

MEMORANDUM

DATE: September 7, 2022

TO: Travis Desormeaux, Permitting and Environmental Responsibility Manager, BW Gold Ltd.

FROM: Ryan Durand, MSc., R.P.Bio., Danielle Mai, B.Sc., R.P.Bio.

SUBJECT: Blackwater Gold Project Plant Site Wetlands

INTRODUCTION

This memo provides an overview of the two wetlands located adjacent to the proposed Plant Site clearing area and adjacent to the existing Blackwater Camp. This memo is being provided to supplement the interim Wetlands Management and Offsetting Plan (EAC Condition 24) submitted to EAO in March 2022 for approval. The wetlands described below have been surveyed and flagged to maintain a buffer of a minimum 30 m offset from the planned early works construction activities. The buffering of the wetland near the proposed plant site clearing was completed in alignment with condition 5.2 of the Federal Decision Statement (DS) issued to BW Gold Ltd. by the Canadian Environmental Assessment Agency (CEAA), now the Impact Assessment Agency of Canada (IAAC). The conditions states:

The Proponent shall maintain, during construction and operation, a 30-metre buffer of undisturbed vegetation around wetlands located within the mine site, excluding activities required to construct project components. The Proponent shall conduct work or activity within the 30-metre buffer only to the extent necessary for safety reasons, to control invasive plants, or to install and maintain erosion or sediment run-off control measures. The Proponent shall have an independent environmental monitor observe work being done within the buffer, except when not possible for safety reasons. As part of the annual report, the Proponent shall include a summary of work or activities conducted for safety reasons within the 30-metre buffer.

METHODS

Wetlands were assessed using the standard methodology as per the Field Manual for Describing Terrestrial Ecosystems (BC MOF and MOE 2010) and classified according to the Wetlands of British Columbia (Mackenzie and Moran, 2004). Additional data collected included water quality, hydrodynamic index, ecosystem function assessments, and a condition assessment following the Protocol for Evaluating

the Health of Wetlands (Fletcher et al, 2021). Wildlife habitat was assessed following the Wildlife Habitat Assessment procedure from the Field Manual for Describing Terrestrial Ecosystems (BC MOF and MOE 2010). Table 1 provides the target species, life requisites and rating scheme used for the assessments.

TABLE 2. HABITAT SUITABILITY RATINGS FOR THE BLACKWATER PROJECT

Species	Life Requisite	Season	Months	Ratings
Western Toad	Reproducing- Eggs	Growing	(April) May- June	Suitable / Not Suitable
	Hibernating	Winter	(April) May- June	Suitable / Not Suitable
Ring-necked Duck	Living	Growing	May - September	High / Moderate / Low / Nil
Olive-sided Flycatcher	Living	Growing	June - August	High / Moderate / Low / Nil
Moose	Living (Food / Security / Thermal)	Spring	May - June	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Summer	July - August	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Fall	September - October	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Winter	November - April	Very High / High / Moderate / Low / Very Low / Nil
Caribou	Living (Food / Security / Thermal)	Spring	May - June	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Summer	July - August	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Fall	September - October	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Winter	November - April	Very High / High / Moderate / Low / Very Low / Nil
Grizzly Bear	Living (Food / Security / Thermal)	Spring	May - June	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Summer	July - August	Very High / High / Moderate / Low / Very Low / Nil
	Living (Food / Security / Thermal)	Fall	September - October	Very High / High / Moderate / Low / Very Low / Nil
Muskrat	Living	Growing	May - September	Suitable / Not Suitable
	Living	Winter	October - April	Suitable / Not Suitable
Little Brown Myotis	Living	Growing	May - September	High / Moderate / Low / Nil

WETLANDS

Two wetlands were mapped and field checked in the proposed Plant Site (Figure 1). Wetland WT-22-453 was classified as swamp site association Ws08 (Subalpine fir – Sitka valerian – Common horsetail). Wetland WT-22-673 was classified as marsh Wm00, and is not currently represented in McKenzie and Moran. The wetlands are connected with each other, Wm00 was nestled within the Ws08, but otherwise isolated with no streams connected with either wetland. Each wetland is described in detail below.

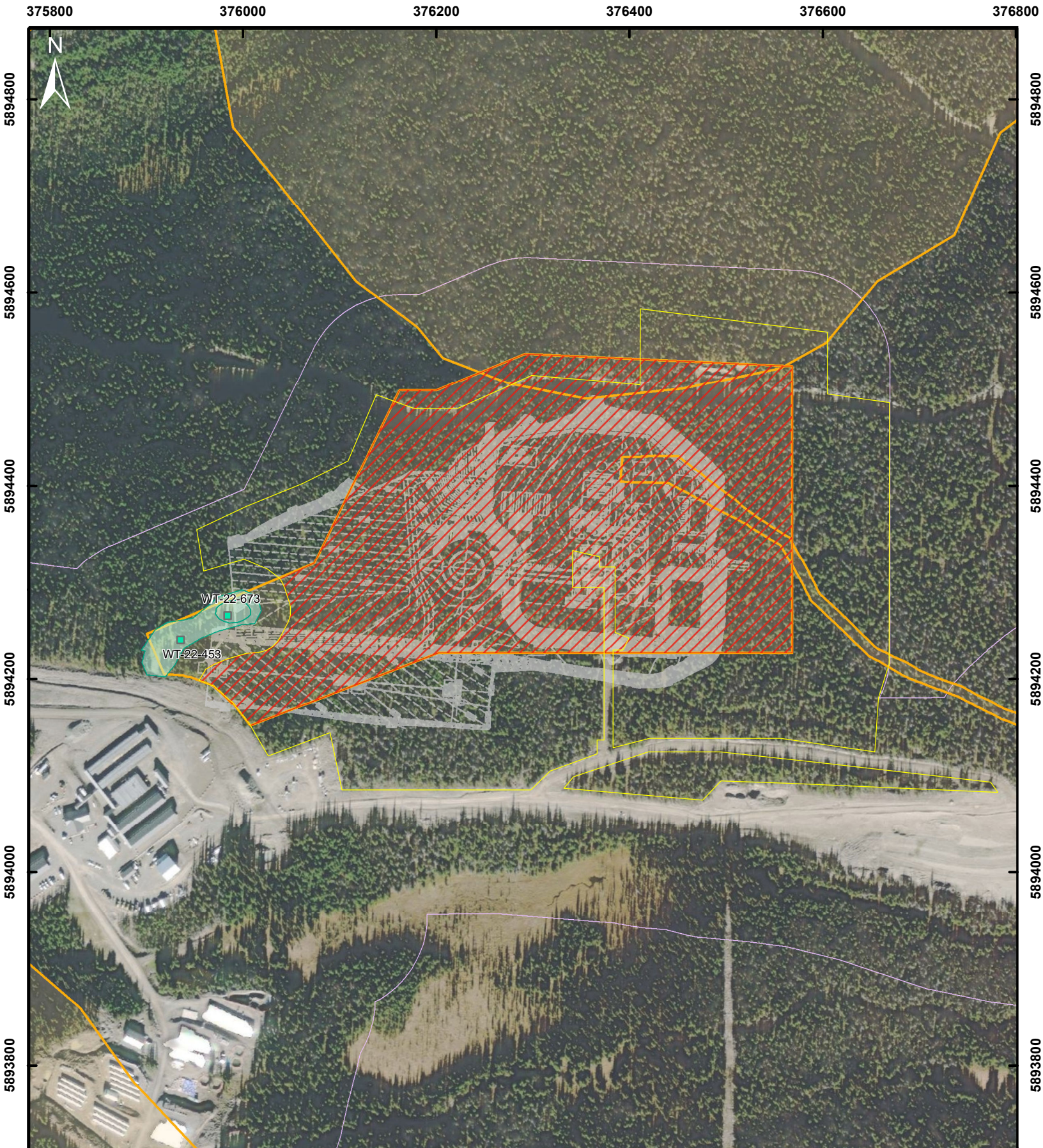
WT-22-453

WT-22-453 is classified as a Ws08 subalpine fir / horsetails / leafy mosses swamp (Photo 1). It is a properly functioning shrubby wetland with a canopy dominated by sub-alpine fir (*Abies lasiocarpa*), a shrub layer with white flowered rhododendron (*Rhododendron albiflorum*), a herbaceous layer dominated by wood horsetail (*Equisetum sylvaticum*), Sitka valerian (*Valerian sitchensis*), bluejoint reedgrass (*Calamagrostis canadensis*) and a moss layer dominated by knights plume (*Ptilium crista-castrensis*), glowmoss (*Aulacomium palustre*) and red stemmed-feather moss (*Pleurozium schreberi*). The wetland had 5% open water and is characterized by mineral soils with silt over a silty clay loam.

The wetland provides potential habitat for Western Toad, Olive-sided Flycatcher, Little Brown Myotis, Moose, Caribou and Grizzly (Table 2). The habitat is considered suitable for Western Toad breeding as there is standing water present; however, no breeding was observed in the site.



PHOTO 1. REPRESENTATIVE PHOTO OF WT-22-453, WS08.



Blackwater Project

Wetlands within the Proposed Plant Site

Figure 1

Date: 2022-09-06

Map Number: BLW-007

Coordinate System: NAD 1983 UTM Zone 10N

Projection: Transverse Mercator

Datum: North American 1983

- Wetland Field Plot (Adjacent to Mine)
- Wetland
- Proposed Expanded Early Works Clearing Limits - 26.4 ha Clearing (Under Discussion with LDN and UFN)
- Early Works Clearing Limits - 14.9 ha Clearing
- Mine Footprint
- Plant Site Infrastructure
- Plant Site Clearing Limits

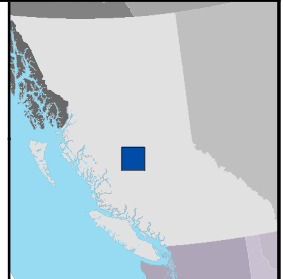
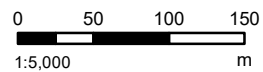


TABLE 2. HABITAT SUITABILITY RATINGS FOR WT-22-453

Species	Life Requisite- Season	Suitability rating
Western Toad	Reproducing Eggs- Growing	Suitable
	Hibernating - Winter	Suitable
Ring-necked Duck	Living- Growing	Not Suitable
Olive-sided flycatcher	Living- Growing	Very High
Little Brown Myotis	Living- Growing	High
Caribou	Living- Winter, Summer, Fall, Spring	Very Low
Grizzly Bear	Living- Spring, Fall	Low
	Living- Summer	Moderate
Moose	Living- Spring, Winter	Low
	Living- Summer	Moderate
Muskrat	Living – Growing, Winter	Not Suitable

WT-22-673

WT-22-673 (Photo 2) is classified as a Wm00 marsh (unclassified marsh association). It is a properly functioning wetland that during time of assessment was flooded from natural causes. It is a graminoid dominated level forest marsh opening dominated by grey sedge (*Carex canesens*) with some water sedge (*Carex aquatilis*), along with *Polystichum spp.* covering the marsh floor and peatmoss (*Sphagnum spp.*) on raised hummocks. Barclay's willow (*Salix Barclayi*) and Drummonds willow (*Salix Drummondii*) surround the edge of the wetland. The wetland had 90% open water and is characterized by mineral soils, silt over silty clay loam.

The wetland provides potential habitat for Olive-sided Flycatcher, Little Brown Myotis, Moose, Caribou, Grizzly, and Little Brown Myotis (Table 3). This site is not considered suitable for Western Toad breeding due to the extent of the ephemeral flooding.



PHOTO 2. REPRESENTATIVE PHOTO OF WT-22-673, WM00.

TABLE 3. HABITAT SUITABILITY RATINGS FOR WT-22-673

Species	Life Requisite-Season	Suitability rating
Western Toad	Reproducing Eggs- Growing	Not Suitable
	Hibernating - Winter	Not Suitable
Ring-necked Duck	Living- Growing	Not Suitable
Olive-sided Flycatcher	Living- Growing	Very high
Moose	Living- Spring, Summer, Fall, Winter	Moderate
Caribou	Living- Spring, Summer, Fall	Very Low
	Living- Winter	Moderate
Grizzly Bear	Living- Spring, Summer, Fall	Moderate
Little Brown Myotis	Living- Growing	High

Muskrat	Living – Growing, Winter	Not Suitable
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REFERENCES

BC Ministry of Forests and Range and BC Ministry of Environment. 2010. Field manual for describing terrestrial ecosystems, 2nd ed. Victoria, BC. Land Manage. Handb. No. 25.

Fletcher, N.F., Tripp, D.B., Hansen, P.L., Nordin, L.J., Porter, M., and Morgan, D. 2021. Protocol for the Wetland Health Management Routine Effectiveness Evaluation. Forest and Range Evaluation Program, B.C. Ministry of Forests, Lands, Natural Resources Operations and Rural Development, Victoria, B.C.

MacKenzie, W.H. and J.R. Moran. 2004. Wetlands of British Columbia: a guide to identification. Res. Br., B.C. Min. For., Victoria, B.C. Land Manage. Handb. No. 52.