

This information was derived by identifying stream/road intersections in GIS. Data were sourced from the Freshwater Atlas for streams and rivers, and the Provincial Cumulative Effects Framework's roads layer (most complete roads layer for the area). Any river crossings were removed for the purpose of this analysis, as it was assumed that bridges would be present at these locations. All others were assumed to be culvert or no-structure. There are currently more than 100 stream crossings present in the Fish and Fish Habitat LSA.

In the Landscapes and Ecosystems RSA (see Chapter 13), riparian areas occur at lower elevations on floodplains and along streams and wetlands. Mapped streams do not always contain enough moisture to be considered riparian (Province of B.C., n.d.). Riparian areas are common along the Elk River and Fording River, and otherwise occur in relatively narrow bands (Figure 12.4-4) in other areas of higher relief due to steep banks or very coarse streambank soils (KES, 2020c). Riparian habitat within the Landscapes and Ecosystems LSA is shown in Chapter 13, Figure 13.5-4. The vegetation composition of riparian areas varies widely with elevation, geomorphology, parent materials, soils, and characteristics of the waterbody. Healthy riparian zones contain native plant species with extensive root systems that stabilize banks, relying on floods to recharge aquifers for drier periods (Amlin and Rood, 2001).

#### 12.4.1.2 Transboundary Environment

The Elk River outlet into the Canadian portion of Lake Koochanusa is located approximately 80 km southwest of the Project. Lake Koochanusa extends 65 km from the U.S.A. border to the Kootenay River Inlet, providing a wide range of aquatic habitat. Water levels in the lake are controlled by Libby Dam, which results in significant seasonal variations in aquatic habitat availability. Lake Koochanusa currently supports 11 native fish species and 6 introduced species, including an abundant Bull Trout population (Leschied, 2017). Westslope Cutthroat Trout are present in low densities in Lake Koochanusa, likely due a low competitive advantage for food resources. Kokanee were introduced to the lake in the 1980s and now are the most abundant sportfish, and also provide a significant food source for other species such as Bull Trout (Leschied 2017). Burbot are present in low densities, and Mountain Whitefish are distributed throughout the lake. Cyprinid species such as Northern Pikeminnow, Peamouth Chub, and Redside Shiner are the most abundant and widely distributed species in the lake, closely followed by Longnose Sucker and Largescale Sucker. Yellow Perch (*Perca flavescens*) and Eastern Brook Trout (*Salvelinus fontinalis*) are non-native species, both of which pose a conservation threat for native species (Leschied, 2017).

Minnow Environmental conducted environmental monitoring activities in the Canadian portion of Lake Koochanusa in 2018 in accordance with the EVWQP. Water quality data indicated that concentrations of the four EVWQP Order constituents (dissolved cadmium, nitrate, total selenium, and sulphate) were generally below the respective guidelines at all monitoring stations (Minnow Environmental, 2018). Benthic invertebrate community data showed significantly lower richness and density downstream of the Elk River compared to upstream, and average tissue selenium concentrations were above the B.C. guideline of 4 mg/kg dw (B.C. MOE, 2014) both upstream and downstream of the Elk River. Average selenium concentrations in Westslope Cutthroat Trout muscle tissue were above the B.C. tissue guidelines in samples collected from just north of the mouth and at the mouth of the Elk River, but all were lower than the U.S. Environmental Protection Agency (EPA) criterion and EVWQP Level 1 benchmark of 13 mg/kg dw (Minnow Environmental, 2018).