

Blackwater Gold Project Transmission Line Sedimentation Monitoring Plan - Framework and Guidelines

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August 28, 2023

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August 28, 2023

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EXECUTIVE SUMMARY

The Blackwater Gold Project was issued an Environmental Assessment Certificate (#M19-01) in 2019 by the Environmental Assessment Office for the construction and operation of an open-pit gold and silver mine. The mine is located approximately 112 km southwest of Vanderhoof, British Columbia. The following document provides the supplementary framework and guidelines for sedimentation monitoring of the Blackwater Gold Project, Transmission Line Corridor (BGP-TLC; including associated access, borrow, and laydown areas).

The following Transmission Line Sedimentation Monitoring Plan - Framework and Guidelines (TLSMP-FG) document has been authored and reviewed by qualified professionals (QP); Certified Professionals in Erosion and Sediment Control (CPESC) with experience in environmental management for construction and operations of mines and transmission lines. The contents of this document are designed to meet Condition 29 of Schedule B (Table of Conditions; Environmental Assessment Certificate #M19-01 2019) under the terms for a TLSMP.

The TLSMP-FG has been authored and prepared by QP-CPESCs who have considered and incorporated the principal guidelines and standards of the Yinka Dene 'Uza'hné Surface Water Management Policy of the CSFNs. The Yinka Dene 'Uza'hné - Water Law (YDU-WL) is a framework that the CSFNs apply to water in their territories. Requirements of site-specific erosion and sediment control (ESC) planning, implementation, and monitoring at YDU-WL identified Class I waterbodies are identified as required by Condition 29.

The TLSMP-FG supplements the requirements for ESC under the Blackwater Construction Environmental Management Plan (Condition 13), and the Transmission Line Surface Erosion Prevention and Sediment Control Plan (TL SEPSCP), including the monitoring requirements that must be met to advance works and plans for the construction, operations, and ongoing monitoring and maintenance of the BGP-TLC. The objectives of this document are framed for the management of sediment on the BGP-TLC, including:

- ◆ The framework for environmental compliance,
- ◆ ESC prescription and compliance requirements,
- ◆ Prescriptions for monitoring specific waterbodies,
- ◆ Water quality thresholds and steps of response, and
- ◆ Guidelines on ESC mitigation and remediation measures.

The TLSMP-FG prioritizes planning options to avoid sedimentation in waterbodies. A framework and guidelines to best management practices applicable to the BGP-TLC construction and maintenance is included. This includes recommendations for adoption of principles of engineering with nature to match the YDU-WL. Guidelines and a framework on planning and scheduling for whole project surface water management are also included.

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GLOSSARY AND ABBREVIATIONS

Term	Definition
BC	British Columbia
BGP	Blackwater Gold Project
CCM	Contractor Construction Manager
CEMP	Construction Environmental Management Plan
CPESC	Certified Professional in Erosion and Sediment Control
CSFM	Carrier Sekani First Nations
DFO	Department of Fisheries and Oceans
EAO	Environmental Assessment Office
EM	Environmental Monitor
EMS	Environmental Management System
ENV	BC Ministry of Environment
EPC	Engineering, Procurement, and Construction
ESC	Erosion and Sediment Control
FLNRORD	BC Ministry of Forests, Lands, Resource Operations, and Rural Development
IEM	Independent Environmental Monitor
NRW	Nechako River Watershed
NP	Nechako Plateau
QP	Qualified Professional
RISC	British Columbia, Resources Inventory Standards Committee
SBSdk	Sub-Boreal Spruce – Dry Cool, Biogeoclimatic Zone
SWO	Stop Work Order
TLC	Transmission Line Corridor
TLSMP-FG	Transmission Line Sedimentation Monitoring Plan - Framework and Guidelines
TL SEPSCP	Transmission Line Surface Erosion Prevention and Sediment Control Plan
YDU-WL	<p><i>Yinka Dene 'Uza'hné - Water Law.</i></p> <p>First Voices:</p> <p><i>Yinka = this world (Nak'azdli Dakelh),</i></p> <p><i>uza' = noble in the clan system, of either sex (Nadleh Whut'en)</i></p> <p><i>'Uza'hné = hereditary chief (Curran 2019)</i></p>

CONCORDANCE TABLE

This document is designed to meet the requirements of the Blackwater Gold Project’s Environmental Assessment Certificate - Schedule B Table of Conditions - Condition 29.

Condition	Report Section(s)
The Holder must retain one or more Qualified Professionals to develop a plan to avoid sedimentation in waterbodies during construction and maintenance of the transmission line. The plan must be developed in consultation with ENV, FLNRORD, and Aboriginal Groups. The Plan must include at least the following:	Document was prepared by QPs
a. a requirement for the development of site-specific erosion and sediment control prescriptions for all transmission line construction and maintenance works that have the potential to impact YDWL Class 1 Waterbodies as set out in Appendix 1 and/or other waterbodies identified to be of cultural significance by other Aboriginal Groups, during transmission line construction and maintenance. The prescriptions must be prepared by a Qualified Professional who is also a Certified Professional in Erosion and Sediment Control (CPESC). The implementation of these prescriptions must be under the direction of a CPESC;	Section 3.4, Section 3.5
b. prescriptions that detail the circumstances under which YDWL Class 1 Waterbodies and other waterbodies identified in paragraph a) (if any), will be monitored for turbidity and the specific monitoring methods that will be employed;	Section 3.5.1
c. monitoring for turbidity at a location upstream and a location downstream of Construction and maintenance activities;	Section 3.5.2;
d. development of triggers for increases in turbidity as a result of the Project taking into consideration BC Water Quality Guidelines, YDWL and any policy provided to the Holder by other Aboriginal Groups that is relevant for the waterbodies identified in paragraph a) for turbidity;	Section 3.5.3
e. a description of how the Holder has considered the YDWL, other Aboriginal Groups’ water policies applicable to the waterbodies identified in paragraph a) if made available to the Holder, and BC Water Quality Guidelines in developing the triggers	Section 3.4.1
f. the identification of mitigation and/or remediation measures in the event that such triggers in paragraph d) are met or exceeded, the timing of implementation of such measures, and monitoring of the effectiveness of such measures;	Section 3.6; Section 3.7
g. criteria to determine when turbidity monitoring may be reduced and/or is no longer required	Section 3.5.2;
h. a requirement that all monitoring data and mitigation implementation be documented, retained, and provided to the EAO Compliance and Enforcement and Aboriginal Groups upon request	Section 3.9
i. a requirement that the Holder invite, and if the Aboriginal Groups’ monitor is available, arrange for, Aboriginal Groups’ monitors to be present during transmission line construction and maintenance activities at all locations where the site-specific erosion and sediment control prescriptions have been developed	Section 3.11

1. INTRODUCTION

The Blackwater Gold Project (Project) received an Environmental Assessment Certificate (#M19-01) in 2019 by the Environmental Assessment Office (EAO 2020) for the construction and operation of an open-pit gold and silver mine. The Project is located approximately 112 km southwest of Vanderhoof, British Columbia (BC). The following document provides the supplementary framework and guidelines for sedimentation monitoring of the Blackwater Gold Project, Transmission Line Corridor (BGP-TLC; including associated access, borrow, and laydown areas) required as per Condition 29 of the approved Environmental Assessment Certificate.

EcoLogic Consultants Ltd. (EcoLogic) was retained by Artemis Gold (the Holder) to produce this Condition 29 Transmission Line Sedimentation Monitoring Plan - Framework and Guidelines (TLSMP-FG) document. The TLSMP-FG has been authored and reviewed by qualified professionals (QPs); Certified Professionals in Erosion and Sediment Control (CPESC) with experience in environmental management for construction and operations of mines and transmission lines. The contents of this document are designed to meet Condition 29 of Schedule B (EAO 2019a) under the terms for a TLSMP. This includes guidelines for meeting local standards of the Carrier Sekani First Nations (CSFNs). In the context of this document, CSFNs refers to Nadleh Whut'en First Nation, Saik'uz First Nation, and Stelat'en First Nation.

The CSFNs have established the Yinka Dene 'Uza'hné *Surface Water Management Policy* (Nadleh Whut'en and Stelat'en 2016a) and Yinka Dene 'Uza'hné *Guide to Surface Water Quality Standards* (Nadleh Whut'en and Stelat'en 2016b). These provide reference to the Yinka Dene 'Uza'hné - Water Law (YDU-WL). Condition 29 of Schedule B (EAO 2019a) includes requirements with respect to the consideration of the YDU-WL. The TLSMP-FG provides the plan to meet the requirements of Condition 29.

2. PURPOSE AND OBJECTIVES

The TLSMP-FG supplements the requirements for erosion and sediment control (ESC) under the Blackwater Construction Environmental Management Plan (Condition 13), the Transmission Line Surface Erosion Prevention and Sediment Control Plan (TL SEPSCP) (BWG Ltd. 2022a, developed by Allnorth Consultants Limited [Allnorth]), and the Transmission Line Clearing Plan (BWG Ltd. 2022b, developed by Allnorth) including the monitoring requirements that must be met to advance works and plans for the construction, operations, and ongoing monitoring and maintenance of the BGP-TLC. The TLSMP-FG has been written specifically to fulfill Condition 29 of Schedule B (EAO 2019a). The objectives of this document are framed for the monitoring and management of sedimentation on the BGP-TLC, including:

- ◆ The framework for environmental compliance,
- ◆ ESC prescription and compliance requirements,
- ◆ Prescriptions for monitoring specific waterbodies,
- ◆ Water quality thresholds and steps of response, and
- ◆ Guidelines on ESC mitigation and remediation measures.

3. A PLAN TO AVOID SEDIMENTATION IN WATERBODIES

3.1 PROJECT LOCATION

The BGP-TLC is designed to link together a 230 kV transmission line for approximately 135 km, from the Glenannan Substation on the Endako Mine Road to the Blackwater mine site (Schedule B, Table of Conditions; Environmental Assessment Certificate #M19-01 2019, Certified Project Description Mapbook Appendix A2, EAO 2019a). The route runs through two regional districts, including the Bulkley-Nechako and Cariboo. It runs through the Nechako River Watershed (NRW) to directly cross the Stellako River, Nechako River, Big Bend Creek, and other streams and wetlands that require site specific ESC management planning and considerations.

The project location (Figure 3.1-1) defines the framework on environmental laws and regulations that are to be met in compliance during operations and in review. Guidelines are provided on meeting the project requirements in sections that follow. However, beyond the guidelines the preferred option is to plan, as feasible, the complete avoidance of adding sediment into water. If avoidance is not an option, then the regulations and guidelines add an additional level of safeguard to reduce deleterious harm to the environment, including adverse effects to aquatic life, wildlife, and human life.

3.2 INDIGENOUS NATIONS

The BGP-TLC transects through territories of Nadleh Whut'en First Nation, Saik'uz First Nation, Stellat'en First Nation, Lhoosk'uz Dene Nation and Ulkatcho First Nation as listed in EAO (2020). An alternate routing of the transmission line passed through the territory of the Nazko First Nation; this routing was not ultimately selected for construction. The YDU-WL (Nadleh Whut'en and Stellat'en 2016ab) is addressed more specifically in Section 3.4.1 of this report to fulfill the requirements of Condition 29.



Blackwater

Figure 3.1-1

Transmission Line Corridor

Date: 2022-11-10

Map Number: BLW-024

Coordinate System: NAD 1983 UTM Zone 10N

Projection: Transverse Mercator

Datum: North American 1983

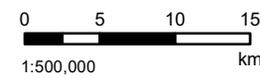


Legend

- █ Transmission Line Corridor
- Major Watershed Boundary

Class 1 Waterbodies

- Creek
- Rivers
- Lake



3.3 ENVIRONMENTAL CONTEXT

The BGP-TLC is in the NRW (Figure 3.1-1), which is a major sub-watershed of the Fraser River Basin. The NRW is bordered by rugged peaks of the Skeena Mountains northward and the Hazelton Mountains along the western perimeter (Cook et al. 1999). The proposed route of the BGP-TLC crosses smaller mountainous sections of the Nechako Plateau (NP), such as the Nechako Range. Mountains in this area were formed from Eocene volcanism between 53 and 47 Ma (Grainger et al. 2001). Many surface waters flow through the varied topography to interconnect hydrological systems across the NRW (Figure 3.2-1).

The primary drainage is the Nechako River, which flows eastward through the 51 km mark of the BGP-TLC. It extends for over 140 km eastward to reach its confluence with the Fraser River in Prince George, BC. The BGP-TLC right-of-way is mostly dominated by the Sub-Boreal Spruce (SBS) dry cool (dk) subzone, which is defined as a dry subzone as it receives the lowest mean annual precipitation (Mean 480.6 mm, Range 415.9–586.3 mm) of the Prince George Forest region. However, the diverse topographic profile of the NRW creates local climatic differences. For example, areas around Tetachuk Lake receives 33-50% of the precipitation compared to the 25-33% received in areas along the Nechako River from Fort Fraser to the confluence of the Stuart River (Helm et al. 1980).

Quaternary glacial geological activity carved through the land in a northeasterly direction (Mate and Levson 2001) and left a diverse arrangement of glaciolacustrine, glaciofluvial, and morainal deposits. The geological activity has created a complex terrain that defines multiple tributary sub-catchments. The soils are highly variable with mixtures of sand, silt, clay, and loam mixed into the varied physiographic profiles of a glacial landscape (Cotic et al. 1976).

The forests are often mixed with Lodgepole Pine and Trembling Aspen dominant that historically climaxed as white spruce and subalpine fir (DeLong et al. 1993; Demarchi 2011). The mountainous terrain invites many low-lying lotic catchments (swamps, fens, bogs, and open water wetlands) that are hydrologically and biophysically connected by a complicated network of creeks, streams, and rivers. Approximately two-thirds of the northern extent of the BGP-TLC runs through the Bulkely Basin Ecoregion and the southern third runs through the Nazko Upland Ecoregion (Figure 3.1-1; Demarchi 2011).

3.3.1 Environmental Concerns

There is a history and legacy of impact to the hydrological systems and sedimentation processes within the project area that establishes a baseline concern (e.g., human activity in the watershed has increased rates of bank erosion) and raises the risk of cumulatively adding to existing problems. Construction of the Kenney Dam on the Nechako River in the 1950s has resulted in increased encroachment of woody vegetation on gravel bars, narrowing of the Nechako River channel, isolation of side- and off-channel habitats, the release of smaller volumes of water, and a shift in sediment particle size to finer grains, likely from forestry and agricultural sources (Gateuille et al. 2019). These geomorphological and hydrological changes resulted in initial concerns for salmon (Bradford 2020).

Contemporary source contributions of sediment are often greatest through direct inputs from eroding banks. Surface run-off from agriculture, forest fires, and forest harvesting are also identified as important sources of sediment input, perhaps in excess of what would be observed in the absence of this human activity. Sediment volumes and flux are varied by the timing and magnitude of snowmelt across the basin and controlled release from the spillway. Recent rises in surface erosion from forest fires, harvesting, and mountain pine-beetle infestations has increased the introduction of finer sediments, which raises concerns for white sturgeon (Gateuille et al. 2019).

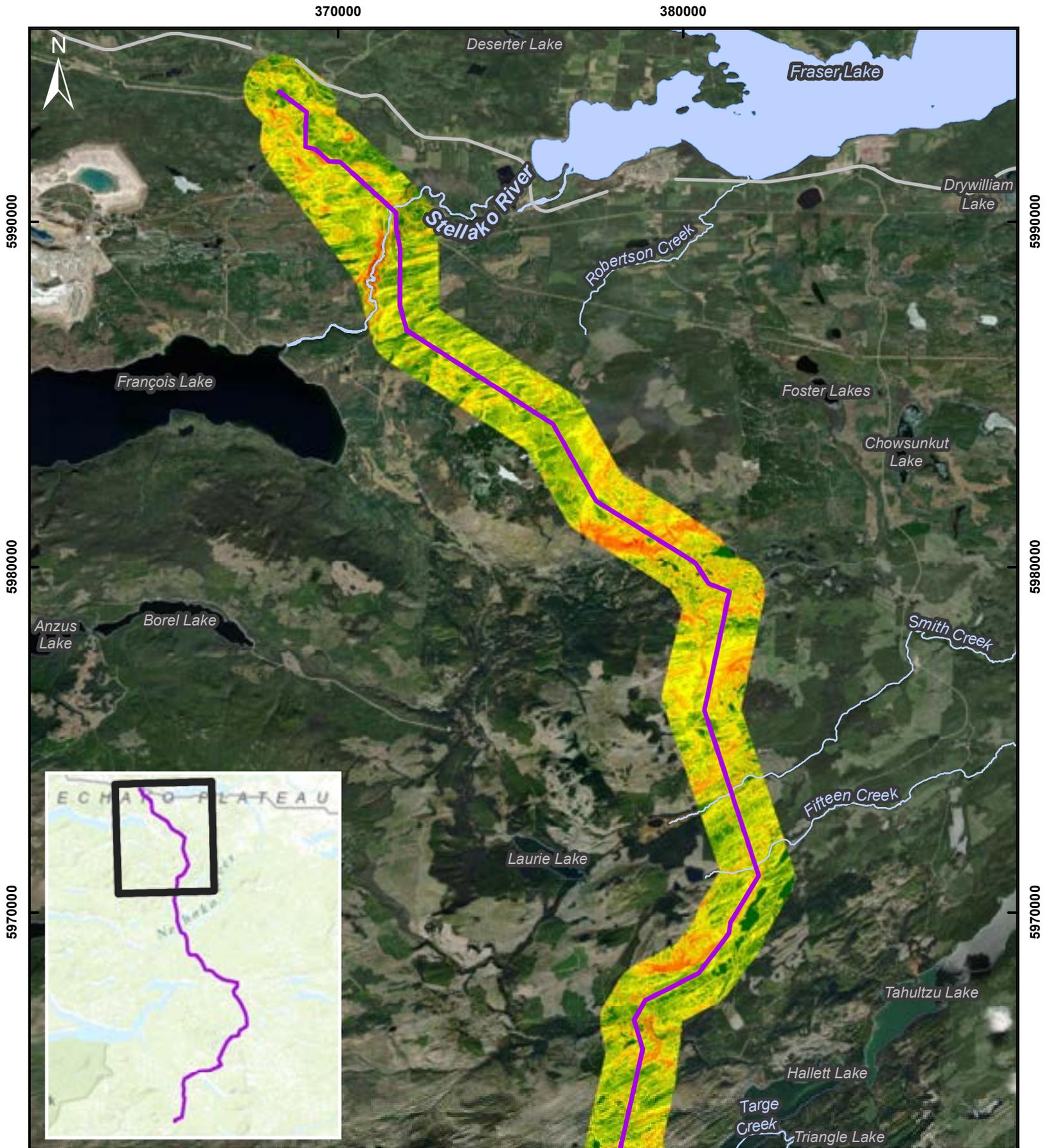
There are unique environmental challenges for ESC associated with the BGP-TLC as a linear development within the Nechako River Watershed. There are also ecological communities and species at-risk that intersect with the BGP-TLC project (EAO 2019b). Picketts et al. (2020) summarize findings from workshops and scenarios for the NRW in consideration of climate change and resource development projections that position the NRW as being in a vulnerable state. Environmental concerns from scientific and public inputs are centered on cumulative impacts within the interplay between land development and climate change (Fraser Basin Council 2015; Picketts et al. 2016).

The closest aquatic species at risk include:

- ◆ A population of white sturgeon is present in the middle reaches of the Nechako River and the mouth of the Stellako River;
- ◆ Nechako Chinook are part of the Mid-Fraser Summer Chinook Conservation Unit that was recently designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as Threatened; and
- ◆ Francois-Fraser-S DU Sockeye is designated as Special Concern by COSEWIC and known spawning habitat is located at the Stellako River Crossing (WC-8).

Ecosystems have been modified by mountain pine beetle impacts, extensive logging, and large areas in the Vanderhoof and Fort Fraser areas have been converted to agriculture (Fraser Basin Council 2016; Gateuille et al. 2019; Owens et al. 2018). The effect of increasing fires on sedimentation is not as well understood and there have been significant forest fires in the NRW (Vore et al. 2020). Increasing wintertime precipitation (rain and snow) from climate change is predicted to increase the likelihood of wintertime flood events on the lower reaches of the Nechako River (Déry et al. 2012; Albers et al. 2016; Kang et al. 2016), which raises the importance of protecting waterways and ecosystems in the project area (e.g., ESC) to reduce the risk of flood to downstream urban areas.

Over 99% of the sediment that is generated within the Nechako sub-basin is retained locally and avoids entry into the Fraser River (Tsuruta 2017). However, the varied topography and slope at the scale of the BGP-TLC across the right-of-way (Figure 3.2-1 to Figure 3.2-4; profiling from north to south of the TLC) raises the risk of direct sediment introductions into fish-bearing streams, amphibian occupied wetlands, or groundwater supplies.



Blackwater

Figure 3.2-1
Transmission Line
Corridor: Slope Analysis

Date: 2022-11-10
Map Number: BLW-025a

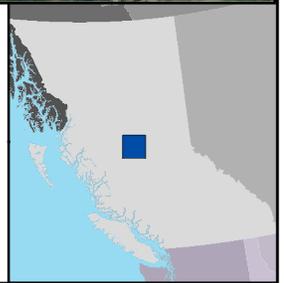
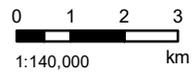
Coordinate System: NAD 1983 UTM Zone 10N
Projection: Transverse Mercator
Datum: North American 1983



Slope (Degrees)

0 - 1
2 - 3
4 - 7
8 - 12
13 - 22
23 - 35
36 - 79

- █ Transmission Line Corridor
- Highway 16
- Class 1 Waterbodies**
- Creek
- Rivers
- Lake



370000

380000

390000



HOLY CROSS MOUNTAIN

Tahultzu Lake

Hallett Lake

Triangle Lake

Bungalow Lake

Bentzi Lake

Targe Lake

Copley Lake

Targe Creek

Nechako River

Holy Cross Lake

Cutoff Creek

Hobson Lake

Knewstubb Lake

5960000

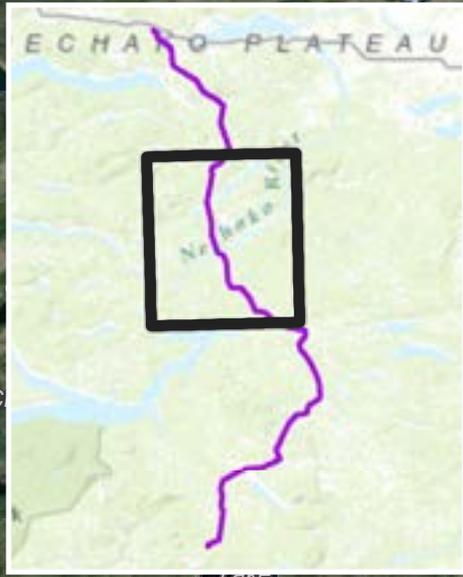
5960000

5950000

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Blackwater

Figure 3.2-2
Transmission Line
Corridor: Slope Analysis

Date: 2022-11-10

Map Number: BLW-025b

Coordinate System: NAD 1983 UTM Zone 10N

Projection: Transverse Mercator

Datum: North American 1983



Slope (Degrees)

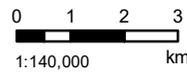
- 0 - 1
- 2 - 3
- 4 - 7
- 8 - 12
- 13 - 22
- 23 - 35
- 36 - 79

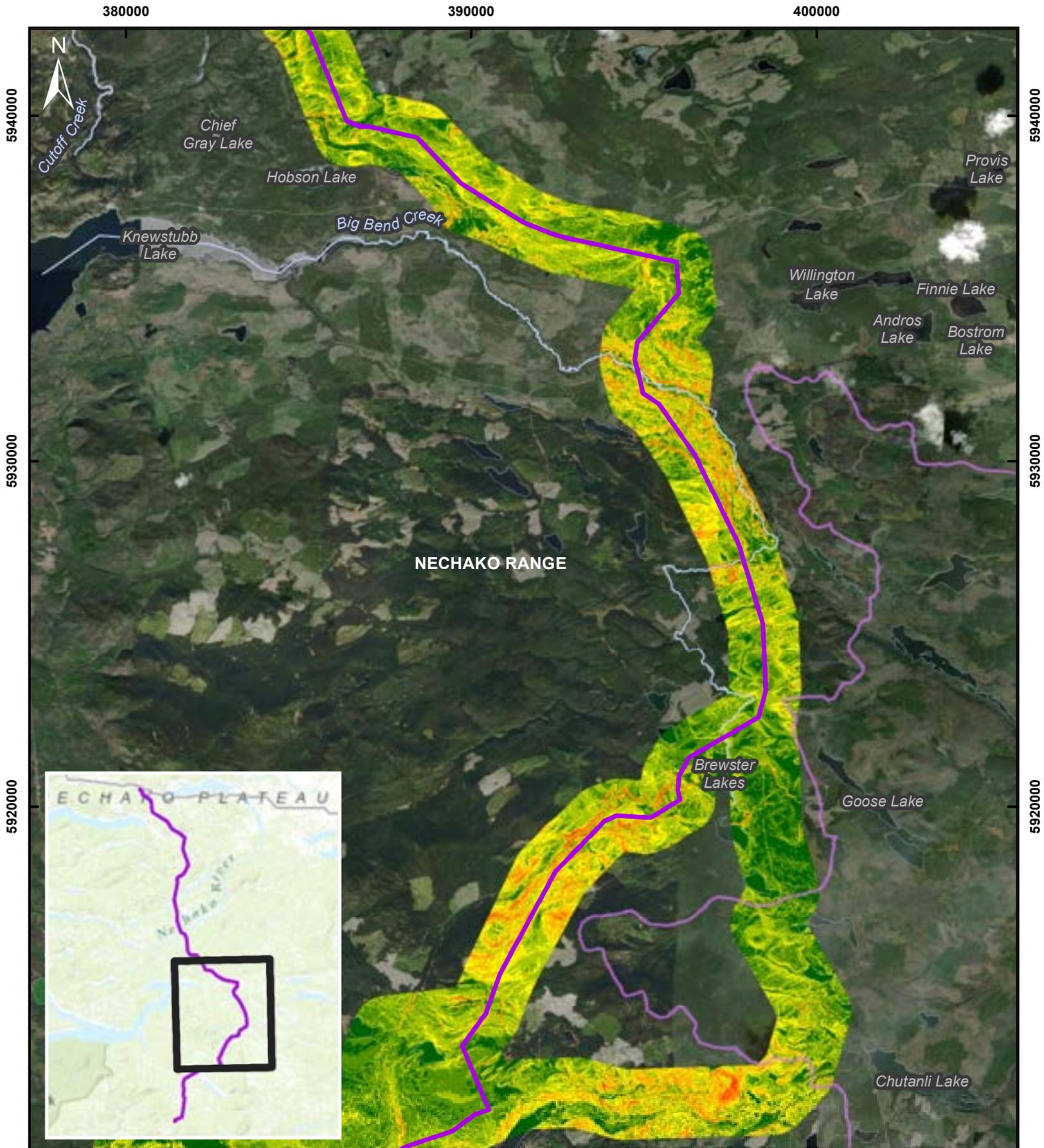
Transmission Line Corridor

Transmission Line Corridor

Class 1 Waterbodies

- Creek
- Rivers
- Lake



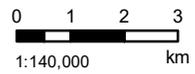
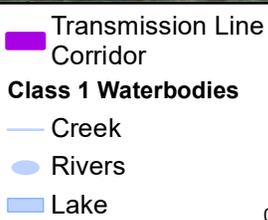
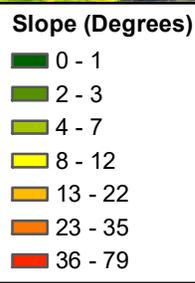


Blackwater

Figure 3.2-3
Transmission Line
Corridor: Slope Analysis

Date: 2022-11-10
Map Number: BLW-025c

Coordinate System: NAD 1983 UTM Zone 10N
Projection: Transverse Mercator
Datum: North American 1983



380000

390000

400000



NECHAKO RANGE

Big Bend Creek

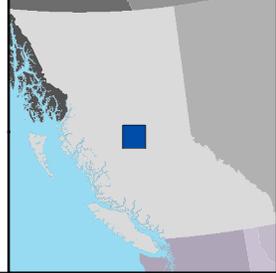
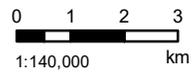
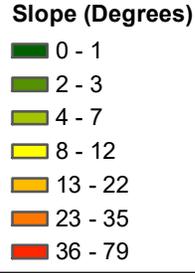
Tatelkuz Lake

Kuyakuz Lake



Blackwater
 Figure 3.2-4
 Transmission Line
 Corridor: Slope Analysis

Date: 2022-11-10
 Map Number: BLW-025d
 Coordinate System: NAD 1983 UTM Zone 10N
 Projection: Transverse Mercator
 Datum: North American 1983



5920000

5920000

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3.3.2 Potential Environmental Impacts

There are many groundwater wells and aquifers along the NRW¹. Water quality for 31.7%–43% of the streams sampled in the watershed have a moderate sediment impact rating, which requires management to improve water quality (Carson and Maloney 2021; Fraser Basin Council 2015). Metal concentrations in suspended sediments of the Nechako River and tributaries often exceed concentrations for the threshold and probable effect level for freshwater biota provincial guidelines (Owens et al. 2018). Pollutants and heavy metals are introduced and carried in sediment colloids (Sengor 2021; Stone et al. 2021). Sand and gravel deposits have been inferred as the major supply of groundwater to wells in the NRW, including some that have tested in exceedance of water quality guidelines for metals (Mayberry 2000).

Stream and wetland sediment introductions may occur during the development of the BGP-TLC. The types of primary earthwork construction activities that may cause sedimentation introductions include:

- ◆ Site preparation with vegetation clearing, grubbing, and disposal of related debris,
- ◆ Blasting, excavation, backfilling, and grading of common rock and other materials,
- ◆ Digging and boring at pole locations,
- ◆ Levelling of ground for stockpile areas, spur roads, crane pads, and stringing pads,
- ◆ Crossings at streams and wetlands,
- ◆ Ditch construction and associated flows, and
- ◆ Work during rainfall.

There are associated risks in the implementation process of ESC and mitigation, such as introduction of additional sediments, pollutants, or invasive species during construction, storage, and installation of ESC measures. Figure 3.2-1 to Figure 3.2-4 identify the high slope areas where risk of sediment introduction is likely higher than lower slope areas.

Areas that have been denuded of vegetation cover and stripped materials that are in temporary storage or being re-used are at risk of erosion by wind or water. Effects pathways run from eroded source sediments transported in the form of dust or suspended sediment into the environment. Sediment transported into waterways can harm aquatic species, degrade aquatic habitat (reduce occupancy and survivorship), and increase contaminant (e.g., heavy metals in sediment) exposures to both humans and ecosystems. Exposed soils and sub-soils also increase the risk of invasive and noxious species becoming established (CR Section 6.1.1 - “Avoiding and Minimizing Effects” in BWG Ltd. 2022a).

Areas with construction traffic may also result in the compaction, rutting, and generation of suspended sediments. Road puddles and ditches can become occupied by species of concern and are often filled with high-levels of sediment. Traffic splash from road puddles can also deposit sediment directly into surface

¹ <https://apps.nrs.gov.bc.ca/gwells/aquifers/92>, <https://apps.nrs.gov.bc.ca/gwells/aquifers/243/>

waters, including ditches that are designed to direct water flow into culverts, stream channels, or sediment ponds. Instability may also result from the added weight from construction equipment on sharper slopes, undercutting of unstable soils, or if soils become waterlogged during heavy rains.

3.4 FRAMEWORK FOR ENVIRONMENTAL COMPLIANCE

Provincial and federal laws, as well as conditions of permits, licenses and authorizations must be followed to remain in compliance. Laws may be subject to change and are to be reviewed by qualified professionals to remain current on all project conditional requirements. BW Gold commits to considering YDU-WL (Section 3.4.1) and adhering to federal and provincial statutes (Sections 3.4.2 and 3.4.3 respectively) when working in and around all waterbodies along the TL ROW. The ESC principles and practices outlined in Sections 3.5, 3.6 and 3.7 have been developed accordingly. Applicable permits, authorizations, approvals, and reporting must be current and maintained in accordance with the respective requirements. Work stoppages are possible (Section 3.10) if non-compliances are observed. Schedule B (EAO 2019a) identifies BGP compliance requirements whereas this TLSMP-FG document addresses condition 29 and makes linkages to associated conditions, such as the role of the Independent Environmental Monitor (IEM; Condition 12) and First Nations monitors (Condition 17). Under Condition 17, Indigenous Nations monitors are expected to monitor water quality as related to sediment, ESC, and Indigenous Nations interests.

Condition 29 requires consideration of the YDU-WL and any policy provided to BW Gold by other Indigenous Nations that is relevant to the waterbodies identified in paragraph a) of Condition 29.

3.4.1 Yinka Dene ‘Uza’hné Water Law

The Nadleh Whut’en and Stellat’en have developed the written guidelines to YDU-WL that are referenced in Condition 29. The YDU-WL (Nadleh Whut’en and Stellat’en 2016ab) sets the required baseline for water management on this project: “Surface waters within our Territories should remain substantially unaltered in terms of water quality and flow” (p. 2). Section 3.5.3 of this document provides guidance on water quality thresholds and steps of response. BW Gold understands that all three CSFNs expect the YDU-WL to be applied within their territories in a manner consistent with the requirements of Condition 29.

The YDU-WL was developed to be “generally consistent with existing federal and provincial water management approaches” (p. 5). The TLSMP-FG builds on the alignment between federal, provincial, and CSFN water management approaches on what needs to be established for each site-specific ESC plan that will be an extension of the Holder’s Construction Environmental Management Plan (CEMP).

Site-specific ESC guidance is adapted according to different classes of water body under the YDU-WL, including a wide range of lotic systems (wetlands and lakes) and lentic systems (streams and rivers). The TLSMP-FG identifies the standards and protocols that must be followed to meet the common standards for ESC planning and implementation across the federal and provincial regulating agencies and to meet the requirements of Condition 29 in relation to the YDU-WL.

The YDU-WL identifies three classes of surface waterbodies. The waterbodies identified in Appendix 1, Schedule B (Table of Conditions; Environmental Assessment Certificate #M19-01 2019, Certified Project Description Mapbook Appendix A2) are identified in Figure 3.2-1 to Figure 3.2-4. The significance of the waterbodies run in decreasing order from:

- Class I – Waters of High Cultural or Ecological Significance:
 - Stellako River,
 - Robertson Creek,
 - Smith Creek,
 - Fifteen Creek,
 - Targe Creek,
 - Nechako River,
 - Cut-off Creek,
 - Big Bend Creek,
- Class II – Sensitive Waters:
 - Chedakuz Creek,
- Class III – Typical Waters:
 - Davidson Creek.

There are additional unnamed surface waters that intersect the BGP-TLC. These have not yet classified (or the classifications have not been provided to BW Gold Ltd.) and may fall within Class II or Class III. Condition 29 sets out requirements related to the Class I waterbodies identified in Appendix 1, Schedule B (Table of Conditions; Environmental Assessment Certificate #M19-01 2019, Certified Project Description Mapbook Appendix A2). ESC expectations for the Class I-III waterbodies are specified in Section 3.5.

3.4.2 Federal

Federal legislation with statutes applicable to ESC activities and requirements includes the following:

- ◆ *Fisheries Act*
 - Manages and protects Canadian fish and fish habitat.
 - Applies to all public or private Canadian fisheries waters and is applicable to both permanently wetted areas and intermittently wetted habitat features.
 - Legislated fish and fish habitat protection from common construction site pollutants (officially called ‘deleterious substances’) such as concrete wash water, hazardous fluids, and soil sediment.

- Subsection 37(6) *Duty to Take Corrective Actions*, states “any person shall, as soon as feasible, take all reasonable measures consistent with public safety and with the conservation and protection of fish and fish habitat to prevent the occurrence or to counteract, mitigate or remedy any adverse effects that result from the occurrence or might reasonably be expected to result from it.”
- Department of Fisheries and Oceans maintains Standards and Codes of Practice².
- ◆ *Species at Risk Act (SARA)*
 - The goal of the Act is to protect endangered or threatened organisms and their habitats.
 - Defines a method to determine the steps that need to be taken to help protect existing relatively healthy environments as well as recover threatened habitats.
 - Applies on federal lands, including national parks, and other protected heritage areas administered by Parks Canada, species protected under the *Migratory Birds Convention Act*, or aquatic species as defined in the *Fisheries Act*, SARA applies automatically on provincial and territorial lands and waters as well.
 - Tied into the BC *Wildlife Act* for wildlife that is are listed as threatened or endangered species.
- ◆ *Canadian Environmental Protection Act (CEPA)*
 - An Act respecting pollution prevention and the protection of the environment and human health in order to contribute to sustainable development.
 - The goal is to contribute to sustainable development through pollution prevention and to protect the environment, human life and health from the risks associated with toxic substances.
 - Recognizes the contribution of pollution prevention and the management and control of toxic substances and hazardous waste to reducing threats to Canada's ecosystems and biological diversity.
 - Schedule 6, Subsection 8 notes that characterization of waste or “...other matter and their constituents shall take into account [...] (e) accumulation and biotransformation in biological materials or sediments”.
- ◆ *Migratory Birds Convention Act (MBCA)*
 - Protects and conserves migratory birds (as individuals and populations), their eggs, and their nests in Canada through the implementation of the Migratory Birds Regulations and the Migratory Bird Sanctuary Regulations.
 - Removal of migratory birds, their eggs or nests from a site is only permissible if the migratory birds are causing or may cause damage to property and equipment (subject to permitting).

² <https://www.dfo-mpo.gc.ca/pnw-ppe/practice-practique-eng.html>

- Deposit of harmful substances to birds in areas or waters frequently visited by migratory birds is prohibited.

3.4.3 Provincial

- ◆ *Water Sustainability Act (WSA)*
 - To ensure a sustainable supply of fresh, clean water that meets the needs of B.C. residents today and in the future.
 - A requirement to consider environmental flow needs in decisions and expanded prohibitions on dumping debris into streams and aquifers.
 - Grants permission to conduct instream construction works “in and around water.”
 - Sediment falls under definition of debris “clay, silt, rock or similar material” and is prohibited from being introduced into a stream, including wetlands.
- ◆ *Environmental Management Act (EMA)*
 - Sediment introductions into water fall under definitions of effluent waste.
 - Under Part 9.1, Compliance, Division 1, General Powers – a Conservation Officer is authorized to inspect.
 - Ministry of Environment provides technical guidance “to help mining companies develop sound practices for erosion and sediment control so that when they are implemented, they will contribute to compliance with the *Environmental Management Act (EMA)*” (Ministry of Environment 2016; see also Ministry of Environment 2015).
- ◆ *Forest and Range Practices Act (FRPA)*
 - Applies to forest tenures and associated licensing.
 - Within an existing forest road right-of-way on Crown land a Works Permit is required that will include terms and conditions for planning, design, and construction.
 - Requirements for sedimentation (Ministry of Forests, Lands, and Natural Resource Operations 2013).
- ◆ *Mines Act (MA)*
 - Provisions for environmental protection and reclamation.
 - ESC management requirements listed in Health, Safety and Reclamation Code for Mines in British Columbia (Ministry of Energy and Mines and Low Carbon Innovation 2022).
- ◆ *Wildlife Act*
 - Defines wildlife as all native (and some non-native) amphibians, birds, mammals, and reptiles that live in BC.

- Provides the protection, conservation, and management of wildlife populations and wildlife habitats within BC. Under Section 34 of the *Act*, it is an offence to possess, take, injure, or molest or destroy a bird, its egg(s), or a nest that is occupied by a bird or its egg(s). The nests of select species are protected year-round.
- Under Section 27 of the *Act*, it is an offence to harm, harass, or kill wildlife from a motor vehicle and under Section 29, unless authorized. A person commits an offence by attempting to capture wildlife, which includes species such as frogs, toads, and snakes.
- Wildlife species can be legally designated as endangered, threatened, or of special concern under the *Act*, which enables the establishment of Critical Wildlife Habitats in Wildlife Management Areas, or penalties for killing or harming wildlife.
- ◆ Declaration on the Rights of Indigenous Peoples Act (Declaration Act - *DA*)
 - Passed into law in November 2019

3.5 ESC PRESCRIPTION AND COMPLIANCE REQUIREMENTS

3.5.1 Prescriptions and Timing

The BGP-TLC is located within the Omineca Natural Resource Region. Work in and about a stream should occur outside of the critical fishery sensitive windows unless a timing variance is authorized. Terms and conditions are provided by Ministry of Forests or Land, Water, and Resource Stewardship Habitat Officers in the Omineca Region. The legislative framework under which the work is authorized will govern how timing windows apply and the involvement of Habitat Officers for authorized changes as defined in section 39 of the WSA regulations.

Site-specific prescriptions have been developed for each crossing of a Class I-III waterbody (Table 3.5-1). All proposed crossings are aerial crossings with no in-stream infrastructure proposed; therefore, ESC management will occur primarily during clearing and right-of-way preparation. All work will be completed in frozen or dry conditions or with at least 60 cm of snow on the ground, thereby greatly reducing the potential for ESC issues. No clearing will be conducted within riparian areas during high rain events (i.e., >44 mm of rain within a 24-hr period).

Additional waterbodies may be defined by Aboriginal Groups or otherwise identified during construction and maintenance that will also require development and submission of site-specific prescriptions for review prior to implementation. ESC prescriptions must be prepared by a Qualified Professional (QP) who is a Certified Professional in Erosion and Sediment Control (CPESC), and implementation must be completed under direction of a QP-CPESC. The QP-CPESC shall be familiar with the regulatory framework and compliance requirements (Section 3.4), including best management practices and procedures for monitoring, reporting, and directing ESC measures as identified under the scope of guidelines contained within this TLSMP-FG document. Monitoring is required for all work within the riparian area (i.e., 30-m on either side of the high-water mark) of waterbodies and watercourses during TLC construction and maintenance.

Table 3.5-1 Crossing details for Class I-III waters.

Crossing ID	YDWL Class	Chainage	Map Location in Appendix B	Crossing type	Fish bearing	Risk Factors and Considerations	Planned Measures	Monitoring Requirements
WC-8	Stellako River (I)	005+185	Page E-4	Aerial crossing	Y	RMZ (20 m); RRZ (50 m); MFZ (5 m)	Prescription WC-8 in Appendix C	<ul style="list-style-type: none"> • Turbidity: <ul style="list-style-type: none"> ○ Pre-clearing (24-hr sampling at upstream, crossing, and downstream locations) ○ Clearing (duration of clearing activities) ○ Post-clearing (24-hr sampling or until turbidity below threshold) Stringing (duration of clearing activities) ○ Post-construction (four visits in year 1) • ESC: <ul style="list-style-type: none"> ○ Daily inspections during clearing and stringing ○ Additional monitoring during high rainfall events
WC-28	Robertson Creek (I)	013+190	Page E-10	Aerial crossing	Y	RMZ (30 m)	Prescription WC-28 in Appendix C	<ul style="list-style-type: none"> • Turbidity: <ul style="list-style-type: none"> ○ Pre-clearing (24-hr sampling at upstream, crossing, and downstream locations) ○ Clearing (duration of clearing activities) ○ Post-clearing (24-hr sampling or until turbidity below threshold) Stringing (duration of clearing activities) ○ Post-construction (four visits in year 1) • ESC: <ul style="list-style-type: none"> ○ Daily inspections during clearing and stringing ○ Additional monitoring during high rainfall events
WC-52	Smith Creek (I)	027+157	Page E-19	Aerial crossing	Y	RMZ (20 m); RRZ (20 m); MFZ (5 m)	Prescription WC-52 in Appendix C	<ul style="list-style-type: none"> • Turbidity: <ul style="list-style-type: none"> ○ Pre-clearing (24-hr sampling at upstream, crossing, and downstream locations) ○ Clearing (duration of clearing activities) ○ Post-clearing (24-hr sampling or until turbidity below threshold) Stringing (duration of clearing activities) ○ Post-construction (four visits in year 1) • ESC: <ul style="list-style-type: none"> ○ Daily inspections during clearing and stringing ○ Additional monitoring during high rainfall events

Crossing ID	YDWL Class	Chainage	Map Location in Appendix B	Crossing type	Fish bearing	Risk Factors and Considerations	Planned Measures	Monitoring Requirements
WC-55	Fifteen Creek (I)	029+456	Page E-21	Aerial crossing	Y	RMZ (30 m)	Prescription WC-55 in Appendix C	<ul style="list-style-type: none"> • Turbidity: <ul style="list-style-type: none"> ○ Pre-clearing (24-hr sampling at upstream, crossing, and downstream locations) ○ Clearing (duration of clearing activities) ○ Post-clearing and line stringing (24-hr sampling or until turbidity below threshold) ○ Post-construction (four visits in year 1) • ESC: <ul style="list-style-type: none"> ○ Daily inspections during clearing and stringing ○ Additional monitoring during high rainfall events
WC-75	Targe Creek (I)	041+997	Page E-29	Aerial crossing	Y	RMZ (20 m); RRZ (20 m); MFZ (5 m)	Prescription WC-75 in Appendix C	<ul style="list-style-type: none"> • Turbidity: <ul style="list-style-type: none"> ○ Pre-clearing (24-hr sampling at upstream, crossing, and downstream locations) ○ Clearing (duration of clearing activities) ○ Post-clearing and line stringing (24-hr sampling or until turbidity below threshold) ○ Post-construction (four visits in year 1) • ESC: <ul style="list-style-type: none"> ○ Daily inspections during clearing and stringing ○ Additional monitoring during high rainfall events
WC-96	Nechako River (I)	051+801	Page E-36	Aerial crossing	Y	RMZ (100 m)	Prescription WC-96 in Appendix C	<ul style="list-style-type: none"> • Turbidity: <ul style="list-style-type: none"> ○ Pre-clearing (24-hr sampling at upstream, crossing, and downstream locations) ○ Clearing (duration of clearing activities) ○ Post-clearing and line stringing (24-hr sampling or until turbidity below threshold) ○ Post-construction (four visits in year 1) • ESC: <ul style="list-style-type: none"> ○ Daily inspections during clearing and stringing ○ Additional monitoring during high rainfall events

Crossing ID	YDWL Class	Chainage	Map Location in Appendix B	Crossing type	Fish bearing	Risk Factors and Considerations	Planned Measures	Monitoring Requirements
WC-100	Cut-off Creek (I)	058+521	Page E-40	Aerial crossing	Y	RMZ (20 m); RRZ (30 m); MFZ (5 m)	Prescription WC-100 in Appendix C	<ul style="list-style-type: none"> • Turbidity: <ul style="list-style-type: none"> ○ Pre-clearing (24-hr sampling at upstream, crossing, and downstream locations) ○ Clearing (duration of clearing activities) ○ Post-clearing and line stringing (24-hr sampling or until turbidity below threshold) ○ Post-construction (four visits in year 1) • ESC: <ul style="list-style-type: none"> ○ Daily inspections during clearing and stringing ○ Additional monitoring during high rainfall events
WC-130	Big Bend Creek (I)	080+714	Page E-57	Aerial crossing	Y	RMZ (20 m); RRZ (30 m); MFZ (5 m)	Prescription WC-130 in Appendix C	<ul style="list-style-type: none"> • Turbidity: <ul style="list-style-type: none"> ○ Pre-clearing (24-hr sampling at upstream, crossing, and downstream locations) ○ Clearing (duration of clearing activities) ○ Post-clearing and line stringing (24-hr sampling or until turbidity below threshold) ○ Post-construction (four visits in year 1) • ESC: <ul style="list-style-type: none"> ○ Daily inspections during clearing and stringing ○ Additional monitoring during high rainfall events
WC-136	Big Bend Creek (I)	087+012	Page E-62	Aerial crossing	Y	RMZ (20 m); RRZ (30 m); MFZ (5 m)	Prescription WC-136 in Appendix C	<ul style="list-style-type: none"> • Turbidity: <ul style="list-style-type: none"> ○ Pre-clearing (24-hr sampling at upstream, crossing, and downstream locations) ○ Clearing (duration of clearing activities) ○ Post-clearing and line stringing (24-hr sampling or until turbidity below threshold) ○ Post-construction (four visits in year 1) • ESC: <ul style="list-style-type: none"> ○ Daily inspections during clearing and stringing ○ Additional monitoring during high rainfall events

Crossing ID	YDWL Class	Chainage	Map Location in Appendix B	Crossing type	Fish bearing	Risk Factors and Considerations	Planned Measures	Monitoring Requirements
WC-146	Big Bend Creek (I)	092+917	Page E-66	Aerial crossing	Y	RMZ (20 m); RRZ (20 m); MFZ (5 m)	Prescription WC-146 in Appendix X	<ul style="list-style-type: none"> • Turbidity: <ul style="list-style-type: none"> ○ Pre-clearing (24-hr sampling at upstream, crossing, and downstream locations) ○ Clearing (duration of clearing activities) ○ Post-clearing and line stringing (24-hr sampling or until turbidity below threshold) ○ Post-construction (four visits in year 1) • ESC: <ul style="list-style-type: none"> ○ Daily inspections during clearing and stringing Additional monitoring during high rainfall events
WC-170	Chedakuz Creek (II)	114+545	Page E-82	Aerial crossing	Y	RMZ (20 m); RRZ (30 m); MFZ (5 m)	Prescription WC-170 in Appendix C	<ul style="list-style-type: none"> • Per the overall Project CEMP
WC-182	Davidson Creek (III)	127+029	Page E-91	Aerial crossing	Y	RMZ (20 m); RRZ (30 m); MFZ (5 m)	Prescription WC-182 in Appendix C	<ul style="list-style-type: none"> • Per the overall Project CEMP

* RMZ = Riparian Management Zone; RRZ = Riparian Reserve Zone; MFZ = Machine-free Zone. Distances in parentheses from both sides of stream bank

3.5.2 Monitoring

3.5.2.1 General Principles

The Canadian Council for Ministers of the Environment (2011) protocols for water sampling must be followed and the applicable provincial Resource Information and Standards Committee (RISC) standards (Cavanagh et al. 1998; Rex and Carmichael 2002). All methods are to include quality control review on data collection in field and analysis in office. All data collected must be logged according to the methods and standards for reporting submission requirements and made available upon request during inspection as may be required.

The requirements outlined in this section are designed to emphasize the importance of establishing a site-specific monitoring plan for Class I-III waterbodies in advance of implementation to ensure that all steps are followed with the goal of maximizing detection of sediment influx caused by the Project (Table 3.5-1). A site plan must be developed as part of a monitoring plan for each Class I-III water body that exists within the ROW.

3.5.2.2 Turbidity Monitoring

Monitoring plans must include sampling locations and schedules (CR Section 7.0 - “Monitoring” in BWG Ltd. 2022a), lists of tools (e.g., hand-held turbidity readers, data loggers), protocols (including equipment calibration protocols), and methods that will be used to meet compliance with provincial standards for aquatic ecosystems and this plan. Procedures for quality control and assurance of sample collection shall be incorporated into the methods describing deployment of sampling devices in a manner that does not disturb the sediment (proceeding upstream), including sampling depth requirements and potential selection of control sampling locations. Sampling schedules must be designed to increase by the level of work activity (e.g., multiple times daily to calculate averages during active work).

The selected *in situ* turbidity monitoring system should be capable of sampling at frequent intervals (i.e., at least one measurement per minute). The instruments should be configured to permit real-time data acquisition and the allowance for the calculation of running hourly averages. monitoring of *in situ* turbidity at sites both upstream and downstream of activity area.

Prior to initiating construction or major maintenance activities within the riparian area, existing conditions at the selected upgradient and downgradient monitoring locations should be assessment to determine if measured turbidity measurements are sufficiently uniform (i.e., within 20% based on relative percent difference) to allow effective monitoring of potential effects. The monitoring location up gradient of the activity area should be sufficiently upstream as to not be influenced by construction activities. The downstream monitoring location should be downstream of the point of complete mixing of the activity area (based on visual estimate or no less than 20 stream widths). If the existing turbidity readings are higher at the downstream station than at the upstream station (and the difference is greater than 20% based on relative percent difference), the downstream station may be relocated to a point further

upstream to allow for consistency between both upstream and downstream stations. If a suitable downstream station cannot be identified, the baseline turbidity dataset for the downstream station may be used as the basis for comparison to downstream station turbidity for the duration of the activity or until the upstream station turbidity increases above the downstream station baseline value.

Monthly follow-up monitoring, including visual inspections, of the BGP-TLC is to be conducted for a period of one year following any construction or major maintenance activity on a rotating basis (i.e., a subset of sites will be inspected and monitored each month) with a minimum of four visits at each site, unless otherwise directed by the CEPSC. The precise monitoring schedule of the four visits will be defined by the CPESC based on site-specific conditions. After the first year, monitoring frequency may be reduced if turbidity readings are trending in the appropriate direction (i.e., decreasing towards the appropriate threshold (Section 3.5.2) and may be stopped if readings are consistently below threshold levels. The CPESC will also be empowered with the ability to decide when monitoring activities can cease for a given location.

3.5.2.3 *Erosion and Sedimentation Control Monitoring*

Monitoring shall include routine checks to ensure that erosion controls and soil management mitigation measures are properly installed and stable. All ESC installations will be inspected at a minimum frequency of every two weeks during active construction (prior, during, and after rain events), and within 24 hours of all rain events were more than 12 mm precipitation falls within any 24-hour period, and more frequently during extended precipitation that can saturate soils, such as snowmelt on wet or thawing soils (CR Section 6.1.1 - “Timing of Works” in BWG Ltd. 2022a). Full-time monitoring is required during construction of in-stream works. During regular operations the EM must complete the following daily activities:

- ◆ ESC Inspections and oversight, including visual bank inspections;
- ◆ Complete ESC Inspection Forms (e.g., Appendix A);
- ◆ Include environmental and ESC content at tailboard meetings; and
- ◆ Notification to the Environmental Manager of any non-compliances with this plan or the TL SEPSCP (BWG Ltd. 2022a).

3.5.3 **Thresholds and Response Actions**

Thresholds for increases in turbidity resulting from Project activities were based, in part, on the YDU-WL expectations for Class I waterbodies:

- ◆ during clear flow periods (i.e., turbidity of upstream waters is less than 8 Nephelometric Turbidity Units [NTU]): average of 20% above upstream for at least 24 hours; and
- ◆ during high flow or turbid periods: average of 20% above upstream at any time.

Table 44 of the BC Water Quality Guidelines (British Columbia Ministry of Environment and Climate Change Strategy; BC MOE-CCS 2021) lists additional numerical guidelines that are to be followed with respect to sediment (Total Suspended Solids), and benthic sediments (e.g., sediments in stream bottom gravels) relative to aquatic life. If any threshold is exceeded as a result of project activities, then a work stoppage is possible (Section 3.10) and ESC mitigation and/or remediation measures must be implemented (Section 3.7.4) to return to baseline conditions. Further, reporting shall include an investigation report on the cause and evaluation of the corrective action and measures to allow for adaptive improvement of the ESC program (CR Section 9.0 - “Evaluation and Adaptive Management” in BWG Ltd. 2022a).

3.6 GUIDELINES ON ESC MITIGATION AND REMEDIATION MEASURES

There are many resources available on ESC mitigation and remediation measures. Extra care may include adoption of new approaches to ESC management, including latest developments in ESC engineering. Adoption or reference to methods published to be effective (e.g., Liu et al. 2021; Perez et al. 2015; Spiekermann et al. 2022) may also be used to keep practices current. LiDAR data collected for this project (BGP 2021) or other forms of remote sensed data, including unmanned aerial vehicles or radar technology (Cummings et al. 2017; Hupy and Wilson 2021; Roering et al. 2009) may also be used to monitor, study, and plan for ESC.

Methods and guidelines used in each specific ESC plan are to be referenced accordingly. A non-exhaustive list of applicable (industry standard) best management practices (BMP) reference material that is recommended for review, training, planning, and installation of mitigation and remediation measures is provided in the following list:

- ◆ BC Ministry of Transportation and Infrastructure (2020) Standard Specifications including reference environmental management documents³, training videos, policies, and guidelines.
- ◆ BC MFLNRORD Engineering Manual, 5.11 Soil Erosion and Sediment Control⁴
- ◆ Cavanagh et al. (1998)
- ◆ Coulter and Halladay (1997)
- ◆ Developing a Mining Erosion and Sediment Control Plan (BC MOE 2015);
- ◆ Government of Canada, Department of Fisheries and Oceans:
 - Standards and Codes of Practice
 - Measures to Protect Fish and Fish Habitat

³<https://www2.gov.bc.ca/gov/content/transportation/transportation-infrastructure/engineering-standards-guidelines/environmental-management/reference-documents#specifications>

⁴<https://www2.gov.bc.ca/gov/content/industry/natural-resource-use/resource-roads/engineering-publications-permits/engineering-manual/road-construction/soil-erosion-sediment-control>

- ◆ Health, Safety, and Reclamation Code for Mines in British Columbia (BC Ministry of Energy and Mines and Low Carbon Innovation 2022);
- ◆ BC Field Sampling Manual (BC MOE 2013);
- ◆ A User’s Guide for Changes In and About a Stream in British Columbia. Version 2022.01. Government of British Columbia (BC FLNRORD 2022).
- ◆ DFO Land Development Guidelines for the Protection of Aquatic Habitat (Chilibeck et al. 1993);
- ◆ Manual of Control of Erosion and Shallow Slope Movement (Coulter et al. 1997);
- ◆ Erosion and Sediment Control Practices for Forest Roads and Stream Crossings a Practical Operations Guide (Gillies 2007);
- ◆ Soil Bioengineering for Riparian Restoration (Polster 2006); and
- ◆ Engineering Manual (BC FLNRORD 2019)

3.7 BEST MANAGEMENT PRACTICES

3.7.1 Engineering with Nature

A pro-active planning approach is encouraged to meet the intent of extra care in recognition of the concerns raised by local First Nations in the YDU-WL (Nadleh Whut’en and Stellat’en 2016ab). Keeping mitigation measures natural (otherwise referred to as “engineering with nature”; Bridges et al. 2016; Somarakis et al. 2019) can be an effective approach as there is a recognized alignment between engineering with nature and First Nations values (Townsend et al. 2020), such as those contained within the YDU-WL.

Under the “engineering with nature” principles, use of local natural materials for construction of mitigation structures [e.g., use of locally harvested mulch or compost material; see Bakr et al. 2015] is preferred over importing natural or synthetic materials from other areas. This includes the preservation of native trees and vegetation where possible and the sourcing of native seed mixtures for application onto exposed soils for stabilization (CR Section 6.1.1 - “Avoiding and Minimizing Effects” in BWG Ltd. 2022a). This will avoid the introduction of foreign species or different genetic strains that displaces or modifies local genetic diversity. This approach also recognizes the value of protecting ecosystems through water quality guidelines for the significant ecological engineering that organisms are involved in, such as regulating sedimentation dynamics; for example, the Western Toad is classified as an ecosystem engineer in the sedimentation process of aquatic sites they inhabit (Wood and Richardson 2010) or the roles of beavers in nutrient and sedimentation dynamics (Puttock et al. 2018).

Use of local materials decreases the likelihood of foreign substance introduction. For example, synthetic geotextiles are often used in engineered solutions for soil stabilization or in various products sold on the market for berms or check-dams. However, these products can degrade from wind, water, friction, and UV radiation to become dysfunctional refuse on the land and in the long-term they release micro plastics into the receiving environment. The introduction of microplastics into the environment can cause a range

of adverse long-term ecological effects (O’Kelly et al. 2021; Wu et al. 2020; Wiewel and Lamoree 2016). Wu et al. (2020) provide a review into green ESC blanket fabric alternatives, or, with effective pre-planning, locally sourced materials can be prioritized in use and application.

3.7.2 Planning

Planning is a critical BMP. All Project activities and areas will consider what ESC requirements are needed. ESC planning BMP can be applied to roads, slopes, soil management, ditches, culverts, sumps, and settling ponds. Planning is a proactive, cost-effective BMP that can decrease the likelihood of environmental issues, ensure practices are relevant and timely, and offer stability to construction costs and schedules.

Planning is a presumptive process; actual ESC mitigation measures employed are largely determined by site conditions that are only truly revealed once a Project is underway. Any aspect of ESC Planning will be communicated to the Project team prior to construction.

Typical planning mitigation measures and techniques include the following:

1. ESC Contingency Planning: Source and/or stockpile any anticipated required materials prior to construction to avoid unnecessary delays. This should include waste rock (for ditch and slope armouring), culverts, geotextiles, mulch, straw, rolled erosion control products (coco-matting), and grass seed. Stockpiles shall be managed within laydown areas (CR Section 6.1.1 - “General Approach” and Section 6.5 “Emergency Preparedness” in BWG Ltd. 2022a).
2. Comply with local Project rainfall shutdown guidelines at all times (CR Section 7.0 - “Monitoring” in BWG Ltd. 2022a). Work will stop once 44 mm of rain is recorded within a 24-hour period in riparian areas or while working on watercourse crossings. A work-stoppage threshold of 73 mm of rain within a 24-hour period will be used for work in other areas.
3. Construct any final drainage structures as early in the construction process as practicable in favourable weather (CR Section 6.1.1 - “Timing of Works” and 6.4.1 - “Drainage Control” in BWG Ltd. 2022a).
4. Construct stable cut-and-fill slopes as per any engineered road design, Forest Road Engineering Guidebook (MOF 2002), or from existing site relevant material.
5. Subdivide any roads into manageable working lengths based on gradient, topographical features, geomorphic process, terrain type, watercourse crossing, soil type, culvert location, etc.
6. Locate spoil or staging locations strategically along road alignments for temporary and permanent storage of cleared vegetation, organic or mineral soils, rock, or equipment.
7. Ensure that material that is temporarily stored (for re-use in road building or reclamation purposes) is placed in a suitable location to avoid double-handling; topsoil nutrients are depleted over time as sediments become suspended and transported in rainfall (CR Section 6.4 – “Reclamation” in BWG Ltd. 2022a).

8. Ensure that the environmental monitor is aware of the work schedule and has been notified well in advance of any future sensitive works planned.
9. Conduct a pre-work site meeting to allow discussion on key objectives; relevant water quality guidelines for the location (see Section 3.4); monitoring and inspection schedules; identification of environmentally sensitive areas; reporting issues; expected timeframe for maintaining and repairing ESC measures, and lines of communication.
10. All rock used during construction will be confirmed to be non-ML/ARD producing material, per Section 8.5 of the Project's ML/ARD Management Plan (BWG Ltd. 2022b).

3.7.3 Scheduling

The Holder must provide the draft TLSMP-FG to the EAO, ENV, FLNRORD, and Aboriginal Groups a minimum of 90 days prior to the planned commencement of transmission line construction. Schedules must be incorporated into the planning process (Section 3.7.2). Principles for scheduling of ESC measures shall include:

- ◆ Schedule and/or plan the works to minimize the risk of erosion (e.g., avoid working in heavy rain);
- ◆ Minimize level of disturbance caused by works (e.g., only clear vegetation in parcels based on immediate works; CR *Section 6.1.1 - "Avoiding and Minimizing Effects"* in BWG Ltd. 2022a);
- ◆ Develop and establish schedules and criteria for:
 - Training,
 - Water quality sampling and testing,
 - Inspections and maintenance of ESC structures,
 - Closure (e.g., seeding, reduce, or cease turbidity monitoring), and
 - Reporting.

3.7.4 Surface Water Management

Water management plans must be developed to manage sites during heavy rainfall causing large amounts of water to pool in and around the site. Controlling sediment run-off and soil erosion during heavy rainfall may be mitigated by drainage ditches, water bars, silt fences, and other control measures covered in the list of references provided (Section 6) or elsewhere as applicable (CR *Section 6.1.1 - "Avoiding and Minimizing Effects"* in BWG Ltd. 2022a). General and site-specific ESC planning documents must include surface water management and mitigation guidelines (CR *Section 6.2 – "Surface Water Infrastructure to Minimize Erosion and Control Sediment"* in BWG Ltd. 2022a), including measures for:

- ◆ Roads and Slopes;
- ◆ Soils Management;
- ◆ Wood Waste Management;

- ◆ Ditches, Culverts, and Sumps; and
- ◆ Material Source and Traffic Flow Management (e.g., vehicle inspections for dirt and clean requirements upon arrival; CR Section 6.1.1 - “Sediment and Erosion Control Measures” in BWG Ltd. 2022a).

3.8 ROLES AND RESPONSIBILITIES

BW Gold has the obligation of ensuring that all commitments are met and that all relevant obligations are made known to mine personnel and site contractors during all phases of the mine life. A clear understanding of the roles, responsibilities, and level of authority that employees and contractors have when working at the mine site is essential to meet Environmental Management System (EMS) objectives.

BW Gold will employ a qualified person as Environmental Monitor (EM) who will ensure that throughout the Construction phase (including the construction of the transmission line), the EMS requirements are established, implemented, and maintained, and that environmental performance is reported to management for review and action. The EM is responsible for retaining the services of qualified persons or qualified professionals with specific scientific or engineering expertise to provide direction and management advice in their areas of specialization. The EM will be supported by a staff of Environmental Monitors that will include Environmental Specialists and Technicians and a consulting team of subject matter experts in the fields of environmental science and engineering. In accordance with EAC Condition 29 a), the development and implementation of sediment and erosion control prescriptions for all transmission line construction and maintenance works must be prepared by a QP-CPESC.

Environmental management during operation of the Project will be integrated under the direction of the EM, who will liaise closely with Departmental Managers and will report directly to the Mine Manager. The EM will be supported by the VP of Environment and Social Responsibility to provide an effective and integrated approach to environmental management and ensure adherence to corporate environmental standards. The EM will be accountable for implementing the approved management plans and reviewing them periodically for effectiveness. Departmental Managers (e.g., mining, milling, and plant/site services) will be directly responsible for implementation of the EMS and associated plans and standard operating procedures—relevant to their areas. It is expected that during operations of the project that the operations, inspection, and maintenance/repair of the TL will fall under the Mine Site Services Department, with some of the services being assigned to qualified consultants and contractors. All employees and contractors are responsible for daily implementation of the practices and policies contained in the EMS.

Pursuant to Condition 29, the Transmission Line Engineering, Procurement and Construction (EPC) contractor roles and responsibilities relating to environmental management and protection have been defined (Table 3.8-1).

Table 3.8-1. Transmission Line Construction Contractor Roles and Responsibilities.

Role	Responsibility
Contractor Construction Manager (CCM)	<p>The Contractor Construction Manager (CCM) has ultimate responsibility for construction proceedings, including worker and public health and safety and environmental protection. The CCM will ensure the implementation of training programs as well as support the Blackwater Gold Environmental Policy. The CCM will ensure that adequate support and resources are made available for the implementation and maintenance of the Environmental Management System (EMS), including the management plan implementation and review. The CCM may, as needed, delegate their duties to QPs. Reports to the BW Gold Construction Manager</p>
Contractor Construction Superintendents	<p>The Contractor Construction Superintendents have an administrative responsibility and requirement to act upon the directions, guidance, and support of the Construction Manager. They are resources to the CCM, and have the following responsibilities:</p> <ul style="list-style-type: none"> • Support the implementation of the Blackwater Gold Environmental Policy; • Ensure that environmental matters are given consideration in pre-planning of construction activities, budgets, training, and operations; and • Ensure that workers under their supervision are made aware of known, or reasonably foreseeable, environmental aspects where they work.
Construction Employees, Contractors, and Sub-Contractors	<p>Employees have general responsibilities for environmental protection, which include:</p> <ul style="list-style-type: none"> • Supporting the Blackwater Gold Environmental Policy; • Supporting implementation of EMPs; • Cooperating with the Blackwater Environment Committee representative(s); • Learning and following environmental best practices and procedures relevant to their work; • Following instructions and directives given by supervisors; • Operating equipment in an environmentally responsible manner to avoid environmental impacts; • If training another worker, ensuring that they are properly completing all required tasks and responsibilities in accordance with environmental best practices procedures; • Reporting all environmental incidents immediately to their supervisor, who will expedite a response to address the incident; • Participating in mitigating or minimizing harm to the environment should an environmental incident occur; and • Asking for help or information when unsure how to perform a task without compromising social, cultural, archaeological, or environmental values.

The Holder’s QP-CPESC for ESC is responsible for preparing site-specific erosion and sediment control prescriptions for all transmission line construction and maintenance works that have the potential to impact YDWL Class I Waterbodies. The implementation of these prescriptions will be under the direction of a CPESC.

3.9 REPORTING REQUIREMENTS

All monitoring data and mitigation implementation pursuant to this plan must be documented, retained, and provided to the EAO Compliance and Enforcement and Aboriginal Groups upon request. Any exceedance in water quality guidelines or established thresholds are to be reported immediately to the Environmental Manager and to the QP-CPESC and as soon as practical (no more than 48-hrs), and to the IEM in accordance with the applicable terms of engagement. The IEM shall be notified daily on the status of the exceedance mitigation until a return to compliance allows for continuation of the construction work (see Section 3.10).

Appendix A provides an example Erosion and Sediment Control Site Inspection Report. During active full-time construction, on a weekly basis, the Holder must prepare:

- ◆ An ESC memo with a summary of sites where the ESC status has changed,
- ◆ Updated photos, and
- ◆ An inspection summary with geo-referenced photo-logs.

External agency and Indigenous Nation notification of major incidents will be conducted by BW Gold in accordance with the Accidents and Malfunctions Communication Plan.

The Holder must submit a report to the attention of the EAO and Aboriginal Groups on the status of compliance with the Project Certificate, which includes a record of non-compliance incidents and their resolution. Reporting must be scheduled accordingly to enter into these multi-planning reports, which are to be submitted at the following times in accordance with Condition 5:

1. at least 30 days prior to the start of construction;
2. on or before March 31 in each year after the start of construction;
3. at least 30 days prior to the start of operations;
4. on or before March 31 in each year after the start of operations;
5. at least 30 days prior to the start of closure;
6. on or before March 31 in each year after the start of closure until the end of closure;
7. at least 30 days prior to the start of post-closure; and
8. on or before March 31 in each year after the start of post-closure until the end of post-closure.

3.10 WORK STOPPAGES

Work stoppages may occur if:

- ◆ a water quality guideline or turbidity threshold is measured in exceedance, or

- ◆ An ESC plan non-compliance is identified that has the potential to result in an exceedance of water quality guidelines or turbidity threshold.

Work shall not restart until corrective measures have been implemented, the water quality guidelines have been re-established below the appropriate threshold, and an inspection has been completed under the direction of the Holder's QP-CPESC to the satisfaction of the Environmental Manager. Incident monitoring shall be established and maintained (CR Section 7.1.1 - "Incident Monitoring" in BWG Ltd. 2022a).

Personnel with the authority to initiate a work stoppage include:

- ◆ Individuals directing any element of construction works (construction managers, superintendents or their designates); or
- ◆ The QP-CPESC, EM, Environmental Manager or IEM.

Whoever identifies the need for a work stoppage while working around equipment must notify the equipment operator to stop working and they must immediately contact the nearest designated supervisor or senior authority and notify them of the issue. The EM must record and maintain an active log during the stoppage.

3.11 ABORIGINAL GROUPS' MONITOR PARTICIPATION

An Aboriginal Group Monitor and Monitoring (AGMM) Plan has been developed pursuant to EAC Condition 17. The AGMM Plan requires Aboriginal Groups as defined in the EAC to develop their own monitoring plans and provide them to BW Gold for discussion and agreement. The AGMM Plan provides the Nations with the opportunity to specify aspects of the project that they are interested in monitoring.

Aboriginal groups monitors are invited to participate and be present during transmission line construction and maintenance activities at all locations where site-specific erosion and sediment control prescriptions have been developed. BW Gold asks that Aboriginal groups monitors to communicate their interest in participating in these activities when developing their monitoring plans pursuant to the AGMM Plan so that participation can be planned and implemented.

3.12 PLAN PERFORMANCE AND EFFECTIVENESS REVIEW

The performance and effectiveness review of any ESC plan is directly related to proper ESC mitigation measure identification, installation, inspection, and maintenance (CR Section 6.1.1 - "Sediment and Erosion Control Measures" in BWG Ltd. 2022a). If soils are eroding in a specific area, then ESC BMPs will be modified (from the initial BMP identification during pre-construction planning) to address the identified issue. The TLSMP-FG is one of multiple planning documents for environmental management (e.g., CEMP, Care and Maintenance, Aboriginal Group Engagement Plan). Ensuring that the TLSMP-FG works in complement to these other planning documents shall be included in stages of performance and effectiveness review through engagement with Indigenous Nations, the Holder, and the regulators.

An inspection program that documents and records effective mitigation measures will be undertaken, either directly by a QP-CPESC or under their direct supervision. As shown in Appendix A, ESC measures can be reviewed over time to give an understanding as to what ESC measures are working well and what measures are not. The use of an inspection report also shows due diligence towards the goal of keeping all soils intact and within the Project footprint.

This framework is a living document and will be reviewed annually to assess its effectiveness and to ensure that it remains current with legislation and best management practices. The timing of plan updates will be informed by monitoring results and changes to regulations and best management practices. Proposed revisions will be reviewed and discussed with the Blackwater Environmental Monitoring Committee, Indigenous Nations, and regulators prior to adopting and implementing the changes. Revised versions of the framework document will be filed with relevant parties.

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APPENDIX A. EXAMPLE EROSION AND SEDIMENT CONTROL SITE INSPECTION REPORT

Erosion and Sediment Control Site Inspection Report

Project Location: _____

Waterbody Classification: _____

ESC Supervisor: _____ Contact #: _____

Company: _____

Inspected by: _____ Position Title: _____
(if different from ECS Supervisor)

Attendees: _____

Weather Conditions: During Inspection: _____ Forecast: _____

Rainfall total: Last 7 days: _____ mm Last 24 hrs: _____ mm

Date : _____	(dd/mm/yy)
Time: Start: _____	End: _____
Permit #:	

<u>Stage of Construction:</u>			
Clearing and grubbing	<input type="checkbox"/>	Final grading	<input type="checkbox"/>
Rough grading	<input type="checkbox"/>	Building Construction	<input type="checkbox"/>
Utility installation	<input type="checkbox"/>	Landscaping	<input type="checkbox"/>
Period of Construction Inactivity	<input type="checkbox"/>		

<u>Type of Inspection</u>	
Regular <input type="checkbox"/>	Significant Rainfall Event <input type="checkbox"/>

	As per ESC Plan? (Y/N)	Modifications Required? (Y/N)	Key Observations and Location	Description of Remedial Action Required (Specify time period for action and if this a repeated request for action)	Risk Rating (L/M/H)
Are off-site/downstream properties/ waterways affected by any site runoff?					
Are perimeter controls in place and functioning adequately?					
Is vegetation disturbance limited to necessary areas?					
Has all sediment-laden storm water originating on site been treated prior to discharge?					
Erosion Control Measures (i.e., stockpile protection, vehicle restriction, disturbed area surface protection, slope texturing, etc.)					
Specify:					

As per ESC Plan? (Y/N)	Modifications Required? (Y/N)	Key Observations and Location	Description of Remedial Action Required (Specify time period for action and if this a repeated request for action)	Risk Rating (L/M/H)
Storm Water Conveyance Measures (i.e., swales, ditches, check dams, slope drains, etc.)				
Specify:				
Sediment Control Measures (i.e., sediment/filter fences, inlet protection, site access facility (gravel pad, wheel wash, sediment basins/traps, etc.)				
Specify:				

Monitoring location*	Turbidity In Situ (NTU)	Exceedance of YDU-WL?	Follow-up required?

*monitoring locations may include the following:
sediment pond outlet, upstream of site, downstream of site, outlet of swale, etc.

NTU meter used: Lamotte 2020e

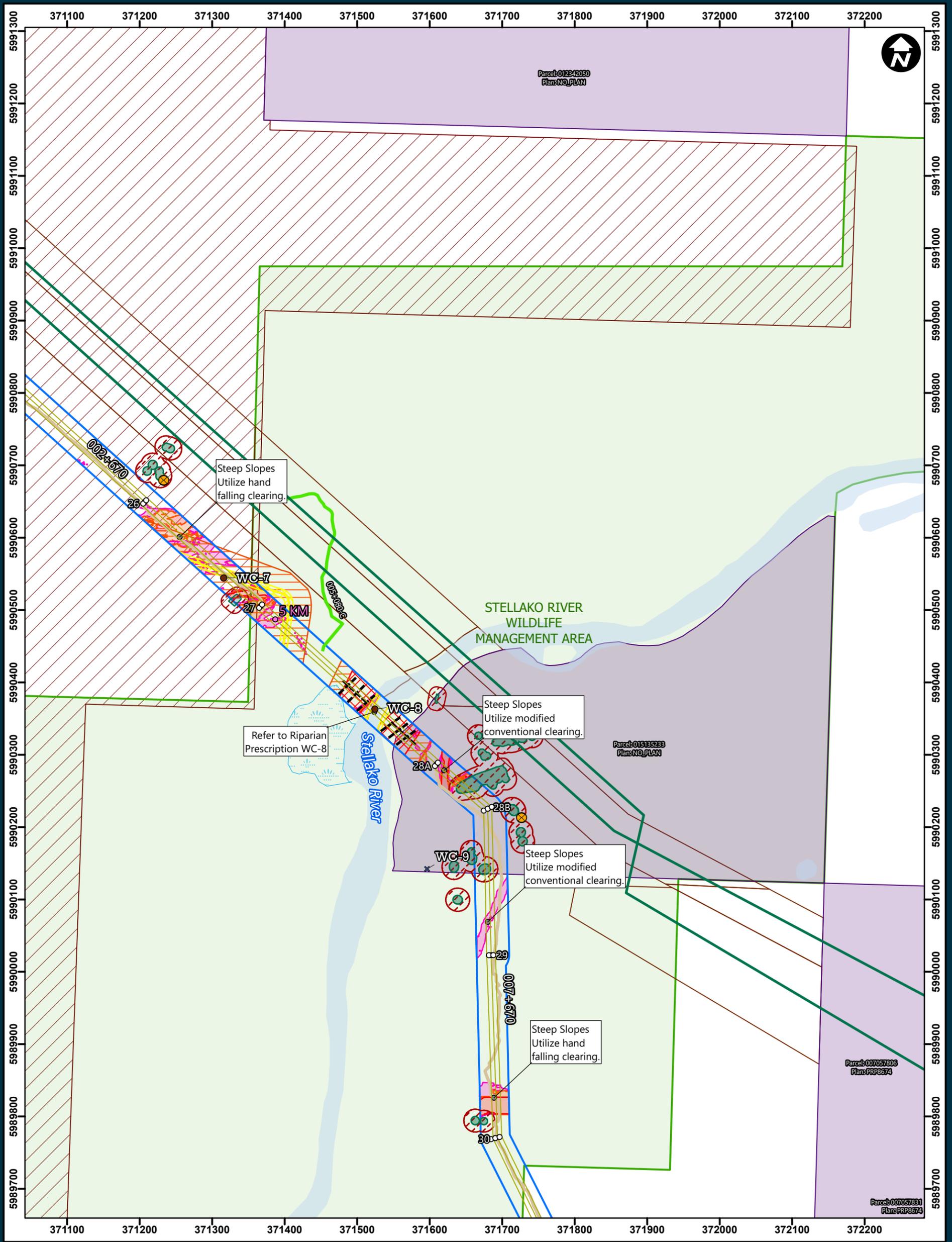
Attach site map and photos showing: ESC measures, devices requiring maintenance, critical areas without protection, areas undergoing rill and gully erosion, and monitoring locations.

Inspector’s Signature: _____

Site Supervisor/Permit Holder Signature: _____

Copies forwarded to: _____

APPENDIX B. MAPS DETAILING CROSSING LOCATIONS FOR CLASS I-III WATERS.




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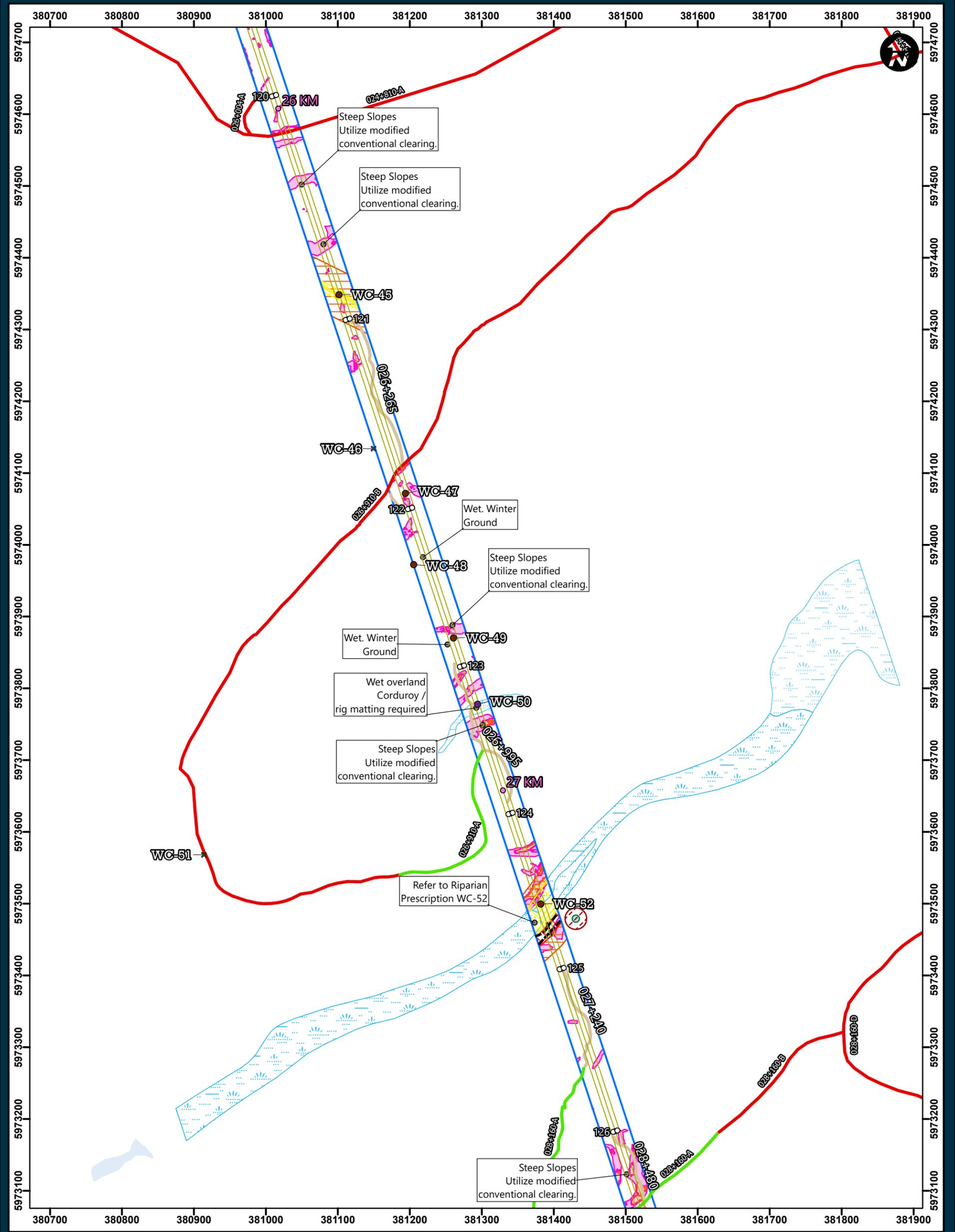
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 Scale: 1:5,000
 Author: tkendall
 Last Modified By: tkendall
 Checked By: djwatt
 Revision #: B



<ul style="list-style-type: none"> ● Gate ● <all other values> ○ BW Gold Proposed Structure ● Cultural Heritage Points ● KM Markers — New temporary access — Non Status — Permitted — Buncher Trails — FSR Roads — Other Private Roads 	<ul style="list-style-type: none"> — Distribution Utility/Telco Line — Fence — Gas Line — Log Fence — BC Hydro TL — BW Gold Proposed TL — Protected Archaeological Site — Special Management Zone - 10m — Machine Free Zone — Riparian Reserve Zone 	<ul style="list-style-type: none"> — Riparian Management Zone — FTEN Cut Blocks — Historical Fire Areas — Mine Footprint — Recreational Areas — Stellaten Woodland — Waterbodies — Wetlands — Wildlife Management Area — BW Gold Proposed TL RoW / OLTC — PMBC Parcel — Cadastre - Outlined RoW 	<ul style="list-style-type: none"> — PMBC Parcel — Cadastre - Private Land — Fraser Lake Community Forest <p>Right of Way Crossings</p> <ul style="list-style-type: none"> ● Aerial Only ● Bridge and Aerial ● Culvert and Aerial ● Not Crossed <p>Undefined Drainages</p> <ul style="list-style-type: none"> ● RigMat/Corduroy/Temporary Overland 	<p>Access Road Crossings</p> <ul style="list-style-type: none"> ✕ Aerial ✕ Bridge Only ✕ Culvert Only ✕ Not Crossed <p>Stream Crossings</p> <ul style="list-style-type: none"> ✕ Aerial ✕ Bridge Only ✕ Culvert Only ✕ Not Crossed <p>Undefined Drainages</p> <ul style="list-style-type: none"> ✕ RigMat/Corduroy/Temporary Overland Only 	<p>Slope Percent Rise***</p> <ul style="list-style-type: none"> ■ 31 to 45% ■ 46 to 60% ■ >60%
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*** Where Slope is less than 45% use Modified Conventional clearing. 46% to 60% use Hand fall clearing Type 1. Greater than 60% use Hand fall clearing Type 2. Otherwise use Conventional clearing methods.

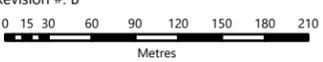





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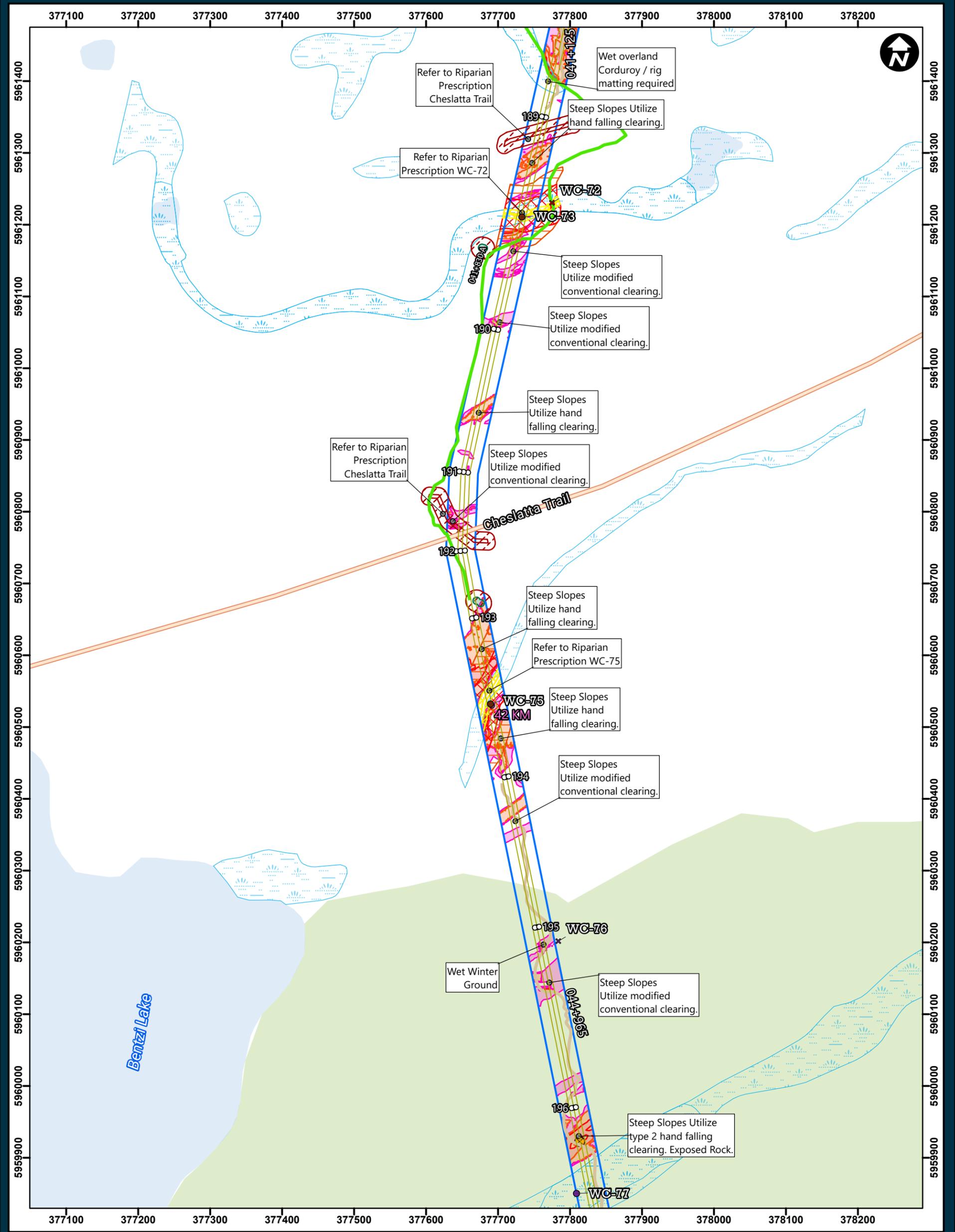
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 Checked By: djwatt
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● Gate	— Distribution Utility/Telco Line	▭ Riparian Management Zone	▭ PMBC Parcel	Access Road Crossings	Slope Percent Rise***
● <all other values>	— Fence	▭ FTEN Cut Blocks	▭ Cadastre - Private Land	✕ Aerial	▭ 31 to 45%
○ BW Gold Proposed Structure	— Gas Line	▭ Historical Fire Areas	▭ Fraser Lake Community Forest	✕ Bridge Only	▭ 46 to 60%
● Cultural Heritage Points	— Log Fence	▭ Mine Footprint	▭ Wildlife Management Area	✕ Culvert Only	▭ >60%
○ KM Markers	— BC Hydro TL	▭ Recreational Areas	▭ BW Gold Proposed TL RoW / OLTC	✕ Not Crossed	
▭ New temporary access	— BW Gold Proposed TL	▭ Stellaten Woodland	▭ PMBC Parcel	Undefined Drainages	
▭ Non Status	▭ Protected Archaeological Site	▭ Waterbodies	▭ Cadastre - Outlined RoW	✕ RigMat/Corduroy/Temporary Overland Only	
▭ Permitted	▭ Special Management Zone - 10m	▭ Wetlands			
▭ Buncher Trails	▭ Machine Free Zone	▭ Wildlife Management Area			
▭ FSR Roads	▭ Riparian Reserve Zone	▭ BW Gold Proposed TL RoW / OLTC			
▭ Other Private Roads		▭ PMBC Parcel			
		▭ Riparian Reserve Zone			

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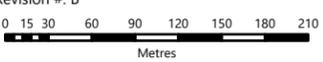





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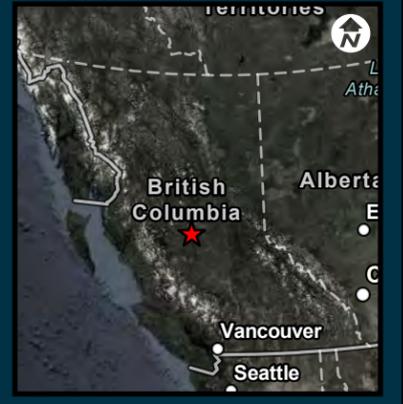
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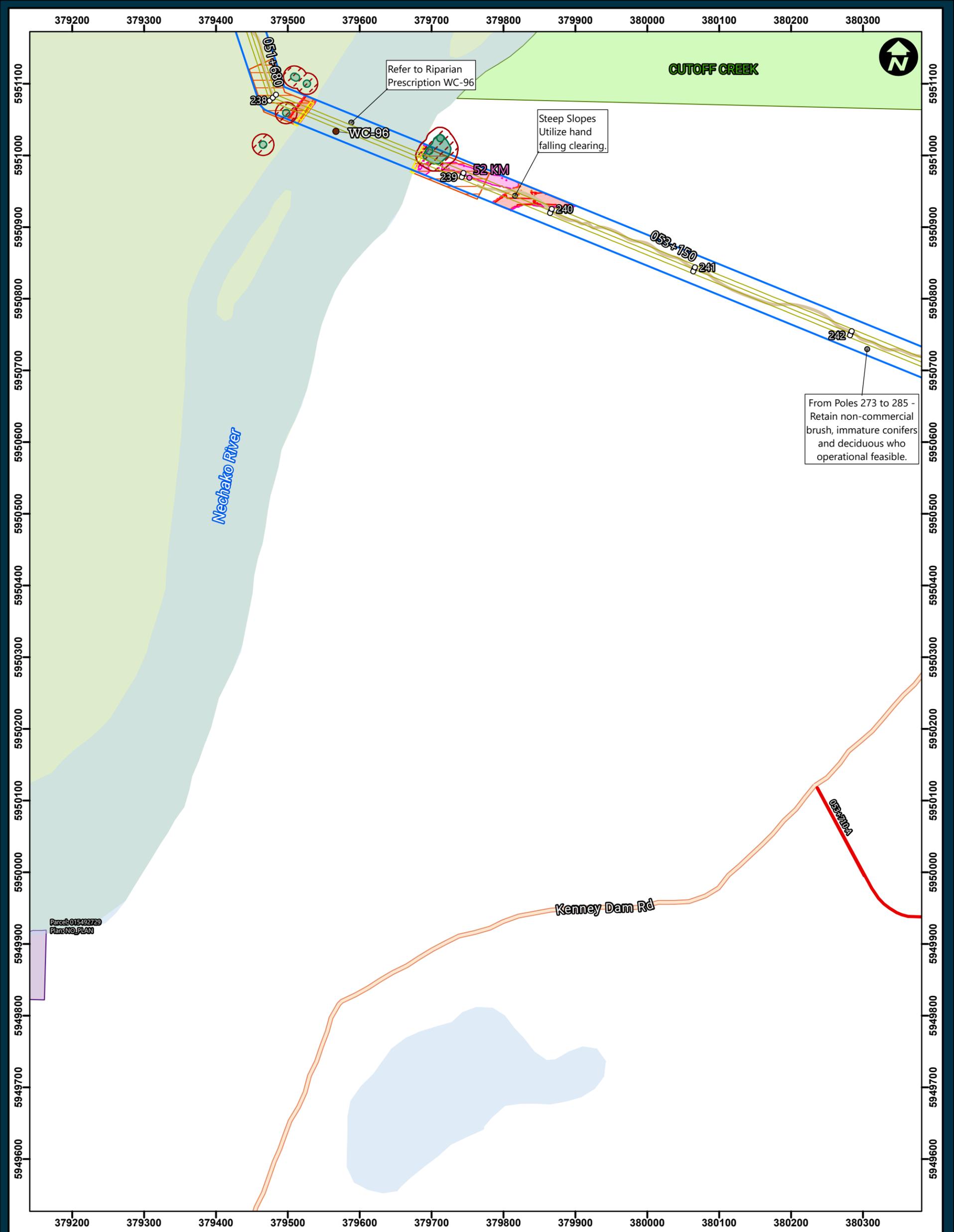
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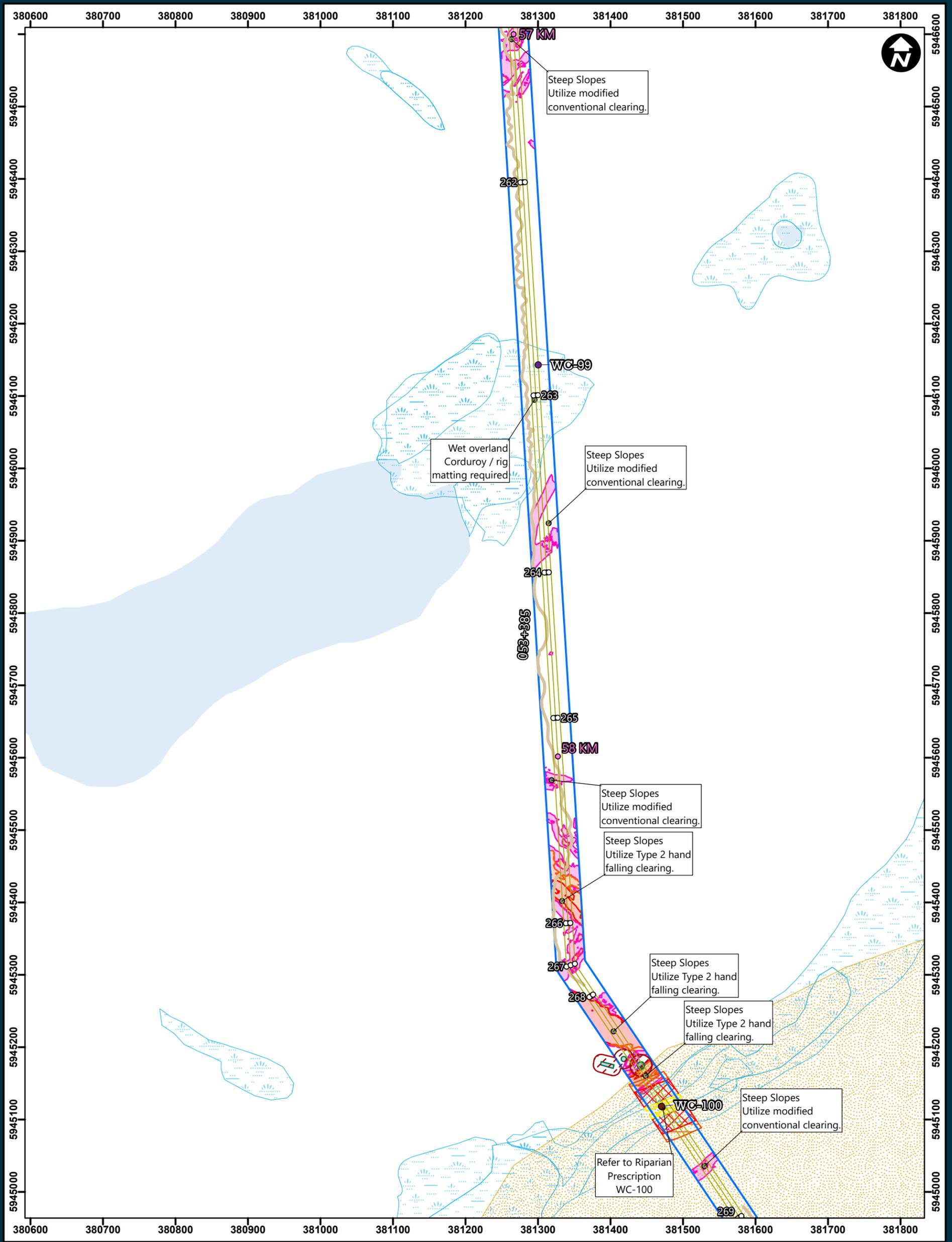
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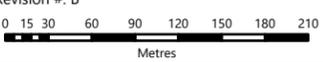





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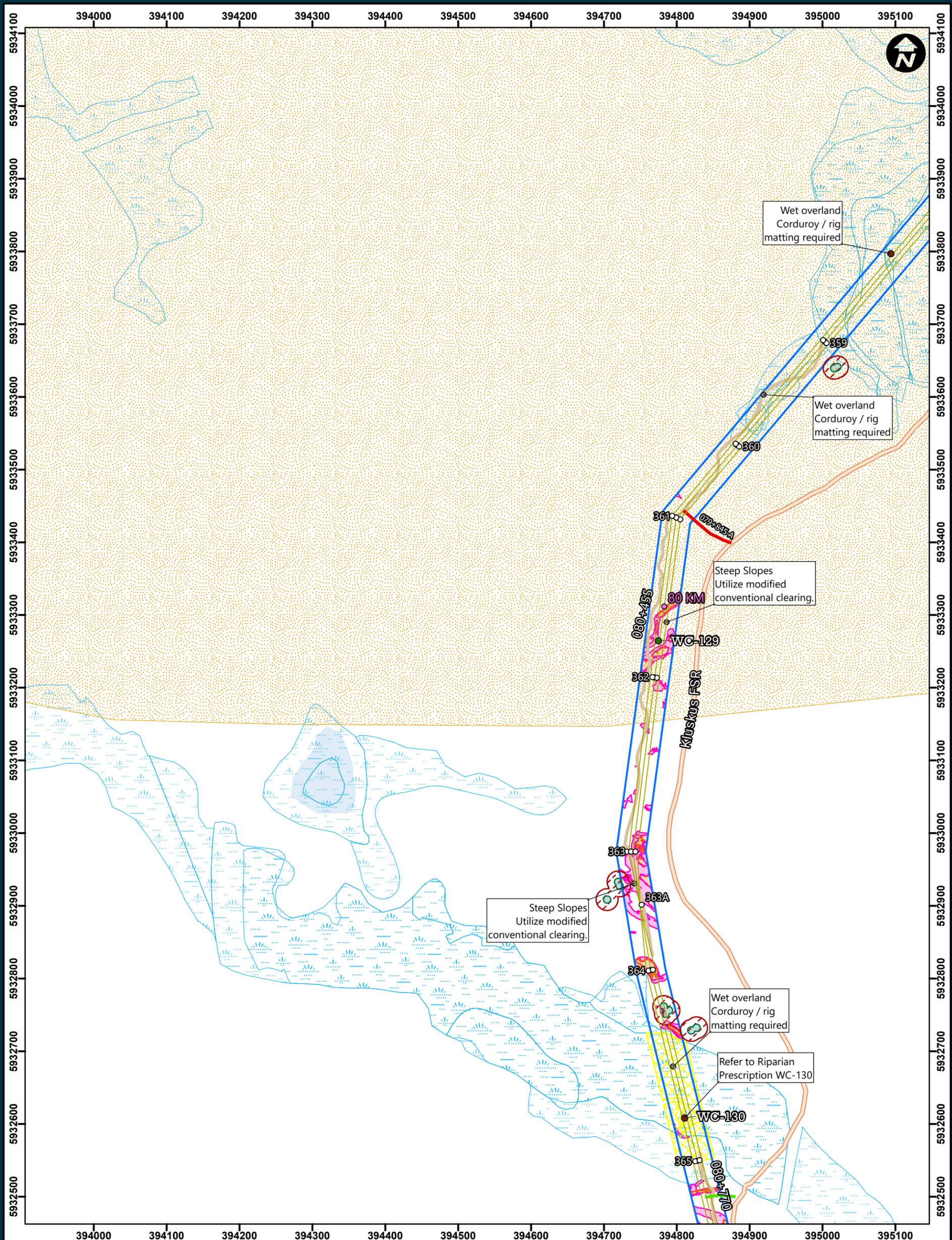
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● Gate	— Distribution Utility/Telco Line	▭ Riparian Management Zone	▭ PMBC Parcel	Access Road Crossings	Slope Percent Rise***
● <all other values>	→ Fence	▭ FTEN Cut Blocks	▭ Cadastre - Private Land	✕ Aerial	▭ 31 to 45%
○ BW Gold Proposed Structure	— Gas Line	▭ Historical Fire Areas	▭ Fraser Lake Community Forest	✕ Bridge Only	▭ 46 to 60%
● Cultural Heritage Points	→ Log Fence	▭ Mine Footprint	▭ Recreational Areas	✕ Culvert Only	▭ >60%
● KM Markers	— BC Hydro TL	▭ Recreational Areas	▭ Stellaten Woodland	✕ Not Crossed	
▭ New temporary access	— BW Gold Proposed TL	▭ Waterbodies	▭ Waterbodies	Undefined Drainages	
▭ Non Status	▭ Protected Archaeological Site	▭ Wetlands	▭ Wildlife Management Area	✕ RigMat/Corduroy/Temporary Overland Only	
▭ Permitted	▭ Management Zone - 10m	▭ Wildlife Management Area	▭ BW Gold Proposed TL RoW / OLTC		
▭ Buncher Trails	▭ Machine Free Zone	▭ PMBC Parcel	▭ PMBC Parcel		
▭ FSR Roads	▭ Riparian Reserve Zone	▭ Cadastre - Outlined RoW	▭ Cadastre - Outlined RoW		
▭ Other Private Roads					
				Stream Crossings	
				● Aerial Only	
				● Bridge and Aerial	
				● Culvert and Aerial	
				● Not Crossed	
				● Undefined Drainages	
				● RigMat/Corduroy/Temporary Overland	

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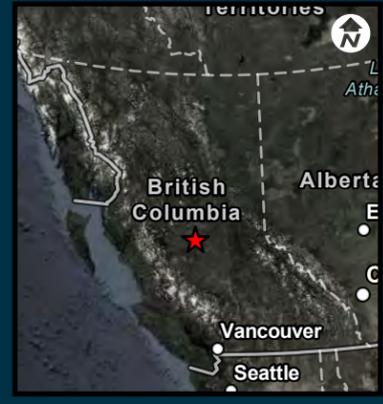
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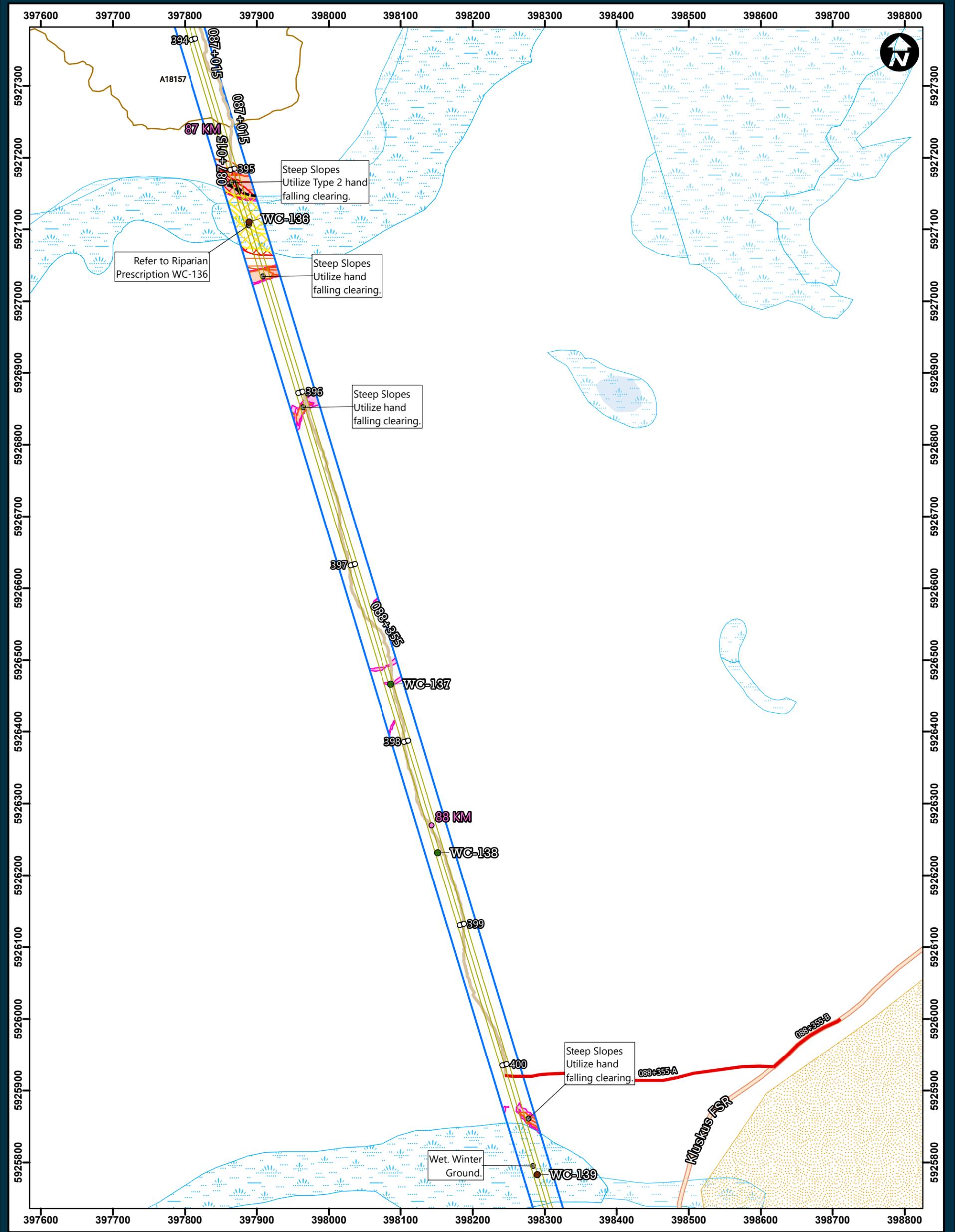
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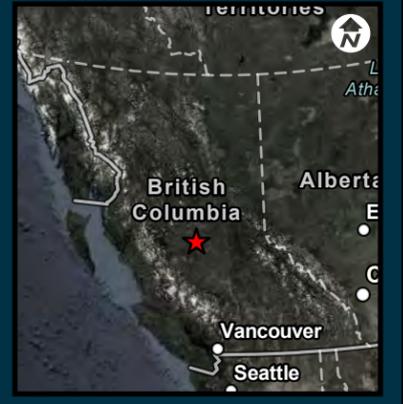
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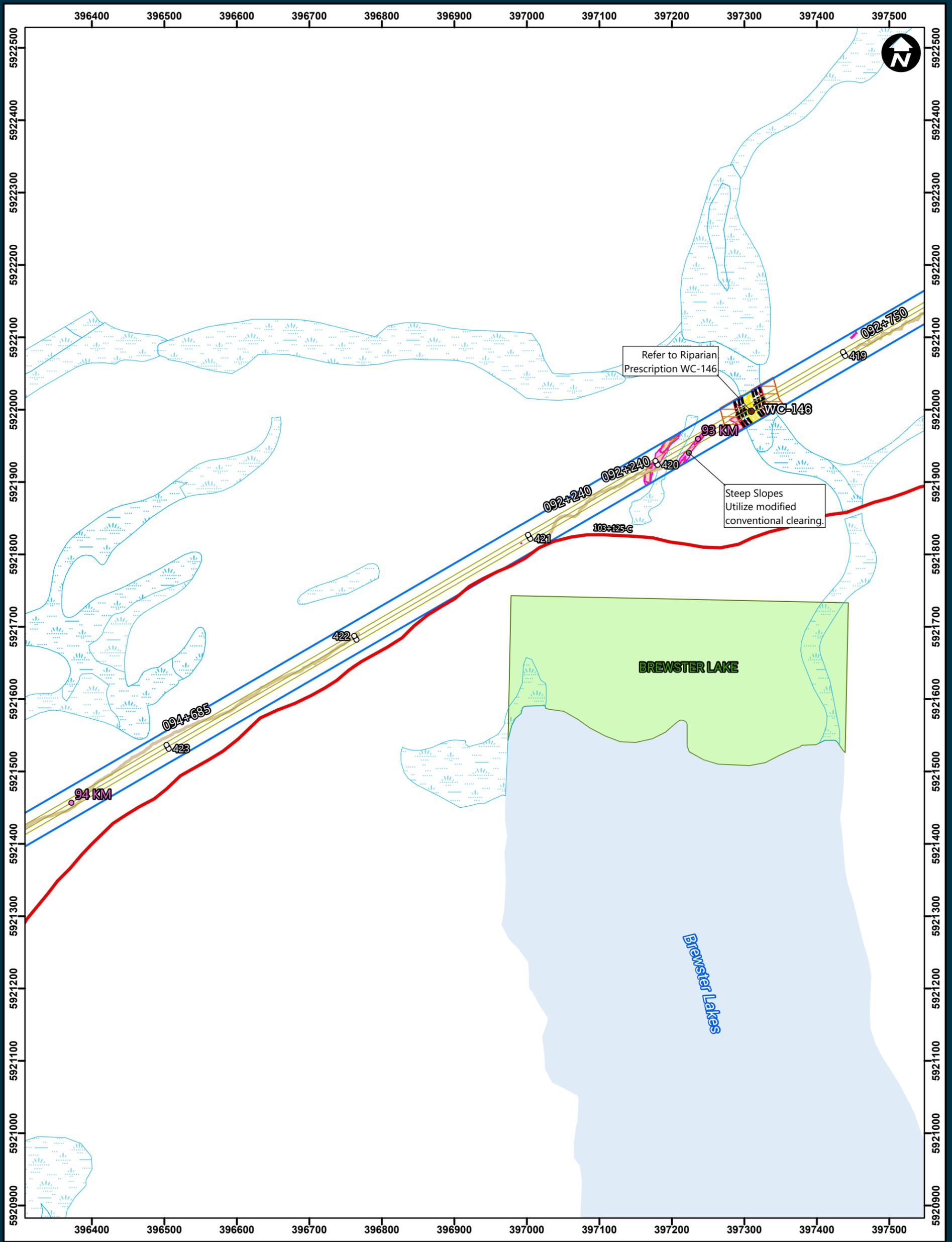
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0 15 30 60 90 120 150 180 210
Metres

● Gate	— Distribution Utility/Telco Line	▭ Riparian Management Zone	▭ PMBC Parcel	Access Road Crossings	Slope Percent Rise***
○ <all other values>	— Fence	▭ FTEN Cut Blocks	▭ Cadastre - Private Land	✕ Aerial	▭ 31 to 45%
○ BW Gold Proposed Structure	— Gas Line	▭ Historical Fire Areas	▭ Fraser Lake Community Forest	✕ Bridge Only	▭ 46 to 60%
● Cultural Heritage Points	— Log Fence	▭ Mine Footprint	▭ Recreational Areas	✕ Culvert Only	▭ >60%
● KM Markers	— BC Hydro TL	▭ Stellaten Woodland	▭ Waterbodies	✕ Not Crossed	
▭ New temporary access	— BW Gold Proposed TL	▭ Wildlife Management Area	▭ Wetlands	Undefined Drainages	
▭ Non Status	▭ Protected Archaeological Site	▭ Special Management Zone - 10m	▭ Riparian Reserve Zone	✕ RigMat/Corduroy/Temporary Overland Only	
▭ Permitted	▭ Machine Free Zone	▭ PMBC Parcel	▭ Cadastre - Outlined RoW		
▭ Buncher Trails	▭ Riparian Reserve Zone	▭ Right of Way Crossings			
▭ FSR Roads		● Aerial Only			
▭ Other Private Roads		● Bridge and Aerial			
		● Culvert and Aerial			
		● Not Crossed			
		● Undefined Drainages			
		● RigMat/Corduroy/Temporary Overland			

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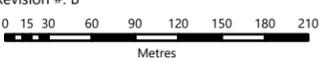





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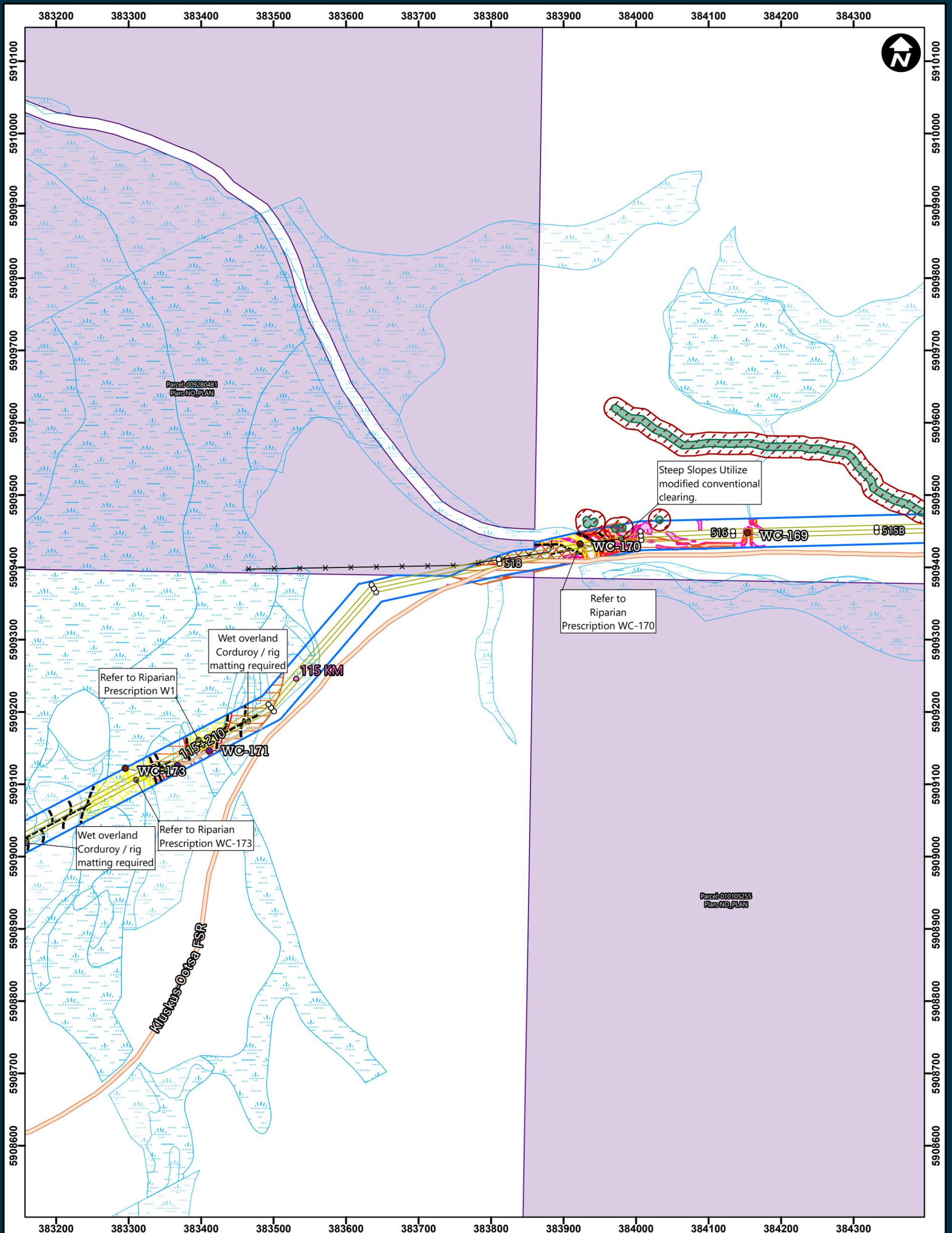
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● Gate	— Distribution Utility/Telco Line	▭ Riparian Management Zone	▭ PMBC Parcel	Access Road Crossings	Slope Percent Rise***
● <all other values>	— Fence	▭ FTEN Cut Blocks	▭ Cadastre - Private Land		
○ BW Gold Proposed Structure	— Gas Line	▭ Historical Fire Areas	▭ Fraser Lake Community Forest	Stream Crossings	▭ 31 to 45%
● Cultural Heritage Points	— Log Fence	▭ Mine Footprint	▭ Recreation Areas		▭ 46 to 60%
● KM Markers	— BC Hydro TL	▭ Recreational Areas	▭ Stellaten Woodland	▭ Not Crossed	▭ >60%
▭ New temporary access	— BW Gold Proposed TL	▭ Waterbodies	▭ Wetlands	Undefined Drainages	
▭ Non Status	▭ Protected Archaeological Site	▭ Wildlife Management Area	▭ BW Gold Proposed TL RoW / OLTC		▭ RigMat/Corduroy/Temporary Overland Only
▭ Permitted	▭ Special Management Zone - 10m	▭ PMBC Parcel	▭ Cadastre - Outlined RoW		
▭ Buncher Trails	▭ Machine Free Zone	▭ Riparian Reserve Zone			
▭ FSR Roads					
▭ Other Private Roads					
				Stream Crossings	
				▭ Aerial	
				▭ Bridge Only	
				▭ Culvert Only	
				▭ Not Crossed	
				Undefined Drainages	
				▭ RigMat/Corduroy/Temporary Overland	

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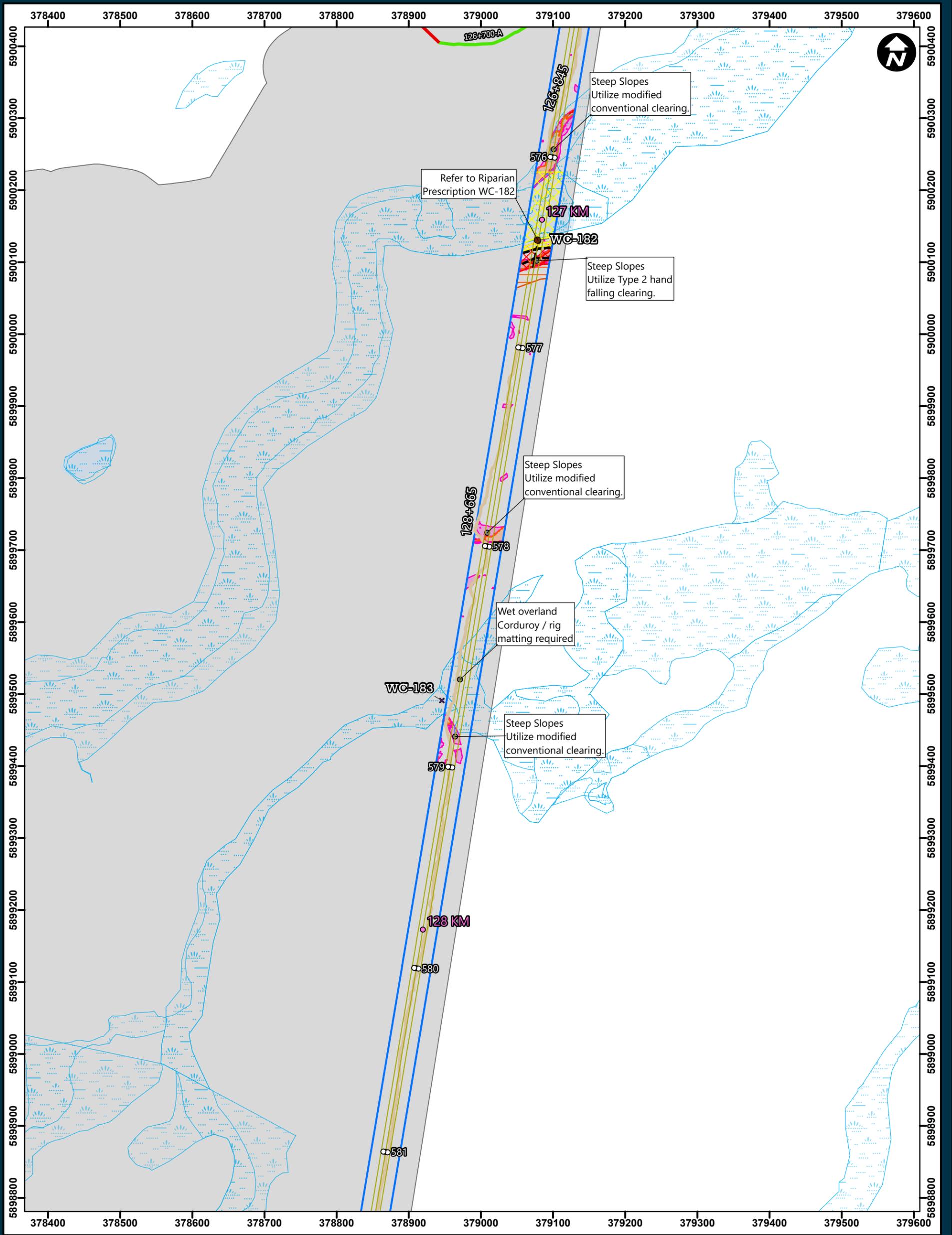
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● Gate	— Distribution Utility/Telco Line	▭ Riparian Management Zone	▭ PMBC Parcel	Access Road Crossings	Slope Percent Rise***
● <all other values>	— Fence	▭ FTEN Cut Blocks	▭ Cadastre - Private Land	✗ Aerial	■ 31 to 45%
○ BW Gold Proposed Structure	— Gas Line	▭ Historical Fire Areas	▭ Fraser Lake Community Forest	✗ Bridge Only	■ 46 to 60%
● Cultural Heritage Points	— Log Fence	▭ Mine Footprint	▭ Recreational Areas	✗ Culvert Only	■ >60%
● KM Markers	— BC Hydro TL	▭ Recreational Areas	▭ Stellaten Woodland	✗ Not Crossed	
▭ New temporary access	— BW Gold Proposed TL	▭ Waterbodies	▭ Waterbodies	Stream Crossings	
▭ Non Status	▭ Protected Archaeological Site	▭ Wetlands	▭ Wetlands	● Aerial Only	
▭ Permitted	▭ Special Management Zone - 10m	▭ Wildlife Management Area	▭ Wildlife Management Area	● Bridge and Aerial	
▭ Buncher Trails	▭ Machine Free Zone	▭ BW Gold Proposed TL RoW / OLTC	▭ PMBC Parcel	● Culvert and Aerial	
▭ FSR Roads	▭ Riparian Reserve Zone	▭ PMBC Parcel	▭ Cadastre - Outlined RoW	● Not Crossed	
▭ Other Private Roads				● Undefined Drainages	
				✗ RigMat/Corduroy/Temporary Overland Only	
				● RigMat/Corduroy/Temporary Overland	

*** Where Slope is less than 45% use Modified Conventional clearing. 46% to 60% use Hand fall clearing Type 1. Greater than 60% use Hand fall clearing Type 2. Otherwise use Conventional clearing methods.





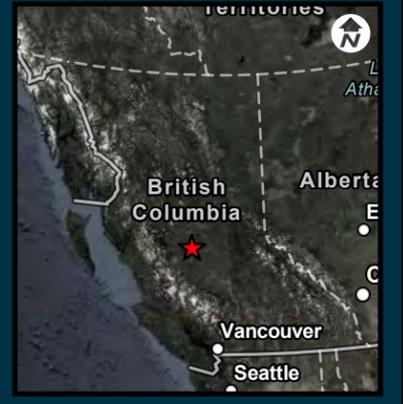
BW GOLD LTD
a subsidiary company of Artemis Gold Inc.

Clearing Plans
Page: E-91

Date: 2023-08-11
 Projection: NAD 1983 UTM Zone 10N
 Scale: 1:5,000
 Author: tkendall
 Last Modified By: tkendall
 Checked By: djwatt
 Revision #: B

● Gate	— Distribution Utility/Telco Line	▭ Riparian Management Zone	▭ PMBC Parcel	Access Road Crossings	Slope Percent Rise***
○ <all other values>	— Fence	▭ FTEN Cut Blocks	▭ Cadastre - Private Land	✕ Aerial	▭ 31 to 45%
○ BW Gold Proposed Structure	— Gas Line	▭ Historical Fire Areas	▭ Fraser Lake Community Forest	✕ Bridge Only	▭ 46 to 60%
● Cultural Heritage Points	— Log Fence	▭ Mine Footprint	▭ Recreation Areas	✕ Culvert Only	▭ >60%
● KM Markers	— BC Hydro TL	▭ Recreational Areas	▭ Stellaten Woodland	✕ Not Crossed	
▭ New temporary access	— BW Gold Proposed TL	▭ Waterbodies	▭ Waterbodies	Undefined Drainages	
▭ Non Status	▭ Protected Archaeological Site	▭ Wetlands	▭ Wildlife Management Area	✕ RigMat/Corduroy/Temporary Overland Only	
▭ Permitted	▭ Special Management Zone - 10m	▭ Riparian Reserve Zone	▭ BW Gold Proposed TL RoW / OLTC		
▭ Buncher Trails	▭ Machine Free Zone		▭ PMBC Parcel		
▭ FSR Roads	▭ Riparian Reserve Zone		▭ Cadastre - Outlined RoW		
▭ Other Private Roads					
				Stream Crossings	
				● Aerial Only	
				● Bridge and Aerial	
				● Culvert and Aerial	
				● Not Crossed	
				● Undefined Drainages	
				● RigMat/Corduroy/Temporary Overland	

*** Where Slope is less than 45% use Modified Conventional clearing. 46% to 60% use Hand fall clearing Type 1. Greater than 60% use Hand fall clearing Type 2. Otherwise use Conventional clearing methods.



APPENDIX C. PRESCRIPTIONS FOR CLASS I-III WATERS CROSSING LOCATIONS.



Riparian Management Zone Prescription

Report Date: August 25th, 2023

WATERCOURSE #	STREAM NAME	POLE NUMBER	LOCATION	LAT/LONG
WC-8	Stellako River	27 – 28A	KP 5+185	54.045563, -124.962038

STREAM CLASSIFICATION	RIPARIAN RESERVE ZONE (RRZ)	RIAPARIAN MANAGEMENT ZONE (RMZ)	TOTAL RIPARIAN MANAGEMENT AREA (RMA)	Crossing Type
S1-B	50m	20m	70m	Aerial
	0.42ha	0.17ha	.59ha	

DESCRIPTION OF THE SITE
<p>The Stellako River is located within Stellako River Wildlife Management Area. Located in the SBS dw3 BEC zone, this site is characterized by rich and wet terrain adjacent to the Stellako River. The understory is comprised of alder, thimbleberry, black twinberry and prickly rose, with an overstory comprised of mature spruce/cottonwood. Further from the Stellako towards the edge of the RMA, the terrain gradually steepens and transitions into a drier site with a mature aspen/spruce overstory and an understory dominated by prickly rose.</p>

PRESCRIPTION	
PRELIMINARY MEASURES	<p>If site conditions differ from what is described in this Riparian Management Zone Prescription, stop work and contact the Blackwater Gold Supervisor for direction. Prior to workers being on the ground outside of a machine, a danger tree assessment will be completed by a certified Danger Tree Accessor. Sediment control fencing will be installed on both sides of the watercourse along the length of the ROW prior to clearing.</p>
RMZ	<p>The RMZ for the Stellako River is 20 meters wide. On the western side of the watercourse, the overstory is primarily made up of mature aspen with a small spruce component. The eastern side is spruce dominant. The mature timber is approximately 25-30 meters tall, and overtops the Transmission Line by approximately 10 meters. The prescription for the RMZ is a <i>Modified Clearcut System</i> which retains the non-commercial brush, immature conifers, and deciduous trees where operationally feasible. Mechanical equipment is permitted within the RMZ. Timber within the RMZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA where operationally feasible.</p>



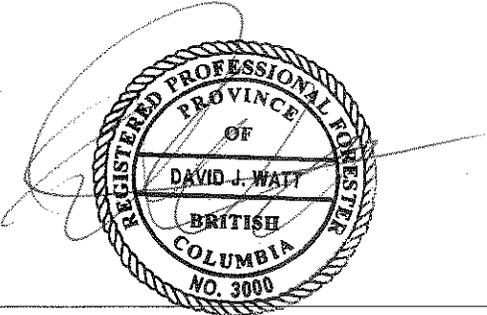
RRZ	<p>The RRZ of the Stellako River is 50 meters wide and consists of mature spruce/cottonwood which is approximately 30 meters tall and overtops the transmission line by approximately 10 meters. This prescription for the RRZ is a <i>Modified Mechanical Tree Removal System</i>. In order to safely top a tree, a mechanical feller buncher will be used to remove the upper portion by cutting the mature trees at approximately 4 to 6 meters above the ground, ensuring adequate clearance for the Transmission Line. The mechanical feller buncher will carry the tops to a central trail where they can be skid outside of the RMA. Immature timber will be left or stubbed at a height so the Transmission Line conductors have a minimum of 6 meters of clearance from any treetops. All non-commercial brush and vegetation within the RRZ will be retained where operationally feasible. This will maintain bank stability and reduce the potential for erosion.</p> <p>Mechanical equipment will not be permitted within 5 meters of the stream bank, which will be marked by a 5-meter MFZ in the field. Mechanical equipment will only enter the watercourses RRZ on the bunching trails that have been identified on the Clearing Profile Map. Buncher trails will not be wider than 3 meters and rig matting will be installed where sensitive terrain or soft spots exist. Equipment will be allowed to sit on planned trails and reach in to remove the tops of trees within the RRZ. The remainder of the timber within the RRZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA where operationally feasible.</p>
TIMING and WEATHER CONDITIONS	<p>Work with mechanical feller bunchers in the RMA area must be completed in either dry or frozen conditions, or on a snowpack of at least 60 cm.</p> <p>Construction within the RMA will not occur during a moderate rain event, defined as: >44mm in a 24hr period.</p>
FOREST HEALTH	<p>All spruce which is felled in the RMA must be removed and either delivered to a processing facility or burned on site to minimize the chance of a Spruce Bark Beetle infestation.</p> <p>All immature timber that is cleared within the RMA must be processed and transported off site or burned on site to minimize the fire risk from fuel build up.</p>

POST CLEARING	<p>Any branches or debris that fall into the stream channel will be removed by hand, where it can be done safely.</p> <p>All unused construction materials, and other litter must be removed from the site after construction is complete.</p> <p>All erosion control materials will be removed prior to the first freeze up after construction is complete so that materials do not deteriorate into the watercourse.</p> <p>Annual monitoring will be required post clearing to monitor conductor clearance and to inspect for Spruce Bark Beetle infestation in stubbed trees.</p> <p>All Buncher trails will be reclaimed after construction is completed.</p>
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Blackwater
Mine

Riparian Management Zone Prescription

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
David Watt, R.P.F.	
DATE SIGNED	
August 25 th , 2023	
<p>I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been to the standards acceptable of a registered Professional Forester</p>	

Map Attached forms an integral part of this plan.

Photos of Site:



Figure 1: Stellako River from the west looking east.



Figure 2: Stellako River from the east looking west.



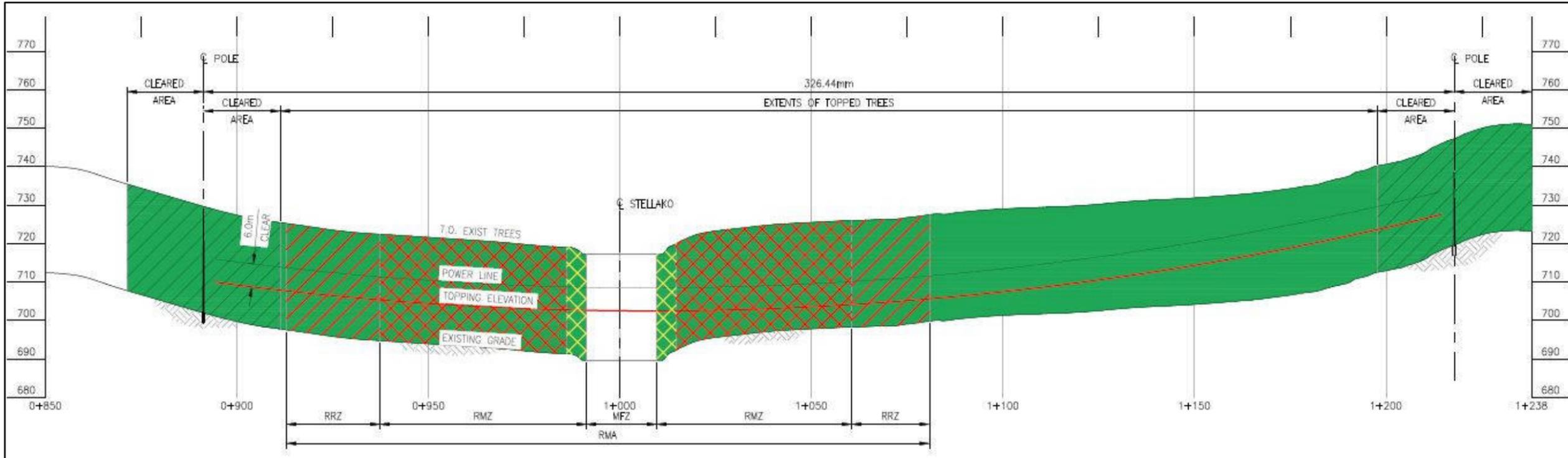
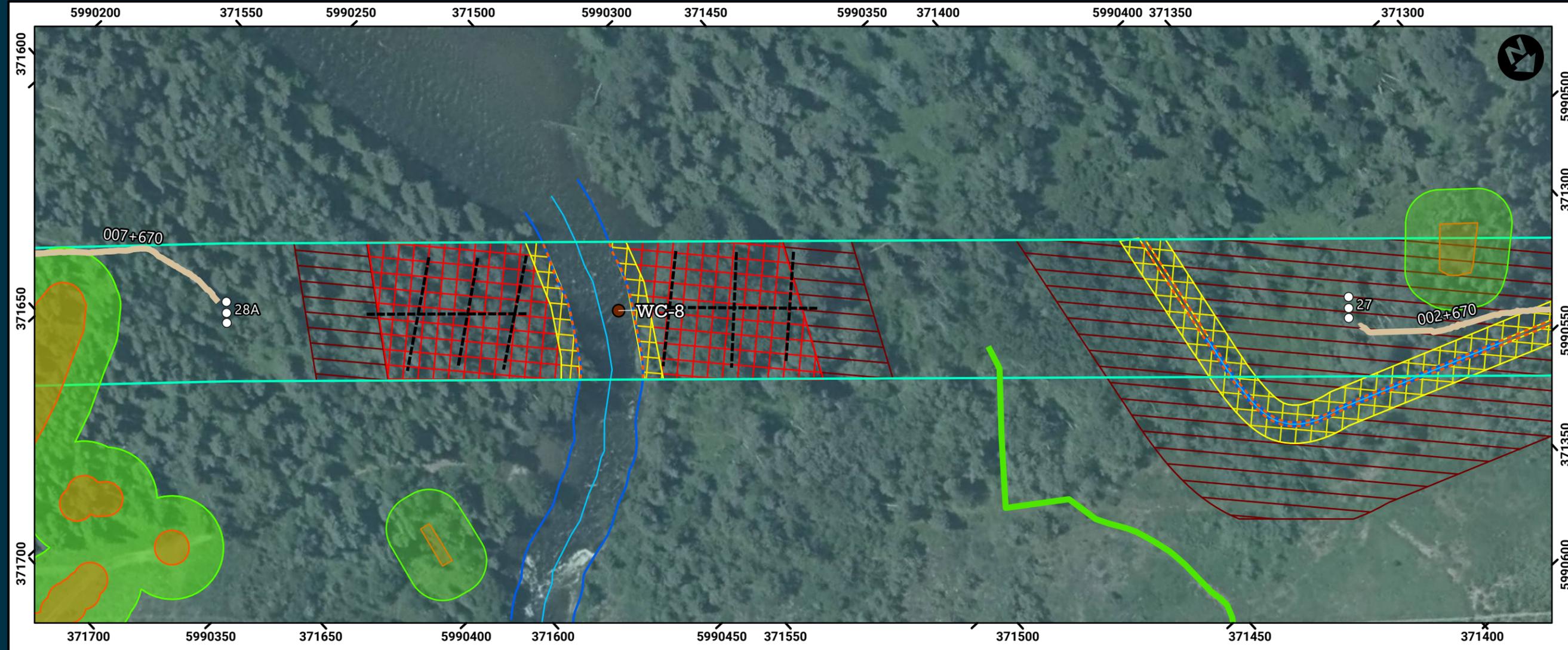
Figure 3:Stellako River from the east looking west.



BW GOLD LTD
 a subsidiary company of Artemis Gold Inc
Clearing Plan Profiles
 WC-8 - Stellako River
 Classification: S1-B

- Cultural Heritage Points
- Non Status roads
- Permitted roads
- Buncher Trails
- Sediment Control
- Stream Banks
- Stream Centerline
- Protected Archaeological Site
- Special Management Zone - 10m
- Riparian Management Zone
- Riparian Reserve Zone
- Machine Free Zone
- Bridge Only
- Culvert Only
- Existing Culvert
- Not Crossed
- RigMat/Corduroy/Temporary Overland Only
- Aerial Only
- Bridge and Aerial
- Culvert and Aerial
- Existing Culvert and Aerial
- Not Crossed
- RigMat/Corduroy/Temporary Overland
- BW Gold Proposed Structure
- New temporary access
- BW Gold Proposed TL RoW / OLTC

Date: 2023-08-23
 Projection: NAD 1983 BC Environment Albers
 Scale: 1:1,250
 Author: tkendall
 Last Modified By: tkendall
 Checked By:
 Revision #:



*** Decking of all timber will occur outside the RMA.



Report Date: August 25th, 2023

WATERCOURSE #	STREAM NAME	POLE NUMBER	LOCATION	LAT/LONG
WC-28	Robertson Creek	62 -63	KP 13+190	53.99401, -124.896827

STREAM CLASSIFICATION	RIPARIAN RESERVE ZONE (RRZ)	RIAPARIAN MANAGEMENT ZONE (RMZ)	TOTAL RIPARIAN MANAGEMENT AREA (RMA)	Crossing Type
S4	0m	30m	30m	Aerial
	0ha	0.27ha	0.27ha	

DESCRIPTION OF THE SITE

The Robertson Creek crossing site is accessed via two unnamed block roads off the Nithi FSR. The watercourse is within the SBSdw3 BEC zone and is comprised of a 5-meter-tall pine plantation on the western side of the of watercourse, and a mature spruce stand on the eastern side. The terrain is level and presents no operational challenges.

PRESCRIPTION

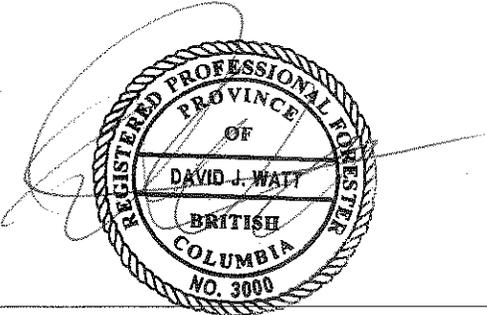
PRELIMINARY MEASURES	If site conditions differ from what is described in this Riparian Management Zone Prescription, stop work and contact the Blackwater Gold Supervisor for direction. Prior to workers being on the ground outside of a machine, a danger tree assessment will be completed by a certified Danger Tree Assessor. Sediment control fencing will be installed on both sides of the watercourse along the length of the ROW prior to clearing.
RMZ	<p>The RMZ for Robertson Creek is 30 meters wide.</p> <p>Western RMZ: On the western side of the watercourse, the Transmission Line will have approximately 10-meters of clearance over the 5-meter-tall pine planation. The prescription for the RMZ will be a <i>Modified Mechanical Tree Removal System</i>, which only clears timber required to complete construction. All immature timber, non-commercial brush, and deciduous trees will be retained where operationally feasible. This will maintain bank stability and reduce the potential for erosion.</p> <p>Eastern RMZ: The mature timber on the eastern side of the watercourse is approximately 20-meters tall and is the same height as the Transmission Line. The prescription for the RMZ will be a <i>Modified Mechanical Tree Removal System</i>. A</p>

	<p>mechanical feller buncher will enter the RMZ and remove the upper portion of the tree by cutting it at approximately 4 to 6 meters above the ground, ensuring adequate clearance for the Transmission Line. Immature timber will be left or stubbed at a height, so the Transmission Line conductors have a minimum of 6 meters clearance from any treetops. All non-commercial brush and vegetation within the RMZ will be retained where operationally feasible. This will maintain bank stability and reduce the potential for erosion.</p> <p>Mechanical equipment will be not permitted within 5 meters of the stream bank, which will be marked by a 5-meter MFZ in the field. Timber within the RMZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA where operationally feasible.</p>
RRZ	Robertson Creek is an S4 stream and has no legislated RRZ.
TIMING AND WEATHER CONDITIONS	<p>Work with mechanical feller bunchers in the RMA must be completed in either dry or frozen conditions, or on a snowpack of at least 60cm.</p> <p>Construction within the RMA will not occur during a moderate rain event, defined as: >44mm in a 24hr period.</p>
FOREST HEALTH	<p>All spruce which is felled in the RMA must be removed and either delivered to a processing facility or burned on site to minimize the chance of a Spruce Bark Beetle infestation.</p> <p>All immature timber that is cleared in the RMA must be processed and transported off site or burned on site to minimize the fire risk from fuel build up.</p>
POST CLEARING	<p>Any branches or debris that falls into the stream channel will be removed by hand, where it can be done safely.</p> <p>All unused construction materials and other litter must be removed from the site after construction is complete.</p> <p>All erosion control materials will be removed prior to the first freeze up after construction is complete so that materials do not deteriorate into the watercourse.</p> <p>Annual monitoring will be required post clearing to monitor conductor clearance and to inspect for Spruce Bark Beetle infestation in stubbed trees.</p>



**Blackwater
Mine**

Riparian Management Zone Prescription

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
David Watt, R.P.F.	
DATE SIGNED	
August 25 th , 2023	
<p>I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been to the standards acceptable of a registered Professional Forester</p>	

Map Attached forms an integral part of this plan.

Photos of Site:



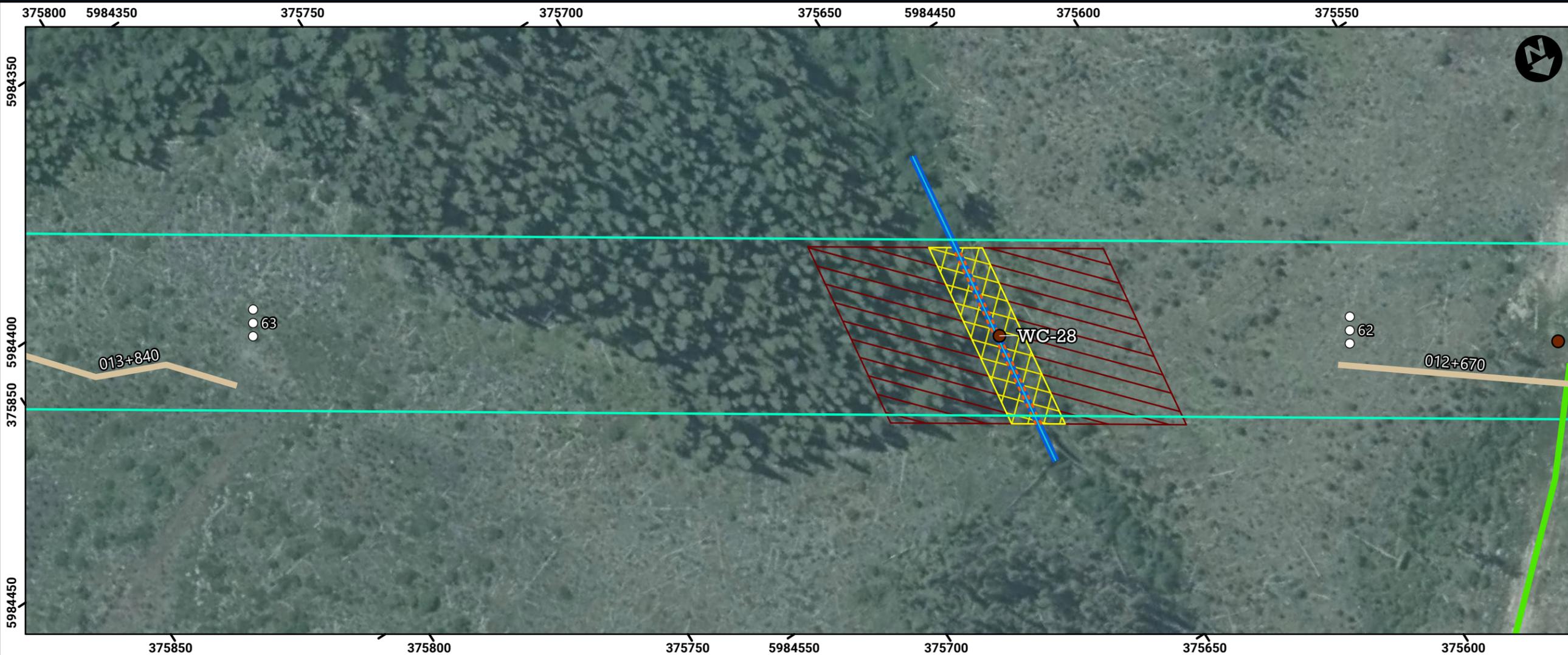
Figure 1: Upstream of WC-28 within ROW.



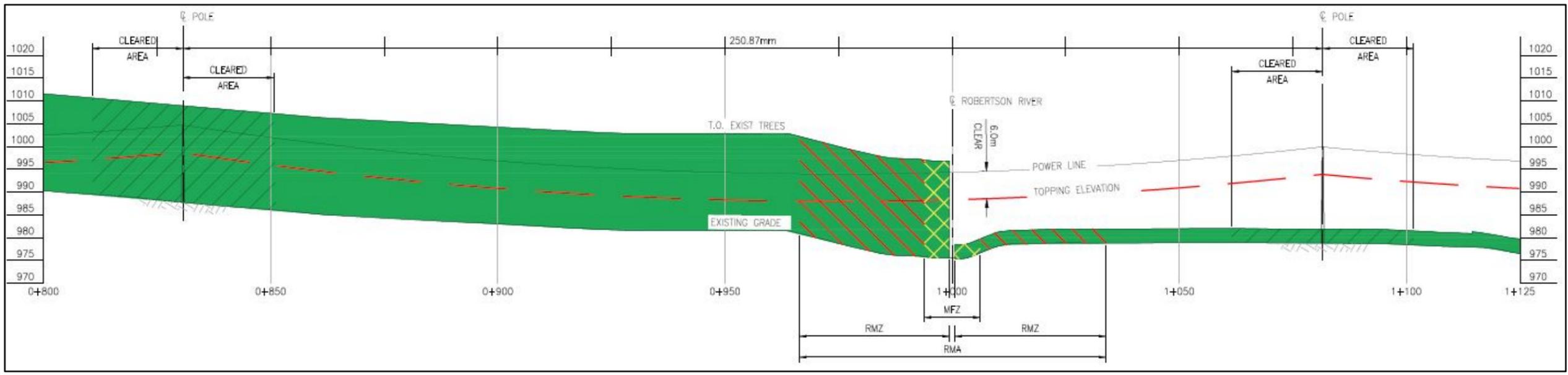
Figure 2: WC-28 from the west looking east.



Figure 3: Downstream of WC-28 within ROW



-  Cultural Heritage Points
-  Non Status roads
-  Permitted roads
-  Buncher Trails
-  Sediment Control
-  Stream Banks
-  Stream Centerline
-  Protected Archaeological Site
-  Special Management Zone - 10m
-  Riparian Management Zone
-  Riparian Reserve Zone
-  Machine Free Zone
-  Bridge Only
-  Culvert Only
-  Existing Culvert
-  Not Crossed
-  RigMat/Corduroy/Temporary Overland Only
-  Aerial Only
-  Bridge and Aerial
-  Culvert and Aerial
-  Existing Culvert and Aerial
-  Not Crossed
-  RigMat/Corduroy/Temporary Overland
-  BW Gold Proposed Structure
-  New temporary access
-  BW Gold Proposed TL RoW / OLTC



Date: 2023-08-23
 Projection: NAD 1983 BC Environment Albers
 Scale: 1:1,000
 Author: tkendall
 Last Modified By: tkendall
 Checked By:
 Revision #:



*** Decking of all timber will occur outside the RMA.



Riparian Management Zone Prescription

Report Date: August 25th, 2023

WATERCOURSE #	STREAM NAME	POLE NUMBER	LOCATION	LAT/LONG
WC-52	Smith Creek	124 - 125	KP 27+157	53.89622, -124.80509

STREAM CLASSIFICATION	RIPARIAN RESERVE ZONE (RRZ)	RIAPARIAN MANAGEMENT ZONE (RMZ)	TOTAL RIPARIAN MANAGEMENT AREA (RMA)	Crossing Type
S3	20m	20m	40m	Aerial
	0.08ha	0.17ha	0.25ha	

DESCRIPTION OF THE SITE
<p>Smith Creek is accessed via two unnamed branch roads off the Holy Cross FSR. The northern access is reached by turning at approximately 112.5km off the Holy Cross FSR. The southern access is from a branch road at approximately 123km off the Holy Cross FSR. Located within SBS mc2, the site is characterized as a slow flowing creek with 5-10-meter-wide floodplains along each side of the watercourse. Beyond the floodplain, the terrain gradually rises on the southern side, and steeply (+30%) slopes up on the northern side. The overstory is dominated by a mature spruce/balsam mix with a poorly established herb and shrub layer.</p>

PRESCRIPTION	
PRELIMINARY MEASURES	<p>If site conditions differ from what is described in this Riparian Management Zone Prescription, stop work and contact the Blackwater Gold Supervisor for direction. Prior to beginning clearing, a danger tree assessment will be completed by a certified Danger Tree Assessor. Sediment control fencing will be installed on both sides of the watercourse along the length of the ROW prior to clearing.</p>
RMZ	<p>The RMZ for Smith Creek is 20 meters wide. The overstory is primarily made up of mature spruce/balsam, which is approximately 25 meters tall and overtops the Transmission Line by 5 meters. The prescription for the RMZ is a <i>Modified Clearcut System</i>, which retains the non-commercial brush, immature conifers, and deciduous trees where operationally feasible.</p> <p>Mechanical equipment is allowed within the RMZ. Timber within the RMZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA, where operationally feasible.</p>

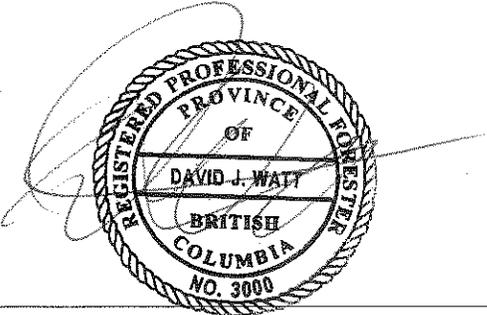
<p>RRZ</p>	<p>The RRZ of Smith Creek is 20 meters wide and consists of mature spruce, which is approximately 25 meters tall and overtops Transmission Line by 5 meters. The prescription for the RRZ is a <i>Modified Mechanical Tree Removal System</i>. In order to safely top the tree, a mechanical feller buncher will be used to remove the upper portion of the tree by cutting the mature trees at approximately 4 to 6 meters above the ground, ensuring adequate clearance for the Transmission Line. The mechanical feller buncher will carry the tops to a central trail where they can be skid outside of the RMA. Immature timber within the RRZ will be left or stubbed at a height so the Transmission Line conductors have a minimum of 6 meters of clearance from any treetops. All non-commercial brush and vegetation within the RRZ will be retained where operationally feasible. This will maintain bank stability and reduce the potential for erosion.</p> <p>Mechanical equipment will not be permitted within 5 meters of the floodplain edge, which will be marked by a 5-meter MFZ in the field. Mechanical equipment will only enter the watercourse's RRZ on the bunching trails that have been identified on the Clearing Profile Map. Buncher trails will not be wider than 3 meters and rig matting will be installed where sensitive terrain or soft spots exist. Mechanical equipment will use caution when working on steep slopes and will not operate outside of a machine's operating specifications. Equipment will be allowed to sit on planned trails and reach in to remove the tops of trees within the RRZ. The remainder of the timber within the RRZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA, where operationally feasible.</p>
<p>TIMING AND WEATHER CONDITIONS</p>	<p>Work with mechanical Feller Bunchers in the RMA area must be completed in either dry or frozen, conditions or on a snowpack of at least 60 cm.</p> <p>Construction within the RMA will not occur during a moderate rain event, defined as: >44mm in a 24hr period.</p>
<p>FOREST HEALTH</p>	<p>All spruce which is felled in the RMA must be removed and either delivered to a processing facility or burned on site to minimize the chance of a Spruce Bark Beetle infestation.</p> <p>All immature timber which is cleared must be processed and transported off site or burned on site to mitigate the fire danger risk from fuel build up.</p>

POST CLEARING	<p>Any branches or debris that falls into the stream channel will be removed by hand, where it can be done safely.</p> <p>All unused construction materials, and other litter must be removed from the site after construction is complete.</p> <p>All erosion control materials will be removed prior to the first freeze up after construction is complete so that materials do not deteriorate into the watercourse.</p> <p>Annual monitoring will be required post clearing to monitor conductor clearance and to inspect for Spruce Bark Beetle infestation in stubbed trees.</p> <p>All buncher trails will be rehabilitated after construction is complete.</p>
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**Blackwater
Mine**

Riparian Management Zone Prescription

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
David Watt, R.P.F.	
DATE SIGNED	
August 25 th , 2023	
<p>I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been to the standards acceptable of a registered Professional Forester</p>	

Map Attached forms an integral part of this plan.

Photos of Site:



Figure 1: Downstream channel and floodplain of WC-52 within ROW.



Figure 2: Upstream channel and floodplain of WC-52 within ROW.

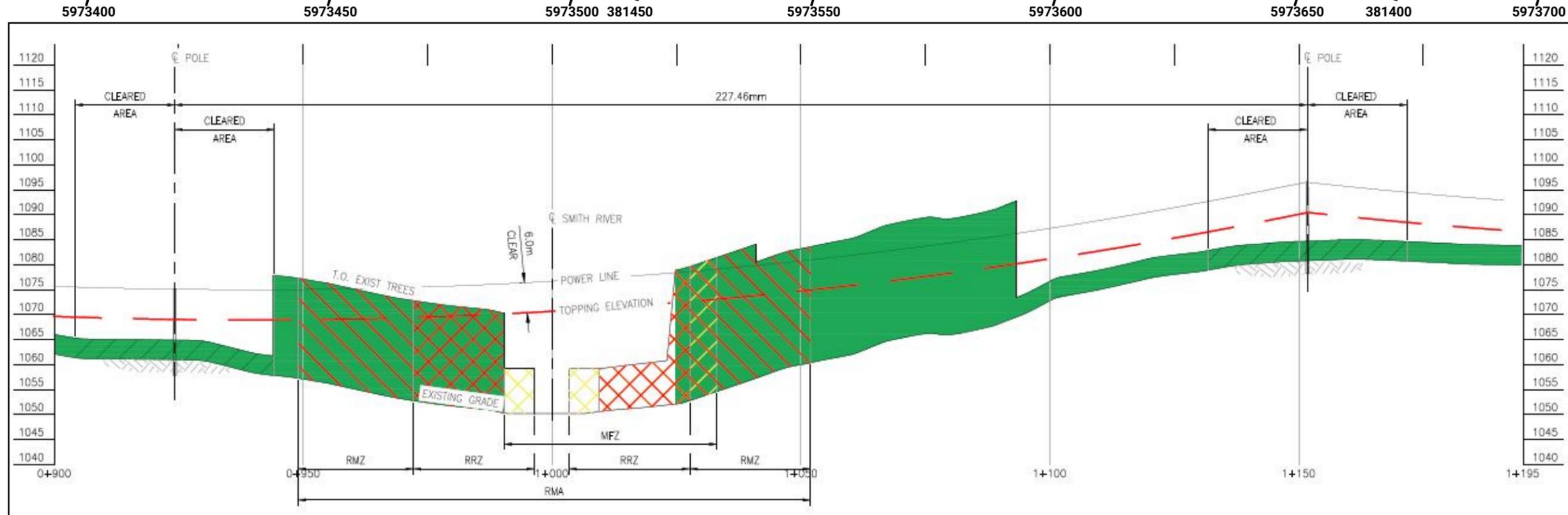
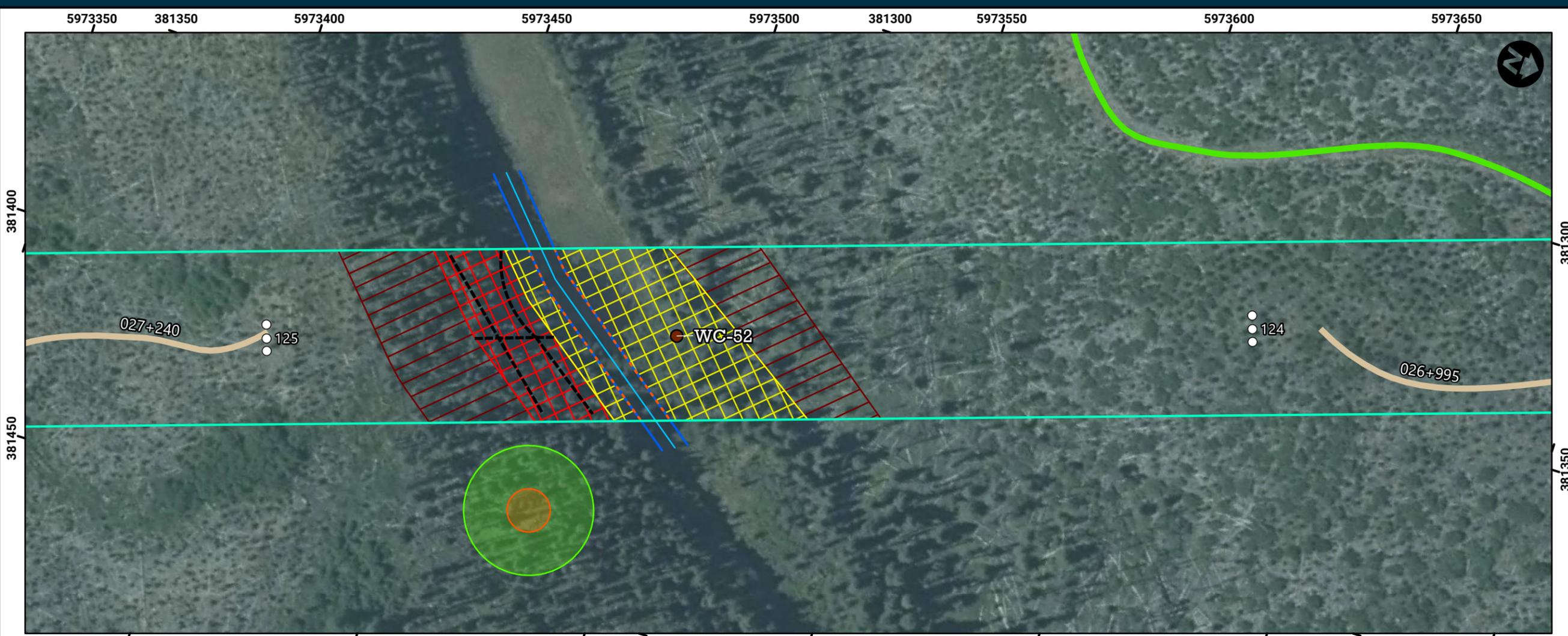


BW GOLD LTD
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Clearing Plan Profiles WC-52 - Smith Creek Classification: S3

- Cultural Heritage Points
- Non Status roads
- Permitted roads
- Buncher Trails
- Sediment Control
- Stream Banks
- Stream Centerline
- Protected Archaeological Site
- Special Management Zone - 10m
- Riparian Management Zone
- Riparian Reserve Zone
- Machine Free Zone
- Bridge Only
- Culvert Only
- Existing Culvert
- Not Crossed
- RigMat/Corduroy/Temporary Overland Only
- Aerial Only
- Bridge and Aerial
- Culvert and Aerial
- Existing Culvert and Aerial
- Not Crossed
- RigMat/Corduroy/Temporary Overland
- BW Gold Proposed Structure
- New temporary access
- BW Gold Proposed TL RoW / OLTC

Date: 2023-08-23
 Projection: NAD 1983 BC Environment Albers
 Scale: 1:1,000
 Author: tkendall
 Last Modified By: tkendall
 Checked By:
 Revision #:



*** Decking of all timber will occur outside the RMA.



Riparian Management Zone Prescription

Report Date: August 25th, 2023

WATERCOURSE #	STREAM NAME	POLE NUMBER	LOCATION	LAT/LONG
WC-55	Fifteen Creek	134A - 134	KP 29+456	53.877084, -124.793575

STREAM CLASSIFICATION	RIPARIAN RESERVE ZONE (RRZ)	RIAPARIAN MANAGEMENT ZONE (RMZ)	TOTAL RIPARIAN MANAGEMENT AREA (RMA)	Crossing Type
S4	0m	30m	30m	Aerial
	0ha	.24ha	.24ha	

DESCRIPTION OF THE SITE
<p>WC-55 is located along an unnamed branch road at 125.5km off the Holy Cross FSR. Located in the SBS mc2, this site is described as a fast-moving watercourse flowing through a 20-meter-deep gully with 35-45% slopes on both sides. Within the gully, the overstory is comprised of mature 30-meter-tall spruce with a rich understory comprised of black twinberry, thimbleberry, alder and mosses. Above the gully the terrain flattens and is made up of 5-meter-tall pine plantations on both sides of the watercourse.</p>

PRESCRIPTION	
PRELIMINARY MEASURES	<p>If site conditions differ from what is described in this Riparian Management Zone Prescription, stop work and contact the Blackwater Gold Supervisor for direction. Prior to workers being on the ground outside of a machine, a danger tree assessment will be completed by a certified Danger Tree Accessor. Sediment control fencing will be installed on both sides of the watercourse along the length of the ROW prior to clearing.</p>
RMZ	<p>The RMZ for Fifteen Creek is 30 meters wide. The overstory is primarily made up of mature spruce and immature pine plantations. Based off the Clearing Plan Map, the Transmission Line conductors will have a minimum 10-meter clearance from the treetops. The prescription for the RMZ will be a <i>Modified Mechanical Tree Removal System</i>, A mechanical feller buncher will enter the RMZ and remove the upper portion of the tree by cutting it at approximately 4 to 6 meters above the ground, ensuring adequate clearance for the Transmission Line. Immature timber will be left or stubbed at a height so the Transmission Line conductors have a minimum of 6 meters clearance from any treetops. All non-commercial brush and vegetation within the RMZ will be retained where operationally feasible. This will maintain bank stability and reduce potential for erosion.</p>

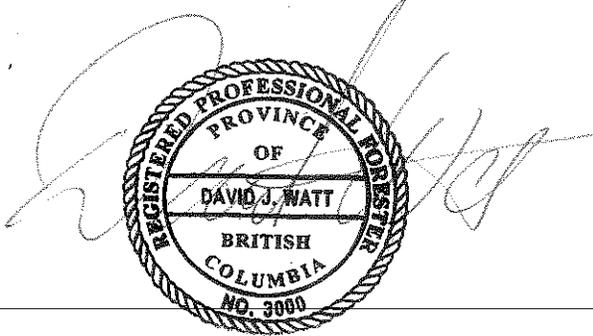
Riparian Management Zone Prescription

	<p>Mechanical equipment will not be permitted within 5 meters of the stream bank, which will be marked by a 5-meter MFZ in the field. Mechanical equipment will use caution when working on steep slopes and will not operate outside of a machines operating specifications. Timber within the RMZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA, where operationally feasible.</p>
RRZ	<p>Fifteen Creek is an S4 stream and has no legislated RRZ.</p>
TIMING AND WEATHER CONDITIONS	<p>Work with mechanical feller bunchers in the RMA must be completed in either dry or frozen conditions, or on a snowpack of at least 60cm.</p> <p>Construction within the RMA will not occur during a moderate rain event, defined as: >44mm in a 24hr period.</p>
FOREST HEALTH	<p>All spruce which is felled in the RMA must be removed and either delivered to a processing facility or burned on site to minimize the chance of a Spruce Bark Beetle infestation.</p> <p>All immature timber which is cleared in the RMA must be processed and transported off site or burned on site to mitigate the fire danger risk from fuel build up.</p>
POST CLEARING	<p>Any branches or debris that falls into the stream channel will be removed by hand, where it can be done safely.</p> <p>All unused construction materials, and other litter must be removed from the site after construction is complete.</p> <p>All erosion control materials will be removed prior to the first freeze up after construction is complete so that materials do not deteriorate into the watercourse.</p> <p>Annual monitoring will be required post clearing to monitor conductor clearance and to inspect for Spruce Bark Beetle infestation in stubbed trees.</p>



**Blackwater
Mine**

Riparian Management Zone Prescription

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
David J. Watt R.P.F.	
DATE SIGNED	
I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been to the standards acceptable of a registered Professional Forester	

Map Attached forms an integral part of this plan.

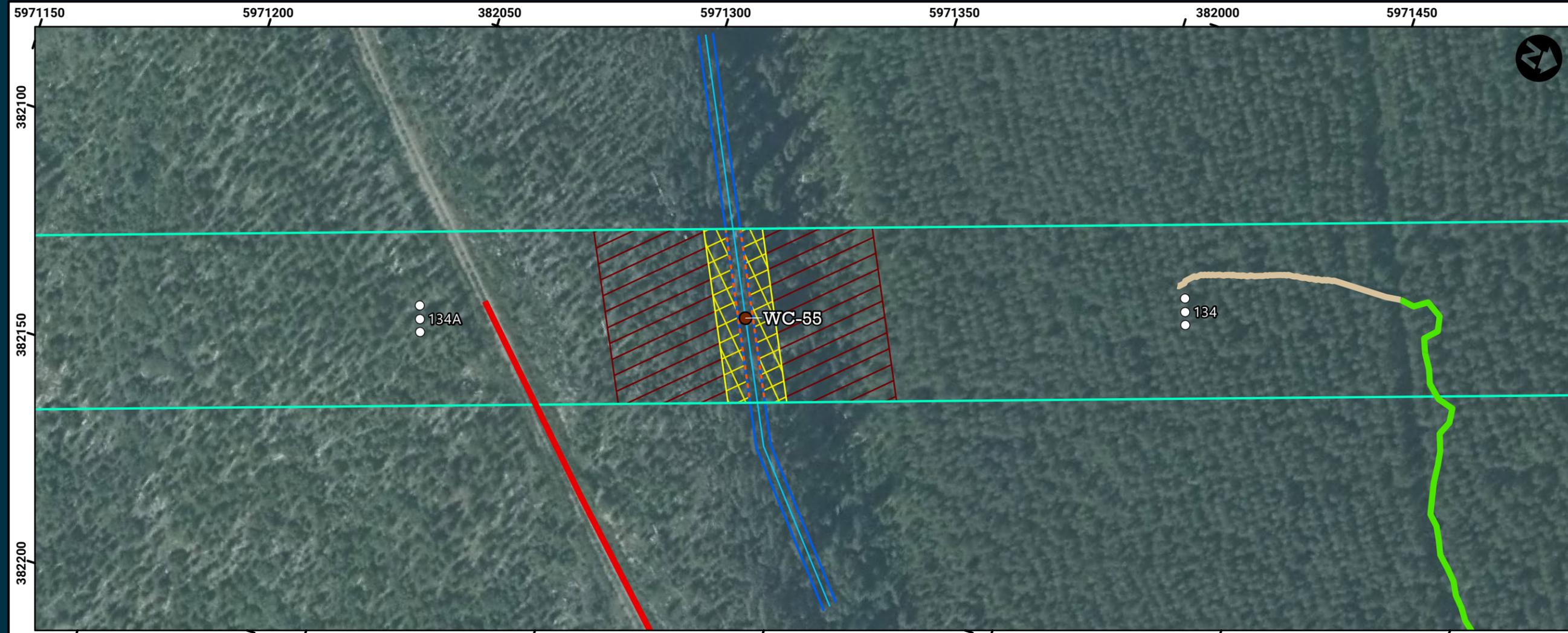
Photos of Site:



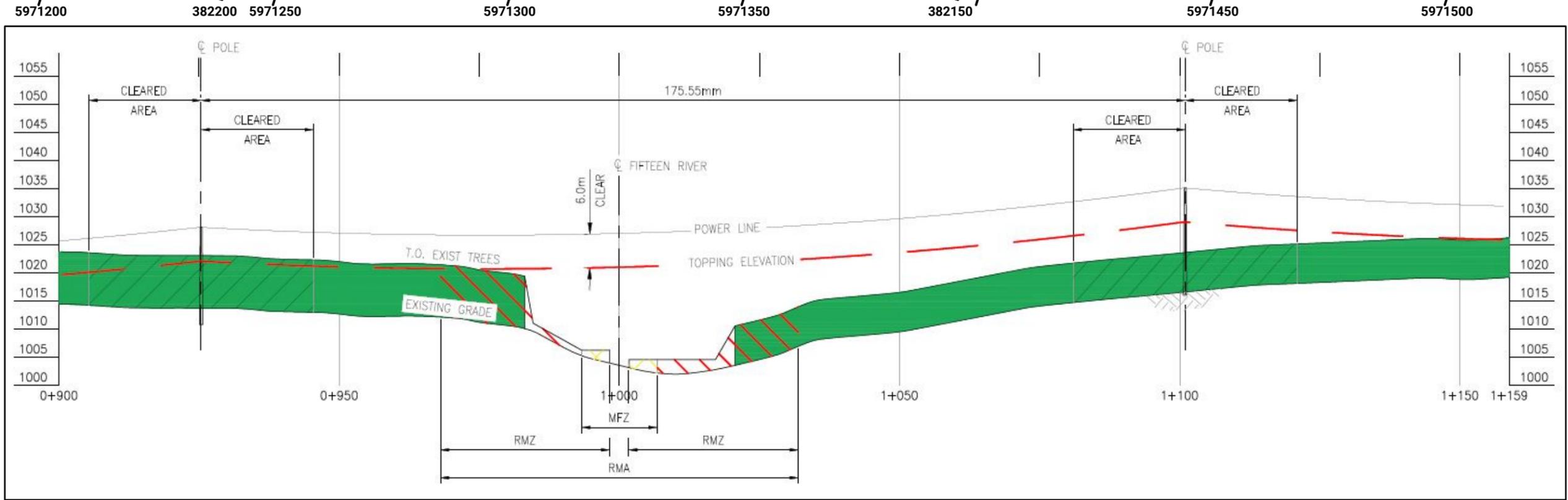
Figure 1: Upstream channel of WC-55 within ROW.



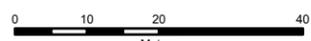
Figure 2: Downstream channel of WC-55 within ROW.



-  Cultural Heritage Points
-  Non Status roads
-  Permitted roads
-  Buncher Trails
-  Sediment Control
-  Stream Banks
-  Stream Centerline
-  Protected Archaeological Site
-  Special Management Zone - 10m
-  Riparian Management Zone
-  Riparian Reserve Zone
-  Machine Free Zone
-  Bridge Only
-  Culvert Only
-  Existing Culvert
-  Not Crossed
-  RigMat/Corduroy/Temporary Overland Only
-  Aerial Only
-  Bridge and Aerial
-  Culvert and Aerial
-  Existing Culvert and Aerial
-  Not Crossed
-  RigMat/Corduroy/Temporary Overland
-  BW Gold Proposed Structure
-  New temporary access
-  BW Gold Proposed TL RoW / OLTC



Date: 2023-08-23
 Projection: NAD 1983 BC Environment Albers
 Scale: 1:1,000
 Author: tkendall
 Last Modified By: tkendall
 Checked By:
 Revision #:




*** Decking of all timber will occur outside the RMA.

Riparian Management Zone Prescription

Report Date: August 25th, 2023

WATERCOURSE #	STREAM NAME	POLE NUMBER	LOCATION	LAT/LONG
WC-75	Targe Creek	193 - 194	KP 41+997	53.779038, -124.865257

STREAM CLASSIFICATION	RIPARIAN RESERVE ZONE (RRZ)	RIAPARIAN MANAGEMENT ZONE (RMZ)	TOTAL RIPARIAN MANAGEMENT AREA (RMA)	Crossing Type
S3	20m	20m	40m	Aerial
	0.28ha	0.29ha	0.57ha	

DESCRIPTION OF THE SITE

Targe Creek is accessed from two unnamed branch roads located off the Holy Cross FSR. The northern access is located off the Holy Cross FSR at approximately 139km and the southern access is off the Holy Cross FSR at approximately 143km. Located within the SBS dk BEC zone, the watercourse is located within a gully with poles located on the crests of each side. Slopes along each side of the gully (35-45%) will present operational challenges for mechanical equipment. The area has been recently logged and reforested. All the trees within the RMA are under 5 meters tall.

PRESCRIPTION

PRELIMINARY MEASURES	If site conditions differ from what is described in this Riparian Management Zone Prescription, stop work and contact the Blackwater Gold Supervisor for direction. Prior to workers being on the ground outside of a machine, a danger tree assessment will be completed by a certified Danger Tree Assessor. Sediment control fencing will be installed on both sides of the watercourse along the length of the ROW prior to clearing.
RMZ	The RMZ for Targe Creek is 20 meters wide. The trees within the crossing site are under 5 meters tall and will not interfere with the Transmission Line. The prescription in the RMA will be a <i>Modified Mechanical Tree Removal System</i> , which only removes timber required to complete construction. All other non-commercial brush, vegetation, and deciduous trees will be retained where operationally feasible. Mechanical equipment is permitted to operate in the RMZ, but will use caution when working on steep slopes and will not operate outside of a machine's operating specifications. Timber within the RMZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid

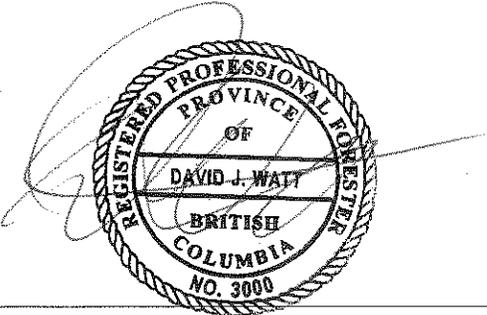


	<p>outside of the RMA. All processing and decking will take place outside the RMA where operationally feasible.</p>
RRZ	<p>The RRZ for Targe Creek is 20 meters wide. The trees within the crossing site are under 5 meters tall and will not interfere with the Transmission Line. The harvest prescription will be a <i>Modified Mechanical Tree Removal System</i>, which only removes timber required to complete construction. All non-commercial brush, vegetation, and deciduous trees will be retained where operationally feasible. This will maintain bank stability and reduce the potential for erosion.</p> <p>Mechanical equipment will not be permitted within 5 meters of the stream bank, which will be marked by a 5-meter MFZ in the field. Mechanical equipment is permitted to operate in the RRZ, but will use caution when working on steep slopes and will not operate outside of a machine's operating specifications. Timber within the RRZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside the RMA where operationally feasible.</p>
TIMING AND WEATHER CONDITIONS	<p>Work with mechanical feller bunchers in the RMA area must be completed in either dry or frozen conditions, or on a snowpack of at least 60cm.</p> <p>Construction within the RMA will not occur during a moderate rain event, defined as: >44mm of in a 24hr period.</p>
FOREST HEALTH	<p>All spruce which is felled in the RMA must be removed and either delivered to a processing facility or burned on site to minimize the chance of a Spruce Bark Beetle infestation.</p> <p>All immature timber that is cleared within the RMA must be processed and transported off site or burned on site to minimize the fire risk from fuel build up.</p>
POST CLEARING	<p>Any branches or debris that fall into the stream channel will be removed by hand, where it can be done safely.</p> <p>All unused construction materials, and other litter must be removed from the site after construction is complete.</p> <p>All erosion control materials will be removed prior to the first freeze up after construction is complete so that materials do not deteriorate into the watercourse.</p> <p>Annual monitoring will be required post clearing to monitor conductor clearance and to inspect for Spruce Bark Beetle infestation in stubbed trees.</p>



Blackwater
Mine

Riparian Management Zone Prescription

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
David Watt, R.P.F.	
DATE SIGNED	
August 25 th , 2023	
I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been to the standards acceptable of a registered Professional Forester	

Map Attached forms an integral part of this plan.

Photos of Site:



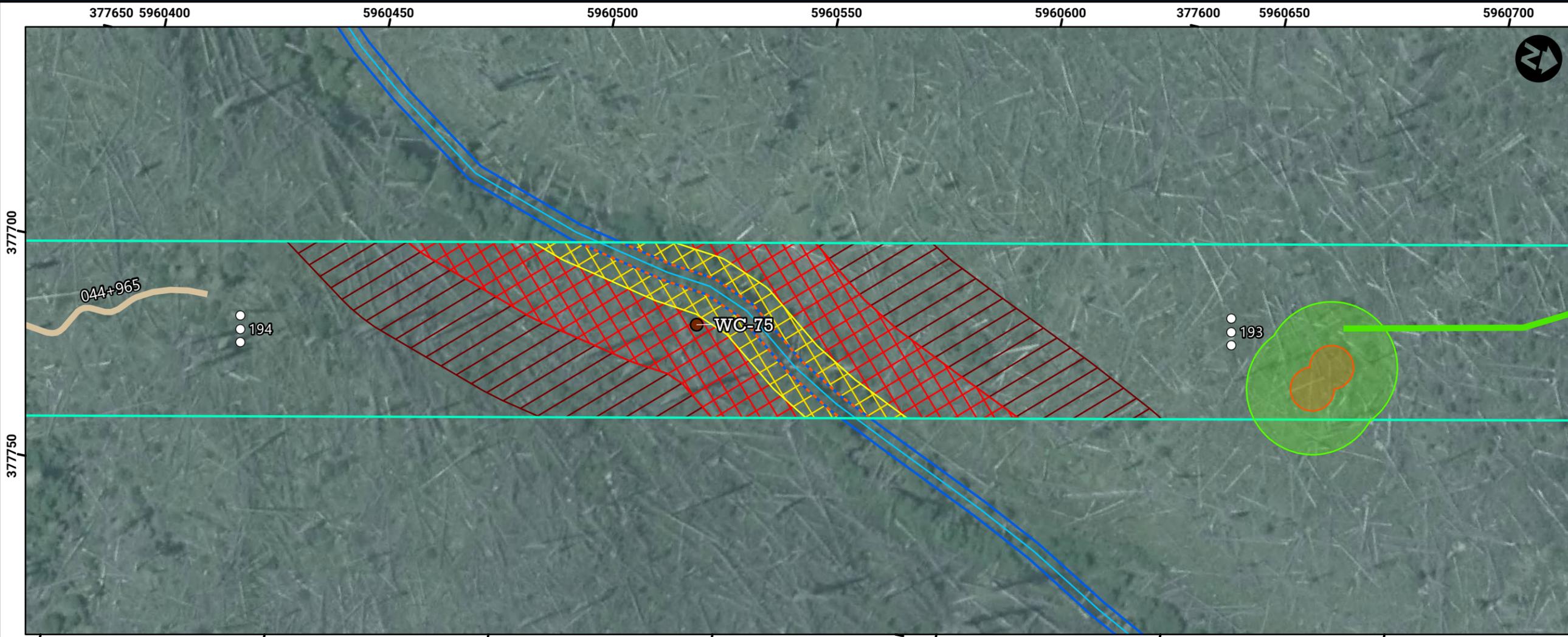
Figure 1: Southern side of WC-75 looking north.



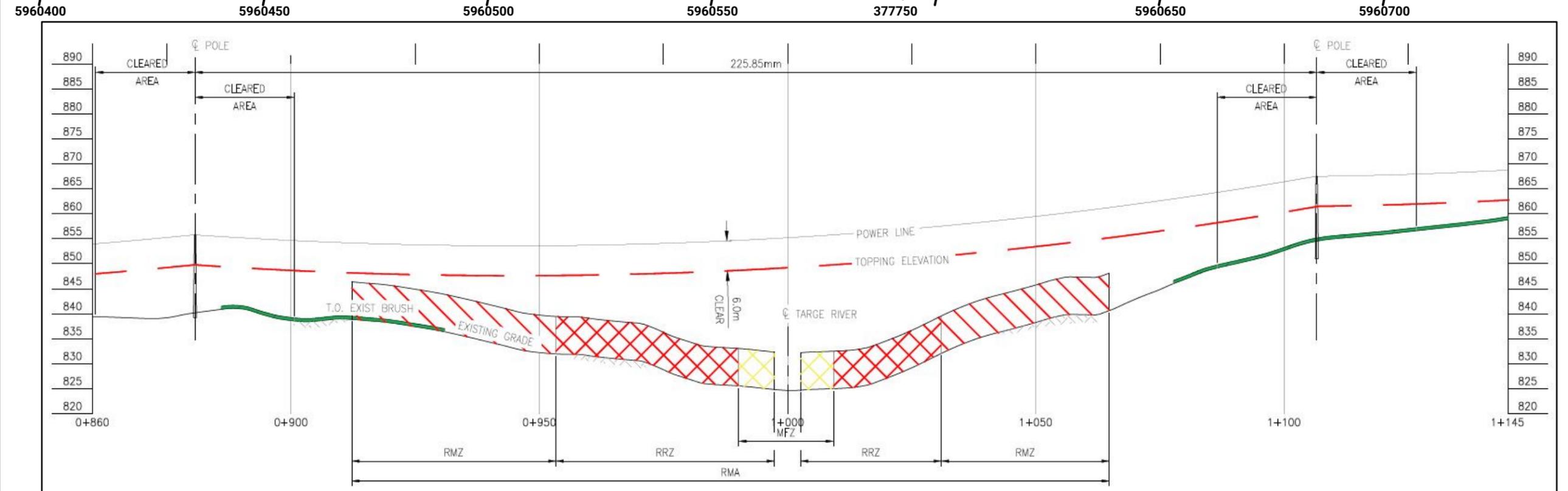
Figure 2: Northern side of WC-75 looking south.



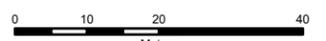
Figure 3: Dry stream bed of WC-75.



-  Cultural Heritage Points
-  Non Status roads
-  Permitted roads
-  Buncher Trails
-  Sediment Control
-  Stream Banks
-  Stream Centerline
-  Protected Archaeological Site
-  Special Management Zone - 10m
-  Riparian Management Zone
-  Riparian Reserve Zone
-  Machine Free Zone
-  Bridge Only
-  Culvert Only
-  Existing Culvert
-  Not Crossed
-  RigMat/Corduroy/Temporary Overland Only
-  Aerial Only
-  Bridge and Aerial
-  Culvert and Aerial
-  Existing Culvert and Aerial
-  Not Crossed
-  RigMat/Corduroy/Temporary Overland
-  BW Gold Proposed Structure
-  New temporary access
-  BW Gold Proposed TL RoW / OLTC



Date: 2023-08-23
 Projection: NAD 1983 BC Environment Albers
 Scale: 1:1,000
 Author: tkendall
 Last Modified By: tkendall
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 Revision #:




*** Decking of all timber will occur outside the RMA.



Riparian Management Zone Prescription

Report Date: August 25th, 2023

WATERCOURSE #	STREAM NAME	POLE NUMBER	LOCATION	LAT/LONG
WC-96	Nechako River	238-239	KP 51+801	53.694193, -124.823685

STREAM CLASSIFICATION	RIPARIAN RESERVE ZONE (RRZ)	RIAPARIAN MANAGEMENT ZONE (RMZ)	TOTAL RIPARIAN MANAGEMENT AREA (RMA)	Crossing Type
S1-A	0m	100m	100m	Aerial
	0ha	0.78ha	0.78ha	

DESCRIPTION OF THE SITE
<p>The Nechako River is accessed from 2 different road networks. The western access is via the Holy Cross 50 road (FSR). The eastern access is via an unnamed branch road off the Kenny Dam Road. The watercourses RMA is within the SBS dk BEC Zone. The terrain is characterized as gradually sloped up and away from the Nechako River and leveling out on each side. The overstory comprised of a mature spruce and cottonwood mix. The western side has smaller timber and is less densely spaced. The eastern side has a higher proportion of dead timber that will have reduced wind firmness.</p>

PRESCRIPTION	
PRELIMINARY MEASURES	<p>If site conditions differ from what is described in this Riparian Management Zone Prescription, stop work and contact the Blackwater Gold Supervisor for direction. Prior to workers being on the ground outside of a machine, a danger tree assessment will be completed by a certified Danger Tree Assessor. Sediment control fencing will be installed on both sides of the watercourse along the length of the ROW prior to clearing.</p>
RMZ	<p>The RMA for the Nechako River is 100 meters wide. The overstory is primarily made up of spruce/cottonwood, which is approximately 30-meters tall, and overtops the Transmission Line by approximately 10 meters. The prescription for the RMZ is a <i>Modified Mechanical Tree Removal System</i>. A mechanical feller buncher will be used to remove the upper portion of each tree by cutting the mature timber at approximately 4 to 6 meters above the ground, ensuring adequate clearance for the Transmission Line. All non-commercial brush, immature conifers, and deciduous trees will be retained where operationally feasible. This will maintain bank stability and reduce the potential for erosion.</p>

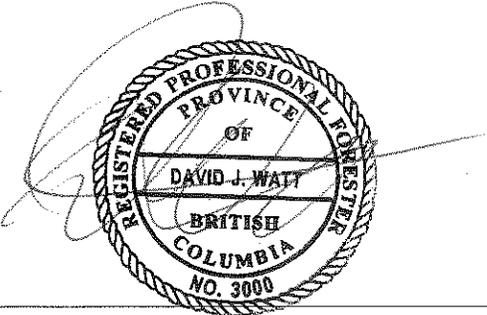
Riparian Management Zone Prescription

	Mechanical equipment will not be permitted within 5 meters of the stream bank, which will be marked by a 5-meter MFZ in the field. Timber within the RMZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA where operationally feasible.
RRZ	The Nechako River is a S1-A and does not have a legislated RRZ.
TIMING AND WEATHER CONDITIONS	<p>Work with mechanical feller bunchers in the RMA areas must be completed in either dry or frozen conditions, or on a snowpack of at least 60cm.</p> <p>Construction within the RMA will not occur during a moderate rain event, defined as: >2.5mm of rain per hour.</p>
FOREST HEALTH	<p>All spruce which is felled in the RMZ must be removed and either delivered to a processing facility or burned on site to minimize the chance of a Spruce Bark Beetle infestation.</p> <p>All immature timber which is cleared must be processed and transported off site or burned on site to mitigate the fire danger risk from fuel build up.</p>
POST CLEARING	<p>Any branches or debris that fall into the stream channel will be removed by hand, where it can be done safely.</p> <p>All unused construction materials, and other litter must be removed from the site after construction is complete.</p> <p>All erosion control materials will be removed prior to the first freeze up after construction is complete so that materials do not deteriorate into the watercourse.</p> <p>Annual monitoring will be required post clearing to monitor conductor clearance and to inspect for Spruce Bark Beetle infestation in stubbed trees.</p>



**Blackwater
Mine**

Riparian Management Zone Prescription

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
David Watt, R.P.F.	
DATE SIGNED	
August 25 th , 2023	
<p>I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been to the standards acceptable of a registered Professional Forester</p>	

Map Attached forms an integral part of this plan.

Photos of Site:



Figure 1: WC-96 aerial photo taken from the east.



Figure 2: WC-96 aerial photo taken from the south.



Figure 3: WC-96 aerial photo taken from the west.



Figure 4: WC-96 photo from west side looking east.



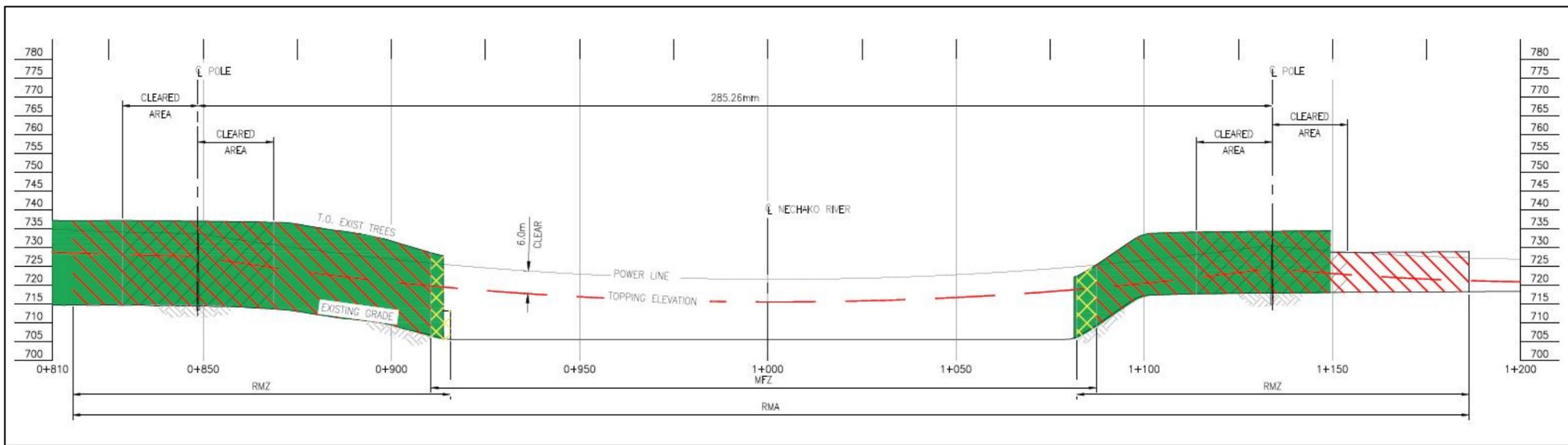
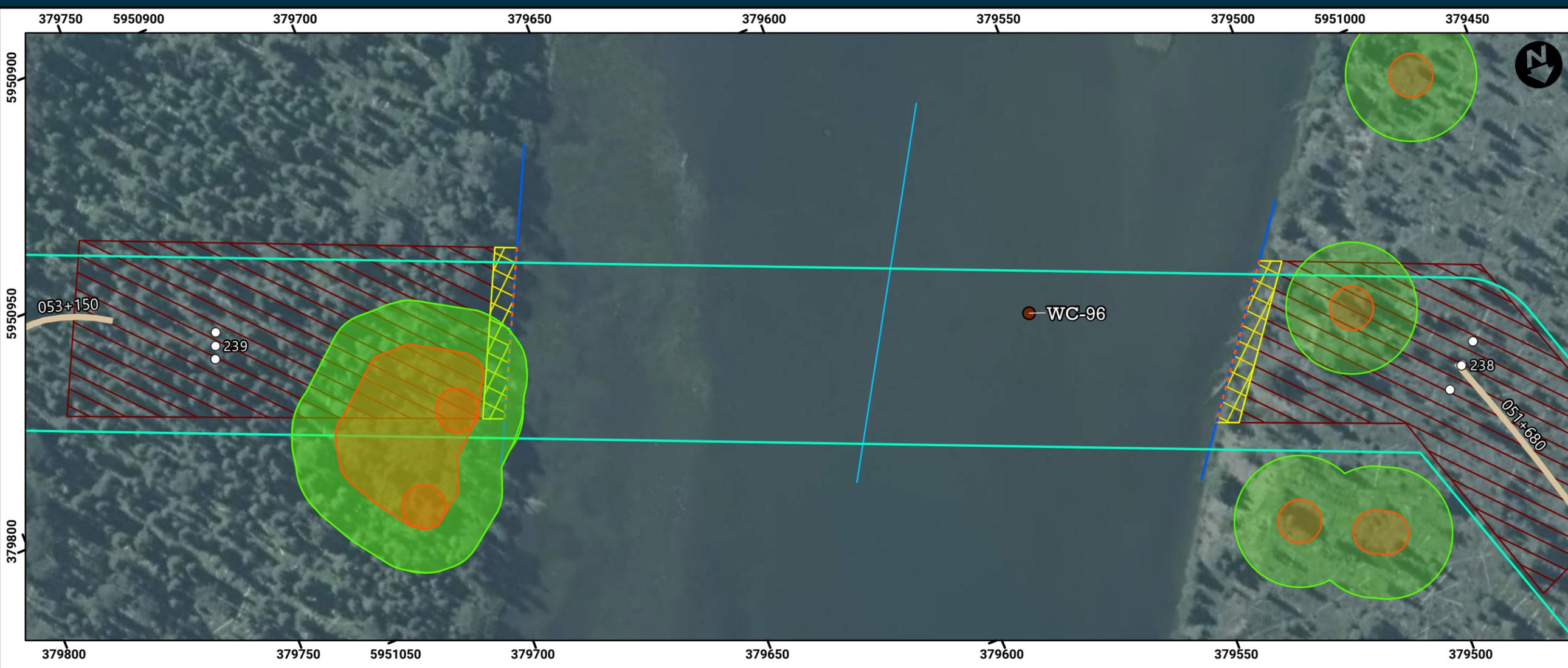
Figure 5: WC-96 bank from the west side.



BW GOLD LTD
 a subsidiary company of Artemis Gold Inc
Clearing Plan Profiles
 WC-96 - Nechako River
 Classification: S1-A

- Cultural Heritage Points
- Non Status roads
- Permitted roads
- Buncher Trails
- Sediment Control
- Stream Banks
- Stream Centerline
- Protected Archaeological Site
- Special Management Zone - 10m
- Riparian Management Zone
- Riparian Reserve Zone
- Machine Free Zone
- Bridge Only
- Culvert Only
- Existing Culvert
- Not Crossed
- RigMat/Corduroy/Temporary Overland Only
- Aerial Only
- Bridge and Aerial
- Culvert and Aerial
- Existing Culvert and Aerial
- Not Crossed
- RigMat/Corduroy/Temporary Overland
- BW Gold Proposed Structure
- New temporary access
- BW Gold Proposed TL RoW / OLTC

Date: 2023-08-23
 Projection: NAD 1983 BC Environment Albers
 Scale: 1:1,000
 Author: tkendall
 Last Modified By: tkendall
 Checked By:
 Revision #:



*** Decking of all timber will occur outside the RMA.



Riparian Management Zone Prescription

Report Date: August 25th, 2023

WATERCOURSE #	STREAM NAME	POLE NUMBER	LOCATION	LAT/LONG
WC-100	Cutoff Creek	268-269	KP 58+521	53.641472, -124.792692

STREAM CLASSIFICATION	RIPARIAN RESERVE ZONE (RRZ)	RIAPARIAN MANAGEMENT ZONE (RMZ)	TOTAL RIPARIAN MANAGEMENT AREA (RMA)	Crossing Type
S2	30m	20m	50m	Aerial
	0.31ha	0.13ha	.44ha	

DESCRIPTION OF THE SITE
<p>Cutoff Creek is accessed from the Swanson FSR. Each side of the watercourse is accessed from a different unnamed block road. Cutoff Creek is a slow flowing stream that has floodplains that extend 20 meters off the edge of each bank. The floodplain is comprised of willows, scrub birch, and hydrophytic vegetation. The terrain north of Cutoff Creek is steep (>60%) and rocky with low tree and vegetation cover. This steep terrain continues beyond the RMA to the crest of the slope where Pole 319 is located. On the southern side of Cutoff Creek, the terrain elevates from the floodplain into a dry level site comprised of a 5-meter-tall pine plantation. A wildfire has recently passed through the area which has damaged the majority of the timber on the south side of the watercourse. This site is located in the SBS dk BEC zone, and is characterized as a drier and nutrient poor.</p>

PRESCRIPTION	
PRELIMINARY MEASURES	<p>If site conditions differ from what is described in this Riparian Management Zone Prescription, stop work and contact the Blackwater Gold Supervisor for direction. Prior to workers being on the ground outside of a machine, a danger tree assessment will be completed by a certified Danger Tree Assessor. Sediment control fencing will be installed on both sides of the watercourse along the length of the ROW prior to clearing.</p>
RMZ	<p>The RMZ for Cutoff Creek is 20 meters wide. The overstory is sparse and comprised of approximately 20-meter-tall dead pine, which is approximately 5 meters taller than the Transmission Line. The prescription for the RMZ is a <i>Modified Clearcut System</i> which retains the non-commercial brush, immature conifers, and deciduous trees where operationally feasible.</p>

Riparian Management Zone Prescription

	<p>Mechanical equipment is allowed within the RMZ. Timber within the RMZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA, where operationally feasible.</p>
RRZ	<p>The RRZ for Cutoff Creek is 30 meters wide and consists of low-density dead pine which is approximately 20 meters tall. Based off the Clearing Plan Map for this watercourse, The transmission conductors clear the tree tops by a minimum of 10 meters. This site will utilize a <i>Modified Mechanical Tree Removal System</i>, which only removes timber required to complete construction. In order to safely top the tree a Mechanical Feller Buncher will be used to remove the upper portion by cutting the mature trees at approximately 4 to 6 meters above the ground, ensuring adequate clearance for the Transmission Line. Immature timber within the RRZ will be left or stubbed at a height so the transmission line conductors have a minimum of 6 meters of clearance from any treetops. All non-commercial brush and vegetation within the RRZ will be retained where operationally feasible. This will maintain bank stability and reduce the potential for erosion</p> <p>Mechanical equipment will not be permitted within 5 meters of the stream bank, which will be marked by a 5-meter MFZ in the field. Mechanical equipment will use caution when working on steep slopes and will not operate outside of a machine's operating specifications. Timber within the RRZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside the RMA, where operationally feasible.</p>
TIMING AND WEATHER CONDITIONS	<p>Work with mechanical feller bunchers within the RMA area must be completed during either dry or frozen conditions, or on a snowpack of at least 60 cm.</p> <p>Construction within the RMA will not occur during a moderate rain event, defined as: > 44mm of in a 24hr period.</p>
FOREST HEALTH	<p>All spruce which is felled in the RMA must be removed and either delivered to a processing facility or burned on site to minimize the chance of a Spruce Bark Beetle infestation.</p> <p>All immature timber that is cleared within the RMA must be processed and transported off site or burned on site to minimize the fire risk from fuel build up.</p>

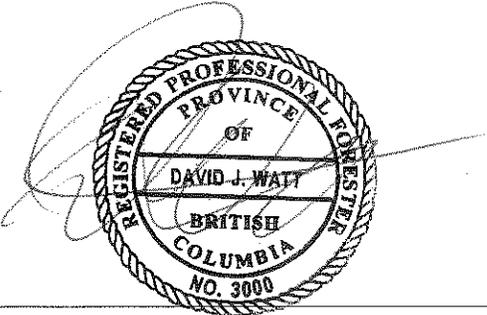
Riparian Management Zone Prescription

<p>POST LEARNING</p>	<p>Any branches or debris that fall into the stream channel will be removed by hand, where it can be done safely.</p> <p>All unused construction materials, and other litter must be removed from the site after construction is complete.</p> <p>All erosion control materials will be removed prior to the first freeze up after construction is complete so that materials do not deteriorate into the watercourse.</p> <p>Annual monitoring will be required post clearing to monitor conductor clearance and to inspect for Spruce Bark Beetle infestation in stubbed trees.</p> <p>All buncher trails will be reclaimed after construction is complete.</p>
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**Blackwater
Mine**

Riparian Management Zone Prescription

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
David Watt, R.P.F.	
DATE SIGNED	
August 25 th , 2023	
<p>I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been to the standards acceptable of a registered Professional Forester</p>	

Map Attached forms an integral part of this plan.

Photos of Site:



Figure 1: upstream channel of WC-100 within ROW.



Figure 2: WC-100 south side looking north within ROW.



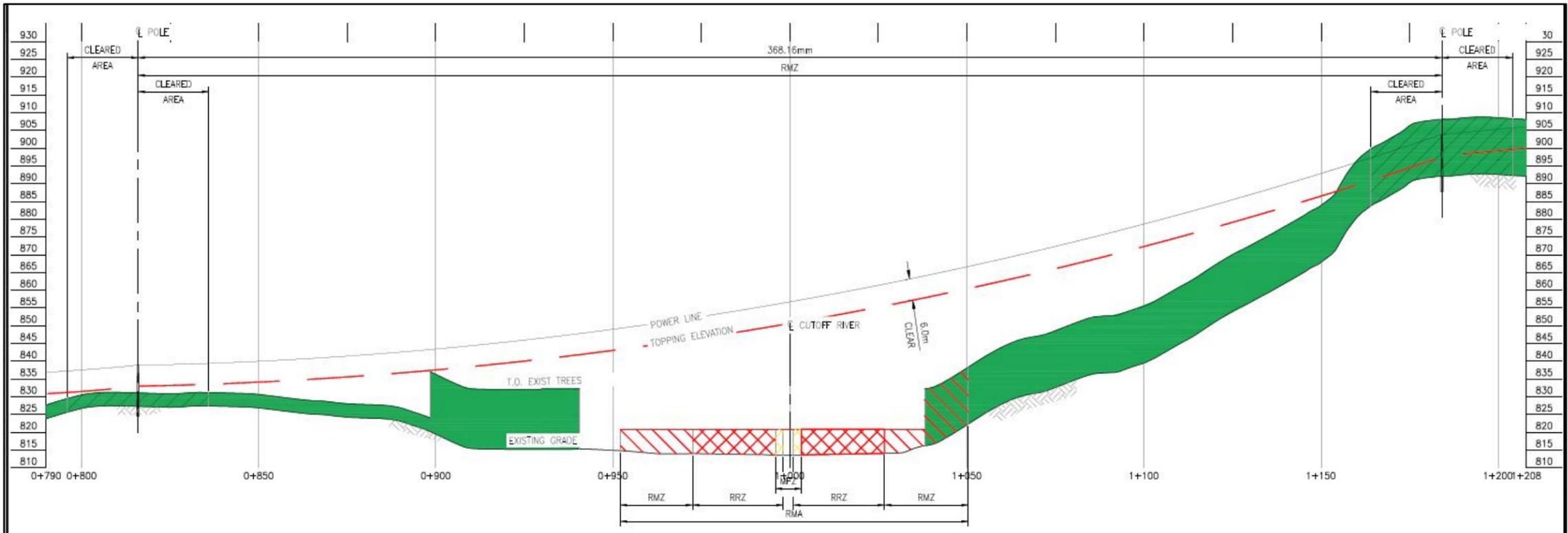
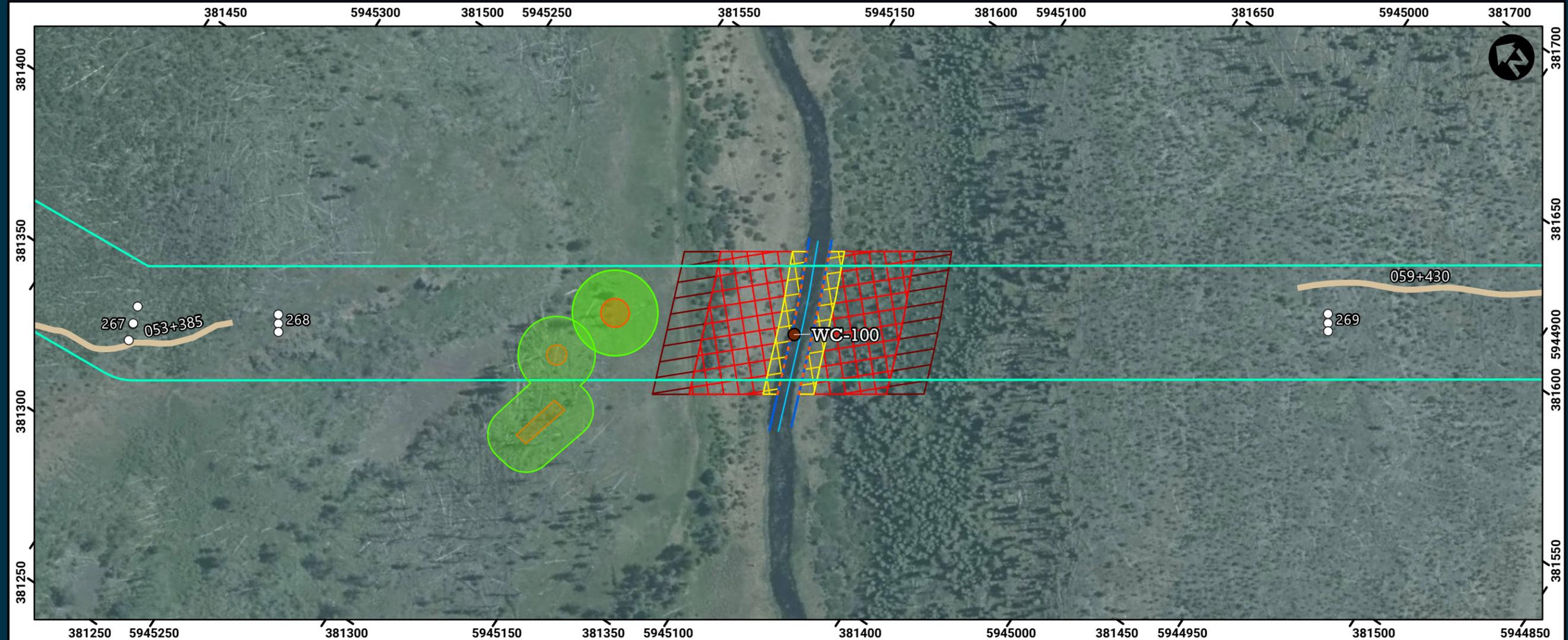
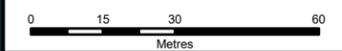
Figure 3: downstream channel and floodplain of WC-100 within ROW



BW GOLD LTD
 a subsidiary company of Artemis Gold Inc
Clearing Plan Profiles
 WC-100 - Cutoff Creek
 Classification: S2

- Cultural Heritage Points
- Non Status roads
- Permitted roads
- Buncher Trails
- Sediment Control
- Stream Banks
- Stream Centerline
- Protected Archaeological Site
- Special Management Zone - 10m
- Riparian Management Zone
- Riparian Reserve Zone
- Machine Free Zone
- Bridge Only
- Culvert Only
- Existing Culvert
- Not Crossed
- RigMat/Corduroy/Temporary Overland Only
- Aerial Only
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- Existing Culvert and Aerial
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- RigMat/Corduroy/Temporary Overland
- BW Gold Proposed Structure
- New temporary access
- BW Gold Proposed TL RoW / OLTC

Date: 2023-08-23
 Projection: NAD 1983 BC Environment Albers
 Scale: 1:1,500
 Author: tkendall
 Last Modified By: tkendall
 Checked By:
 Revision #:



*** Decking of all timber will occur outside the RMA.



Report Date: August 25th, 2023

WATERCOURSE #	STREAM NAME	POLE NUMBER	LOCATION	LAT/LONG
WC-130	Big Bend Creek	364 - 365	KP 80+714	53.531868, -124.587056

STREAM CLASSIFICATION	RIPARIAN RESERVE ZONE (RRZ)	RIAPARIAN MANAGEMENT ZONE (RMZ)	TOTAL RIPARIAN MANAGEMENT AREA (RMA)	Crossing Type
S2	30m	20m	50m	Aerial
	0.45ha	0.22ha	0.67ha	

DESCRIPTION OF THE SITE
WC-130 is located along the Kluskus FSR at approximately 77km. Located in the SBS mc2, this site is characterized as a slow flowing stream, meandering through an 80-meter-wide floodplain comprised of willows, sedges and other hydrophytic vegetation. Beyond the flood plain is made up of a sparse mature pine overstory with a poorly developed understory.

PRESCRIPTION	
PRELIMINARY MEASURES	If site conditions differ from what is described in this Riparian Management Zone Prescription, stop work and contact the Blackwater Gold supervisor for direction. Prior to workers being on the ground outside of a machine, a danger tree assessment will be completed by a certified Danger Tree Assessor. Sediment control fencing will be installed on both sides of the watercourse along the length of the ROW prior to clearing.
RMZ	The RMZ for Big Bend Creek is 20 meters wide. The mature timber is approximately 20 meters tall, which is approximately the same height at the Transmission Line. The harvesting prescription will be a <i>Modified Clearcut System</i> . All immature timber, non-commercial brush, and deciduous trees within the RMZ will be retained where operationally feasible. Mechanical equipment is allowed operate within the RMZ. Timber within the RMZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA, where operationally feasible.
RRZ	The RRZ for Big Bend Creek is 30 meters wide. The overstory consists of immature pine which is approximately 20 meters tall and approximately the same height as the Transmission Line. This prescription in the RRZ will be a <i>Modified Mechanical Tree</i>

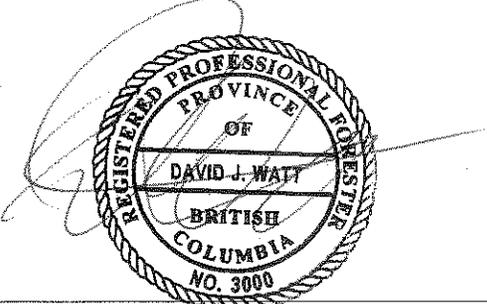


	<p><i>Removal System.</i> In order to safely top each tree a mechanical feller buncher will be used to remove the upper portion by cutting the mature tree at approximately 4 to 6 meters above the ground. This ensures adequate clearance for the transmission line. The mechanical feller buncher will carry the tops to a central trail where they can be skidded outside of the RMA. Immature timber within the RRZ will be left or stubbed at a height so the transmission line conductors have a minimum of 6 meters of clearance from any treetops. All non-commercial brush and vegetation within the RRZ will be retained where operationally feasible. This will maintain bank stability and reduce the potential for erosion.</p> <p>Mechanical equipment will not be permitted within 5 meters of the floodplain edge which will be marked by a 5-meter MFZ in the field. Mechanical equipment will only enter the watercourses RRZ on the bunching trails that have been identified on the Clearing Profile Map. Buncher trails will not be wider than 3 meters and Rig matting will be installed where sensitive terrain and soft spots exist. Equipment will be allowed to sit on planned trails and reach in to remove the tops of trees within the RRZ. The remainder of the timber within the RRZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skidded outside of the RMA. All processing and decking will take place outside of the RMA where operationally feasible.</p>
<p>TIMING AND WEATHER CONDITIONS</p>	<p>Work with mechanical feller bunchers in the RMA must be completed in either dry or frozen conditions, or on a snowpack of at least 60cm.</p> <p>Construction within the RMA will not occur during a moderate rain event, defined as: >2.5mm of rain per hour.</p>
<p>FOREST HEALTH</p>	<p>All spruce which is felled in the RMA must be removed and either delivered to a processing facility or burned on site to minimize the chance of a Spruce Bark Beetle infestation.</p> <p>All immature timber that is cleared within the RMA must be processed and transported off site or burned on site to minimize the fire risk from fuel build up.</p>
<p>POST CLEARING</p>	<p>Any branches or debris that fall into the stream channel will be removed by hand, where it can be done safely.</p> <p>All unused construction materials, and other litter must be removed from the site after construction is complete.</p> <p>All erosion control materials will be removed prior to the first freeze up after construction is complete so that materials do not deteriorate into the watercourse.</p> <p>Annual monitoring will be required post clearing to monitor conductor clearance and to inspect for Spruce Bark Beetle infestation in stubbed trees.</p> <p>All buncher trails will be rehabilitated after construction is complete.</p>



Blackwater
Mine

Riparian Management Zone Prescription

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
David Watt, R.P.F.	
DATE SIGNED	
August 25 th , 2023	
<p>I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been to the standards acceptable of a registered Professional Forester</p>	

Map Attached forms an integral part of this plan.

Photos of Site:



Figure 1: Downstream channel of WC-130, outside ROW.



Figure 2: Downstream channel of WC-130, outside ROW



Figure 3: Downstream channel of WC-130 within the ROW.



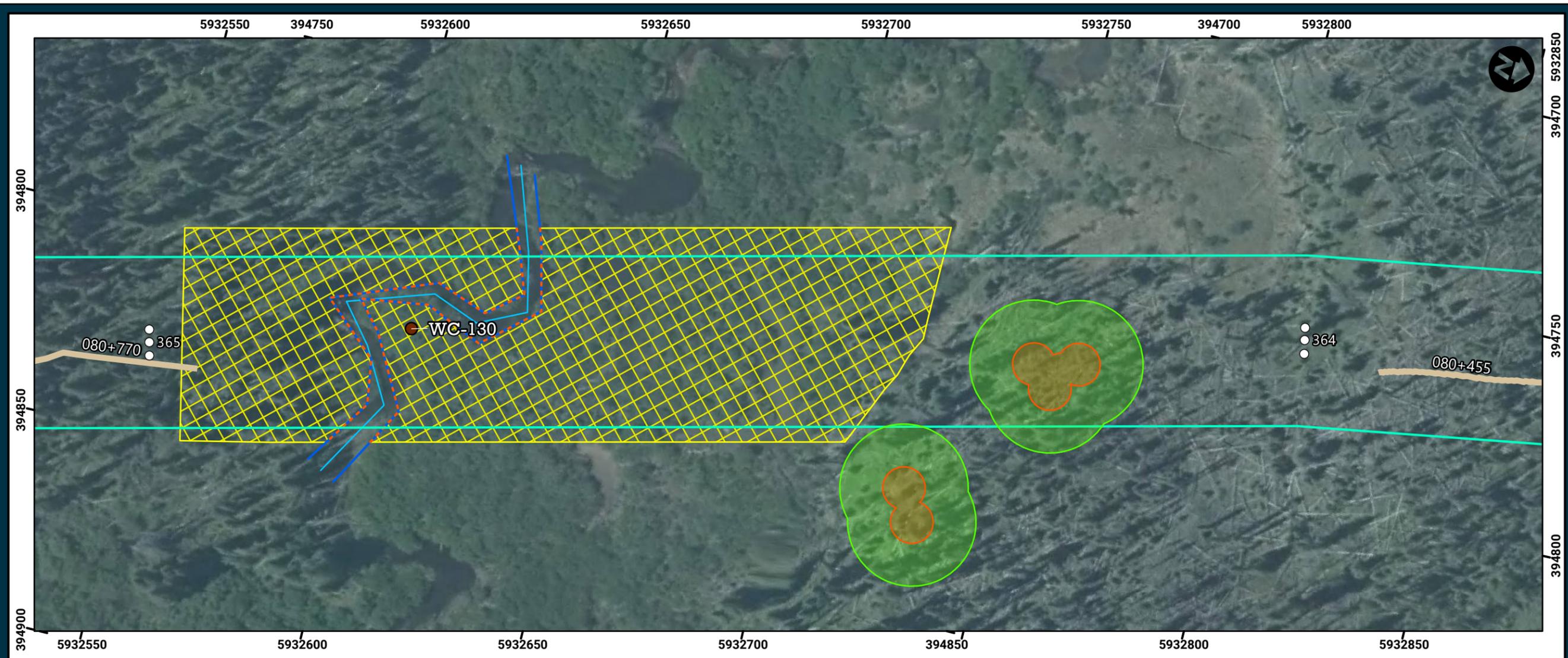
Figure 4: Downstream channel of WC-130 within the ROW.



Figure 5: Upstream channel of WC-130 within the ROW.

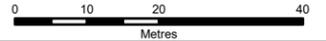
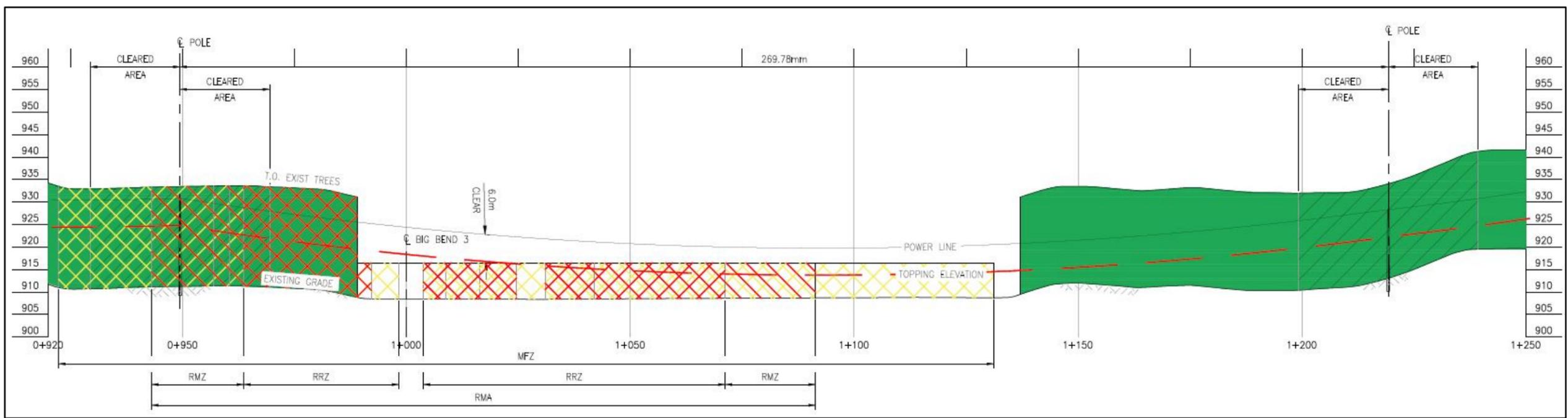


Figure 6: Downstream channel of WC-130 outside the ROW.



-  Cultural Heritage Points
-  Non Status roads
-  Permitted roads
-  Buncher Trails
-  Sediment Control
-  Stream Banks
-  Stream Centerline
-  Protected Archaeological Site
-  Special Management Zone - 10m
-  Riparian Management Zone
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-  Not Crossed
-  RigMat/Corduroy/Temporary Overland Only
-  Aerial Only
-  Bridge and Aerial
-  Culvert and Aerial
-  Existing Culvert and Aerial
-  Not Crossed
-  RigMat/Corduroy/Temporary Overland
-  BW Gold Proposed Structure
-  New temporary access
-  BW Gold Proposed TL RoW / OLTC

Date: 2023-08-23
 Projection: NAD 1983 BC Environment Albers
 Scale: 1:1,000
 Author: tkendall
 Last Modified By: tkendall
 Checked By:
 Revision #:

*** Decking of all timber will occur outside the RMA.

Riparian Management Zone Prescription

Report Date: August 25th, 2023

WATERCOURSE #	STREAM NAME	POLE NUMBER	LOCATION	LAT/LONG
WC-136	Big Bend Creek	395 - 396	KP 87+012	53.48303, -124.53867

STREAM CLASSIFICATION	RIPARIAN RESERVE ZONE (RRZ)	RIAPARIAN MANAGEMENT ZONE (RMZ)	TOTAL RIPARIAN MANAGEMENT AREA (RMA)	Crossing Type
S2	30m	20m	50m	Aerial
	0.38ha	0.20ha	0.58ha	

DESCRIPTION OF THE SITE
<p>WC-136 is accessed from two branch roads off the Kluskus FSR. The 79 Branch Road (FSR) is used to access the north side of the watercourse. An unnamed block road at approximately 86km off the Kluskus FSR is used to access the southern side of the watercourse. Located in the SBSmc3 BEC zone, this site characterized by a slow flowing stream meandering through a wide floodplain comprised of willows, sedges, and some mature spruce. The northside of the watercourse is characterized by a long slope of 45-60% from the edge of the floodplain until outside the RMA. There is no timber along the northern slope. The southern side of the watercourse has 40-meter-wide floodplain that transitions into dense mature spruce stand.</p>

PRESCRIPTION				
<table border="1"> <tr> <td>PRELIMINARY MEASURES</td> <td> <p>If site conditions differ from what is described in this Riparian Management Zone Prescription, stop work and contact the Blackwater Gold Supervisor for direction. Prior to workers being on the ground outside of a machine, a danger tree assessment will be completed by a certified Danger Tree Assessor. Sediment control fencing will be installed on both sides of the watercourse along the length of the ROW prior to clearing.</p> </td> </tr> <tr> <td>RMZ</td> <td> <p>The RMZ for WC-136 is 20 meters wide. The mature timber is approximately 30 meters tall, which overtops the transmission line by 10 meters. The prescription for the RMZ is a <i>Modified Clearcut System</i> which retains the non-commercial brush, immature conifers, and deciduous trees where operationally feasible.</p> <p>Mechanical equipment is permitted to operate inside RMZ. Timber within the RMZ that cannot be reached or is too large for the feller buncher will be hand felled away</p> </td> </tr> </table>	PRELIMINARY MEASURES	<p>If site conditions differ from what is described in this Riparian Management Zone Prescription, stop work and contact the Blackwater Gold Supervisor for direction. Prior to workers being on the ground outside of a machine, a danger tree assessment will be completed by a certified Danger Tree Assessor. Sediment control fencing will be installed on both sides of the watercourse along the length of the ROW prior to clearing.</p>	RMZ	<p>The RMZ for WC-136 is 20 meters wide. The mature timber is approximately 30 meters tall, which overtops the transmission line by 10 meters. The prescription for the RMZ is a <i>Modified Clearcut System</i> which retains the non-commercial brush, immature conifers, and deciduous trees where operationally feasible.</p> <p>Mechanical equipment is permitted to operate inside RMZ. Timber within the RMZ that cannot be reached or is too large for the feller buncher will be hand felled away</p>
PRELIMINARY MEASURES	<p>If site conditions differ from what is described in this Riparian Management Zone Prescription, stop work and contact the Blackwater Gold Supervisor for direction. Prior to workers being on the ground outside of a machine, a danger tree assessment will be completed by a certified Danger Tree Assessor. Sediment control fencing will be installed on both sides of the watercourse along the length of the ROW prior to clearing.</p>			
RMZ	<p>The RMZ for WC-136 is 20 meters wide. The mature timber is approximately 30 meters tall, which overtops the transmission line by 10 meters. The prescription for the RMZ is a <i>Modified Clearcut System</i> which retains the non-commercial brush, immature conifers, and deciduous trees where operationally feasible.</p> <p>Mechanical equipment is permitted to operate inside RMZ. Timber within the RMZ that cannot be reached or is too large for the feller buncher will be hand felled away</p>			

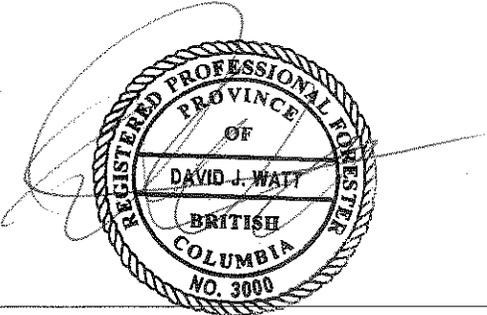
	<p>from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA, where operationally feasible.</p>
RRZ	<p>The RRZ for WC-136 is 30 meters wide. The overstory consists of sparsely spaced mature spruce which is approximately 30 meters tall and overtops the transmission line by approximately 10 meters. This RRZ will utilize a <i>Modified Mechanical Tree Removal System</i>. In order to safely top each tree a mechanical feller buncher will be used to remove the upper portion by cutting the mature tree at approximately 4 to 6 meters above the ground, ensuring adequate clearance for the Transmission Line. The mechanical feller buncher will carry the tops to a central trail where they can be skidded outside of the RMA. Immature timber within the RRZ will be left or stubbed at a height so the Transmission Line conductors have a minimum of 6 meters of clearance from any treetops. All non-commercial brush and vegetation within the RRZ will be retained where operationally feasible. This will maintain bank stability and reduce the potential for erosion.</p> <p>Mechanical equipment will not be permitted within 5 meters of the floodplain edge, which will be marked by a 5-meter MFZ in the field. Mechanical equipment will only enter the watercourses RRZ on the bunching trails that have been identified on the Clearing Profile Map. Buncher trails will not be wider than 3 meters and rig matting will be installed on buncher trails where sensitive terrain or soft spots exist.</p> <p>Mechanical equipment will use caution when working on steep slopes and not operate outside of the machines operating specifications. Equipment will be allowed to sit on pre-established trails and reach in to remove the tops of trees within the RRZ. The remainder of the timber within the RRZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside the RMA, where operationally feasible.</p>
TIMING AND WEATHER CONDITIONS	<p>Work with mechanical feller bunchers in the RMA must be completed in either dry or frozen conditions, or on a snowpack of at least 60cm.</p> <p>Construction within the RMA will not occur during a moderate rain event, defined as: >44mm in a 24hr period.</p>
FOREST HEALTH	<p>All Spruce which is felled in the RMA must be removed and either delivered to a processing facility or burned on site to minimize the chance of a Spruce Bark Beetle infestation.</p> <p>All immature timber that is cleared within the RMA must be processed and transported off site or burned on site to minimize the fire risk from fuel build up.</p>

POST CLEARING	<p>Any branches or debris that fall into the stream channel will be removed by hand, where it can be done safely.</p> <p>All unused construction materials, and other litter must be removed from the site after construction is complete.</p> <p>All erosion control materials will be removed prior to the first freeze up after construction is complete so that materials do not deteriorate into the watercourse.</p> <p>Annual monitoring will be required post clearing to monitor conductor clearance and to inspect for Spruce Bark Beetle infestation in stubbed trees.</p> <p>All buncher trails will be reclaimed after construction is complete.</p>
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Blackwater
Mine

Riparian Management Zone Prescription

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
David Watt, R.P.F.	
DATE SIGNED	
August 25 th , 2023	
I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been to the standards acceptable of a registered Professional Forester	

Map Attached forms an integral part of this plan.

Photos of Site:



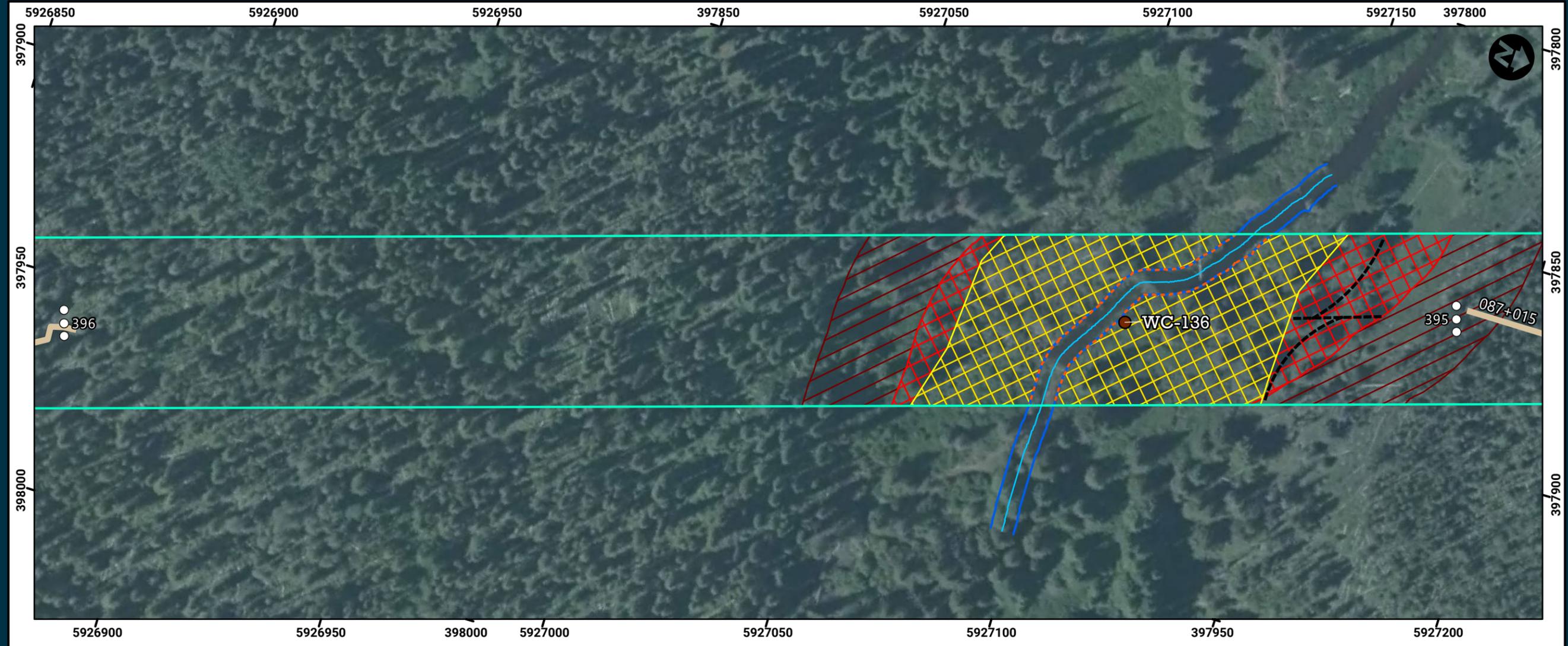
Figure 1: WC-136 southside looking north, inside ROW.



Figure 2: Upstream channel and Floodplain of WC-136 outside of ROW.

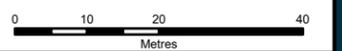
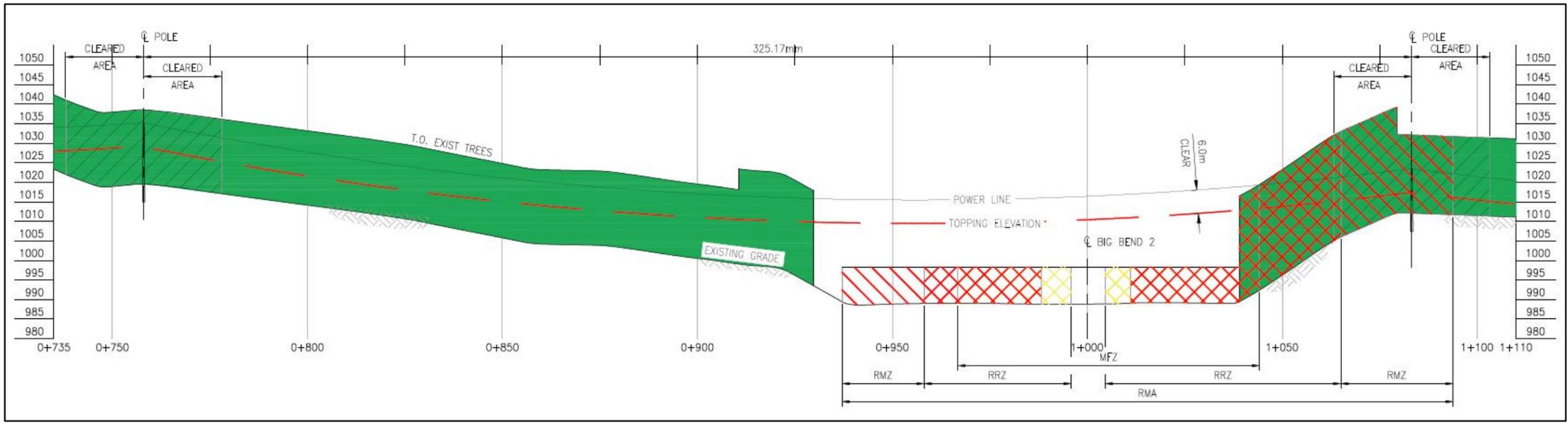


Figure 3: Upstream channel and floodplain of WC-136, outside of ROW.



- Cultural Heritage Points
- Non Status roads
- Permitted roads
- Buncher Trails
- Sediment Control
- Stream Banks
- Stream Centerline
- Protected Archaeological Site
- Special Management Zone - 10m
- Riparian Management Zone
- Riparian Reserve Zone
- Machine Free Zone
- Bridge Only
- Culvert Only
- Existing Culvert
- Not Crossed
- RigMat/Corduroy/Temporary Overland Only
- Aerial Only
- Bridge and Aerial
- Culvert and Aerial
- Existing Culvert and Aerial
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- RigMat/Corduroy/Temporary Overland
- BW Gold Proposed Structure
- New temporary access
- BW Gold Proposed TL RoW / OLTC

Date: 2023-08-23
 Projection: NAD 1983 BC Environment Albers
 Scale: 1:1,000
 Author: tkendall
 Last Modified By: tkendall
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 Revision #:

*** Decking of all timber will occur outside the RMA.



Riparian Management Zone Prescription

Report Date: August 25th, 2023

WATERCOURSE #	STREAM NAME	POLE NUMBER	LOCATION	LAT/LONG
WC-146	Big Bend Creek	419-420	KP 92+917	53.437095, -124.545849

STREAM CLASSIFICATION	RIPARIAN RESERVE ZONE (RRZ)	RIAPARIAN MANAGEMENT ZONE (RMZ)	TOTAL RIPARIAN MANAGEMENT AREA (RMA)	Crossing Type
S3	20m	20m	40m	Aerial
	0.16ha	0.16ha	0.32ha	

DESCRIPTION OF THE SITE
WC-146 is located along the Martin FSR at approximately 1km. The site is characterized by a slow meandering stream flowing through a wide, but gently sloped gully. Located within the SBS mc3 BEC zone, this site has a rich understory made up of alder, thimbleberry, black twinberry. The overstory is comprised of mature spruce/dead pine. The crossing site is located close to the Brewster Lake Rec Site.

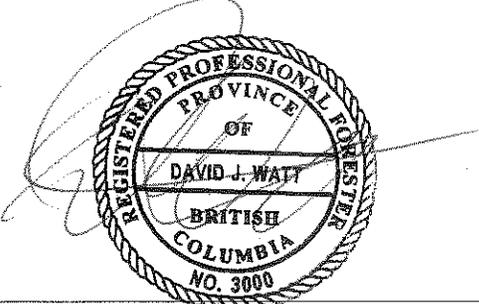
PRESCRIPTION	
PRELIMINARY MEASURES	If site conditions differ from what is described in this Riparian Management Zone Prescription, stop work and contact the Blackwater Gold Supervisor for direction. Prior to workers being on the ground outside of a machine, a danger tree assessment will be completed by a certified Danger Tree Assessor. Sediment control fencing will be installed on both sides of the watercourse along the length of the ROW prior to clearing.
RMZ	The RMZ for Big Bend Creek is 20 meters wide. The overstory is primarily made up of mature spruce/pine, which is approximately 30 meters tall, and overtops the Transmission Line by approximately 10 meters. The prescription for the RMZ is a <i>Modified Clearcut System</i> which retains the non-commercial brush, immature conifers and deciduous trees where operationally feasible. Mechanical equipment is permitted to operate inside the RMZ. Timber within the RMZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA where operationally feasible.
RRZ	The RRZ for Big Bend Creek is 20 meters wide. The overstory consists of mature spruce/pine which is approximately 30 meters tall and overtops the Transmission

	<p>Line by approximately 10 meters. The prescription for the RRZ is a <i>Modified Mechanical Tree Removal System</i>. In order to safely top each tree, a mechanical feller buncher will be used to remove the upper portion by cutting the mature tree at approximately 4-6 meters above the ground, ensuring adequate clearance for the Transmission Line. The mechanical feller buncher will carry the tops to a central trail where they can be skid outside of the RMA. Immature timber within the RRZ will be left or stubbed at a height so the Transmission Line conductors have a minimum of 6 meters of clearance from any treetops. All non-commercial brush and vegetation within the RRZ will be retained where operationally feasible. This will maintain bank stability and reduce the potential for erosion.</p> <p>Mechanical equipment will not be permitted within 5 meters of the stream bank, which will be marked by a 5-meter MFZ in the field. Mechanical equipment will only enter the watercourses RRZ on the bunching trails that have been identified on the Clearing Profile Map. Buncher trails will not be wider than 3 meters and rig matting will be installed where sensitive terrain or soft spots exist. Mechanical equipment will use caution when working on steep slopes and will not operate outside of a machines operating specifications. Equipment will be allowed to sit on planned trails and reach in to remove the tops of trees within the RRZ. The remainder of the timber within the RRZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA, where operationally feasible.</p>
<p>TIMING AND WEATHER CONDITIONS</p>	<p>Work with mechanical feller bunchers in the RMA must be completed in either dry or frozen conditions, or on a snowpack of at least 60cm.</p> <p>Construction within the RMA will not occur during a moderate rain event, defined as: >44mm in a 24hr period.</p>
<p>FOREST HEALTH</p>	<p>All spruce which is felled in the RMA must be removed and either delivered to a processing facility or burned on site to minimize the chance of a Spruce Bark Beetle infestation.</p> <p>All immature timber that is cleared within the RMA must be processed and transported off site or burned on site to minimize the fire risk from fuel build up.</p>
<p>POST CLEARING</p>	<p>Any branches or debris that fall into the stream channel will be removed by hand, where it can be done safely.</p> <p>All unused construction materials, and other litter must be removed from the site after construction is complete.</p> <p>All erosion control materials will be removed prior to the first freeze up after construction is complete so that materials do not deteriorate into the watercourse.</p> <p>Annual monitoring will be required post clearing to monitor conductor clearance and to inspect for Spruce Bark Beetle infestation in stubbed trees.</p> <p>All buncher trails will be reclaimed after construction is complete.</p>



Blackwater
Mine

Riparian Management Zone Prescription

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
David Watt, R.P.F.	
DATE SIGNED	
August 25 th , 2023	
<p>I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been to the standards acceptable of a registered Professional Forester</p>	

Map Attached forms an integral part of this plan.

Photos of Site:



Figure 1: Downstream channel of WC-146 within the ROW.



Figure 2: WC-146 rich vegetation along the stream banks within the ROW.



Figure 3: Large woody debris and rich vegetation within ROW.



Figure 4: Downstream channel of WC-146 outside ROW.



Figure 5: Within ROW, CWD along stream.



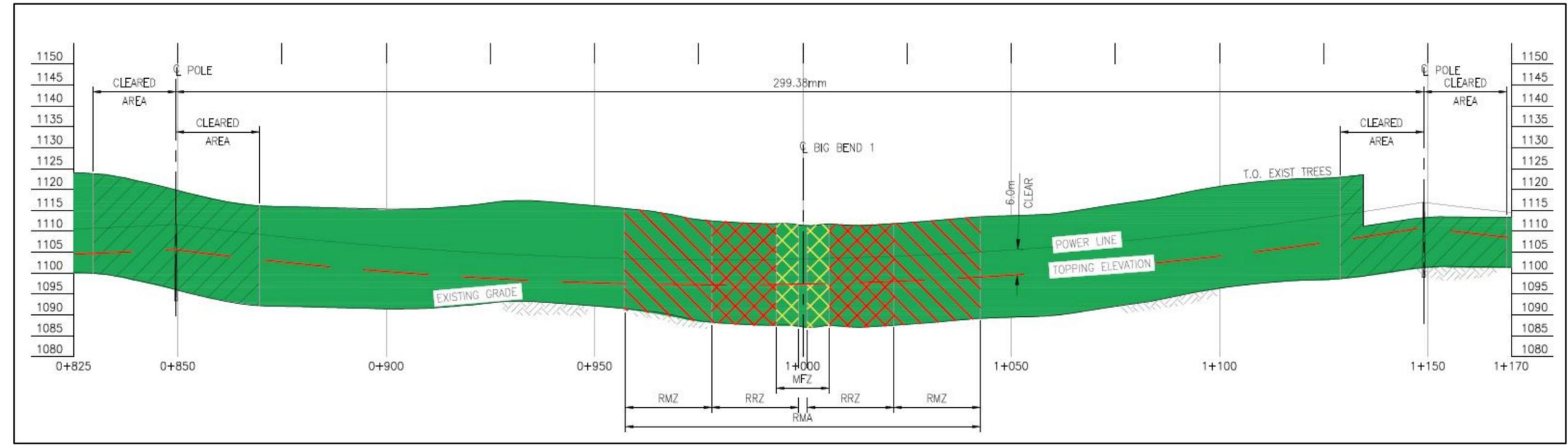
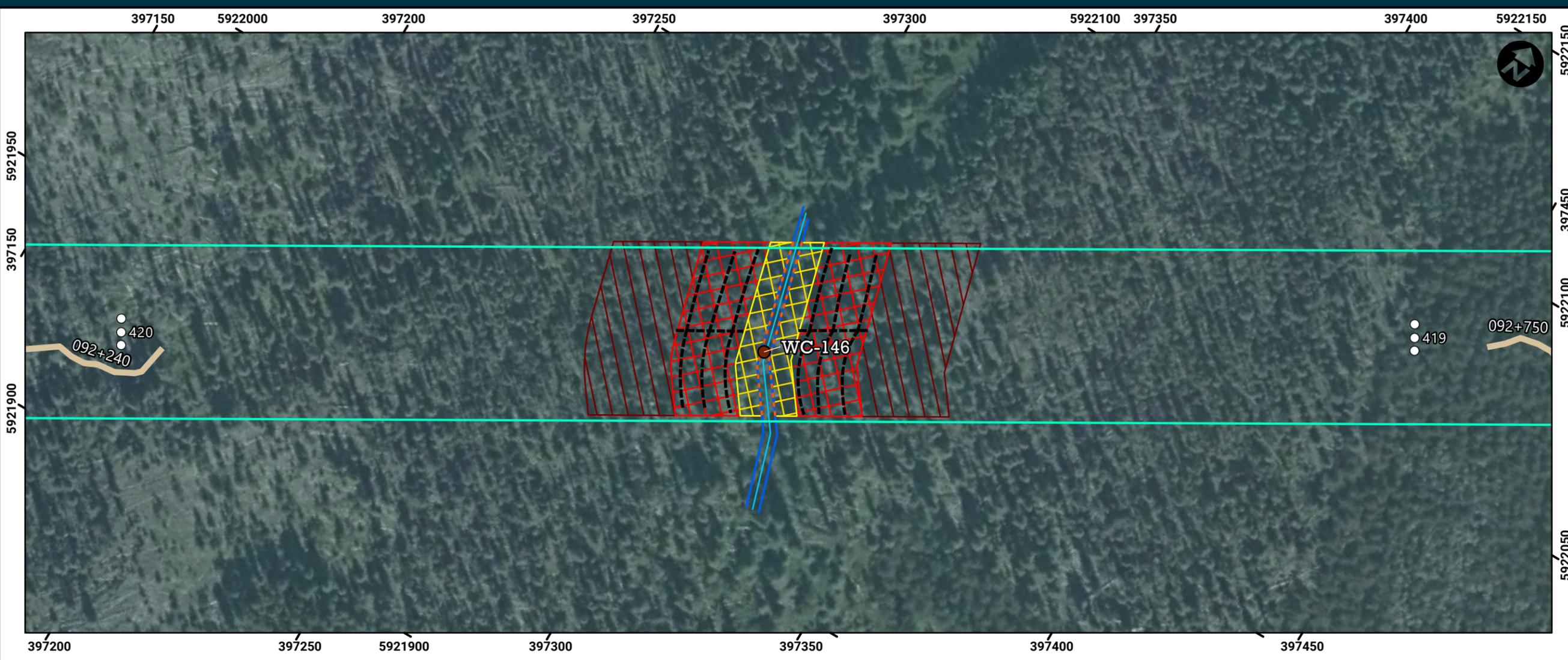
Figure 6: east looking west across stream, within ROW.



BW GOLD LTD
a subsidiary company of Artemis Gold Inc
Clearing Plan Profiles
WC-146 - Big Bend Creek
Classification: S3

- Cultural Heritage Points
- Non Status roads
- Permitted roads
- Buncher Trails
- Sediment Control
- Stream Banks
- Stream Centerline
- Protected Archaeological Site
- Special Management Zone - 10m
- Riparian Management Zone
- Riparian Reserve Zone
- Machine Free Zone
- Bridge Only
- Culvert Only
- Existing Culvert
- Not Crossed
- RigMat/Corduroy/Temporary Overland Only
- Aerial Only
- Bridge and Aerial
- Culvert and Aerial
- Existing Culvert and Aerial
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- BW Gold Proposed Structure
- New temporary access
- BW Gold Proposed TL RoW / OLTC

Date: 2023-08-23
Projection: NAD 1983 BC Environment Albers
Scale: 1:1,000
Author: tkendall
Last Modified By: tkendall
Checked By:
Revision #:



*** Decking of all timber will occur outside the RMA.

Report Date: August 25th, 2023

WATERCOURSE #	STREAM NAME	POLE NUMBER	LOCATION	LAT/LONG
WC-170	Chedakuz Creek	517-518	KP 114+545	53.321136, -124.742693

STREAM CLASSIFICATION	RIPARIAN RESERVE ZONE (RRZ)	RIAPARIAN MANAGEMENT ZONE (RMZ)	TOTAL RIPARIAN MANAGEMENT AREA (RMA)	Crossing Type
S2	30m	20m	50m	Aerial
	0.45ha	0.45ha	0.90ha	

DESCRIPTION OF THE SITE

Chedakuz is located along the Kluskus FSR at approximately 118km. Located in the SBS dk BEC zone, the site is characterized by a slow stream flowing through short gully. On both side of the gully the terrain is flat and comprised of immature pine stands. There is private property and a barbed wire fence running through southern side of the RMA. Pole 643 is located within the RMA of WC-170.

PRESCRIPTION

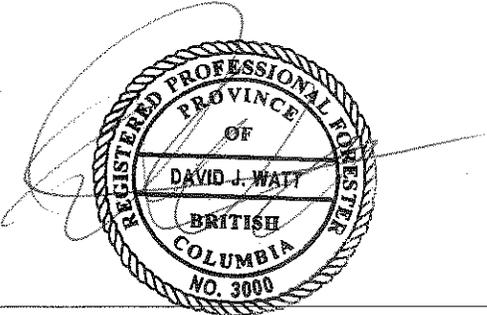
PRELIMINARY MEASURES	If site conditions differ from what is described in this Riparian Management Zone Prescription, stop work and contact the Blackwater Gold Supervisor for direction. Prior to workers being on the ground outside of a machine, a danger tree assessment will be completed by a certified Danger Tree Assessor. Sediment control fencing will be installed on both sides of the watercourse along the length of the ROW prior to clearing.
RMZ	The RMZ for Chedakuz Creek is 20 meters wide. The overstory is primarily made up of immature pine, which is approximately 15 meters tall, giving the Transmission Line approximately 5 meters of clearance. The prescription for the RMZ is a <i>Modified Clearcut System</i> , which retains the non-commercial brush, immature conifers, and deciduous trees where operationally feasible. Mechanical equipment is permitted to operate inside RMZ. Timber within the RMZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA, where operationally feasible.
RRZ	The RRZ for Chedakuz Creek is 30 meters wide. The overstory primarily consists of immature pine, which is approximately 15 meters tall and gives the Transmission Line approximately 5 meters of clearance. The prescription for the RRZ is a <i>Modified</i>

	<p><i>Mechanical Tree Removal System.</i> In order to safely top each tree, a mechanical feller buncher will be used to remove the upper portion by cutting the mature tree at approximately 4 to 6 meters above the ground, ensuring adequate clearance for the Transmission Line. The mechanical feller buncher will carry the tops to a central trail where they can be skidded outside of the RMA. Immature timber within the RRZ will be left or stubbed at a height so the Transmission Line conductors have a minimum of 6 meters of clearance from any treetops. All non-commercial brush and vegetation within the RRZ will be retained where operationally feasible. This will maintain bank stability and reduce the potential for erosion.</p> <p>Mechanical equipment will not be permitted within 5 meters of the stream bank, which will be marked by a 5-meter MFZ in the field. Mechanical equipment will only enter the watercourses RRZ on the bunching trails that have been identified on the Clearing Profile Map. Buncher trails will not be wider than 3 meters and rig matting will be installed where sensitive terrain or soft spots exist. Mechanical equipment will use caution when working on steep slopes and not operate outside of a machine's operating specifications. Equipment will be allowed to sit on planned trails and reach in to remove the tops of trees within the RRZ. The remainder of the timber within the RRZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA, where operationally feasible.</p>
TIMING AND WEATHER CONDITIONS	<p>Work with mechanical feller bunchers in the RMA must be completed in either dry or frozen conditions, or on a snowpack of at least 60cm.</p> <p>Construction within the RMA will not occur during a moderate rain event, defined as: >2.5mm of rain per hour.</p>
FOREST HEALTH	<p>All spruce which is felled in the RMA must be removed and either delivered to a processing facility or burned on site to minimize the chance of a Spruce Bark Beetle infestation.</p> <p>All immature timber that is cleared within the RMA must be processed and transported off site or burned on site to minimize the fire risk from fine fuel build up.</p>
POST CLEARING	<p>All unused construction materials, and other litter must be removed from the site after construction is complete.</p> <p>Any branches or debris that fall into the stream channel will be removed by hand, where it can be done safely.</p> <p>Silt fencing will be removed prior to freeze up to avoid the silt fencing deteriorating into the watercourse.</p> <p>Annual monitoring will be required post clearing to monitor conductor clearance and to inspect for Spruce Bark Beetle infestation in stubbed trees.</p> <p>All buncher trails will be reclaimed after construction is complete.</p>



Blackwater
Mine

Riparian Management Zone Prescription

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
David Watt, R.P.F.	
DATE SIGNED	
August 25 th , 2023	
I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been to the standards acceptable of a registered Professional Forester	

Map Attached forms an integral part of this plan.

Photos of Site:



Figure 1: Downstream channel of WC-170 within the ROW.



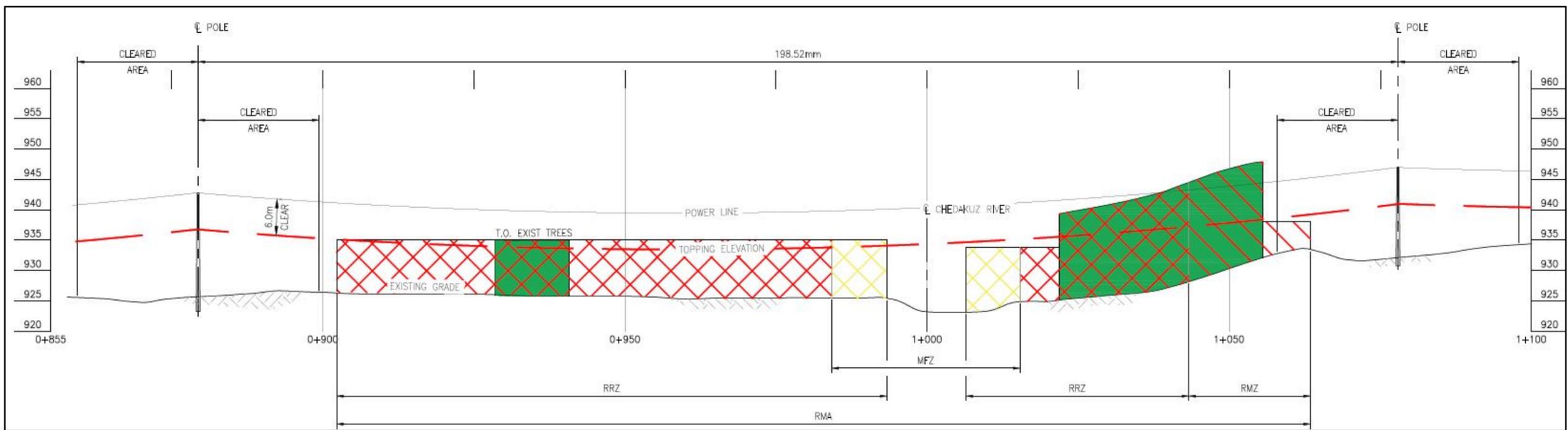
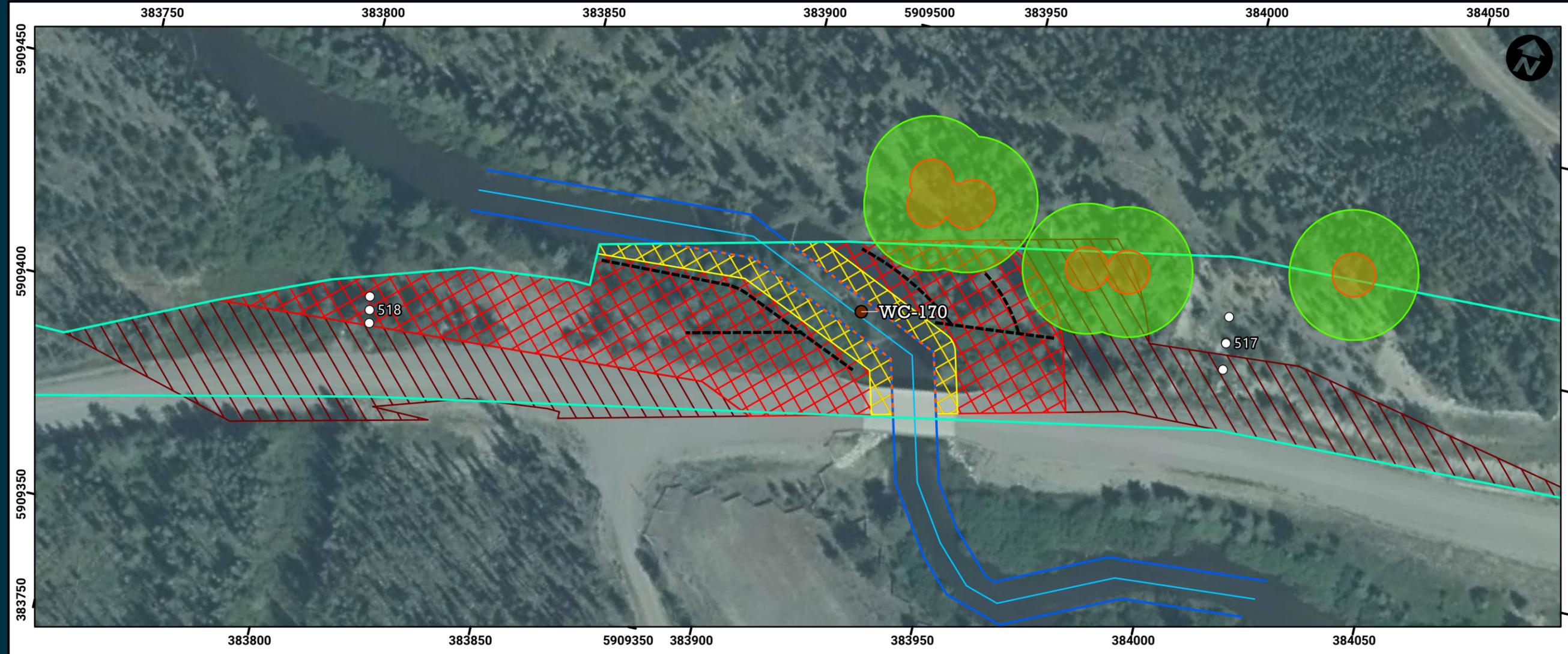
Figure 2: Sign at bridge crossing.



BW GOLD LTD
 a subsidiary company of Artemis Gold Inc
Clearing Plan Profiles
 WC-170 - Chedakuz Creek
 Classification: S2

- Cultural Heritage Points
- Non Status roads
- Permitted roads
- Buncher Trails
- Sediment Control
- Stream Banks
- Stream Centerline
- Protected Archaeological Site
- Special Management Zone - 10m
- Riparian Management Zone
- Riparian Reserve Zone
- Machine Free Zone
- Bridge Only
- Culvert Only
- Existing Culvert
- Not Crossed
- RigMat/Corduroy/Temporary Overland Only
- Aerial Only
- Bridge and Aerial
- Culvert and Aerial
- Existing Culvert and Aerial
- Not Crossed
- RigMat/Corduroy/Temporary Overland
- BW Gold Proposed Structure
- New temporary access
- BW Gold Proposed TL RoW / OLTC

Date: 2023-08-23
 Projection: NAD 1983 BC Environment Albers
 Scale: 1:1,000
 Author: tkendall
 Last Modified By: tkendall
 Checked By:
 Revision #:



*** Decking of all timber will occur outside the RMA.

Report Date: August 25th, 2023

WATERCOURSE #	STREAM NAME	POLE NUMBER	LOCATION	LAT/LONG
WC-182	Davidson Creek	576 - 577	KP 127+029	53.323667, -124.811894

STREAM CLASSIFICATION	RIPARIAN RESERVE ZONE (RRZ)	RIAPARIAN MANAGEMENT ZONE (RMZ)	TOTAL RIPARIAN MANAGEMENT AREA (RMA)	Crossing Type
S2	30m	20m	50m	Aerial
	0.26ha	0.17ha	0.43ha	

DESCRIPTION OF THE SITE

Davidson Creek is accessed along the Davidson 1000 Road. Located within the SBS mc3, the site characterized by having flat terrain within the RRZ on both sides of the watercourse. Within the RMZ, the watercourse has steep slopes (30-45%) that break in towards the watercourse. The overstory is comprised of mature spruce and pine, while the understory is moderately well-developed with balsam, alder, and other vegetation.

PRESCRIPTION

PRELIMINARY MEASURES	If site conditions differ from what is described in this Riparian Management Zone Prescription, stop work and contact the Blackwater Gold Supervisor for direction. Prior to workers being on the ground outside of a machine, a danger tree assessment will be completed by a certified Danger Tree Assessor. Sediment control fencing will be installed on both sides of the watercourse along the length of the ROW prior to clearing.
RMZ	<p>The RMZ for WC-182 is 20 meters wide. The overstory is primarily made up of mature spruce/pine, which is approximately 30 meters tall, and overtops the Transmission Line by approximately 10 meters. The prescription for the RMZ is a <i>Modified Clearcut System</i> which retains the non-commercial brush, immature conifers and deciduous trees where operationally feasible.</p> <p>Mechanical equipment is permitted to operate inside RMZ. Mechanical equipment will use caution when working on steep slopes and not operate outside of a machines operating specifications. Timber within the RMZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA, where operationally feasible.</p>

<p>RRZ</p>	<p>The RRZ for WC-182 is 30 meters wide. The overstory consists of mature spruce/pine, which is approximately 30 meters tall and overtops the Transmission Line by approximately 10 meters. The prescription for the RRZ is a <i>Modified Mechanical Tree Removal System</i>. In order to safely top each tree a mechanical feller buncher will be used to remove the upper portion by cutting the mature tree at approximately 4 to 6 meters above the ground, ensuring adequate clearance for the Transmission Line. The mechanical feller buncher will carry the tops to a central trail where they can be skid outside of the RMA. Immature timber within the RRZ will be left or stubbed at a height so the Transmission Line conductors have a minimum of 6 meters of clearance from any treetops. All non-commercial brush and vegetation within the RRZ will be retained where operationally feasible. This will maintain bank stability and reduce the potential for erosion.</p> <p>Mechanical equipment will not be permitted within 5 meters of the stream bank, which will be marked by a 5-meter MFZ in the field. Mechanical equipment will only enter the watercourses RRZ on the bunching trails that have been identified on the Clearing Profile Map. Buncher trails will not be wider than 3 meters and rig matting will be installed where sensitive terrain or soft spots exist. Mechanical equipment will use caution when working on steep slopes and not operate outside of a machines operating specifications. Equipment will be allowed to sit on planned trails and reach in to remove the tops of trees within the RRZ. The remainder of the timber within the RRZ that cannot be reached or is too large for the feller buncher will be hand felled away from the stream in order to be top skid outside of the RMA. All processing and decking will take place outside of the RMA, where operationally feasible.</p>
<p>TIMING AND WEATHER CONDITIONS</p>	<p>Work with mechanical feller bunchers in the RMA must be completed in either dry or frozen conditions, or on a snowpack of at least 60cm.</p> <p>Construction within the RMA will not occur during a moderate rain event, defined as: >44mm in a 24hr period.</p>
<p>FOREST HEALTH</p>	<p>All spruce which is felled in the RMA must be removed and either delivered to a processing facility or burned on site to minimize the chance of a Spruce Bark Beetle infestation.</p> <p>All immature timber that is cleared within the RMA must be processed and transported off site or burned on site to minimize the fire risk from fuel build up.</p>

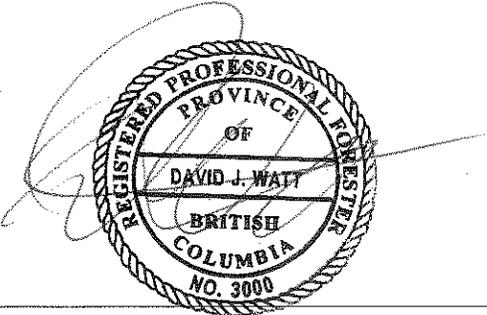
Riparian Management Zone Prescription

POST CLARING	<p>All unused construction materials, and other litter must be removed from the site after construction is complete.</p> <p>Any branches or debris that fall into the stream channel will be removed by hand, where it can be done safely.</p> <p>Silt fencing will be removed prior to freeze up to avoid the silt fencing deteriorating into the watercourse.</p> <p>Annual monitoring will be required post clearing to monitor conductor clearance and to inspect for Spruce Bark Beetle infestation in stubbed trees.</p> <p>All buncher trails will be reclaimed after construction is complete.</p>
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Blackwater
Mine

Riparian Management Zone Prescription

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
David Watt, R.P.F.	
DATE SIGNED	
August 25 th , 2023	
I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been to the standards acceptable of a registered Professional Forester	

Map Attached forms an integral part of this plan.

Photos of Site:



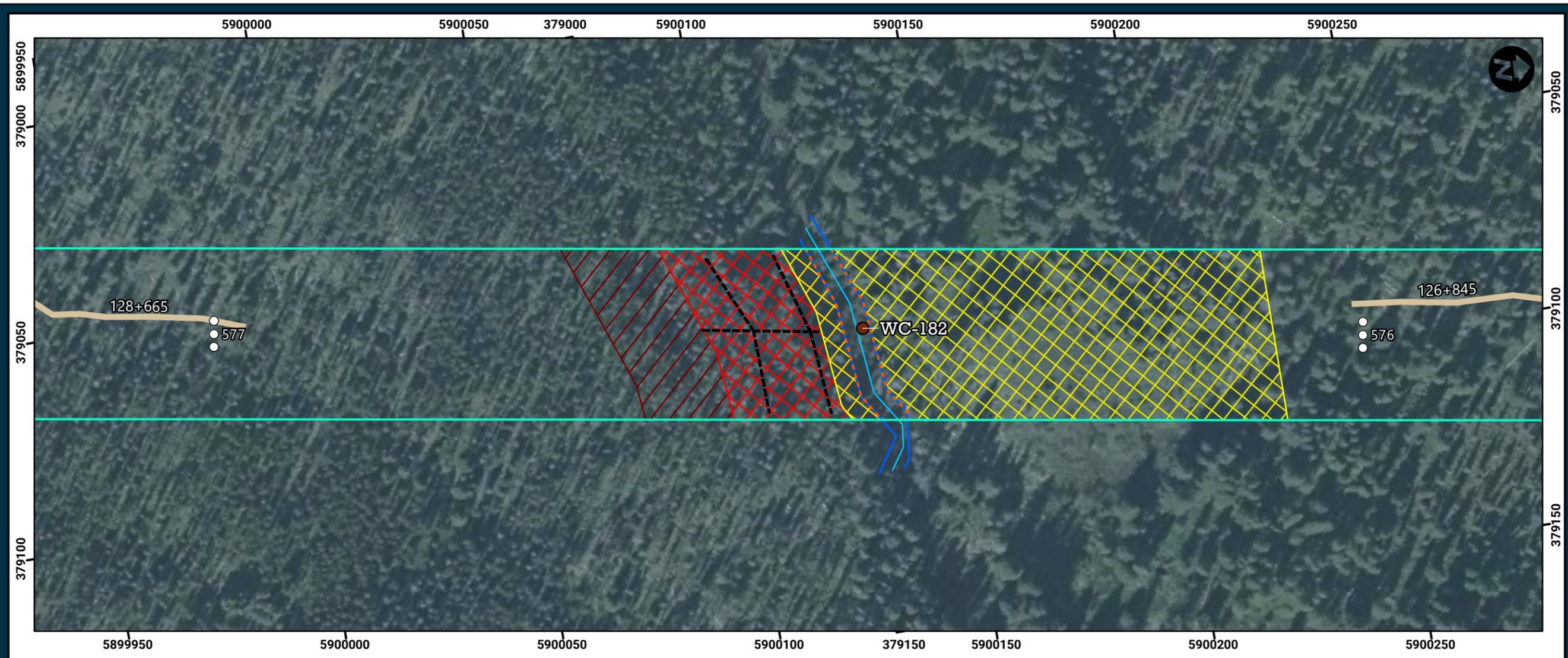
Figure 1: Downstream channel of WC-182 within the ROW.



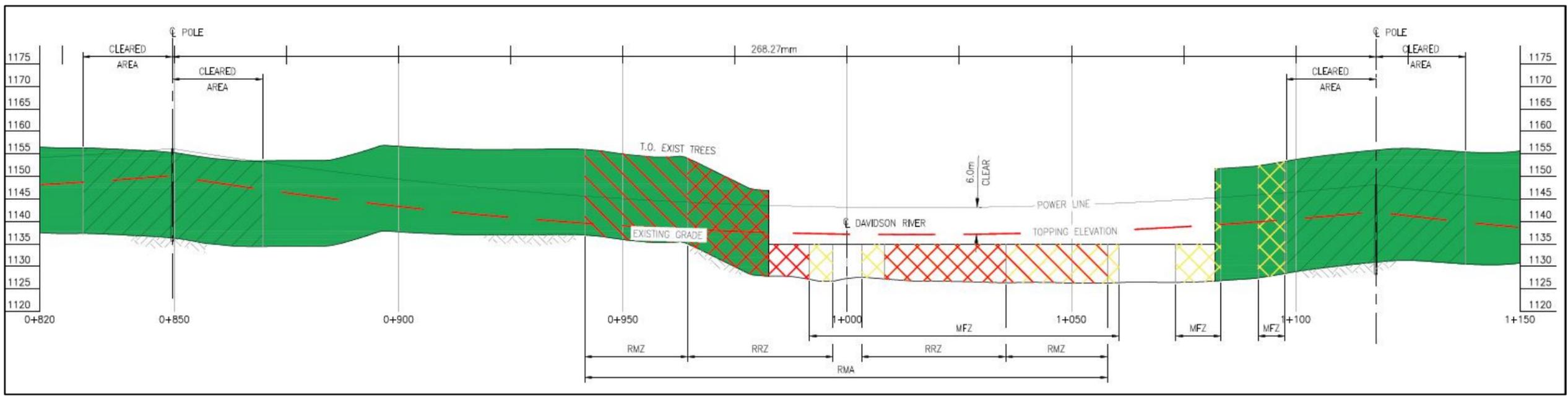
Figure 2: Rich vegetation along the banks of WC-182.



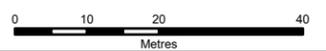
Figure 3: Upstream channel of WC-182 within the ROW.



-  Cultural Heritage Points
-  Non Status roads
-  Permitted roads
-  Buncher Trails
-  Sediment Control
-  Stream Banks
-  Stream Centerline
-  Protected Archaeological Site
-  Special Management Zone - 10m
-  Riparian Management Zone
-  Riparian Reserve Zone
-  Machine Free Zone
-  Bridge Only
-  Culvert Only
-  Existing Culvert
-  Not Crossed
-  RigMat/Corduroy/Temporary Overland Only
-  Aerial Only
-  Bridge and Aerial
-  Culvert and Aerial
-  Existing Culvert and Aerial
-  Not Crossed
-  RigMat/Corduroy/Temporary Overland
-  BW Gold Proposed Structure
-  New temporary access
-  BW Gold Proposed TL RoW / OLTC



Date: 2023-08-23
 Projection: NAD 1983 BC Environment Albers
 Scale: 1:1,000
 Author: tkendall
 Last Modified By: tkendall
 Checked By:
 Revision #:




*** Decking of all timber will occur outside the RMA.