5.8	323	72.42	20%	417.2	4%
	<i>LCO Dry Creek</i>	LC_DC1	LC_DC1	0.68	195	35.41	17%	226.4	2%
	<i>Unnamed Creek</i>		LC_UC	1.2	-	-	-	-	-
	<i>Greenhills Creek</i>		GHCKU	4.1	706	6.3	1%	881	11%
	<i>Greenhills Creek</i>	GH_GH1	GHCKD	0.24	706	6.3	1%	881	11%
	MU1 Summary								
	Overall %effect (characterized areas)						2%		2%
	Proportion of MU1 with effect of								
	<L1						94%		95%
	L1-L2						2%		3%
	L2-L3						3%		1%
	>L3						0%		0%
	Uncharacterized areas						1%		1%
	Proportion of Fording with effect (characterized areas)		<L1				100%		100%
MU2	Mainstem Fording River								
	<i>d/s Josephine Falls</i>		FO9	9.1	389	17	5%	329	3%
	<i>d/s Grace Cr.</i>	LC_LC6	FRUL	15	357	13	4%	277	2%
	<i>d/s Line Cr.</i>	LC_LC5	FO23	5.9	357	13	4%	277	2%
	Tributaries								
	<i>Grace Cr.</i>	LC_GRCK	LC_GRCK	7.7	116	0.037	0%	33	0%
	<i>u/s LCO</i>	LC_LC1	L124	15	116	0.037	0%	33	0%
	<i>South Line Cr.</i>	LC_SLC	SLINE	11	116	0.037	0%	33	0%
	<i>Other reference tributaries</i>	-	-	14	116	0.037	0%	33	0%
	<i>u/s West Line Cr.</i>	LC_LCUSWLC	LCUT	2.8	427	23	6%	432	4%
	<i>d/s West Line Cr.</i>	LC_LC3	LILC3	0.76	456	19	5%	511	5%
	<i>d/s pond discharge</i>	WL_DCP_SP24	LISP24	0.75	456	19	5%	511	5%
	<i>d/s South Line Cr. Confluence</i>	LC_LCDSLCC	LIDSL	2.2	345	12	4%	348	3%
	<i>d/s LIDSL</i>	LC_LCC	LIDCOM	8.9	345	12	4%	348	3%
	<i>d/s LIDSL</i>	LC_LC4	LI8	4.3	323	9.7	3%	282	2%
	MU2 Summary								
	Overall %effect (characterized areas)						2%		1%
	Proportion of MU2 with effect of								
	<L1						100%		100%
	L1-L2						0%		0%
	L2-L3						0%		0%
	>L3						0%		0%
	Uncharacterized areas						0%		0%
	Proportion of Fording with effect (characterized areas)		<L1				100%		100%
MU3	Mainstem Elk River								
	<i>u/s GHO</i>	GH_ER2	ELUGH	303	116	0.037	0%	33	0%
	<i>d/s Thompson Cr.</i>	GH_ERC	EL20	18	166	1.27	1%	75	0%
	<i>u/s Boivin Cr.</i>	GH_ER1	ELUEL	14	165	1.18	1%	72	0%
	<i>d/s Elkford Sewage Ponds</i>		ELDEL	41	165	1.18	1%	72	0%
	<i>u/s Fording R.</i>		ELUFO	13	165	1.18	1%	72	0%
	Tributaries								
	<i>Michelson Cr.</i>	GH_MC1	-	1.1	116	0.037	0%	33	0%
	<i>Unnamed tributary west of Elk River</i>		UCWER	17	116	0.037	0%	33	0%
	<i>Other reference tributaries</i>	-	-	168	116	0.037	0%	33	0%
	<i>Elk River Side Channel</i>	GH_ERSC4	GH_ERSC4	4.1	-	-	-	-	-
	<i>Elk River Side Channel</i>	GH_ER1A	GH_ER1A	0.42	-	-	-	-	-
	<i>Elk River Side Channel</i>	RG_ERSC5	ERSC5	0.47	-	-	-	-	-
	<i>Side Channel d/s Thompson Cr.</i>	RG_SCDTC	SCDTC	1.4	-	-	-	-	-
	<i>Leask Cr.</i>	GH_LC1	-	3.0	2026	108	6%	1655	24%
	<i>Wolftram Cr.</i>	GH_WC2	WOCK	0.41	-	-	-	-	-
<i>Thompson Cr.</i>	GH_TC1	THCK	0.036	954	15	2%	1252	17%	
MU3 Summary									
Overall %effect (characterized areas)						0%		0%	
Proportion of MU3 with effect of									
<L1						99%		98%	
L1-L2						0%		0%	
L2-L3						0%		1%	
>L3						0%		0%	
Uncharacterized areas						1%		1%	
Proportion of Elk with effect (characterized areas)		<L1				100%		100%	
MU4	Mainstem Elk River								
	<i>u/s Grave Cr.</i>	EV_ER4	EL19	11	217	4.8	2%	138	1%
	<i>d/s Grave Cr.</i>		ELDGR	8.1	217	4.8	2%	138	1%
	<i>d/s Otto Cr.</i>	EV_ER2	ELUSP	6.1	209	3.7	2%	135	1%
	Mainstem Michel Creek								
	<i>u/s CMO</i>	CM_MC1	M25	12	116	0.037	0%	33	0%
	<i>u/s Corbin Cr.</i>		MUCO	3.2	116	0.037	0%	33	0%
	<i>d/s Corbin Cr.</i>	CM_MC2	MDCO	1.7	348	2.5	1%	311	2%
	<i>d/s Andy Good Cr.</i>	CM_MCTM	MIDAG	2.3	348	2.5	1%	311	2%
	<i>u/s Leach Cr.</i>		MULE	7.2	348	2.5	1%	311	2%
	<i>u/s Wheeler Cr.</i>		M5	4.9	348	2.5	1%	311	2%
	<i>u/s Erickson Cr.</i>	EV_MC3	M3	11	166	0.7	0%	92	0%
<i>d/s Erickson Cr.</i>		MIDER	1.1	166	0.7	0%	92	0%	
<i>d/s Gate Cr.</i>		MIDGA	0.074	166	0.7	0%	92	0%	
<i>d/s Bodie Cr.</i>		MIDBO	0.19	241	4.1	2%	193	1%	
<i>Lower Michel Compliance</i>	EV_MC2	MICOMP	0.71	241	4.1	2%	193	1%	
<i>d/s EVO</i>	EV_MC1	M2	0.71	240	4.0	2%	189	1%	
Tributaries									
<i>u/s Hamer Cr.</i>	EV_GV3	GRUHA	12	116	0.037	0%	33	0%	
<i>Andy Good Creek</i>	CM_AG1	AGCK	13	116	0.037	0%	33	0%	
<i>Alexander Cr. Mid-creek</i>		AL4	50	116	0.037	0%	33	0%	
<i>Leach Creek</i>		LE1	67	116	0.037	0%	33	0%	
<i>Alexander Cr. Near bend to West</i>	EV_AC2	ALUSM	36	116	0.037	0%	33	0%	
<i>Other reference tributaries</i>	-	-	160	116	0.037	0%	33	0%	
<i>u/s Hamer Pond</i>	EV_HC6	HACKUS	12	125	0.118	0%	14	0%	
<i>d/s Hamer Pond</i>	EV_HC1	HACKDS	0.53	288	1.87	1%	321	3%	
<i>d/s Hamer Cr.</i>		GRCK	2.3	199	1.1	1%	179	1%	
<i>mouth at Elk R.</i>	EV_GV1	GRDS	0.52	199	1.07	1%	179	1%	
<i>Otto Cr.</i>	EV_OC1	OCNM	0.54	275	0.47	0%	72	0%	
<i>Sixmile Creek</i>	EV_SM1	SMCK	0.58	162	0.239	0%	76	0%	
<i>Balmer Creek</i>	EV_BLM2	BACK	0.53	210	0.37	0%	40	0%	
<i>Corbin Cr.</i>	CM_CC1	CORCK	2.0	-	-	-	-	-	
<i>Erickson Cr.</i>	EV_EC1	ERCK	8.4	1195	9	1%	783	9%	
<i>Gate Creek</i>	EV_GT1	GATE	1.2	1899	73	4%	1486	21%	
<i>Bodie Cr.</i>	EV_BC1	BOCK	0.86	1926	80	4%	1354	19%	
MU4 Summary									
Overall %effect (characterized areas)						0%		0%	
Proportion of MU4 with effect of									
<L1						100%		99%	
L1-L2						0%		0%	
L2-L3						0%		0%	
>L3						0%		0%	
Uncharacterized areas						0%		0%	
Proportion of Elk with effect (characterized areas)		<L1				100%		100%	
MU5	Mainstem Elk River								
	<i>d/s Sparwood</i>	EV_ER1	EL1	0.18	213	3.5	2%	146	1%
	<i>u/s Fernie</i>	RG_ELKFERNIE	ELUFE	58	207	3.2	2%	116	1%
	<i>d/s Fernie</i>		ELDFE	50	207	3.2	2%	116	1%
	<i>u/s Elko</i>	RG_ELKORES	ELELKO	29	202	2.6	1%	101	0%
	<i>u/s Hwy93 bridge</i>	RG_ELKMOUTH	ELH93	78	187	1.99	1%	81	0%
	Tributaries								
	<i>McCool Creek</i>		MCCR	9.2	116	0.037	0%	33	0%
	<i>Upper Wigwam R.</i>		WWRU	206	116	0.037	0%	33	0%
	<i>Lower Wigwam R.</i>		WWRL	292	116	0.037	0%	33	0%
<i>Other reference tributaries</i>	-	-	264	116	0.037	0%	33	0%	
MU5 Summary									
Overall %effect (characterized areas)						0%		0%	
Proportion of MU5 with effect of									
<L1						100%		100%	
L1-L2						0%		0%	
L2-L3						0%		0%	
>L3						0%		0%	
Uncharacterized areas						0%		0%	
Proportion of Elk with effect (characterized areas)		<L1				100%		100%	

Table A-21: Integrated Effects Table for Amphibians – 2023

Management Unit	Area Description	VO Station Code	Biological Area Code	Avg Flow Total Habitat (m3)	Hardness (mg/L as CaCO3)	Nitrate		Sulphate	
						[NO3] (mg/L N)	Sensitive Species (L. pipiens)	[SO4] (mg/L)	Sensitive Species (L. pipiens)
MU1	Mainstem Fording River								
	u/s Henretta Cr. and FRO	FR_UFR1	FO26	16	116	0.037	0%	33	0%
	d/s Henretta Cr.	FR_FR1	FODHE	2.9	196	4.0	2%	208	1%
	u/s Clode Cr.		FOUCL	0.23	196	4.0	2%	208	1%
	u/s North Greenhills Diversion		FOUNGO	1.5	196	4.0	2%	208	1%
	d/s North Greenhills Diversion	FR_FRABEC1	FODNGD	0.56	196	4.0	2%	208	1%
	Multiplate Culvert	FR_MULTIPATE	MP1	0.89	196	4.0	2%	208	1%
	u/s Shandley Cr.		FOUSH	1.5	196	4.0	2%	208	1%
	u/s Kilmamock Cr.	FR_FR2	FOUK1	0.92	334	25	8%	422	4%
	d/s Kilmamock & u/s Swift Cr.	GH_FR3	FOBKS	2.5	334	25	8%	422	4%
	d/s future AWTF-S		SCOUTDS	0.078	334	25	8%	422	4%
	d/s Swift Cr., u/s Cataract Cr.	FR_FR4, GH_FR	FOBSC	0.71	380	22	6%	581	6%
	d/s Cataract, u/s Porter	FR_FRCP1	FOBCP	1.4	423	23	6%	575	6%
	1 km SW of Fording R Compliance		FRCP1SW	1.4	423	23	6%	575	6%
	u/s Porter	FR_FRRD	FRUPO	2.2	423	23	6%	575	6%
	d/s Porter Cr., u/s Chauncey Cr.	GH_PC2	FODPO	1.9	571	25	5%	562	6%
	u/s Chauncey Creek	FR_FRABCH	FOZ2	2.0	548	24	5%	536	5%
	d/s Chauncey Cr., u/s Ewin Cr.	FR_FR5	FOUEW	11	548	24	5%	536	5%
	Fording River u/s Dry Creek	LC_FRUS	FOZ8	5.0	548	24	5%	536	5%
	d/s Dry Cr., u/s GHO	LC_FRB	FOZ9	8.9	548	24	5%	536	5%
	d/s GHO and Greenhills Cr.	GH_FR1	FODGH	2.5	390	15	4%	332	3%
	Tributaries								
	Henretta Creek	FR_HC3	HENUP	10.0	116	0.037	0%	33	0%
	Chauncey Creek	RG_CH1	CHCK	23	116	0.037	0%	33	0%
	Ewin Creek		EWCK	45	116	0.037	0%	33	0%
	Other reference tributaries	-	-	40	116	0.037	0%	33	0%
	Henretta Creek	FR_HC1	HENFO	5.4	227	6.4	3%	315	2%
	Fish Pond Creek	FR_FC1	FR_FC1	0.29	-	-	-	-	-
	Clode Creek	FR_CC1	CLODE	0.98	1234	57	5%	769	9%
	Lake Mountain Creek	FR_NGD1	NGD1	1.5	1001	73.4	8%	788	9%
	Kilmamock Creek	FR_KC1	KICK	2.4	637	92	14%	1256	17%
	Swift Creek	GH_SC1-2	SWCK	0.8	2554	26	1%	2051	30%
	Cataract Creek	GH_CC1	CATCK	0.33	2894	38	1%	2243	33%
	Porter Creek	GH_PC1	POCK	0.26	772	1.1	0%	553	6%
	LCO Dry Creek	LC_DCDS	LC_DCDS	5.8	335	16.6	5%	353.1	3%
	LCO Dry Creek	LC_DC1	LC_DC1	0.68	196	8.26	5%	177.2	1%
	Unnamed Creek		LC_UC	1.2	-	-	-	-	-
	Greenhills Creek		GHCKU	4.1	698	5.3	1%	889	11%
	Greenhills Creek	GH_GH1	GHCKD	0.24	698	5.3	1%	889	11%
	MU1 Summary								
	Overall %effect (characterized areas)						2%		2%
	Proportion of MU1 with effect of		<L1				98%		95%
			L1-L2				1%		3%
			L2-L3				0%		1%
			>L3				0%		0%
	Uncharacterized areas						1%		1%
	Proportion of Fording with effect (characterized areas)		<L1				100%		100%
MU2	Mainstem Fording River								
	d/s Josephine Falls		FO9	9.1	390	15	4%	332	3%
	d/s Grace Cr.	LC_LC6	FRUL	15	364	11	3%	282	2%
	d/s Line Cr.	LC_LC5	FO23	5.9	364	11	3%	282	2%
	Tributaries								
	Grace Cr.	LC_GRCK	LC_GRCK	7.7	116	0.037	0%	33	0%
	u/s LCO	LC_LC1	L24	15	116	0.037	0%	33	0%
	South Line Cr.	LC_SLC	SLINE	11	116	0.037	0%	33	0%
	Other reference tributaries	-	-	14	116	0.037	0%	33	0%
	u/s West Line Cr.	LC_LCUSWLC	LCUT	2.8	419	26	6%	489	5%
	d/s West Line Cr.	LC_LC3	LILC3	0.76	446	18	4%	560	6%
	d/s pond discharge	WL_DCP_SP24	LISP24	0.75	446	18	4%	560	6%
	d/s South Line Cr. Confluence	LC_LCDSLCC	LIDSL	2.2	337	11	4%	387	3%
	d/s LIDSL	LC_LCC	LIDCOM	8.9	337	11	4%	387	3%
	d/s LIDSL	LC_LC4	LI8	4.3	312	8.9	3%	318	2%
	MU2 Summary								
	Overall %effect (characterized areas)						2%		1%
	Proportion of MU2 with effect of		<L1				100%		100%
			L1-L2				0%		0%
			L2-L3				0%		0%
			>L3				0%		0%
	Uncharacterized areas						0%		0%
	Proportion of Fording with effect (characterized areas)		<L1				100%		100%
MU3	Mainstem Elk River								
	u/s GHO	GH_ER2	ELUGH	303	116	0.037	0%	33	0%
	d/s Thompson Cr.	GH_ERC	EL20	18	166	1.27	1%	77	0%
	u/s Boivin Cr.	GH_ER1	ELUEL	14	164	1.18	1%	73	0%
	u/s Elkford Sewage Ponds		ELDEL	41	164	1.18	1%	73	0%
	u/s Fording R.		ELUFO	13	164	1.18	1%	73	0%
	Tributaries								
	Michelson Cr.	GH_MC1	-	1.1	116	0.037	0%	33	0%
	Unnamed tributary west of Elk River		UCWER	17	116	0.037	0%	33	0%
	Other reference tributaries	-	-	168	116	0.037	0%	33	0%
	Elk River Side Channel	GH_ERSC4	GH_ERSC4	4.1	-	-	-	-	-
	Elk River Side Channel	GH_ER1A	GH_ER1A	0.42	-	-	-	-	-
	Elk River Side Channel	RG_ERSC5	ERSC5	0.47	-	-	-	-	-
	Side Channel d/s Thompson Cr.	RG_SCDTC	SCDTC	1.4	-	-	-	-	-
	Leask Cr.	GH_LC1	-	3.0	2085	97	5%	1735	25%
	Wolftram Cr.	GH_WC2	WOCK	0.41	-	-	-	-	-
	Thompson Cr.	GH_TC1	THCK	0.036	1014	15	2%	1347	19%
	MU3 Summary								
	Overall %effect (characterized areas)						0%		0%
	Proportion of MU3 with effect of		<L1				99%		98%
			L1-L2				0%		0%
			L2-L3				0%		1%
			>L3				0%		0%
	Uncharacterized areas						1%		1%
	Proportion of Elk with effect (characterized areas)		<L1				100%		100%
MU4	Mainstem Elk River								
	u/s Grave Cr.	EV_ER4	EL19	11	217	4.5	2%	147	1%
	d/s Grave Cr.		ELDGR	8.1	217	4.5	2%	147	1%
	d/s Otto Cr.	EV_ER2	ELUSP	6.1	209	3.3	2%	140	1%
	Mainstem Michel Creek								
	u/s CMO	CM_MC1	M25	12	116	0.037	0%	33	0%
	u/s Corbin Cr.		MUCO	3.2	116	0.037	0%	33	0%
	d/s Corbin Cr.	CM_MC2	MDCO	1.7	348	2.5	1%	311	2%
	d/s Andy Good Cr.	CM_MCTM	MIDAG	2.3	348	2.5	1%	311	2%
	u/s Leach Cr.		MULE	7.2	348	2.5	1%	311	2%
	u/s Wheeler Cr.		M5	4.9	348	2.5	1%	311	2%
	u/s Erickson Cr.	EV_MC3	M3	11	167	0.7	0%	92	0%
	d/s Erickson Cr.		MIDER	1.1	167	0.7	0%	92	0%
	d/s Gate Cr.		MIDGA	0.074	167	0.7	0%	92	0%
	d/s Bodie Cr.		MIDBO	0.19	238	3.8	2%	199	1%
	Lower Michel Compliance	EV_MC2	MICOMP	0.71	238	3.8	2%	199	1%
	d/s EVO	EV_MC1	M2	0.71	237	3.7	2%	194	1%
Tributaries									
u/s Hamer Cr.	EV_GV3	GRUHA	12	116	0.037	0%	33	0%	
Andy Good Creek	CM_AG1	AGCK	13	116	0.037	0%	33	0%	
Alexander Cr. Mid-creek		AL4	50	116	0.037	0%	33	0%	
Leach Creek		LE1	67	116	0.037	0%	33	0%	
Alexander Cr. Near bend to West	EV_AC2	ALUSM	36	116	0.037	0%	33	0%	
Other reference tributaries	-	-	160	116	0.037	0%	33	0%	
u/s Hamer Pond	EV_HC6	HACKUS	12	125	0.118	0%	14	0%	
d/s Hamer Pond	EV_HC1	HACKDS	0.53	288	1.55	1%	318	2%	
d/s Hamer Cr.		GRCK	2.3	199	0.9	0%	178	1%	
mouth at Elk R.	EV_GV1	GRDS	0.52	199	0.89	0%	178	1%	
Otto Cr.	EV_OC1	OCNM	0.54	272	0.39	0%	72	0%	
Sixmile Creek	EV_SM1	SMCK	0.58	163	0.212	0%	77	0%	
Balmer Creek	EV_BLM2	BACK	0.53	210	0.3	0%	39	0%	
Corbin Cr.	CM_CC1	CORCK	2.0	-	-	-	-	-	
Erickson Cr.	EV_EC1	ERCK	8.4	1248	12	1%	806	10%	
Gate Creek	EV_GT1	GATE	1.2	1968	66	4%	1530	22%	
Bodie Cr.	EV_BC1	BOCK	0.86	2052	85	4%	1487	21%	
MU4 Summary									
Overall %effect (characterized areas)						0%		0%	
Proportion of MU4 with effect of		<L1				100%		99%	
		L1-L2				0%		0%	
		L2-L3				0%		0%	
		>L3				0%		0%	
Uncharacterized areas						0%		0%	
Proportion of Elk with effect (characterized areas)		<L1				100%		100%	
MU5	Mainstem Elk River								
	d/s Sparwood	EV_ER1	EL1	0.18	212	3.1	2%	148	1%
	u/s Fernie	RG_ELKFERNIE	ELUFE	58	207	2.8	2%	114	1%
	d/s Fernie		ELDFE	50	207	2.8	2%	114	1%
	u/s Elko	RG_ELKORES	ELELKO	29	202	2.4	1%	101	0%
	u/s Hwy93 bridge	RG_ELKMOUTH	ELH93	78	187	1.77	1%	81	0%
	Tributaries								
	McCool Creek		MCCR	9.2	116	0.037	0%	33	0%
	Upper Wigwam R.		WWRU	206	116	0.037	0%	33	0%
	Lower Wigwam R.		WWRL	292	116	0.037	0%	33	0%
	Other reference tributaries	-	-	264	116	0.037	0%	33	0%
	MU5 Summary								
	Overall %effect (characterized areas)						0%		0%
	Proportion of MU5 with effect of		<L1				100%		100%
			L1-L2				0%		0%
			L2-L3				0%		0%
			>L3				0%		0%
	Uncharacterized areas						0%		0%
Proportion of Elk with effect (characterized areas)		<L1				100%		100%	

Table A-22: Integrated Effects Table for Amphibians – 2024

Management Unit	Area Description	WQ Station Code	Biological Area Code	Avg Flow Total Habitat (ha)	Hardness (mg/L as CaCO <sub>3</sub> )	Nitrate		Sulphate	
						[NO <sub>3</sub> ] (mg/L N)	Sensitive Species ( <i>L. pipiens</i> )	[SO <sub>4</sub> ] (mg/L)	Sensitive Species ( <i>L. pipiens</i> )
MU1	<b>Mainstem Fording River</b>								
	u/s Henrietta Cr. and FRO	FR_UFR1	F026	16	116	0.037	0%	33	0%
	d/s Henrietta Cr.	FR_FR1	F0DH6	2.9	187	3.4	2%	216	1%
	u/s Clode Cr.		FOUCL	0.23	187	3.4	2%	216	1%
	u/s North Greenhills Diversion		FOUNGD	1.5	187	3.4	2%	216	1%
	d/s North Greenhills Diversion	FR_FRABEC1	F0DNGD	0.56	187	3.4	2%	216	1%
	Multiplate Culvert	FR_MULTIPATE	MP1	0.89	187	3.4	2%	216	1%
	u/s Shandley Cr.		FOUSH	1.5	187	3.4	2%	216	1%
	u/s Kilmarnock Cr.	FR_FR2	FOUKI	0.92	348	11	3%	441	4%
	d/s Kilmarnock & u/s Swift Cr.	GH_FR3	FOBKS	2.5	348	11	3%	441	4%
	d/s future AWTF-S		SCOUTDS	0.078	348	11	3%	441	4%
	d/s Swift Cr., u/s Cataract Cr.	FR_FR4, GH_FR	FOBSC	0.71	395	10	3%	598	6%
	d/s Cataract, u/s Porter	FR_FRCP1	FOBOP	1.4	437	12	3%	595	6%
	1 km SW of Fording R Compliance		FRCP1SW	1.4	437	12	3%	595	6%
	u/s Porter	FR_FRRD	FRUPO	2.2	437	12	3%	595	6%
	d/s Porter Cr., u/s Chauncey Cr.	GH_PC2	F0DPO	1.9	589	20	4%	583	6%
	u/s Chauncey Creek	FR_FRABCH	FO22	2.0	565	19	4%	555	6%
	d/s Chauncey Cr., u/s Ewin Cr.	FR_FR5	FOUEW	11	565	19	4%	555	6%
	Fording River u/s Dry Creek	LC_FRUS	FO28	5.0	565	19	4%	555	6%
	d/s Dry Cr., u/s GHO	LC_FRB	FO29	8.9	565	19	4%	555	6%
	d/s GHO and Greenhills Cr.	GH_FR1	F0DGH	2.5	407	12	3%	344	3%
	<b>Tributaries</b>								
	Henretta Creek	FR_HC3	HENUP	10.0	116	0.037	0%	33	0%
	Chauncey Creek	RG_CH1	CHCK	23	116	0.037	0%	33	0%
	Ewin Creek		EWCK	45	116	0.037	0%	33	0%
	Other reference tributaries			40	116	0.037	0%	33	0%
	Henretta Creek	FR_HC1	HENFO	5.4	222	5.2	3%	314	2%
	Fish Pond Creek	FR_FC1	FR_FC1	0.29	-	-	-	-	-
	Clode Creek	FR_CC1	CLODE	0.98	1074	14	1%	724	8%
	Lake Mountain Creek	FR_NGD1	NGD1	1.5	1206	88.9	8%	969	12%
	Kilmarnock Creek	FR_KC1	KICK	2.4	666	102	15%	1309	18%
	Swift Creek	GH_SC1-2	SWCK	0.8	2646	25	1%	2120	31%
	Cataract Creek	GH_CC1	CATCK	0.33	2902	34	1%	2227	33%
	Porter Creek	GH_PC1	POCK	0.26	770	0.9	0%	555	6%
	LCO Dry Creek	LC_DCDS	LC_DCDS	5.8	330	14.18	5%	379.6	3%
	LCO Dry Creek	LC_DC1	LC_DC1	0.68	195	7.67	4%	205.7	1%
	Unnamed Creek	LC_UC		1.2	-	-	-	-	-
	Greenhills Creek		GHCKU	4.1	712	4.5	1%	883	11%
	Greenhills Creek	GH_GH1	GHCKD	0.24	712	4.5	1%	883	11%
	<b>MU1 Summary</b>								
	Overall %effect (characterized areas)						1%		2%
	Proportion of MU1 with effect of								
	<L1						98%		95%
	L1-L2						1%		4%
	L2-L3						0%		1%
	>L3						0%		0%
	Uncharacterized areas						1%		1%
	Proportion of Fording with effect (characterized areas)						100%		100%
MU2	<b>Mainstem Fording River</b>								
	d/s Josephine Falls		FO9	9.1	407	12	3%	344	3%
	d/s Grace Cr.	LC_LC6	FRUL	15	368	10	3%	296	2%
	d/s Line Cr.	LC_LC5	FO23	5.9	368	10	3%	296	2%
	<b>Tributaries</b>								
	Grace Cr.	LC_GRCK	LC_GRCK	7.7	116	0.037	0%	33	0%
	u/s LCO	LC_LC1	LI24	15	116	0.037	0%	33	0%
	South Line Cr.	LC_SLC	SLINE	11	116	0.037	0%	33	0%
	Other reference tributaries			14	116	0.037	0%	33	0%
	u/s West Line Cr.	LC_LCUSWLC	LCUT	2.8	404	19	5%	457	4%
	d/s West Line Cr.	LC_LC3	LILC3	0.76	445	14	3%	557	6%
	d/s pond discharge	WL_DCP_SP24	LISP24	0.75	445	14	3%	557	6%
	d/s South Line Cr. Confluence	LC_LCODSSLCC	LIDSL	2.2	340	9	3%	396	3%
	d/s LIDSL	LC_LCC	LIDCOM	8.9	340	9	3%	396	3%
	d/s LIDSL	LC_LC4	LI8	4.3	314	7.4	3%	324	3%
	<b>MU2 Summary</b>								
	Overall %effect (characterized areas)						2%		1%
	Proportion of MU2 with effect of								
	<L1						100%		100%
	L1-L2						0%		0%
	L2-L3						0%		0%
	>L3						0%		0%
	Uncharacterized areas						0%		0%
	Proportion of Fording with effect (characterized areas)						100%		100%
MU3	<b>Mainstem Elk River</b>								
	u/s GHO	GH_ER2	ELUGH	303	116	0.037	0%	33	0%
	d/s Thompson Cr.	GH_ERC	EL20	18	166	1.18	1%	78	0%
	u/s Boivin Cr.	GH_ER1	ELUEL	14	164	1.1	1%	74	0%
	d/s Elkford Sewage Ponds		ELDEL	41	164	1.10	1%	74	0%
	u/s Fording R.		ELUFO	13	164	1.10	1%	74	0%
	<b>Tributaries</b>								
	Michelson Cr.	GH_MC1	-	1.1	116	0.037	0%	33	0%
	Unnamed tributary west of Elk River		UCWER	17	116	0.037	0%	33	0%
	Other reference tributaries			168	116	0.037	0%	33	0%
	Elk River Side Channel	GH_ERSC4	GH_ERSC4	4.1	-	-	-	-	-
	Elk River Side Channel	GH_ER1A	GH_ER1A	0.42	-	-	-	-	-
	Elk River Side Channel	RG_ERSC5	ERSC5	0.47	-	-	-	-	-
	Side Channel d/s Thompson Cr.	RG_SCDTC	SCDTC	1.4	-	-	-	-	-
	Leach Cr.	GH_LC1		3.0	2137	83	4%	1764	26%
	Wolftram Cr.	GH_WC2	WOCK	0.41	-	-	-	-	-
	Thompson Cr.	GH_TC1	THCK	0.036	1072	13	1%	1374	19%
	<b>MU3 Summary</b>								
	Overall %effect (characterized areas)						0%		0%
	Proportion of MU3 with effect of								
	<L1						99%		98%
	L1-L2						0%		0%
	L2-L3						0%		1%
	>L3						0%		0%
	Uncharacterized areas						1%		1%
	Proportion of Elk with effect (characterized areas)						100%		100%
MU4	<b>Mainstem Elk River</b>								
	u/s Grave Cr.	EV_ER4	EL19	11	221	4.0	2%	153	1%
	d/s Grave Cr.		ELDGR	8.1	221	4.0	2%	153	1%
	d/s Otto Cr.	EV_ER2	ELUSP	6.1	212	2.9	2%	145	1%
	<b>Mainstem Michel Creek</b>								
	u/s CMO	CM_MC1	M25	12	116	0.037	0%	33	0%
	u/s Corbin Cr.		MUCCO	3.2	116	0.037	0%	33	0%
	d/s Corbin Cr.	CM_MC2	MIDCO	1.7	348	2.5	1%	311	2%
	d/s Andy Good Cr.	CM_MCTM	MIDAG	2.3	348	2.5	1%	311	2%
	u/s Leach Cr.		MULE	7.2	348	2.5	1%	311	2%
	u/s Wheeler Cr.		M5	4.9	348	2.5	1%	311	2%
	u/s Erickson Cr.	EV_MC3	M3	11	163	0.7	0%	92	0%
	d/s Erickson Cr.		MIDR	1.1	163	0.7	0%	92	0%
	d/s Gate Cr.		MIDGA	0.074	163	0.7	0%	92	0%
	d/s Bodie Cr.		MIDBO	0.19	244	4.0	2%	211	1%
	Lower Michel Compliance	EV_MC2	MICOMP	0.71	244	4.0	2%	211	1%
	d/s EVO	EV_MC1	M2	0.71	243	3.9	2%	207	1%
	<b>Tributaries</b>								
	u/s Hamer Cr.	EV_GV3	GRUHA	12	116	0.037	0%	33	0%
	Andy Good Creek	CM_AG1	AGCK	13	116	0.037	0%	33	0%
	Alexander Cr. Mid-creek		AL4	50	116	0.037	0%	33	0%
	Leach Creek		LE1	67	116	0.037	0%	33	0%
	Alexander Cr. Near bend to West	EV_AC2	ALUSM	36	116	0.037	0%	33	0%
	Other reference tributaries			160	116	0.037	0%	33	0%
	u/s Hamer Pond	EV_HC6	HACKUS	12	125	0.118	0%	14	0%
	d/s Hamer Pond	EV_HC1	HACKDS	0.53	304	0.83	0%	292	2%
	d/s Hamer Cr.		GRCK	2.3	207	0.5	0%	163	1%
	mouth at Elk R.	EV_GV1	GRDS	0.52	207	0.5	0%	163	1%
	Otto Cr.	EV_OC1	OCNM	0.54	283	0.93	0%	78	0%
	Six-mile Creek	EV_SM1	SMCK	0.58	162	0.188	0%	77	0%
	Balmer Creek	EV_BLM2	BACK	0.53	275	10.3	4%	133	1%
	Corbin Cr.	CM_CC1	CORCK	2.0	-	-	-	-	-
	Erickson Cr.	EV_EC1	ERCK	8.4	1314	15	1%	867	11%
	Gate Creek	EV_GT1	GATE	1.2	1987	63	3%	1496	21%
	Bodie Cr.	EV_BC1	BOCK	0.86	2099	84	4%	1551	22%
	<b>MU4 Summary</b>								
	Overall %effect (characterized areas)						0%		0%
	Proportion of MU4 with effect of								
	<L1						100%		97%
	L1-L2						0%		2%
	L2-L3						0%		0%
	>L3						0%		0%
	Uncharacterized areas						0%		0%
	Proportion of Elk with effect (characterized areas)						100%		100%
MU5	<b>Mainstem Elk River</b>								
	d/s Spanwood	EV_ER1	EL1	0.18	216	2.8	1%	156	1%
	u/s Fernie	RG_ELKFERNIE	ELUFE	58	210	2.6	1%	117	1%
	d/s Fernie		ELDFE	50	210	2.6	1%	117	1%
	u/s Elko	RG_ELKORES	ELELKO	29	206	2.1	1%	103	0%
	u/s Hwy93 bridge	RG_ELKMOUTH	ELH93	78	190	1.62	1%	83	0%
	<b>Tributaries</b>								
	McCool Creek		MCCR	9.2	116	0.037	0%	33	0%
	Upper Wigwam R.		WWRU	206	116	0.037	0%	33	0%
	Lower Wigwam R.		WWRU	292	116	0.037	0%	33	0%
	Other reference tributaries			264	116	0.037	0%	33	0%
	<b>MU5 Summary</b>								
	Overall %effect (characterized areas)						0%		0%
	Proportion of MU5 with effect of								
	<L1						100%		100%
	L1-L2						0%		0%
	L2-L3						0%		0%
	>L3						0%		0%
	Uncharacterized areas						0%		0%
	Proportion of Elk with effect (characterized areas)						100%		100%

Notes: Red font indicates values estimated from other upstream or downstream subunits. Grey font indicates values less than detection limit. Italicized rows are reference areas.



Table A-23: Integrated Effects Table for Amphibians – 2025

Management Unit	Area Description	WQ Station Code	Biological Area Code	Avg Flow Total Habitat (ha)	Hardness (mg/L as CaCO <sub>3</sub> )	Nitrate		Sulphate	
						[NO <sub>3</sub> ] (mg/L N)	Sensitive Species ( <i>L. pipiens</i> )	[SO <sub>4</sub> ] (mg/L)	Sensitive Species ( <i>L. pipiens</i> )
MU1	Mainstem Fording River								
	<i>u/s Henretta Cr. and FRO</i>	FR_UFR1	FO26	16	116	0.037	0%	33	0%
	<i>d/s Henretta Cr.</i>	FR_FR1	FODHE	2.9	189	3.0	2%	226	1%
	<i>u/s Clode Cr.</i>		FOUCL	0.23	189	3.0	2%	226	1%
	<i>u/s North Greenhills Diversion</i>		FOUNGO	1.5	189	3.0	2%	226	1%
	<i>d/s North Greenhills Diversion</i>	FR_FRABEC1	FODNGD	0.56	189	3.0	2%	226	1%
	Multiplate Culvert	FR_MULTIPATE	MP1	0.89	189	3.0	2%	226	1%
	<i>u/s Shandley Cr.</i>		FOUSH	1.5	189	3.0	2%	226	1%
	<i>u/s Kilmamock Cr.</i>	FR_FR2	FOUKJ	0.92	350	10	3%	464	4%
	<i>d/s Kilmamock &amp; u/s Swift Cr.</i>	GH_FR3	FOBKS	2.5	350	10	3%	464	4%
	<i>d/s future AWTF-S</i>		SCOUTDS	0.078	350	10	3%	464	4%
	<i>d/s Swift Cr., u/s Cataract Cr.</i>	FR_FR4, GH_FR	FOBSC	0.71	391	10	3%	616	7%
	<i>d/s Cataract, u/s Porter</i>	FR_FRCP1	FOBCP	1.4	438	11	3%	614	6%
	1 km SW of Fording R Compliance		FRCP1SW	1.4	438	11	3%	614	6%
	<i>u/s Porter</i>	FR_FRRD	FRUPO	2.2	438	11	3%	614	6%
	<i>d/s Porter Cr., u/s Chauncey Cr.</i>	GH_PC2	FODFO	1.9	602	18	3%	598	6%
	<i>u/s Chauncey Creek</i>	FR_FRABCH	FOZZ	2.0	578	17	3%	572	6%
	<i>d/s Chauncey Cr., u/s Ewin Cr.</i>	FR_FR5	FOUEW	11	578	17	3%	572	6%
	Fording River u/s Dry Creek	LC_FRUS	FOZ8	5.0	578	17	3%	572	6%
	<i>d/s Dry Cr., u/s GHO</i>	LC_FRB	FOZ9	8.9	578	17	3%	572	6%
	<i>d/s GHO and Greenhills Cr.</i>	GH_FR1	FODGH	2.5	413	11	3%	362	3%
	Tributaries								
	<i>Henretta Creek</i>	FR_HC3	HENUP	10.0	116	0.037	0%	33	0%
	<i>Chauncey Creek</i>	RG_CH1	CHCK	23	116	0.037	0%	33	0%
	<i>Ewin Creek</i>		EWCK	45	116	0.037	0%	33	0%
	<i>Other reference tributaries</i>	-	-	40	116	0.037	0%	33	0%
	<i>Henretta Creek</i>	FR_HC1	HENFO	5.4	226	4.3	2%	313	2%
	<i>Fish Pond Creek</i>	FR_FC1	FR_FC1	0.29	-	-	-	-	-
	<i>Clode Creek</i>	FR_CC1	CLODE	0.98	1083	13	1%	741	8%
	<i>Lake Mountain Creek</i>	FR_NGD1	NGD1	1.5	1384	94.4	7%	1094	14%
	<i>Kilmamock Creek</i>	FR_KC1	KICK	2.4	668	102	15%	1345	19%
	<i>Swift Creek</i>	GH_SC1-2	SWCK	0.8	2809	27	1%	2204	33%
	<i>Cataract Creek</i>	GH_CC1	CATCK	0.33	2908	31	1%	2202	33%
	<i>Porter Creek</i>	GH_PC1	POCK	0.26	772	0.7	0%	555	6%
	<i>LCO Dry Creek</i>	LC_DCDS	LC_DCDS	5.8	362	13.51	4%	408.1	4%
	<i>LCO Dry Creek</i>	LC_DC1	LC_DC1	0.68	194	7.97	4%	240.3	2%
	<i>Unnamed Creek</i>		LC_UC	1.2	-	-	-	-	-
	<i>Greenhills Creek</i>		GHCKU	4.1	702	3.9	1%	901	11%
	<i>Greenhills Creek</i>	GH_GH1	GHCKD	0.24	702	3.9	1%	901	11%
	MU1 Summary								
	Overall %effect (characterized areas)						1%		2%
	Proportion of MU1 with effect of	<L1					98%		95%
		L1-L2					1%		4%
		L2-L3					0%		1%
		>L3					0%		0%
		Uncharacterized areas					1%		1%
	Proportion of Fording with effect (characterized areas)		<L1				100%		100%
MU2	Mainstem Fording River								
	<i>d/s Josephine Falls</i>		FO9	9.1	413	11	3%	362	3%
	<i>d/s Grace Cr.</i>	LC_LC6	FRUL	15	376	9	3%	312	2%
	<i>d/s Line Cr.</i>	LC_LC5	FO23	5.9	376	9	3%	312	2%
	Tributaries								
	<i>Grace Cr.</i>	LC_GRCK	LC_GRCK	7.7	116	0.037	0%	33	0%
	<i>u/s LCO</i>	LC_LC1	L124	15	116	0.037	0%	33	0%
	<i>South Line Cr.</i>	LC_SL1	SLINE	11	116	0.037	0%	33	0%
	<i>Other reference tributaries</i>	-	-	14	116	0.037	0%	33	0%
	<i>u/s West Line Cr.</i>	LC_LCUSWLC	LCUT	2.8	405	17	5%	462	4%
	<i>d/s West Line Cr.</i>	LC_LC3	LILC3	0.76	449	13	3%	576	6%
	<i>d/s pond discharge</i>	WL_DCP_SP24	LISP24	0.75	449	13	3%	576	6%
	<i>d/s South Line Cr. Confluence</i>	LC_LCDSLCC	LIDSL	2.2	343	8	3%	416	4%
	<i>d/s LIDSL</i>	LC_LCC	LIDCOM	8.9	343	8	3%	416	4%
	<i>d/s LIDSL</i>	LC_LC4	L18	4.3	317	7.3	3%	340	3%
	MU2 Summary								
	Overall %effect (characterized areas)						1%		2%
	Proportion of MU2 with effect of	<L1					100%		100%
		L1-L2					0%		0%
		L2-L3					0%		0%
		>L3					0%		0%
		Uncharacterized areas					0%		0%
	Proportion of Fording with effect (characterized areas)		<L1				100%		100%
MU3	Mainstem Elk River								
	<i>u/s GHO</i>	GH_ER2	ELUGH	303	116	0.037	0%	33	0%
	<i>d/s Thompson Cr.</i>	GH_ERC	EL20	18	165	1.04	1%	79	0%
	<i>u/s Boivin Cr.</i>	GH_ER1	ELUEL	14	163	0.97	1%	75	0%
	<i>d/s Elkford Sewage Ponds</i>		ELDEL	41	163	0.97	1%	75	0%
	<i>u/s Fording R.</i>		ELUFO	13	163	0.97	1%	75	0%
	Tributaries								
	<i>Michelson Cr.</i>	GH_MC1	-	1.1	116	0.037	0%	33	0%
	<i>Unnamed tributary west of Elk River</i>		UCWER	17	116	0.037	0%	33	0%
	<i>Other reference tributaries</i>	-	-	168	116	0.037	0%	33	0%
	<i>Elk River Side Channel</i>	GH_ERSC4	GH_ERSC4	4.1	-	-	-	-	-
	<i>Elk River Side Channel</i>	GH_ER1A	GH_ER1A	0.42	-	-	-	-	-
	<i>Elk River Side Channel</i>	RG_ERSC5	ERSC5	0.47	-	-	-	-	-
	<i>Side Channel d/s Thompson Cr.</i>	RG_SCDTC	SCDTC	1.4	-	-	-	-	-
	<i>Leask Cr.</i>	GH_LC1	-	3.0	2108	71	4%	1800	26%
	<i>Wolfam Cr.</i>	GH_WC2	WOCK	0.41	-	-	-	-	-
	<i>Thompson Cr.</i>	GH_TC1	THCK	0.036	1133	11	1%	1392	19%
	MU3 Summary								
	Overall %effect (characterized areas)						0%		0%
	Proportion of MU3 with effect of	<L1					99%		98%
		L1-L2					0%		0%
		L2-L3					0%		1%
		>L3					0%		0%
		Uncharacterized areas					1%		1%
	Proportion of Elk with effect (characterized areas)		<L1				100%		100%
MU4	Mainstem Elk River								
	<i>u/s Grave Cr.</i>	EV_ER4	EL19	11	220	3.6	2%	157	1%
	<i>d/s Grave Cr.</i>		ELDGR	8.1	220	3.6	2%	157	1%
	<i>d/s Otto Cr.</i>	EV_ER2	ELUSP	6.1	211	2.7	1%	150	1%
	Mainstem Michel Creek								
	<i>u/s CMO</i>	CM_MC1	M25	12	116	0.037	0%	33	0%
	<i>u/s Corbin Cr.</i>		MUCO	3.2	116	0.037	0%	33	0%
	<i>d/s Corbin Cr.</i>	CM_MC2	MIDCO	1.7	348	2.5	1%	311	2%
	<i>d/s Andy Good Cr.</i>	CM_MCTM	MIDAG	2.3	348	2.5	1%	311	2%
	<i>u/s Leach Cr.</i>		MULE	7.2	348	2.5	1%	311	2%
	<i>u/s Wheeler Cr.</i>		M5	4.9	348	2.5	1%	311	2%
	<i>u/s Erickson Cr.</i>	EV_MC3	M3	11	164	0.7	0%	91	0%
	<i>d/s Erickson Cr.</i>		MIDER	1.1	164	0.7	0%	91	0%
<i>d/s Gate Cr.</i>		MIDGA	0.074	164	0.7	0%	91	0%	
<i>d/s Bodie Cr.</i>		MIDBO	0.19	245	4.5	2%	229	2%	
<i>Lower Michel Compliance</i>	EV_MC2	MICOMP	0.71	245	4.5	2%	229	2%	
<i>d/s EVO</i>	EV_MC1	M2	0.71	244	4.3	2%	223	1%	
Tributaries									
<i>u/s Hamer Cr.</i>	EV_GV3	GRUHA	12	116	0.037	0%	33	0%	
<i>Andy Good Creek</i>	CM_AG1	AGCK	13	116	0.037	0%	33	0%	
<i>Alexander Cr. Mid-creek</i>		AL4	50	116	0.037	0%	33	0%	
<i>Leach Creek</i>		LE1	67	116	0.037	0%	33	0%	
<i>Alexander Cr. Near bend to West</i>	EV_AC2	ALUSM	36	116	0.037	0%	33	0%	
<i>Other reference tributaries</i>	-	-	160	116	0.037	0%	33	0%	
<i>u/s Hamer Pond</i>	EV_HC6	HACKUS	12	125	0.118	0%	14	0%	
<i>d/s Hamer Pond</i>	EV_HC1	HACKDS	0.53	309	0.75	0%	303	2%	
<i>d/s Hamer Cr.</i>		GRCK	2.3	208	0.5	0%	171	1%	
<i>mouth at Elk R.</i>	EV_GV1	GRDS	0.52	208	0.46	0%	171	1%	
<i>Otto Cr.</i>	EV_OC1	OCNM	0.54	285	1.0	0%	82	0%	
<i>Sixmile Creek</i>	EV_SM1	SMCK	0.58	162	0.17	0%	78	0%	
<i>Balmer Creek</i>	EV_BLM2	BACK	0.53	290	9.29	3%	142	1%	
<i>Corbin Cr.</i>	CM_CC1	CORCK	2.0	-	-	-	-	-	
<i>Erickson Cr.</i>	EV_EC1	ERCK	8.4	1406	20	2%	943	12%	
<i>Gate Creek</i>	EV_GT1	GATE	1.2	2058	61	3%	1612	23%	
<i>Bodie Cr.</i>	EV_BC1	BOCK	0.86	2187	84	4%	1648	24%	
MU4 Summary									
Overall %effect (characterized areas)						0%		0%	
Proportion of MU4 with effect of	<L1					100%		97%	
	L1-L2					0%		2%	
	L2-L3					0%		0%	
	>L3					0%		0%	
	Uncharacterized areas					0%		0%	
Proportion of Elk with effect (characterized areas)		<L1				100%		100%	
MU5	Mainstem Elk River								
	<i>d/s Sparwood</i>	EV_ER1	EL1	0.18	215	2.7	1%	161	1%
	<i>u/s Fernie</i>	RG_ELKFERNIE	ELUFE	58	208	2.4	1%	122	1%
	<i>d/s Fernie</i>		ELDFE	50	208	2.4	1%	122	1%
	<i>u/s Elko</i>	RG_ELKORES	ELELKO	29	204	2.0	1%	106	0%
	<i>u/s Hwy93 bridge</i>	RG_ELKMOUTH	ELH93	78	189	1.53	1%	85	0%
	Tributaries								
	<i>McCool Creek</i>		MCCR	9.2	116	0.037	0%	33	0%
	<i>Upper Wigwam R.</i>		WWRU	206	116	0.037	0%	33	0%
	<i>Lower Wigwam R.</i>		WVRL	292	116	0.037	0%	33	0%
	<i>Other reference tributaries</i>	-	-	264	116	0.037	0%	33	0%
	MU5 Summary								
	Overall %effect (characterized areas)						0%		0%
Proportion of MU5 with effect of	<L1					100%		100%	
	L1-L2					0%		0%	
	L2-L3					0%		0%	
	>L3					0%		0%	
	Uncharacterized areas					0%		0%	
Proportion of Elk with effect (characterized areas)		<L1				100%		100%	

Table A-24: Integrated Effects Table for Amphibians – 2026

Management Unit	Area Description	VO Station Code	Biological Area Code	Avg Flow Total Habitat (m³/s)	Hardness (mg/L as CaCO₃)	Nitrate		Sulphate	
						[NO₃] (mg/L N)	Sensitive Species ( <i>L. pipiens</i> )	[SO₄] (mg/L)	Sensitive Species ( <i>L. pipiens</i> )
MU1	Mainstem Fording River								
	u/s Henretta Cr. and FRO	FR_UFR1	FO26	16	116	0.037	0%	33	0%
	d/s Henretta Cr.	FR_FR1	FODHE	2.9	190	2.3	1%	211	1%
	u/s Clode Cr.		FOUCL	0.23	190	2.3	1%	211	1%
	u/s North Greenhills Diversion		FOUNGO	1.5	190	2.3	1%	211	1%
	d/s North Greenhills Diversion	FR_FRABEC1	FODNGD	0.56	190	2.3	1%	211	1%
	Multiplate Culvert	FR_MULTIPATE	MP1	0.89	190	2.3	1%	211	1%
	u/s Shandley Cr.		FOUSH	1.5	190	2.3	1%	211	1%
	u/s Kilmamock Cr.	FR_FR2	FOUKI	0.92	351	9	3%	456	4%
	d/s Kilmamock & u/s Swift Cr.	GH_FR3	FOBKS	2.5	351	9	3%	456	4%
	d/s future AWTF-S		SCOUTDS	0.078	351	9	3%	456	4%
	d/s Swift Cr., u/s Cataract Cr.	FR_FR4, GH_FR	FOBSC	0.71	388	9	2%	583	6%
	d/s Cataract, u/s Porter	FR_FRCP1	FOBCP	1.4	432	10	3%	583	6%
	1 km SW of Fording R Compliance		FRCP1SW	1.4	432	10	3%	583	6%
	u/s Porter	FR_FRRD	FRUPD	2.2	432	10	3%	583	6%
	d/s Porter Cr., u/s Chauncey Cr.	GH_PC2	FODPO	1.9	604	16	3%	585	6%
	u/s Chauncey Creek	FR_FRABCH	FO22	2.0	582	16	3%	556	6%
	d/s Chauncey Cr., u/s Ewin Cr.	FR_FR5	FOUEW	11	582	16	3%	556	6%
	Fording River u/s Dry Creek	LC_FRUS	FO28	5.0	582	16	3%	556	6%
	d/s Dry Cr., u/s GHO	LC_FRB	FO29	8.9	582	16	3%	556	6%
	d/s GHO and Greenhills Cr.	GH_FR1	FODGH	2.5	405	10	3%	353	3%
	Tributaries								
	Henretta Creek	FR_HC3	HENUP	10.0	116	0.037	0%	33	0%
	Chauncey Creek	RG_CH1	CHCK	23	116	0.037	0%	33	0%
	Ewin Creek		EWCK	45	116	0.037	0%	33	0%
	Other reference tributaries	-	-	40	116	0.037	0%	33	0%
	Henretta Creek	FR_HC1	HENFO	5.4	224	3.5	2%	313	2%
	Fish Pond Creek	FR_FC1	FR_FC1	0.29	-	-	-	-	-
	Clode Creek	FR_CC1	CLODE	0.98	1084	11	1%	779	9%
	Lake Mountain Creek	FR_NGD1	NGD1	1.5	1409	78.1	6%	1085	14%
	Kilmamock Creek	FR_KC1	KICK	2.4	658	91	14%	1305	18%
	Swift Creek	GH_SC1-2	SWCK	0.8	2822	28	1%	2154	32%
	Cataract Creek	GH_CC1	CATCK	0.33	2908	28	1%	2173	32%
	Porter Creek	GH_PC1	POCK	0.26	771	0.6	0%	555	6%
	LCO Dry Creek	LC_DCDS	LC_DCDS	5.8	343	11.4	4%	377.4	3%
	LCO Dry Creek	LC_DC1	LC_DC1	0.68	193	6.77	4%	218.6	1%
	Unnamed Creek		LC_UC	1.2	-	-	-	-	-
	Greenhills Creek		GHCKU	4.1	722	3.0	0%	889	11%
	Greenhills Creek	GH_GH1	GHCKD	0.24	722	3.0	0%	889	11%
	MU1 Summary								
	Overall %effect (characterized areas)						1%		2%
	Proportion of MU1 with effect of	<L1					98%		95%
		L1-L2					1%		4%
		L2-L3					0%		1%
		>L3					0%		0%
		Uncharacterized areas					1%		1%
	Proportion of Fording with effect (characterized areas)		<L1				100%		100%
MU2	Mainstem Fording River								
	d/s Josephine Falls		FO9	9.1	405	10	3%	353	3%
	d/s Grace Cr.	LC_LC6	FRUL	15	370	8	2%	285	2%
	d/s Line Cr.	LC_LC5	FO23	5.9	370	8	2%	285	2%
	Tributaries								
	Grace Cr.	LC_GRCK	LC_GRCK	7.7	116	0.037	0%	33	0%
	u/s LCO	LC_LC1	L24	15	116	0.037	0%	33	0%
	South Line Cr.	LC_SLC	SUNE	11	116	0.037	0%	33	0%
	Other reference tributaries	-	-	14	116	0.037	0%	33	0%
	u/s West Line Cr.	LC_LCUSWLC	LCUT	2.8	354	13	4%	447	4%
	d/s West Line Cr.	LC_LC3	LILC3	0.76	402	6	2%	350	3%
	d/s pond discharge	WL_DCP_SP24	LISP24	0.75	402	6	2%	350	3%
	d/s South Line Cr. Confluence	LC_LCDSLLCC	LIDSL	2.2	314	4	1%	263	2%
	d/s LIDSL	LC_LCC	LIDCOM	8.9	314	4	1%	263	2%
	d/s LIDSL	LC_LC4	LI8	4.3	293	3.5	1%	222	1%
	MU2 Summary								
	Overall %effect (characterized areas)						1%		1%
	Proportion of MU2 with effect of	<L1					100%		100%
		L1-L2					0%		0%
		L2-L3					0%		0%
		>L3					0%		0%
		Uncharacterized areas					0%		0%
	Proportion of Fording with effect (characterized areas)		<L1				100%		100%
MU3	Mainstem Elk River								
	u/s GHO	GH_ER2	ELUGH	303	116	0.037	0%	33	0%
	d/s Thompson Cr.	GH_ERC	EL20	18	164	0.9	1%	79	0%
	u/s Boivin Cr.	GH_ER1	ELUEL	14	163	0.84	1%	75	0%
	u/s Elkford Sewage Ponds		ELDEL	41	163	0.84	1%	75	0%
	u/s Fording R.		ELUFO	13	163	0.84	1%	75	0%
	Tributaries								
	Michelson Cr.	GH_MC1	-	1.1	116	0.037	0%	33	0%
	Unnamed tributary west of Elk River		UCWER	17	116	0.037	0%	33	0%
	Other reference tributaries	-	-	168	116	0.037	0%	33	0%
	Elk River Side Channel	GH_ERSC4	GH_ERSC4	4.1	-	-	-	-	-
	Elk River Side Channel	GH_ER1A	GH_ER1A	0.42	-	-	-	-	-
	Elk River Side Channel	RG_ERSC5	ERSC5	0.47	-	-	-	-	-
Side Channel d/s Thompson Cr.	RG_SCDTC	SCDTC	1.4	-	-	-	-	-	
Leask Cr.	GH_LC1	-	3.0	2109	60	3%	1820	27%	
Wolfram Cr.	GH_WC2	WOCK	0.41	-	-	-	-	-	
Thompson Cr.	GH_TC1	THCK	0.036	1037	9	1%	1389	19%	
MU3 Summary									
Overall %effect (characterized areas)						0%		0%	
Proportion of MU3 with effect of	<L1					99%		98%	
	L1-L2					0%		0%	
	L2-L3					0%		1%	
	>L3					0%		0%	
	Uncharacterized areas					1%		1%	
Proportion of Elk with effect (characterized areas)		<L1				100%		100%	
MU4	Mainstem Elk River								
	u/s Grave Cr.	EV_ER4	EL19	11	219	3.0	1%	149	1%
	d/s Grave Cr.		ELDGR	8.1	219	3.0	1%	149	1%
	d/s Otto Cr.	EV_ER2	ELUSP	6.1	210	2.3	1%	142	1%
	Mainstem Michel Creek								
	u/s CMO	CM_MC1	M25	12	116	0.037	0%	33	0%
	u/s Corbin Cr.	CM_MC2	MUCO	3.2	116	0.037	0%	33	0%
	d/s Corbin Cr.	CM_MCTM	MIDAG	2.3	348	2.5	1%	311	2%
	u/s Leach Cr.		MULE	7.2	348	2.5	1%	311	2%
	u/s Wheeler Cr.		M5	4.9	348	2.5	1%	311	2%
	u/s Erickson Cr.	EV_MC3	M3	11	165	0.7	0%	92	0%
	d/s Erickson Cr.		MIDER	1.1	165	0.7	0%	92	0%
	d/s Gate Cr.		MIDGA	0.074	165	0.7	0%	92	0%
d/s Bodie Cr.		MIDBO	0.19	242	4.1	2%	225	1%	
Lower Michel Compliance	EV_MC2	MICOMP	0.71	242	4.1	2%	225	1%	
d/s EVO	EV_MC1	M2	0.71	241	4.0	2%	220	1%	
Tributaries									
u/s Hamer Cr.	EV_GV3	GRUHA	12	116	0.037	0%	33	0%	
Andy Good Creek	CM_AG1	AGCK	13	116	0.037	0%	33	0%	
Alexander Cr. Mid-creek		AL4	50	116	0.037	0%	33	0%	
Leach Creek		LE1	67	116	0.037	0%	33	0%	
Alexander Cr. Near bend to West	EV_AC2	ALUSM	36	116	0.037	0%	33	0%	
Other reference tributaries	-	-	160	116	0.037	0%	33	0%	
u/s Hamer Pond	EV_HC6	HACKUS	12	125	0.118	0%	14	0%	
d/s Hamer Pond	EV_HC1	HACKDS	0.53	314	0.74	0%	307	2%	
d/s Hamer Cr.		GRCK	2.3	210	0.4	0%	174	1%	
mouth at Elk R.	EV_GV1	GRDS	0.52	210	0.44	0%	174	1%	
Otto Cr.	EV_OC1	OCNM	0.54	296	1.69	1%	86	0%	
Sixmile Creek	EV_SM1	SMCK	0.58	162	0.15	0%	76	0%	
Balmer Creek	EV_BLM2	BACK	0.53	289	7.69	3%	143	1%	
Corbin Cr.	CM_CC1	CORCK	2.0	-	-	-	-	-	
Erickson Cr.	EV_EC1	ERCK	8.4	1474	23	2%	978	12%	
Gate Creek	EV_GT1	GATE	1.2	2096	58	3%	1647	24%	
Bodie Cr.	EV_BC1	BOCK	0.86	2131	67	3%	1449	20%	
MU4 Summary									
Overall %effect (characterized areas)						0%		0%	
Proportion of MU4 with effect of	<L1					100%		97%	
	L1-L2					0%		2%	
	L2-L3					0%		0%	
	>L3					0%		0%	
	Uncharacterized areas					0%		0%	
Proportion of Elk with effect (characterized areas)		<L1				100%		100%	
MU5	Mainstem Elk River								
	d/s Sparwood	EV_ER1	EL1	0.18	215	2.4	1%	156	1%
	u/s Fernie	RG_ELKFERNIE	ELUFE	58	208	2.1	1%	119	1%
	d/s Fernie		ELDFE	50	208	2.1	1%	119	1%
	u/s Elko	RG_ELKORES	ELELKO	29	205	1.8	1%	106	0%
	u/s Hwy93 bridge	RG_ELKMOUTH	ELH93	78	189	1.33	1%	85	0%
	Tributaries								
	McCool Creek		MCCR	9.2	116	0.037	0%	33	0%
	Upper Wigwam R.		WWRU	206	116	0.037	0%	33	0%
	Lower Wigwam R.		WWRL	292	116	0.037	0%	33	0%
	Other reference tributaries	-	-	264	116	0.037	0%	33	0%
	MU5 Summary								
	Overall %effect (characterized areas)						0%		0%
Proportion of MU5 with effect of	<L1					100%		100%	
	L1-L2					0%		0%	
	L2-L3					0%		0%	
	>L3					0%		0%	
	Uncharacterized areas					0%		0%	
Proportion of Elk with effect (characterized areas)		<L1				100%		100%	

Table A-25: Integrated Effects Table for Amphibians – 2027

Management Unit	Area Description	VO Station Code	Biological Area Code	Avg Flow Total Habitat (na)	Hardness (mg/L as CaCO <sub>3</sub> )	Nitrate		Sulphate	
						[NO <sub>3</sub> ] (mg/L N)	Sensitive Species ( <i>L. pipiens</i> )	[SO <sub>4</sub> ] (mg/L)	Sensitive Species ( <i>L. pipiens</i> )
MU1	<b>Mainstem Fording River</b>								
	<i>u/s Henretta Cr. and FRO</i>	FR_UFR1	FO26	16	116	0.037	0%	33	0%
	<i>d/s Henretta Cr.</i>	FR_FR1	FODHE	2.9	192	1.9	1%	213	1%
	<i>u/s Clode Cr.</i>		FOUCL	0.23	192	1.9	1%	213	1%
	<i>u/s North Greenhills Diversion</i>		FOUNGO	1.5	192	1.9	1%	213	1%
	<i>d/s North Greenhills Diversion</i>	FR_FRABEC1	FODNGD	0.56	192	1.9	1%	213	1%
	Multiplate Culvert	FR_MULTIPLATE	MP1	0.89	192	1.9	1%	213	1%
	<i>u/s Shandley Cr.</i>		FOUSH	1.5	192	1.9	1%	213	1%
	<i>u/s Kilmamock Cr.</i>	FR_FR2	FOUKI	0.92	350	9	3%	474	4%
	<i>d/s Kilmamock &amp; u/s Swift Cr.</i>	GH_FR3	FOBKS	2.5	350	9	3%	474	4%
	<i>d/s future AWTF-S</i>		SCOUTDS	0.078	350	9	3%	474	4%
	<i>d/s Swift Cr., u/s Cataract Cr.</i>	FR_FR4, GH_FR	FOBSC	0.71	383	9	2%	493	5%
	<i>d/s Cataract, u/s Porter</i>	FR_FRCP1	FOBCP	1.4	430	10	2%	496	5%
	1 km SW of Fording R Compliance		FRCP1SW	1.4	430	10	2%	496	5%
	<i>u/s Porter</i>	FR_FRRD	FRUPO	2.2	430	10	2%	496	5%
	<i>d/s Porter Cr., u/s Chauncey Cr.</i>	GH_PC2	FODPO	1.9	606	14	3%	531	5%
	<i>u/s Chauncey Creek</i>	FR_FRABCH	FOZ2	2.0	588	14	3%	507	5%
	<i>d/s Chauncey Cr., u/s Ewin Cr.</i>	FR_FR5	FOUEW	11	588	14	3%	507	5%
	Fording River u/s Dry Creek	LC_FRUS	FOZ8	5.0	588	14	3%	507	5%
	<i>d/s Dry Cr., u/s GHO</i>	LC_FRB	FOZ9	8.9	588	14	3%	507	5%
	<i>d/s GHO and Greenhills Cr.</i>	GH_FR1	FODGH	2.5	410	9	2%	337	3%
	<b>Tributaries</b>								
	<i>Henretta Creek</i>	FR_HC3	HENUP	10.0	116	0.037	0%	33	0%
	<i>Chauncey Creek</i>	RG_CH1	CHCK	23	116	0.037	0%	33	0%
	<i>Ewin Creek</i>		EWCK	45	116	0.037	0%	33	0%
	<i>Other reference tributaries</i>		-	40	116	0.037	0%	33	0%
	<i>Henretta Creek</i>	FR_HC1	HENFO	5.4	222	2.9	1%	313	2%
	<i>Fish Pond Creek</i>	FR_FC1	FR_FC1	0.29	-	-	-	-	-
	<i>Clode Creek</i>	FR_CC1	CLODE	0.98	955	10	1%	769	9%
	<i>Lake Mountain Creek</i>	FR_NGD1	NGD1	1.5	-	-	-	-	-
	<i>Kilmamock Creek</i>	FR_KC1	KICK	2.4	670	34	5%	863	10%
	<i>Swift Creek</i>	GH_SC1-2	SWCK	0.8	2912	32	1%	2192	32%
	<i>Cataract Creek</i>	GH_CC1	CATCK	0.33	2935	25	1%	2157	32%
	<i>Porter Creek</i>	GH_PC1	POCK	0.26	770	0.5	0%	554	6%
	<i>LCO Dry Creek</i>	LC_DCDS	LC_DCDS	5.8	363	10.35	3%	350.2	3%
	<i>LCO Dry Creek</i>	LC_DC1	LC_DC1	0.68	193	6.41	4%	213.1	1%
	<i>Unnamed Creek</i>		LC_UC	1.2	-	-	-	-	-
	<i>Greenhills Creek</i>		GHCKU	4.1	711	2.6	0%	881	11%
	<i>Greenhills Creek</i>	GH_GH1	GHCKD	0.24	711	2.6	0%	881	11%
	<b>MU1 Summary</b>								
	Overall %effect (characterized areas)						1%		2%
	Proportion of MU1 with effect of	<L1					99%		95%
		L1-L2					0%		3%
		L2-L3					0%		1%
		>L3					0%		0%
		Uncharacterized areas					1%		1%
	Proportion of Fording with effect (characterized areas)		<L1				100%		100%
MU2	<b>Mainstem Fording River</b>								
	<i>d/s Josephine Falls</i>		FO9	9.1	410	9	2%	337	3%
	<i>d/s Grace Cr.</i>	LC_LC6	FRUL	15	381	7	2%	275	2%
	<i>d/s Line Cr.</i>	LC_LC5	FO23	5.9	381	7	2%	275	2%
	<b>Tributaries</b>								
	<i>Grace Cr.</i>	LC_GRCK	LC_GRCK	7.7	116	0.037	0%	33	0%
	<i>u/s LCO</i>	LC_LC1	L124	15	116	0.037	0%	33	0%
	<i>South Line Cr.</i>	LC_SLC	SLINE	11	116	0.037	0%	33	0%
	<i>Other reference tributaries</i>		-	14	116	0.037	0%	33	0%
	<i>u/s West Line Cr.</i>	LC_LCUSWLC	LCUT	2.8	379	12	4%	534	5%
	<i>d/s West Line Cr.</i>	LC_LC3	LILC3	0.76	423	7	2%	404	4%
	<i>d/s pond discharge</i>	WL_DCP_SP24	LISP24	0.75	423	7	2%	404	4%
	<i>d/s South Line Cr. Confluence</i>	LC_LCDSLCC	LIDSL	2.2	329	4	1%	298	2%
	<i>d/s LIDSL</i>	LC_LCC	LIDCOM	8.9	329	4	1%	298	2%
	<i>d/s LIDSL</i>	LC_LC4	L18	4.3	306	3.4	1%	246	2%
	<b>MU2 Summary</b>								
	Overall %effect (characterized areas)						1%		1%
	Proportion of MU2 with effect of	<L1					100%		100%
		L1-L2					0%		0%
		L2-L3					0%		0%
		>L3					0%		0%
		Uncharacterized areas					0%		0%
	Proportion of Fording with effect (characterized areas)		<L1				100%		100%
MU3	<b>Mainstem Elk River</b>								
	<i>u/s GHO</i>	GH_ER2	ELUGH	303	116	0.037	0%	33	0%
	<i>d/s Thompson Cr.</i>	GH_ERC	EL20	18	165	0.8	1%	80	0%
	<i>u/s Boivin Cr.</i>	GH_ER1	ELUEL	14	163	0.75	1%	76	0%
	<i>d/s Elkford Sewage Ponds</i>		ELDEL	41	163	0.75	1%	76	0%
	<i>u/s Fording R.</i>		ELUFO	13	163	0.75	1%	76	0%
	<b>Tributaries</b>								
	<i>Michelson Cr.</i>	GH_MC1	-	1.1	116	0.037	0%	33	0%
	<i>Unnamed tributary west of Elk River</i>		UCWER	17	116	0.037	0%	33	0%
	<i>Other reference tributaries</i>		-	168	116	0.037	0%	33	0%
	<i>Elk River Side Channel</i>	GH_ERSC4	GH_ERSC4	4.1	-	-	-	-	-
	<i>Elk River Side Channel</i>	GH_ER1A	GH_ER1A	0.42	-	-	-	-	-
	<i>Elk River Side Channel</i>	RG_ERSC5	ERSC5	0.47	-	-	-	-	-
<i>Side Channel d/s Thompson Cr.</i>	RG_SCDTC	SCDTC	1.4	-	-	-	-	-	
<i>Leask Cr.</i>	GH_LC1	-	3.0	2127	50	3%	1833	27%	
<i>Wolfam Cr.</i>	GH_WC2	WOCK	0.41	-	-	-	-	-	
<i>Thompson Cr.</i>	GH_TC1	THCK	0.036	1076	8	1%	1384	19%	
<b>MU3 Summary</b>									
Overall %effect (characterized areas)						0%		0%	
Proportion of MU3 with effect of	<L1					99%		98%	
	L1-L2					0%		0%	
	L2-L3					0%		1%	
	>L3					0%		0%	
	Uncharacterized areas					1%		1%	
Proportion of Elk with effect (characterized areas)		<L1				100%		100%	
MU4	<b>Mainstem Elk River</b>								
	<i>u/s Grave Cr.</i>	EV_ER4	EL19	11	221	2.7	1%	149	1%
	<i>d/s Grave Cr.</i>		ELDGR	8.1	221	2.7	1%	149	1%
	<i>d/s Otto Cr.</i>	EV_ER2	ELUSP	6.1	212	2.1	1%	143	1%
	<b>Mainstem Michel Creek</b>								
	<i>u/s CMO</i>	CM_MC1	M25	12	116	0.037	0%	33	0%
	<i>u/s Corbin Cr.</i>		MUCO	3.2	116	0.037	0%	33	0%
	<i>d/s Corbin Cr.</i>	CM_MC2	MDCO	1.7	348	2.5	1%	311	2%
	<i>d/s Andy Good Cr.</i>	CM_MCTM	MIDAG	2.3	348	2.5	1%	311	2%
	<i>u/s Leach Cr.</i>		MULE	7.2	348	2.5	1%	311	2%
	<i>u/s Wheeler Cr.</i>		M5	4.9	348	2.5	1%	311	2%
	<i>u/s Erickson Cr.</i>	EV_MC3	M3	11	165	0.7	0%	91	0%
	<i>d/s Erickson Cr.</i>		MIDER	1.1	165	0.7	0%	91	0%
<i>d/s Gate Cr.</i>		MIDGA	0.074	165	0.7	0%	91	0%	
<i>d/s Bodie Cr.</i>		MIDBO	0.19	245	4.5	2%	251	2%	
<i>Lower Michel Compliance</i>	EV_MC2	MICOMP	0.71	245	4.5	2%	251	2%	
<i>d/s EVO</i>	EV_MC1	M2	0.71	245	4.4	2%	245	2%	
<b>Tributaries</b>									
<i>u/s Hamer Cr.</i>	EV_GV3	GRUHA	12	116	0.037	0%	33	0%	
<i>Andy Good Creek</i>	CM_AG1	AGCK	13	116	0.037	0%	33	0%	
<i>Alexander Cr. Mid-creek</i>		AL4	50	116	0.037	0%	33	0%	
<i>Leach Creek</i>		LE1	67	116	0.037	0%	33	0%	
<i>Alexander Cr. Near bend to West</i>	EV_AC2	ALUSM	36	116	0.037	0%	33	0%	
<i>Other reference tributaries</i>		-	160	116	0.037	0%	33	0%	
<i>u/s Hamer Pond</i>	EV_HC6	HACKUS	12	125	0.118	0%	14	0%	
<i>d/s Hamer Pond</i>	EV_HC1	HACKDS	0.53	324	1.35	0%	323	3%	
<i>d/s Hamer Cr.</i>		GRCK	2.3	214	0.7	0%	183	1%	
<i>mouth at Elk R.</i>	EV_GV1	GRDS	0.52	214	0.66	0%	183	1%	
<i>Otto Cr.</i>	EV_OC1	OCNM	0.54	314	2.63	1%	98	0%	
<i>Sixmile Creek</i>	EV_SM1	SMCK	0.58	162	0.138	0%	77	0%	
<i>Balmer Creek</i>	EV_BLM2	BACK	0.53	284	6.35	2%	144	1%	
<i>Corbin Cr.</i>	CM_CC1	CORCK	2.0	-	-	-	-	-	
<i>Erickson Cr.</i>	EV_EC1	ERCK	8.4	1564	26	2%	1040	13%	
<i>Gate Creek</i>	EV_GT1	GATE	1.2	1955	47	3%	1633	24%	
<i>Bodie Cr.</i>	EV_BC1	BOCK	0.86	2064	55	3%	1415	20%	
<b>MU4 Summary</b>									
Overall %effect (characterized areas)						0%		0%	
Proportion of MU4 with effect of	<L1					100%		97%	
	L1-L2					0%		2%	
	L2-L3					0%		0%	
	>L3					0%		0%	
	Uncharacterized areas					0%		0%	
Proportion of Elk with effect (characterized areas)		<L1				100%		100%	
MU5	<b>Mainstem Elk River</b>								
	<i>d/s Sparwood</i>	EV_ER1	EL1	0.18	216	2.2	1%	162	1%
	<i>u/s Fernie</i>	RG_ELKFERNIE	ELUFE	58	210	1.9	1%	123	1%
	<i>d/s Fernie</i>		ELDFE	50	210	1.9	1%	123	1%
	<i>u/s Elko</i>	RG_ELKORES	ELEKO	29	207	1.6	1%	108	0%
	<i>u/s Hwy93 bridge</i>	RG_ELKMOUTH	ELH93	78	191	1.22	1%	87	0%
	<b>Tributaries</b>								
	<i>McCool Creek</i>		MACOR	9.2	116	0.037	0%	33	0%
	<i>Upper Wigwam R.</i>		WWRU	206	116	0.037	0%	33	0%
	<i>Lower Wigwam R.</i>		WWRL	292	116	0.037	0%	33	0%
	<i>Other reference tributaries</i>		-	264	116	0.037	0%	33	0%
	<b>MU5 Summary</b>								
	Overall %effect (characterized areas)						0%		0%
Proportion of MU5 with effect of	<L1					100%		100%	
	L1-L2					0%		0%	
	L2-L3					0%		0%	
	>L3					0%		0%	
	Uncharacterized areas					0%		0%	
Proportion of Elk with effect (characterized areas)		<L1				100%		100%	



Table A-26: Integrated Effects Table for Amphibians – 2028

Management Unit	Area Description	VO Station Code		Biological Area Code	Avg Flow Total Habitat (m3)	Hardness (mg/L as CaCO3)	Nitrate		Sulphate	
							[NO3] (mg/L N)	Sensitive Species (L. pipiens)	[SO4] (mg/L)	Sensitive Species (L. pipiens)
MU1	Mainstem Fording River									
	u/s Henretta Cr. and FRO		FR_UFR1	FO26	16	116	0.037	0%	33	0%
	d/s Henretta Cr.		FR_FR1	FODHE	2.9	193	1.5	1%	206	1%
	u/s Clode Cr.			FOUCL	0.23	193	1.5	1%	206	1%
	u/s North Greenhills Diversion			FOUNGO	1.5	193	1.5	1%	206	1%
	d/s North Greenhills Diversion		FR_FRABEC1	FODNGD	0.56	193	1.5	1%	206	1%
	Multiplate Culvert		FR_MULTIPLATE	MP1	0.89	193	1.5	1%	206	1%
	u/s Shandley Cr.			FOUSH	1.5	193	1.5	1%	206	1%
	u/s Kilmamock Cr.		FR_FR2	FOUKI	0.92	366	9	3%	496	5%
	d/s Kilmamock & u/s Swift Cr.		GH_FR3	FOBKS	2.5	366	9	3%	496	5%
	d/s future AWTF-S			SCOUTDS	0.078	366	9	3%	496	5%
	d/s Swift Cr., u/s Cataract Cr.		FR_FR4, GH_FR	FOBSC	0.71	404	9	2%	513	5%
	d/s Cataract, u/s Porter		FR_FRCP1	FOBCP	1.4	449	9	2%	511	5%
	1 km SW of Fording R Compliance			FRCP1SW	1.4	449	9	2%	511	5%
	u/s Porter Cr., u/s Chauncey Cr.		GH_FRCD	FRUPO	2.2	449	9	2%	511	5%
	u/s Chauncey Creek		FR_FRABCH	FOZ2	2.0	581	11	2%	500	5%
	d/s Chauncey Cr., u/s Ewin Cr.		FR_FR5	FOUEW	11	581	11	2%	500	5%
	Fording River u/s Dry Creek		LC_FRUS	FOZ8	5.0	581	11	2%	500	5%
	d/s Dry Cr., u/s GHO		LC_FRB	FOZ9	8.9	581	11	2%	500	5%
	d/s GHO and Greenhills Cr.		GH_FR1	FODGH	2.5	414	9	2%	331	3%
	Tributaries									
	Henretta Creek		FR_HC3	HENUP	10.0	116	0.037	0%	33	0%
	Chauncey Creek		RG_CH1	CHCK	23	116	0.037	0%	33	0%
	Ewin Creek			EWCK	45	116	0.037	0%	33	0%
	Other reference tributaries		-	-	40	116	0.037	0%	33	0%
	Henretta Creek		FR_HC1	HENFO	5.4	224	2.4	1%	314	2%
	Fish Pond Creek		FR_FC1	FR_FC1	0.29	-	-	-	-	-
	Clode Creek		FR_CC1	CLODE	0.98	1009	11	1%	839	10%
	Lake Mountain Creek		FR_NGD1	NGD1	1.5	-	-	-	-	-
	Kilmamock Creek		FR_KC1	KICK	2.4	683	30	5%	845	10%
	Swift Creek		GH_SC1-2	SWCK	0.8	2944	32	1%	2222	33%
	Cataract Creek		GH_CC1	CATCK	0.33	2960	24	1%	2199	33%
	Porter Creek		GH_PC1	POCK	0.26	769	0.4	0%	554	6%
	LCO Dry Creek		LC_DCDS	LC_DCDS	5.8	389	8.01	2%	338.9	3%
	LCO Dry Creek		LC_DC1	LC_DC1	0.68	217	5.23	3%	205.0	1%
	Unnamed Creek			LC_UC	1.2	-	-	-	-	-
	Greenhills Creek			GHCKU	4.1	717	1.4	0%	873	11%
	Greenhills Creek		GH_GH1	GHCKD	0.24	717	1.4	0%	873	11%
	MU1 Summary									
	Overall %effect (characterized areas)							1%		2%
	Proportion of MU1 with effect of		<L1					99%		94%
			L1-L2					0%		4%
			L2-L3					0%		1%
			>L3					0%		0%
			Uncharacterized areas					1%		1%
	Proportion of Fording with effect (characterized areas)		<L1					100%		100%
	MU2	Mainstem Fording River								
d/s Josephine Falls			FO9	9.1	414	9	2%	331	3%	
d/s Grace Cr.		LC_LC6	FRUL	15	384	7	2%	283	2%	
d/s Line Cr.		LC_LC5	FO23	5.9	384	7	2%	283	2%	
Tributaries										
Grace Cr.		LC_GRCK	LC_GRCK	7.7	116	0.037	0%	33	0%	
u/s LCO		LC_LC1	LZ4	15	116	0.037	0%	33	0%	
South Line Cr.		LC_SLG	SLINE	11	116	0.037	0%	33	0%	
Other reference tributaries		-	-	14	116	0.037	0%	33	0%	
u/s West Line Cr.		LC_LCUSWLC	LCUT	2.8	380	11	3%	555	6%	
d/s West Line Cr.		LC_LC3	LILC3	0.76	436	5	1%	424	4%	
d/s pond discharge		WL_DCP_SP24	LISP24	0.75	436	5	1%	424	4%	
d/s South Line Cr. Confluence		LC_LCDSLCC	LIDSL	2.2	333	3	1%	312	2%	
d/s LIDSL		LC_LCC	LIDCOM	8.9	333	3	1%	312	2%	
d/s LIDSL		LC_LC4	LI8	4.3	309	3.0	1%	254	2%	
MU2 Summary										
Overall %effect (characterized areas)							1%		1%	
Proportion of MU2 with effect of		<L1					100%		100%	
		L1-L2					0%		0%	
		L2-L3					0%		0%	
		>L3					0%		0%	
		Uncharacterized areas					0%		0%	
Proportion of Fording with effect (characterized areas)		<L1					100%		100%	
MU3	Mainstem Elk River									
	u/s GHO		GH_ER2	ELUGH	303	116	0.037	0%	33	0%
	d/s Thompson Cr.		GH_ERC	EL20	18	160	0.59	0%	71	0%
	u/s Boivin Cr.		GH_ER1	ELUEL	14	159	0.55	0%	67	0%
	u/s Elkford Sewage Ponds			ELDEL	41	159	0.55	0%	67	0%
	u/s Fording R.			ELUFO	13	159	0.55	0%	67	0%
	Tributaries									
	Michelson Cr.		GH_MC1	-	1.1	116	0.037	0%	33	0%
	Unnamed tributary west of Elk River			UCWER	17	116	0.037	0%	33	0%
	Other reference tributaries		-	-	168	116	0.037	0%	33	0%
	Elk River Side Channel		GH_ERSC4	GH_ERSC4	4.1	-	-	-	-	-
	Elk River Side Channel		GH_ER1A	GH_ER1A	0.42	-	-	-	-	-
	Elk River Side Channel		RG_ERSC5	ERSC5	0.47	-	-	-	-	-
Side Channel d/s Thompson Cr.		RG_SCDTC	SCDTC	1.4	-	-	-	-	-	
Leask Cr.		GH_LC1	-	3.0	2045	49	3%	1859	27%	
Wolfram Cr.		GH_WC2	WOCK	0.41	-	-	-	-	-	
Thompson Cr.		GH_TC1	THCK	0.036	1046	6	1%	1398	20%	
MU3 Summary										
Overall %effect (characterized areas)							0%		0%	
Proportion of MU3 with effect of		<L1					99%		98%	
		L1-L2					0%		0%	
		L2-L3					0%		1%	
		>L3					0%		0%	
		Uncharacterized areas					1%		1%	
Proportion of Elk with effect (characterized areas)		<L1					100%		100%	
MU4	Mainstem Elk River									
	u/s Grave Cr.		EV_ER4	EL19	11	221	2.2	1%	138	1%
	d/s Grave Cr.			ELDGR	8.1	221	2.2	1%	138	1%
	d/s Otto Cr.		EV_ER2	ELUSP	6.1	212	1.8	1%	135	1%
	Mainstem Michel Creek									
	u/s CMO		CM_MC1	MZ5	12	116	0.037	0%	33	0%
	u/s Corbin Cr.		CM_MC2	MUCO	3.2	116	0.037	0%	33	0%
	d/s Corbin Cr.		CM_MCTM	MIDAG	2.3	348	2.5	1%	311	2%
	u/s Leach Cr.			MULE	7.2	348	2.5	1%	311	2%
	u/s Wheeler Cr.			M5	4.9	348	2.5	1%	311	2%
	u/s Erickson Cr.		EV_MC3	M3	11	167	0.7	0%	92	0%
	d/s Erickson Cr.			MIDER	1.1	167	0.7	0%	92	0%
	d/s Gate Cr.			MIDGA	0.074	167	0.7	0%	92	0%
d/s Bodie Cr.			MIDBO	0.19	254	2.8	1%	219	1%	
Lower Michel Compliance		EV_MC2	MICOMP	0.71	254	2.8	1%	219	1%	
d/s EVO		EV_MC1	M2	0.71	253	2.8	1%	214	1%	
Tributaries										
u/s Hamer Cr.		EV_GV3	GRUHA	12	116	0.037	0%	33	0%	
Andy Good Creek		CM_AG1	AGCK	13	116	0.037	0%	33	0%	
Alexander Cr. Mid-creek			AL4	50	116	0.037	0%	33	0%	
Leach Creek			LE1	67	116	0.037	0%	33	0%	
Alexander Cr. Near bend to West		EV_AC2	ALUSM	36	116	0.037	0%	33	0%	
Other reference tributaries		-	-	160	116	0.037	0%	33	0%	
u/s Hamer Pond		EV_HC6	HACKUS	12	125	0.118	0%	14	0%	
d/s Hamer Pond		EV_HC1	HACKDS	0.53	336	1.62	1%	333	3%	
d/s Hamer Cr.			GRCK	2.3	219	0.9	0%	189	1%	
mouth at Elk R.		EV_GV1	GRDS	0.52	219	0.91	0%	189	1%	
Otto Cr.		EV_OC1	OCNM	0.54	321	2.66	1%	106	0%	
Sixmile Creek		EV_SM1	SMCK	0.58	162	0.125	0%	76	0%	
Balmier Creek		EV_BLM2	BACK	0.53	284	4.92	2%	138	1%	
Corbin Cr.		CM_CC1	CORCK	2.0	-	-	-	-	-	
Erickson Cr.		EV_EC1	ERCK	8.4	1627	18	1%	1030	13%	
Gate Creek		EV_GT1	GATE	1.2	1809	28	2%	1318	18%	
Bodie Cr.		EV_BC1	BOCK	0.86	1751	29	2%	1233	17%	
MU4 Summary										
Overall %effect (characterized areas)							0%		0%	
Proportion of MU4 with effect of		<L1					100%		97%	
		L1-L2					0%		2%	
		L2-L3					0%		0%	
		>L3					0%		0%	
		Uncharacterized areas					0%		0%	
Proportion of Elk with effect (characterized areas)		<L1					100%		100%	
MU5	Mainstem Elk River									
	d/s Sparwood		EV_ER1	EL1	0.18	219	1.9	1%	151	1%
	u/s Fernie		RG_ELKFERNIE	ELUFE	58	212	1.7	1%	117	1%
	d/s Fernie			ELDFE	50	212	1.7	1%	117	1%
	u/s Elko		RG_ELKORES	ELELKO	29	208	1.4	1%	105	0%
	u/s Hwy 93 bridge		RG_ELKMOUTH	ELH93	78	191	1.06	1%	84	0%
	Tributaries									
	McCool Creek			MCCR	9.2	116	0.037	0%	33	0%
	Upper Wigwam R.			WWRU	206	116	0.037	0%	33	0%
	Lower Wigwam R.			WWRL	292	116	0.037	0%	33	0%
Other reference tributaries		-	-	264	116	0.037	0%	33	0%	
MU5 Summary										
Overall %effect (characterized areas)							0%		0%	
Proportion of MU5 with effect of		<L1					100%		100%	
		L1-L2					0%		0%	
		L2-L3					0%		0%	
		>L3					0%		0%	
		Uncharacterized areas					0%		0%	
Proportion of Elk with effect (characterized areas)		<L1					100%		100%	



