APPENDIX 9-G INVASIVE PLANT MANAGEMENT PLAN

BW GOLD LTD
a subsidiary company of Artemis Gold Inc

Blackwater Gold Project

Invasive Plant Management Plan

March 2022

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ACRONYMS AND ABBREVIATIONS

Aboriginal Groups or Indigenous nations	Lhoosk'uz Dené Nation, Ulkatcho First Nation, Nadleh Whut'en First Nation, Saik'uz First Nation, Stellat'en First Nation and Nazko First Nation (as defined in the Project's Environmental Assessment Certificate #M19-01)
Artemis	Artemis Gold Inc.
BC	British Columbia
BC Hydro	BC Hydro and Power Authority
Blackwater, or the Project	Blackwater Gold Project
BMP	Best management practices
BW Gold	BW Gold LTD.
CCCIPC	Cariboo Chilcotin Coast Invasive Plant Committee
CEA Agency	Canadian Environmental Assessment Agency
CRD	Caribou Regional District
DS	Decision Statement
EAC	Environmental Assessment Certificate
EAO	Environmental Assessment Office
EDRR	Early Detection Rapid Response
EM	Environmental Monitor
EMC	Environmental Monitoring Committee
EMLI	Ministry of Energy, Mines and Low Carbon Innovation
EMP	Environmental Management Plan
EMPR	Ministry of Energy, Mines and Petroleum Resources
ENV	Ministry of Environment and Climate Change Strategy
EPCM	Engineering, Procurement and Construction Management
FLNRORD	Ministry of Forests, Lands, Natural Resource Operations and Rural Development
GM	General Manager
IAPP	Invasive Alien Plant Program
IMISWG	Inter-Ministry Invasive Species Working Group
IPMP	Invasive Plant Management Plan
ISCBC	Invasive Species Council of BC
Joint MA/EMA Application or Application	Blackwater Gold Project Joint *Mines Act/Environmental Management Act* Permits Application

LSA	Local Study Area
m	Metre
MAFF	Ministry of Agriculture, Fisheries and Food
MOFR	Ministry of Forests and Range
MP	Management Plan
NWIPC	Northwest Invasive Plant Council
RCP	Reclamation and Closure Plan
SEPSCP	Surface Erosion Prevention and Sediment Control Plan
SMP	Soil Management Plan
SOP	Standard operating procedure
VMP	Vegetation Management Plan
VP	Vice President

1. PROJECT OVERVIEW

The Blackwater Gold Project (the Project) is a gold and silver open pit mine located in central British Columbia (BC), approximately 112 kilometres (km) southwest of Vanderhoof, 160 km southwest of Prince George, and 446 km northeast of Vancouver.

The Project is presently accessed via the Kluskus Forest Service Road (FSR), the Kluskus-Ootsa FSR and an exploration access road, which connects to the Kluskus-Ootsa FSR at km 142. The Kluskus FSR joins Highway 16 approximately 10 km west of Vanderhoof. A new, approximately 13.8 km road (Mine Access Road) will be built to replace the existing exploration access road, which will be decommissioned. The new planned access is at km 124.5. Driving time from Vanderhoof to the mine site is about 2.5 hours.

Major mine components include a tailings storage facility (TSF), ore processing facilities, waste rock, overburden, and soil stockpiles, borrow areas and quarries, water management infrastructure, water treatment plants, accommodation camps and ancillary facilities. The gold and silver will be recovered into a gold-silver doré product and shipped by air and/or transported by road. Electrical power will be supplied by a new approximately 135 km, 230 kilovolt (kV) overland transmission line that will connect to the BC Hydro grid at the Glenannan substation located near the Endako mine, 65 km west of Vanderhoof.

The Blackwater mine site is located within the traditional territories of Lhoosk'uz Dené Nation (LDN), Ulkatcho First Nation (UFN), Skin Tyee Nation and Tsilhqot'in Nation. The Kluskus and Kluskus-Ootsa FSRs and Project transmission line cross the traditional territories of Nadleh Whut'en First Nation (NWFN), Saik'uz First Nation (SFN), and Stellat'en First Nation (StFN; collectively, the Carrier Sekani First Nations) as well as the traditional territories of the Nazko First Nation (NFN), Nee Tahi Buhn Band, Cheslatta Carrier Nation and Yekooche First Nation (BC EAO 2019a, 2019b).

Project construction is anticipated to take two years. Mine development will be phased with an initial milling capacity of 15,000 tonnes per day (t/d) or 5.5 million tonnes per annum (Mtpa) for the first five years of operation. After the first five years, the milling capacity will increase to 33,000 t/d or 12 Mtpa for the next five-years, and to 55,000 t/d or 20 Mtpa in Year 11 until the end of the 23-year mine life. The Closure phase is 24 to approximately 45 years, ending when the Open Pit has filled and the TSF is allowed to passively discharge to Davidson Creek, and the Post-closure phase is 46+ years.

New Gold Inc. (New Gold) received Environmental Assessment Certificate #M19-01 (EAC) on June 21, 2019 under the *2002 Environmental Assessment Act* (BC EAO 2019c) and a Decision Statement (DS) on April 15, 2019 under the *Canadian Environmental Assessment Act, 2012* (CEA Agency 2019). In August 2020, Artemis Gold Inc. (Artemis) acquired the mineral tenures, assets and rights in the Blackwater Project that were previously held by New Gold Inc. On August 7, 2020, the Certificate was transferred to BW Gold LTD. (BW Gold), a wholly-owned subsidiary of Artemis, under the *2018 Environmental Assessment Act*. The Impact Assessment Agency of Canada notified BW Gold on September 25, 2020 to verify that written notice had been provided within 30 days of the change of proponent as required in Condition 2.16 of the DS, and that a process had been initiated to amend the DS.

2. PURPOSE AND OBJECTIVES

The purpose of the Invasive Plant Management Plan (IPMP) is to prevent the introduction, establishment and spread of invasive plants (and noxious weeds) on the Blackwater mine site. This IPMP outlines the steps that BW Gold will take to prevent, treat, and monitor invasive plant infestations on the mine site. The IPMP is applicable to the Construction, Operation, Closure, and Post closure phases.

The IPMP objectives are to:

- Minimize the creation of habitat suitable for colonization by invasive plant species (emphasis on Cariboo Chilcotin Coast Invasive Plant Committee (CCCIPC) priority species);
- Promptly detect and eradicate invasive plants through effective inventory, control, and monitoring program; and
- Avoid the introduction and spread of invasive plants through early detection; and
- Manage invasive plants through species-specific treatments, follow up monitoring and adaptive management.

The IPMP addresses the requirements in Section 9.9 of the Joint Application Information Requirements for *Mines Act* and *Environmental Management Act* Permits (EMPR & ENV 2019).

Best management practices (BMPs) produced by government bodies and regional agencies will be followed to ensure all prevention, treatment, and monitoring activities are completed in a proper manner, which includes the involvement of qualified personnel where appropriate.

2.1 Controlling Invasive Plants and Noxious Weeds

Control of noxious weeds and their seeds is regulated by the BC *Weed Control Act*. Noxious weeds are any invasive plant species designated by regulation to be noxious under the BC *Weed Control Act* and Regulations. They can displace native vegetation and reduce wildlife habitat and forage. Invasive plants are non-native or alien to the ecosystem under consideration. Their introduction causes, or is likely to cause, economic or environmental damage, or harm to human health. In B.C. the term invasive plant is synonymous with invasive alien plant.

Invasive plants and noxious weeds are primarily monitored by regional weed committees and are entered into a database administered by the Province of BC. The Blackwater mine site is in the Nazko sub-region of Cariboo Regional District (CRD) Electoral Area 1. The CCCIPC Regional Strategic Plan (2017) provides direction on invasive plant species of highest management priority for control, inventory, and monitoring in the Cariboo Chilcotin region.

Invasive plants in the Cariboo Chilcotin region are mostly limited to roadways, however, invasive species are not well documented in the sub-region (CCCIPC 2017). Appendix A provides the following priority species information and lists:

- Table A1-1 provides provincial priority invasive plant definitions and management objectives;
- Table A1-2 lists the provincial priority invasive plant species from the BC Inter-Ministry Invasive Species Working Group (BC IMISWG);
- Table A2-1 provides invasive plant priority ranking descriptions for the Cariboo Chilcotin region; and
- Table A2-2 lists the priority invasive plant species for the CCCIPC sub-regions.

The provincial priority list identifies Early Detection Rapid Response (EDRR) species (refer to https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/invasive-species/publications/provincial_priority_is_list.pdf, updated March 2021). These EDRR species pose a significant threat and are those species that proliferate rapidly and are known to have adverse effects on native plant species. There are currently no EDRR listed species in the Nazko sub-region where the Project is located. The EDRR is regularly reviewed by the Province.

The Inter-Ministry Invasive Species Working Group (IMISWG) has developed the provincial EDRR framework to make decisions on treatment of new invasive plants to the Province. For more information on EDRR, see Invasive Species Early Detection and Rapid Response Plan for BC (BC IMISWG 2014).

2.2 Indigenous and Stakeholder Engagement

The IPMP has been developed in consultation with Aboriginal Groups. The draft plan was provided to Aboriginal Groups for review and comment and revised to address the comments. Aboriginal Groups and government agencies will have an opportunity to review and comment on proposed updates to the IPMP over the life of the mine.

2.3 Related Documents

The IPMP is linked to the following documents in the Joint MA/EMA Application: Reclamation and Closure Plan (RCP; Chapter 4 of the MA/EMA Application), Surface Erosion Prevention and Sediment Control Plan (SEPSCP; Appendix 9-A), Soil Management Plan (SMP; Appendix 9-B), Construction Environmental Management Plan (Appendix 9-C) and Vegetation Management Plan (Appendix 9-G).

3. ROLES AND RESPONSIBILITIES

BW Gold has an obligation to ensure 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.

Table 3-1 provides an overview of general environmental management responsibilities during all phases of the mine life for key positions that will be involved in environmental management. Other positions not specifically listed in Table 3-1 but who will provide supporting roles include independent environmental monitors, an Engineer of Record (EOR) for each tailings storage facility and dam, an Independent Tailings Review Board (ITRB), TSF qualified person, geochemistry qualified professional, and other qualified persons and qualified professionals.

Table 3-1: Blackwater Gold Roles and Responsibilities

Role	Responsibility
Chief Executive Officer (CEO)	The CEO is responsible for overall Project governance. Reports to the Board.
Chief Operating Officer (COO)	The COO is responsible for engineering and Project development and coordinates with the Mine Manager to ensure overall Project objectives are being managed. Reports to CEO.
Vice President (VP) Environment & Social Responsibility	The VP Environment & Social Responsibility is responsible for championing the Environmental Policy Statement and EMS, establishing environmental performance targets, and overseeing permitting. Reports to COO.
General Manager (GM) Development	The GM is responsible for managing project permitting, he Project's administration services and external entities, and delivering systems and programs that ensure Artemis's values are embraced and supported, Putting People First, Outstanding Corporate Citizenship, High Performance Culture and Rigorous Project Management and Financial Discipline. Reports to COO.
Mine Manager	The Mine Manager, as defined in the *Mines Act*, has overall responsibility for mine operations, including the health and safety of workers and the public, EMS implementation, overall environmental performance and protection, and permit compliance. The Mine Manager may delegate some of their responsibilities to other qualified personnel. Reports to GM.
Construction Manager (CM)	The CM is accountable for ensuring environmental and regulatory commitments/ and obligations are being met during the construction phase. Reports to GM.
Environmental Manager (EM)	The EM is responsible for the day-to-day management of the Project's environmental programs and compliance with environmental permits, updating EMS and MPs. The EM or designate will be responsible for reporting non-compliance to the CM, and Engineering, Procurement and Construction Management (EPCM) contractor, other contractors and regulatory agencies, where required. Supports the CM and reports to Mine Manager.
Departmental Managers	Departmental Managers are responsible for implementation of the EMS relevant to their areas. Report to Mine Manager.
Indigenous Relations Manager	Indigenous Relations Manager is responsible for Indigenous engagement throughout the life of mine. Also responsible for day-to-day management and communications with Indigenous groups. Reports to VP Environment & Social Responsibility.

Role	Responsibility
Community Relations Advisor	Community Relations Advisor is responsible for managing the Community Liaison Committee and Community Feedback Mechanism. Reports to Indigenous Relations Manager.
Environmental Monitors	Environmental Monitors (includes Environmental Specialists and Technicians) are responsible for tracking and reporting on environmental permit obligations through field-based monitoring programs. Report to EM.
Aboriginal Monitors	Aboriginal Monitors are required under EAC condition 17 and will be responsible for monitoring for potential effects from the Project on the Indigenous interests. Indigenous Monitors will be involved in the adaptive management and follow-up monitoring programs. Report to EM.
Employees and Contractors	Employees are responsible for being aware of permit requirements specific to their roles and responsibilities. Report to Departmental Managers.
Qualified Professionals and Qualified Persons	Qualified professionals and qualified persons will be retained to review objectives and conduct various aspects of environmental and social monitoring as specified in EMPs and social MPs.

BW Gold will employ a qualified person as an EM who will ensure that 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 by a consulting team of subject matter experts in the fields of environmental science and engineering.

During the Construction phase, BW Gold will be entering into multiple EPC contracts, likely for the Transmission Line, Process Plant, Tailings and Reclaim System, and 25 kV Power Distribution. Each engineer/contractor will have their own CM and there will be a BW Gold responsible PM and/or Superintendent who ultimately reports to the GM Development. Some of the scope, such as the TSF and Water Management Structures will be self-performed by BW Gold, likely using hired equipment. Other smaller scope packages may be in the form of EPCM contracts. The EPCM contractors will report to the CMs who will ultimately be responsible for ensuring that impacts are minimized, and environmental obligations are met during the Construction phase. For non-EPCM contractors, who will perform some of the minor works on site, the same reporting structure, requirements, and responsibilities will be established as outlined above. BW Gold will maintain overall responsibility for management of the construction and operation of the mine site and will therefore be responsible for establishing employment and contract agreements, communicating environmental requirements, and conducting periodic reviews of performance against stated requirements.

The CM is accountable for ensuring that environmental and regulatory commitments/obligations are being met during the construction phase. The EM will be responsible for ensuring that construction activities are proceeding in accordance with the objectives of the EMS and associated MPs. The EM or designate will be responsible for reporting non-compliance to the CM and EPCM contractor, other contractors, and regulatory agencies, where required. The EM or designate will have the authority to stop any construction activity that is deemed to pose a risk to the environment; work will only proceed when the identified risk and concern have been addressed and rectified.

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 in order 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 MPs and reviewing them periodically for effectiveness. Departmental area managers (e.g., mining, milling, and plant/site services) will be directly responsible for implementation of the EMS and EMPs relevant to their areas. All employees and contractors are responsible for daily implementation of the practices and policies contained in the EMS.

During closure and post-closure, staffing levels will be reduced to align with the level of activity associated with these phases. Prior to initiating closure activities, BW Gold will revisit environmental and health and safety roles and responsibilities to ensure the site is adequately resourced to meet permit monitoring and reporting. The Mine Manager will maintain overall responsibility for management of Closure and Post-closure activities at the mine site.

Pursuant to Condition 19 of the EAC, BW Gold has established an Environmental Monitoring Committee (EMC) to facilitate information sharing and provide advice on the development and operation of the Project, and the implementation of EAC conditions, in a coordinated and collaborative manner. Committee members include representatives of the Environmental Assessment Office (EAO), UFN, LDN, NWFN, StFN, SFN, NFN, Ministry of Energy, Mines and Low Carbon Innovation (EMLI), Ministry of Environment and Climate Change Strategy, and Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD).

Pursuant to Condition 17 of the EAC, Aboriginal Group Monitor and Monitoring Plan, BW Gold will retain or provide funding to retain a monitor for each Aboriginal Group prior to commencing construction and through all phases of the mine life. The general scope of the monitor's activities will be related to monitoring for potential effects from the Project on the Aboriginal Group's Aboriginal interests.

4. COMPLIANCE OBLIGATIONS, GUIDELINES, AND BEST MANAGEMENT PRACTICES

4.1 Legislation and Regulations

Federal legislation applicable to invasive plant management includes:

- *Canadian Environmental Protection Act, 1999;*
- *Fisheries Act;*
- *Impact Assessment Act*;
- *Migratory Birds Convention Act, 1994;*
- *Pest Control Products Act, 2002*;
- *Plant Protection Act*;
- *Seeds Act*; and
- *Species at Risk Act*.

Provincial legislation applicable to invasive plant management includes:

- *Declaration on the Rights of Indigenous Peoples Act*;
- *Environmental Assessment Act*;
- *Forest and Range Practices Act*;
  - *Invasive Plants Regulation;*
- *Integrated Pest Management Act, 2016*;
  - *Integrated Pest Management Regulation;*
- *Plant Protection Act;*
- *Mines Act*;
  - Health, Safety and Reclamation Code for Mines in British Columbia (Code; EMLI 2021) – Part 10, section 10.7.7 (Re-vegetation);
- *Weed Control Act*;
  - Weed Control Regulation; and
- *Wildlife Act*.

4.2 Environmental Assessment Certificate and Decision Statement Conditions

There are no specific conditions in the EAC pertaining to invasive plants.

The IPMP addresses Condition 6.8 of the Project's federal DS, which requires: "*The Proponent shall develop and implement measures in consultation with Indigenous groups [Lhoosk'uz Dené Nation, Ulkatcho First Nation, Nadleh Whut'en First Nation, Saik'uz First Nation, Stellat'en First Nation, Nazko First Nation, Skin Tyee Nation, Tŝilhqot'in Nation, Métis Nation British Columbia, and Nee-Tahi-Buhn Band] to manage invasive species within the Designated Project area*".

4.3 Existing Permits

BW Gold received *Mines Act* Permit M-246 on June 22, 2021, authorizing early works construction for the Project. Condition 7 (Vegetation Management) of Part C (Protection of Land and Watercourses) of the permit includes the following requirements related to invasive plant management:

> *(a) The Permittee must limit disturbance to vegetation to those areas approved by this permit.*
>
> *(b) The Permittee must manage and control weeds that establish on the site and must ensure that weeds do not migrate from the site to adjacent areas. The Permittee must consider using non-toxic means for weed control. The Permittee must ensure that all seed used on-site is certified weed-free.*
>
> *(c) The Permittee must avoid burning and/or disposal of woody debris suitable for use in reclamation.*

The requirements in the IPMP (and any conditions in the *Mines Act* permit for full mine construction) will incorporate and may amend requirements in Permit M-246 relating to invasive plants and noxious weed management.

4.4 Guidelines and Best Management Practices

Guidelines, best management practices and reference materials related to invasive plant management include:

- Guide to Weeds in British Columbia (BC Ministry of Agriculture 2002);
- Invasive Plant Prevention Guidelines (Clark 2003);
- Invasive Alien Plant Program (IAPP) Reference Guide (BC Ministry of Forest and Range 2010b);
- Pest Management Plan for Management of Vegetation at BC Hydro Facilities #105-980-12/17 (BC Hydro 2012);
- Best Practices for Preventing the Spread of Invasive Plants during Forest Management Activities: A Pocket Guide for British Columbia's Forest Workers, 2013 Edition (BC MFLNRO and ISCBC 2013);
- Northwest Invasive Plant Council Strategic Plan (NWIPC 2015);
- Integrated Vegetation Management Plan for Control of Vegetation at BC Hydro Facilities #105-0983-16/21 (BC Hydro 2016);
- Cariboo Chilcotin Coast Invasive Plant Committee Regional Strategic Plan (CCCIPC 2017);
- Invasive Species Strategy for BC (ISCBC 2017);
- Best Practices for Managing Invasive Plants Along Roadsides: A Pocket Guide for British Columbia's Maintenance Contractors (ISCBC 2019);
- Invasive Plant Pest Management Plan for Provincial Public (Crown) Lands in the Southern Interior of British Columbia (BC FLNRORD 2020);
- Field Guide to Noxious Weeds and Other Selected Invasive Plants of British Columbia (ISCBC 2021);
- Invasive Alien Plants Pest Management Plan on Provincial Crown Lands in Central and Northern British Columbia, and the Invasive (BC FLNRO 2015); and
- Alien Plant Program (IAPP) Reference Guide Part (BC MOFR 2010a).

5. ADAPTIVE MANAGEMENT FRAMEWORK

The IPMP is a living document that will evolve over time in response to monitoring results and regulatory changes. The Plan incorporates adaptive management as follows:

- Plan
  - Prepare SOP
- Do
  - Implement IPMP
  - Implement training
  - Eradicate invasive plants
- Monitor
  - Implement monitoring
  - Review and update species lists, and maps annually based on review of provincial priority list/CCCIPC Regional Strategic Plan
  - QA/QC monitoring records
- Adjust
  - Review / update SOP as required
  - Review effectiveness of best management practices
  - Update IPMP as required

6. TRAINING AND AWARENESS

Employees and contractors will receive training in vegetation management on their arrival on site and prior to the start of work as part of the Site Orientation. The purpose of this training is to provide all site personnel with a basic level of environmental awareness and an understanding of their obligations regarding compliance with regulatory requirements, commitments, and best practices. Training will be delivered by means of classroom instruction, toolbox/tailgate meetings or other means as appropriate.

Site managers will be provided with a copy of the IPMP and targeted invasive plant management training will be provided to mine personnel responsible for vegetation management following the Best Practices for Preventing the Spread of Invasive Plants During Forest Management Activities: a Pocket Guide for British Columbia's Forest Workers, 2013 Edition (BC FLNRORD & ISCBC 2013) and copies of the guidebook will be provided to employees. Invasive plant lists and species profiles (Appendices B, C, and D), and maps of known occurrences at or near the mine site will be made available to personnel. Any updates to invasive plant lists and maps will also be made available.

BW Gold will review and update the training and awareness documentation based on changes in training needs and regulatory requirements annually.

7. BASELINE INVASIVE PLANTS SUMMARY

Field surveys found one invasive plant species, yellow salsify (*Tragopogon dubius*; Appendix B), on the southern boundary of the mine site and orange hawkweed (Hieracium aurantiacum; Appendix C) was identified just outside the LSA along the Klusus FSR northeast of the junction of the Mine Access Road (AMEC 2013; Figure 7-1), and at the northern end of the T/L. The CCCIPC Regional Strategic Plan recommends that yellow salsify "…be monitored to ensure [it] do[es] not become a serious concern." (CCCIPC 2017; MacKenzie 2012) and is considered invasive in the neighbouring Bulkley-Nechako Regional District (NWIPC 2012). Orange hawkweed is designated as a noxious weed in the CRD and Bulkley-Nechako Regional District under the *Weed Control Regulation*. Biocontrol agent is the primary means of control. There has been no treatment of yellow salsify or orange hawkweed within the mine site.

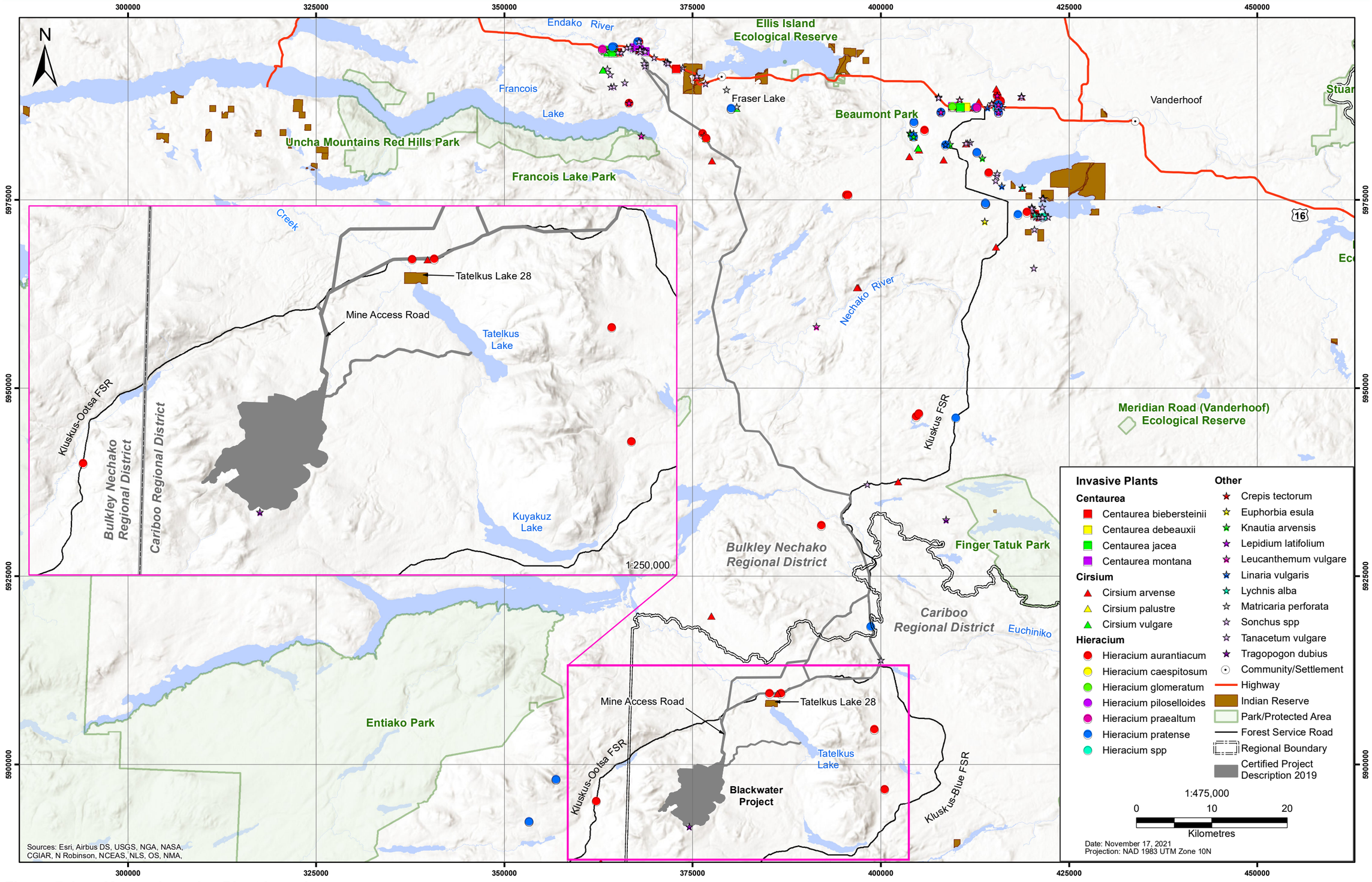

Figure 7-1: Known Invasive Plant Locations

8. IMPLEMENTATION

Invasive plant species thrive in recently disturbed area where there is little shade or competition from other plant species; therefore, minimizing ground disturbance reduces the opportunity for invasive plant establishment (Clark 2003; Polster 2005).

Invasive plants may be introduced and spread throughout the life of the Blackwater mine. The Project's construction activities will generate the largest initial ground disturbances and create suitable conditions for both the introduction and establishment of invasive plants. Vehicles and machinery are common transport and dispersal mechanisms for invasive plants. Additionally, invasive plants can be found in seed mixes used for reclamation purposes, although this risk is low with certified 100% weed-free seed mixes. This section identifies measures and best management practices to prevent the spread of invasive plants and noxious weeds.

Prior to commencement of Project construction, a standard operating procedure (SOP) for invasive plant management will finalized to provide direction for BW Gold employees and contractors (see Appendix D for a draft Invasive Plant Management SOP). The SOP will be finalized with input from Aboriginal Groups, EPCM and other contractors. The final SOP will also be included in the Construction Environmental Management Plan (CEMP).

8.1 General Management Measures

The following measures will be implemented to prevent the introduction of invasive plant species:

- Employees and contractors will use project-designated roads and established pull-outs.
- Earth moving equipment and trucks are expected to be clean and free of soil and vegetation when they arrive on the mine site.
- Site Security will perform a visual inspection for cleanliness (free of excessive dirt and debris above and beyond that reasonably expected from transport to site) on all earth moving equipment and vehicles upon arrival to the mine site.
- Through onboarding training, ensure to inspect clothing and vehicle/equipment undercarriages for seeds and plant tissue when working in, and prior to leaving, areas known to contain invasive plants in accordance with the Invasive Plant Management SOP.
- Minimize clearing dimensions during construction.
- Minimize ground and soil disturbance and vegetation removal, including along road edges and outside work areas.
- Restrict equipment and vehicle use to Project roads, trails and pullouts through a combination of training, mapping and signage.
- Stabilize exposed soils and consider the drainage and gradient, length of time that areas would be left exposed to evaluate the need to re-seed with native seed mix, in accordance with the RCP.
- Minimize soil erosion and degradation through adherence to the SEPSCP. If straw bales are used for erosion control, only certified weed-free straw will be used.
- Maintain newly disturbed sites free of invasive plants in accordance with the Invasive Plant Monitoring SOP.
- Maintain equipment storage areas free of invasive species in accordance with the Invasive Plant Management SOP.
- Equipment and vehicles will not be parked in invested areas.

- Inspect clothing and vehicle/equipment undercarriages when working in, and prior to leaving, areas known to contain invasive plants.
- In accordance with the RCP and SMP, salvage topsoil during construction and operations. Topsoil will not be stockpiled or stored in areas containing invasive plant species.
- To re-vegetate road ways, use species that prevent erosion and are not wildlife attractants to prevent the establishment of invasive plants in accordance with the IPMP. Wildlife attracting species include legumes (family Fabaceae), brome (*Bromus* sp.), alfalfa (*Medicago sativa*), annual rye (*Lolium multiflorum*), barley (*Hordeum vulgare*), timothy (*Phleum pretense*), alpine bluegrass (*Poa Alpina*), and American sloughgrass (*Beckmannia syzigachne*) (Matheus & Omtzigt 2013).
- Stabilize exposed soils and promptly re-seed with native seeds mix and monitor to confirm effective vegetation recolonization.

Section 4.2.3 of the RCP provides details on revegetation including vegetation sources and planting density. After revegetation, vegetation will be monitored for invasive plants for up to three complete growing seasons depending on the risk of invasive species spread and establishment, proximity to known invasive plant populations, and success of revegetation. The monitoring program is described in Section 9 of the RCP.

8.2 Working in Infested Areas

If invasive plants are identified on the site, the following measures will be implemented.

8.2.1 Vehicle and Equipment Cleaning

After working in areas with known infestations, vehicles and earth moving equipment will be cleaned using portable higher pressure washers within a portable containment structure at the infested site. Equipment cleaning will be located outside any Riparian Management Area in accordance with the Riparian Area Management SOP. Alternatively, cleaning will be done in an area where contamination and seed spread is unlikely, such as a mud-free, gravel, concrete, or other hard surface. Truck wash water will be collected and de-contaminated at a central location. Cleaning will occur at least 30 m away from watercourses or undisturbed areas. Employees will inspect vehicle and equipment to ensure mud, soil, vegetation, and debris is removed and left at the site of infestation.

If vehicles or earth moving equipment are causing the spread of invasive plants, subject to the direction of a qualified person, a quarantine area may be established which may include blocking off the infestation, implementing treatment and control measures, and using portable wash stations.

8.2.2 Treatment and Control Measures

The CCCIPC, Aboriginal Groups and ENV will be consulted on the proposed treatment plan and management objective which may include:

- Eradication: completely remove all individuals of invasive plant species. This objective is typically applied to species that occur in limited distributions.
- Containment: limit the extent of an infestation and prevent spread to un-infested areas or areas of high value, such as undisturbed or revegetated areas. This objective is typically applied when infestations are established but not widespread.
- Control: focus control efforts on high value areas such as native or revegetated areas. This objective is typically applied when established infestations are widespread.

The following criteria will be considered to determine the appropriate treatment:

- The status of the species – EDRR, high priority, and regulated noxious weeds receive higher priority for treatment (Appendix A).
- The potential to eradicate the species from the site – limited infestations have a higher probability of eradication and receive higher priority for treatment.
- The risk to native communities, sensitive ecosystems, and revegetated areas – infestations located in, or threatening these areas receive higher priority for treatment.

Injury Levels and Treatment Thresholds

The *Invasive Pest Management Regulation* defines the injury threshold as "the point at which the abundance of pests and the damage they are causing or are likely to cause indicates that pest control is necessary or desirable." It is only when invasive plant species have expanded to a large area and rehabilitation of critical habitats and other values are contemplated that injury thresholds as defined under the Regulation are considered.

Section 58 of the *Integrated Pest Management Regulation* identifies requirements for pest management plans, which must include injury thresholds that will be applied in deciding whether a pesticide treatment is necessary and an explanation of how the thresholds were chosen, and how the thresholds will be applied. Injury thresholds will be determined on a case-by-case basis by considering the following factors (BC MFLNRO 2019):

- Species distribution within a defined area;
- Invasiveness (threat) of the invasive plant species;
- Susceptibility and significance of adjacent habitats that may be invaded or threatened;
- Density of the plants and the potential for the species to become dense;
- Feasibility and costs of managing the invasive species on site.

Injury levels and treatment thresholds will consider the priority ranking of the species (Appendix A) and site prioritization. Site prioritization will follow guidelines established by NWIPC (Table 8.2-1).

Table 8.2-1: Site Prioritization of Invasive Plant Species Infestations

Priority	Purpose or Intent
1 Extremely High Opportunity for Control	To stop the spread of invasive plants threatening currently un-infested, highly susceptible areas. These sites are less than or equal to 0.25 ha and there is a good expectation of control. This priority also includes sites that are threatening a large neighbouring economic base, for example, seed and other high value crops.
2 High Opportunity for Control	To stop the enlargement of sites in highly susceptible areas. These sites are less than or equal to 0.5 ha. Must have a reasonably good expectation of control.
3 Moderate Opportunity for Control	To stop the enlargement of sites greater than or equal to 0.5 ha in highly susceptible areas, or less than or equal to 0.5 ha in moderately susceptible areas.
4 Low Opportunity for Control	To stop the enlargement/contain sites greater than 0.5 ha in moderately susceptible areas.

Source: NWIPC 2015

8.2.2.1 Treatment Options

Potential treatment options for invasive plant species include mechanical (e.g., hand pulling, digging), chemical (e.g., herbicide application) or biological control (the control of an invasive plant through the actions of another organism) or through a combination of these methods, as discussed below (and see Appendix E). The management objective, biology and ecology of the species, size of the infestation, and site conditions determine the appropriate treatment for an invasive plant species. Integrating more than one control strategy is often more effective than using a single treatment approach, and repeated treatments are often required for the successful management of invasive plants (BC FLNRORD 2019; Polster 2005).

Mechanical Control

Mechanical control includes collecting and bagging, hand cutting or mowing, hand pulling or digging, and revegetation and seeding (Table 8.2-2). This method of control is appropriate for infestations with few plants covering a small area or areas where herbicide application is prohibited or impractical. It may not be a suitable method for some species (e.g., rhizomatous species) where mechanical removal stimulates growth. During removal, all of the plant, including flowers, branches, roots, or seeds needs to be removed and properly disposed of to prevent spread to new areas. Disposal methods may vary by species and could include burning, deep burial in a landfill, or bagging. In remote areas, the CCCIPC recommends bagging flowers/seeds for disposal and leaving uprooted plant parts to dry out and decay (CCCIPC 2021).

Table 8.2-2: Mechanical Control Methods for Invasive Plants

Method	Effective Time	Efficiency	Equipment Required
Collecting and bagging	Before plants flower or shed seed	Removes seeds, effective for annual and biennial invasive plants, requires treatment over multiple years.	Bags, gloves
Hand cutting or mowing	Early season before plants flower or set seeds	Effective on annual or biennials, kills individuals and prevents seed production.	Sickle, weed-whacker
Hand pulling or digging	After the plants have bolted in the spring and prior to flowering and production of seed	Less effective on perennials or species with extensive root systems.	Gloves, shovels
Re-vegetation and seeding	Late fall is best, otherwise early spring	Does not control plants, rather reduces their spread and densities.	Appropriate seed, sowing method

Source: Modified from CCCIPC 2017

Biological Control

Biological control involves using living organisms to control pest populations. Biological control agents are usually insects that attack or weaken target invasive species, reducing the competitive ability and population density of the target species over time. Biological control agents are suitable for use in pesticide-free zones or for widespread infestations where mechanical or chemical control would be inefficient or ineffective. However, biological control methods may be slow to take effect, and do not currently exist for all invasive plant species (BC FLNRORD 2019). Only biological control that is proven effective, approved for use, and appropriate for the area and target species will be used.

Chemical Control

Chemical control involves the use of herbicides and can be used in conjunction with other control methods to increase effectiveness. If chemical treatment is recommended, the Handbook for Pesticide Applicators and Dispensers (BC MOE 2005) will inform application methods and measures to protect waterbodies and riparian areas. The goal of any herbicide application is to quickly control invasive plants species and reduce herbicide use over time in the Project area (BC MFLNRORD 2019).

Herbicide selection will be informed by consultation with Indigenous nations and CCCIPC as well as site conditions, target species and treatment objectives. Herbicide use will meet the StFN and NWFN herbicide use policies.

Herbicide application must comply with BC's *Integrated Pest Management Ac*t and be documented using the BC MFLNRO Invasive Plant Chemical & Mechanical Treatment Record (BC MOFR 2010b). Pesticides will be purchased from a licensed vendor and will only be applied by those with training and certification. Appendix F identifies requirements in the *Integrated Pest Management Regulation* related to herbicide use and handling.

Herbicides will not be used under the following conditions:

- When it is raining;
- When ground winds are over 8 km/h;
- When site conditions prevent the use of herbicides (e.g., coarse textured soils); and
- When the benefit of using a herbicide is negligible.

Any herbicide application will be targeted rather than broad spraying to reduce the amount of herbicide used and to minimize adverse effects to the surrounding environment.

Table 8.2-3 identifies distances for "no treatment zones" (NTZ) and "pesticide free zones" (PFZ) as prescribed by the *Integrated Pest Management Act*. To maintain PFZs as pesticide-free, an adequate buffer zone must be implemented around the PFZ. This zone must account for sloped topography, weather at the time of treatment, or any other site factor that could cause the spread of the pesticides.

Table 8.2-3: Water Protection Table

Section of Integrated Pesticide Management Regulation	Permitted Application	NTZ/PFZ	Notes
All Herbicide Applications			
71(3) Reg.	Domestic and agricultural wells and water intakes, 30 m including all methods and pesticides.	30 m NTZ	NTZ may be reduced if reasonably satisfied that a smaller NTZ will ensure no pesticide enters well or intake (70(4) Reg.)

Section of Integrated Pesticide Management Regulation	Permitted Application	NTZ/PFZ	Notes
Glyphosate Applications			
74(1)(a)(ii)	Along or around a body of water or classified wetland that: ■ is fish-bearing, or ■ that drains directly into a fish-bearing body of water, or ■ is along or around a dry stream that when wet is fish bearing, or ■ drains directly into a fish bearing body of water.	2 m PFZ	Glyphosate must be applied using selective application methods.*
74(1)(c) Reg.	Along or around a body of water if the body of water is: ■ not fish-bearing at any time of the year, ■ does not drain directly into a fish-bearing body of water.	2 m NTZ	
74(1)(b) Reg.	Along or around a body of water or a classified wetland that is: ■ fish-bearing, or ■ that drains directly into a fish-bearing body of water, or ■ along or around a dry stream that when wet is fish-bearing or drains directly into a fish-bearing body of water.	5 m PFZ	
74(2) Reg.	Up to the high water mark of a temporary free-standing body of water and dry stream, that is: ■ not fish-bearing at any time of the year, ■ does not drain directly into a fish-bearing body of water.	0 m NTZ	
Non-glyphosate Applications			
73(1) Reg.	Around or along a body of water or dry stream and classified wetland using any pesticide except glyphosate, subject to label restrictions and including all application methods.	10 m PFZ	Except for glyphosate applications.
Noxious Weed and Invasive Plant Management			
77(2) Reg.	Targeted application of glyphosate to noxious weeds and invasive plants if the application is used between 1 m and 10 m above the high water mark	1 m PFZ	

**Selective application is the application of a pesticide to individual plants so that the vegetation between individual plants is not treated. For the purposes of BC Hydro's Integrated Vegetation Management Plan for Facilities this includes cut surface, basal bark, directed foliar, and injection treatments (source: BC Hydro 2016).*

9. MONITORING

Invasive plant surveys will be conducted by appropriately qualified Environmental Monitors, under the direction of the BW Gold EM, and in accordance with IAPP standardized methods. The monitoring program will assess:

- The regeneration success of re-vegetated of areas to ensure invasive species have not become established;
- Specific locations where invasive species have been previously identified and the extent of plant populations; and
- The effectiveness of treatments, where control activities were undertaken.

Baseline information related to invasive plants will be updated based on monitoring results. Any changes to invasive plant species will be reflected in annual updates to the IPMP.

Table 9-1 describes the invasive species monitoring program.

The IAPP Site & Invasive Plant Survey Record form (Appendix G) will be used to document species, location, population distribution types and densities, and total area affected. An Invasive Plant Species Monitoring SOP is provided in Appendix H.

Most monitoring activities will occur between late spring and early summer (Table 9-1). The timing of the surveys will be determined by the EM (or designated qualified person) based on plant phenology (e.g., timing of biological activities such as flowering, propagation, and seed dispersion). A minimum of two weeks between treatments will be observed (BC MOFR 2010a). Treatments applied after flowering (autumn) will involve the removal and disposal of seed heads to an appropriate waste disposal location.

If invasive plants are observed, surveyors will record the GPS location, take photographs, and if needed to confirm the invasive plant species, collect a sample (bag and label). If invasive species or noxious weeds are observed, the Environmental Monitor will report to the EM who will designate a qualified professional to select the appropriate treatment method, oversee the treatment, conduct follow-up monitoring to document treatment efficacy, and document and report the activities, findings, and recommendations to the EM. The EM will consult Aboriginal Groups, ENV and CCCIPC on the treatment method. If herbicide treatment is required, it will be applied before the flowering stage (early spring) when plants are most susceptible (BC MOFR 2010b).

9.1 Quality Assurance and Control

Quality assurance and quality control (QA/QC) will be followed during monitoring. Field data sheets will be used to standardize data collection. All data will be transferred to a database and will be reviewed prior to finalization to ensure all necessary information is provided.

Table 9-1: Invasive Plant Monitoring Program

Monitoring Activity	Description	Frequency	Timing and Duration
Pre-clearing visual surveys within confirmed clearing boundaries	■ Pre-clearing survey completed to determine presence of invasive species. ■ For each invasive plant observation, photograph, record GPS location.	Variable	■ Prior to clearing occurring.
Known locations of invasive plant species (Figure 7-1)	■ Investigation by qualified person to assess treatment control requirements. ■ Monitor areas proximate to two known sites.	Monthly (during the growing season)	■ Early Spring 2022 – investigate to determine treatment. ■ Continue monthly monitoring (during the growing season) until treatment has been confirmed to be effective.
Junction of Mine Access Road and Kluskus-Ootsa FSR	■ Monitor to assess if invasive plant species have infested these areas due to transportation by equipment or workers, or disturbance from cleaning activities. ■ If observed, qualified person assesses site and determines treatment and control measures. ■ Record observations and update records using the IAPP Site & Invasive Plant Survey Record. Any new observations reported to the EM immediately. New observations entered into IAPP's "Report-a-Weed" Program, a provincial online mapping and reporting tool, by the EM or designate.	Monthly (during the growing season)	■ Continue annually until treatment has been confirmed to be effective.
Disturbed areas (roads, trails, etc.), cleared and revegetated areas	■ Monitor revegetated sites to assess the effectiveness of revegetation activities where applicable, and that invasive species have not become established during the growing season. ■ Record observations and update records using the IAPP Site & Invasive Plant Survey Record. Any new observations to be reported to the EM immediately. New observations entered into IAPP's "Report-a-Weed" Program, a provincial online mapping and reporting tool, by the EM or designate.	Annual	■ Revegetated areas will be monitored before plants produce seeds that year (e.g., late spring-early summer). ■ Disturbed areas that have not yet been revegetated will be monitored in the late spring-early summer before plants produce seed. ■ Monitor for up to three complete growing seasons depending on the risk of invasive species spread and establishment, proximity to known invasive plant populations, and success of revegetation in accordance with the RCP.

Monitoring Activity	Description	Frequency	Timing and Duration
Treated areas	■ Monitor effectiveness of treatment and controls, and record using the IAPP treatment monitoring forms. ■ If treatment and control methods are not successful, decide on other treatment and control and implement. ■ Monitor area proximate to treatment area for spread.	Bi-weekly observations between treatments to assess efficacy of selected treatment	■ During the same growing season for areas treated in the same year before the target invasive species produce seeds. Specific timing will depend on the target species. ■ For areas treated in the previous year, monitoring will occur in the summer. ■ Monitoring will continue annually until treatment has been confirmed to be effective.
Truck washing bay, other designated cleaning areas, equipment yards, and storage areas, Operations camp parking lot	■ Monitor to assess if invasive plant species have infested these areas due to transportation by equipment or workers, or disturbance from cleaning activities. ■ If observed, qualified person assesses site and determines treatment and control measures. ■ Record observations and update records using the IAPP Site & Invasive Plant Survey Record. Any new observations reported to the EM immediately. New observations entered into IAPP's "Report-a-Weed" Program, a provincial online mapping and reporting tool, by the EM or designate.	Annually	■ Late spring-early summer before plants produce seed for the duration of the Project.
Newly disturbed areas and not yet vegetated	■ Monitor for presence of invasive species. ■ If observed, qualified person assesses site and determines treatment and control measures. ■ Record observations and update records using the IAPP Site & Invasive Plant Survey Record. Any new observations to be reported to the EM immediately. New observations entered into IAPP's "Report-a-Weed" Program, a provincial online mapping and reporting tool, by the EM or designate.	Annually	■ Late spring-early summer before plants produce seed. ■ Six weeks prior to disturbance if not recently surveyed.

10. REPORTING AND RECORD KEEPING

10.1 Reporting

Reporting is the responsibility of BW Gold's EM, with delegation as necessary to appropriate personnel. Consultants and contractors hired to implement aspects of the monitoring programs will be suitably qualified professionals or qualified persons.

10.1.1 Incidental Observations

Incidental observations of invasive plant species in the field will be flagged, photographed and recorded as follows:

- Type of observation (e.g., if suspected invasive species);
- Project area (UTM coordinates if possible);
- Date of observation; and
- Name of observer.

Incidental observations will be recorded using a standard field data sheet and submitted to the EM daily. The EM will follow up on incidental observation reports within one week. If there is a new invasive plant observation, the EM will complete an IAPP report (see Appendix G).

10.1.2 Annual Reclamation Report

Vegetation monitoring and management activity will be reported in the ARR (EMLI 2021b). The ARR will be submitted to EMLI and provided to Aboriginal Groups on or before March 31 each year. The ARR will provide a summary of monitoring results and describe mitigation measures, including treatments applied and the next year's monitoring program.

10.2 Record Keeping

The EM is responsible for data management, reporting and records related to the IPMP. Data will be entered into suitable electronic databases (consideration will be given to programs such as Microsoft Access or SAP). Quality control checks will be performed by a senior member of the environment team upon receipt of results. Data will be entered in a format and program(s) (such as Microsoft Excel or R Project) that allows for comparison between years and be stored in a single file format for each type of survey or monitoring activity. Monitoring data will be stored for 25 years beyond decommissioning and be made available for review upon request for regulatory inspections and for auditing purposes.

QA/QC will be followed during monitoring. Field data sheets will be used to standardize data collection. All data will be transferred to a database and will be reviewed prior to finalization to ensure all necessary information is provided.

The EM is responsible for data management, reporting and records related to invasive plants. The EM will report key results of invasive plant monitoring to the Blackwater Environment Committee and Aboriginal Groups during routine meetings. Monitoring data will be entered into an electronic database and have quality control checks completed upon receipt of results. Data will be entered into a standard format that allows for data reporting and analyses. Data and data comparisons will be stored in a single file format for each type of survey or monitoring activity. Monitoring data will be stored for the life of the mine and will be made available for review upon request.

11. EVALUATION AND ADAPTIVE MANAGEMENT

The IPMP objective is to promptly detect, inventory, monitor and eradicate invasive plants. In the event, a new invasive species is discovered on the mine site, adaptive management will be implemented and would include:

- Confirm species taxonomy by engaging a qualified professional;
- Source management monitoring, determine the extent of the plant distribution;
- Determine the treatment plan in consultation with Aboriginal Groups, CCCIPC and ENV;
- Implement the plan; and
- Monitor treatment effectiveness.

12. PLAN REVISION

The IPMP is a living document and will be reviewed annually to assess its effectiveness and evaluate invasive plant management strategies and 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 provincial and regional (CCCIPC) priority invasive species lists and new management recommendations.

BW Gold will review and update the invasive plant list every three months in the Invasive Plant Standard Operating Procedure if new species are added. Any changes will be discussed with employees and contractors. Updates to the IPMP will be completed annually.

The EM is responsible for updating the plan. Proposed revisions will be reviewed and discussed with the Blackwater Environmental Monitoring Committee and Aboriginal Groups, ENV and EMLI prior to adopting and implementing the changes. Revised and approved versions of the IPMP will be filed with EMLI, ENV, and Aboriginal Groups.

13. QUALIFIED PROFESSIONALS

Under the direction of ERM Consultants Canada, this plan has been prepared and reviewed by the following qualified professionals:

Prepared by:

Shannon Seahra, Ph.D.
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Reviewed by:

Wade Brunham, R.P.Bio.
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14. REFERENCES

Definitions of the acronyms and abbreviations used in this reference list can be found in the Acronyms and Abbreviations section.

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APPENDIX A PROVINCIAL AND REGIONAL PRIORITY INVASIVE PLANT SPECIES LISTS

Appendix A: Provincial and Regional Priority Invasive Plant Species Lists

PROVINCIAL PRIORITY INVASIVE PLANTS

Table A-1: Provincial Priority Invasive Plant Definitions and Management Objectives

Definitions	
Prevent	Species determined to be high risk to BC and not yet established. Management objective is prevent the introduction and establishment.
Provincial EDRR	Species is high risk to B.C. and is new to the Province. Management objective is eradication.
Provincial Containment	Species is high risk with limited extent in B.C. but significant potential to spread. Management objective is to prevent further expansion into new areas with the ultimate goal of reducing the overall extent.
Regional Containment/Control	Species is high risk and well established, or medium risk with high potential for spread. Management objective is to prevent further expansion into new areas within the region through establishment of containment lines and identification of occurrences outside the line to control.
Management	Species is more widespread but may be of concern in specific situations with certain high values - e.g., conservation lands, specific agriculture crops. Management objective is to reduce the invasive species impacts locally or regionally, where resources are available.

Source: BC Inter-Ministry Invasive Species Working Group, 2021

Table A-2: Provincial Priority Invasive Plant Species

Category	Common Name	Genus	Species
Management	Bur chervil	*Anthriscus*	*caucalis*
Management	Carpet burweed	*Soliva*	*sessilis*
Management	Cypress spurge	*Euphorbia*	*cyparissias*
Management	Eurasian water milfoil	*Myriophyllum*	*spicatum*
Management	Gorse	*Ulex*	*europaeus*
Management	Invasive yellow hawkweeds	*Hieracium*	spp.
Management	Longspine Sandbur	*Cenchrus*	*longispinus*
Management	Mountain bluet	*Centaurea*	*montana*
Management	Purple loosestrife	*Lythrum*	*salicaria*
Management	Scentless chamomile	*Tripleurospermum*	*inodorum*
Management	Scotch thistle	*Onopordum*	*acanthium*
Management	Spurge laurel	*Daphne*	*laureola*
Management	Sulphur cinquefoil	*Potentilla*	*recta*
Management	Sweet fennel	*Foeniculum*	*vulgare*

Category	Common Name	Genus	Species
Management	Tansy ragwort	*Jacobaea*	*vulgaris*
Prevent	Camelthorn	*Alhagi*	*maurorum*
Prevent	Clary sage	*Salvia*	*sclarea*
Prevent	Common crupina	*Crupina*	*vulgaris*
Prevent	Eggleaf spurge	*Euphorbia*	*oblongata*
Prevent	Goatsrue	*Galega*	*officinalis*
Prevent	Halogeton/Saltlover	*Halogeton*	*glomeratus*
Prevent	Hydrilla	*Hydrilla*	*verticillata*
Prevent	Iberian starthistle	*Centaurea*	*iberica*
Prevent	Italian thistle	*Carduus*	*pycnocephalus*
Prevent	Johnsongrass	*Sorghum*	*halepense*
Prevent	Jointed goatgrass	*Aegilops*	*cylindrica*
Prevent	Kudzu	*Pueraria*	*montana* var. *lobata*
Prevent	Meadow Clary	*Salvia*	*pratensis*
Prevent	Mediterranean sage	*Salvia*	*aethiopis*
Prevent	Medusahead	*Taeniatherum*	*caput-medusae*
Prevent	Purple nutsedge	*Cyperus*	*rotundus*
Prevent	Purple starthistle	*Centaurea*	*calcitrapa*
Prevent	Red bartsia	*Odontites*	*serotina*
Prevent	Silverleaf nightshade	*Solanum*	*elaeagnifolium*
Prevent	Slender/Meadow foxtail	*Alopecurus*	*myosuroides*
Prevent	Slenderflower thistle	*Carduus*	*tenuiflorus*
Prevent	Spring milletgrass	*Milium*	*vernale*
Prevent	Spurge Flax	*Thymelaea*	*passerina*
Prevent	Squarrose knapweed	*Centaurea*	*virgata* ssp. *squarrosa*
Prevent	Syrian bean-caper	*Zygophyllum*	*fabago*
Prevent	Texas blueweed	*Helianthus*	*ciliaris*
Prevent	Water soldier	*Stratiotes*	*aloides*
Provincial Containment	Garlic mustard	*Alliaria*	*petiolata*
Provincial Containment	Giant hogweed	*Heracleum*	*mantegazzianum*
Provincial Containment	Poison hemlock	*Conium*	*maculatum*
Provincial Containment	Rush skeletonweed	*Chondrilla*	*juncea*
Provincial Containment	Wild chervil	*Anthriscus*	*sylvestris*
Provincial Containment	Wild parsnip	*Pastinaca*	*sativa*

Category	Common Name	Genus	Species
Provincial Early Detection Rapid Response (EDRR)	African rue	*Peganum*	*harmala*
Provincial EDRR	Black henbane	*Hyoscyamus*	*niger*
Provincial EDRR	Brazilian elodea/Waterweed	*Egeria*	*densa*
Provincial EDRR	Dyer's woad	*Isatis*	*tinctoria*
Provincial EDRR	European common reed	*Phragmites*	*australis*
Provincial EDRR	Flowering rush	*Butomus*	*umbellatus*
Provincial EDRR	Giant reed	*Arundo*	*donax*
Provincial EDRR	Invasive cordgrasses	*Spartina*	spp.
Provincial EDRR	Maltese star thistle	*Centaurea*	*melitensis*
Provincial EDRR	Mouse-ear hawkweed	*Hieracium*	*pilosella*
Provincial EDRR	North Africa grass	*Ventenata*	*dubia*
Provincial EDRR	Perennial pepperweed	*Lepidium*	*latifolium*
Provincial EDRR	Shiny geranium	*Geranium*	*lucidum*
Provincial EDRR	Slender false brome	*Brachypodium*	*sylvaticum* subsp. *sylvaticum*
Provincial EDRR	Water hyacinth*	*Eichhornia*	*crassipes*
Provincial EDRR	Water lettuce*	*Pistia*	*stratiotes*
Provincial EDRR	Yellow floating heart	*Nymphoides*	*peltata*
Provincial EDRR	Yellow starthistle	*Centaurea*	*solstitialis*
Regional Containment/Control	Blueweed	*Echium*	*vulgare*
Regional Containment/Control	Common bugloss	*Anchusa*	*officinalis*
Regional Containment/Control	Common tansy	*Tanacetum*	*vulgare*
Regional Containment/Control	Field scabious	*Knautia*	*arvensis*
Regional Containment/Control	Himalayan blackberry	*Rubus*	*armeniacus*
Regional Containment/Control	Himalayan knotweed	*Persicaria*	*wallichii*
Regional Containment/Control	Hoary alyssum	*Berteroa*	*incana*
Regional Containment/Control	Hoary cress	*Cardaria*	*draba*
Regional Containment/Control	Knotweeds (Japanese, Giant, and Bohemian)	*Fallopia/Reynoutria & Polygonum*	*spp.*
Regional Containment/Control	Leafy spurge	*Euphorbia*	*esula*
Regional Containment/Control	Marsh plume thistle/marsh thistle	*Cirsium*	*palustre*
Regional Containment/Control	Orange hawkweed	*Hieracium*	*aurantiacum*
Regional Containment/Control	Policeman's helmet/Himalayan balsam	*Impatiens*	*glandulifera*
Regional Containment/Control	Puncturevine	*Tribulus*	*terrestris*
Regional Containment/Control	Scotch broom	*Cytisus*	*scoparius*
Regional Containment/Control	Spotted knapweed	*Centaurea*	*stoebe*

Category	Common Name	Genus	Species
Regional Containment/Control	Teasel	*Dipsacus*	*fullonum*
Regional Containment/Control	Whiplash hawkweed	*Hieracium*	*flagellare*
Regional Containment/Control	Yellow archangel	*Lamium*	*galeobdolon*
Regional Containment/Control	Yellow flag iris	*Iris*	*pseudacorus*

** Status under review.*

Source: BC Inter-Ministry Invasive Species Working Group, 2021

REGIONAL PRIORITY INVASIVE PLANT

Table A-3: Invasive Plant Priority Ranking Descriptions

Priority Ranking	Description
1 New Invaders	Newly established species, current limited distribution, or at our borders. Expected to flourish if they become established, or if not managed. Management objective is elimination.
2 Containment	Well established species in our region, but have not yet infested all potential habitats. New sites will be managed to contain them and prevent further spread.
3 Established	Common and widespread species that occupy most or all potential habitats. Widespread control of these species is not currently possible.
4 Biological Control	Well established species in our region, for which effective biocontrol agents exist.

Source: CCCIPC 2020

Table A-4: Priority Invasive Plant Species by Sub-Region in the Cariboo Chilcotin

Sub-Region Name	North Cariboo	Central Cariboo	South Cariboo	Nazko	Chilcotin
Regional District Electoral Areas	A, B, C	D, F	E, G, H, L	I	J, K
Baby's-Breath	1	1	1	1	1
Black Henbane[1]	1	1	1	1	1
Blueweed	1	1	1	1	1
Burdock	3	3	3	3	2
Canada Thistle	3	3	3	3	3
Caraway	1	1	1	1	1
Common Tansy	2	2	2	1	1
Dalmatian Toadflax	4	4	4	1	2[3]
Diffuse Knapweed	2	2	2	1	2
Field Scabious	2	1	1	1	1
Flowering Rush[1]	1	1	1	1	1
Himalayan Balsam	1	1	1	1	1
Hoary Alyssum	1	1	1	1	1

Sub-Region Name	North Cariboo	Central Cariboo	South Cariboo	Nazko	Chilcotin
Hoary Cress	1	1	1	1	1
Hound's-Tongue	1	1	4[5]	1	1
Knotweed Spp.	1	1	1	1	1
Leafy Spurge[2]	1	1	1	1[7]	1
Marsh Plume Thistle	1[9]	1	1	1	1
Meadow Knapweed	1	1	1	1	1
Mountain Bluet	1	1	1	1	1
Nodding Thistle	4	4	4	4	4
Orange Hawkweed	3	3	3	3	1
Oxeye Daisy	3	3	3	3	3
Perennial Pepperweed[1]	1	1	1	1	1
Plumeless Thistle	1	1	1	1	1
Purple Loosestrife	1[3]	1	1[3]	1	1
Russian Knapweed	1	1	1	1	1
Scentless Chamomile	2	3	3	2	3[3]
Spotted Knapweed	2	2[4]	2	1	2[8]
St. John's Wort[6]	2	2	2	1	1
Sulphur Cinquefoil	1	2	2	1	1
Tansy Ragwort	1	1	1	1	1
Yellow Flag Iris	1	1	1	1	1
Yellow Hawkweeds, Invasive	3	3	3	3	2
Wild Chervil	1	1	1	1	1
Wild Parsnip	1	1	1	1	1

Notes:

Blackwater Mine Site Is Located in the Nazko Sub-Region (Modified From CCCIPC 2020).

Species ranks that are in WHITE indicate the species is NOT known to exist in that sub-region. If Black, the species is present.

[1] Provincial EDRR (Early Detection Early Response) species.

[2] Biocontrol agent is present on dry sites, but not yet effective, it is effective in the TNRD near Canoe Creek.

[3] Biocontrol agent is the primary means of control.

[4] Biocontrol agent is present, but not yet effective.

[5] In the Canoe/Dog/Churn Creek areas, species is mainly controlled by biocontrol agents.

[6] Biocontrol appears to be affected by a parasite.

[7] Classified as a New Invader (1) in the Western Nazko.

[8] Grassland are at highest threat.

[9] Outside the established containment area.

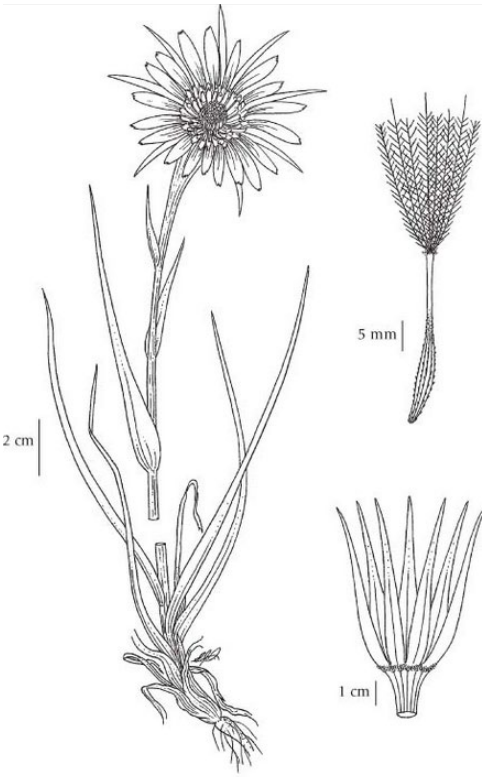
REFERENCES

BC Inter-Ministry Invasive Species Working Group. 2021. *Provincial Priority Invasive Species.* https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/invasive-species/publications/provincial_priority_is_list.pdf (accessed August 2021).

Cariboo Chilcotin Coast Invasive Plant Committee (CCCIPC). 2020. *Invasive Plants of Concern in the Cariboo Chilcotin Educational Document & Executive Summary.* https://cccipc.ca/documents/2020_Invasive_Plant_Summary-compressed.pdf (accessed August 2021).

APPENDIX B YELLOW SALSIFY (*TRAGOPOGON DUBIUS*) FACTSHEET

Tragopogon Identification And Control



Common Name(s): Western Goat's beard or Yellow salsify

Scientific Name: ***Tragopogon dubius Scop.***

Legal Status: Exotic with a low extant.

*There are significant inventory gaps.

Invasiveness: High Threat: Low

General:

Biennial or sometimes annual herb from a taproot; stems erect, solitary, simple or sometimes branching from the base, lightly woolly-hairy when young, becoming glabrous except at leaf bases, exuding milky juice when broken, 0.3-1 m tall. Cross section of plant stem is triangular.

Flowers:

Heads with strap-shaped flowers, solitary, on much-enlarged, hollow stalks terminating the stems or few branches; involucres 2.5-7 cm tall; involucral bracts linear-lanceolate, equal, usually about 13 or only 8 on dwarfed plants or on last-formed heads, distinctly surpassing the ray flowers; ray flowers pale yellow.

Leaves:

Basal leaves lacking; stem leaves entire, grasslike, tapering uniformly from base to the apex, parallel-veined, with clasping bases, 20-50 cm long, 0.5-2 cm wide.

Fruits:

Heads with strap-shaped flowers, solitary, on much-enlarged, hollow stalks terminating the stems or few branches; involucres 2.5-7 cm tall; involucral bracts linear-lanceolate, equal, usually about 13, distinctly surpassing the ray flowers; ray flowers pale yellow; disk flowers lacking.

Control: Most effective control is chemical as mowing will not eradicate the plant.

Chemical: A combination of 2, 4-D and dicamba applied during the rosette stage provides effective control and helps to increase perennial grasses.

For more information on invasive plant species visit
www.nwipc.org

References
Mangold, J.M. & Lansverk, A.L. 2013. Testing control options for Western salsify (*tragopogon dubius*) on Conservation Reserve Program Lands. Weed Technology, 27(3), 509-514.
EfloraBC. 2013. Electronic Access of Plants in British Columbia. Retrieved from http://linnet.geog.ubc.ca/DB_Query/CommonName.aspx
Images from Google images and EfloraBC

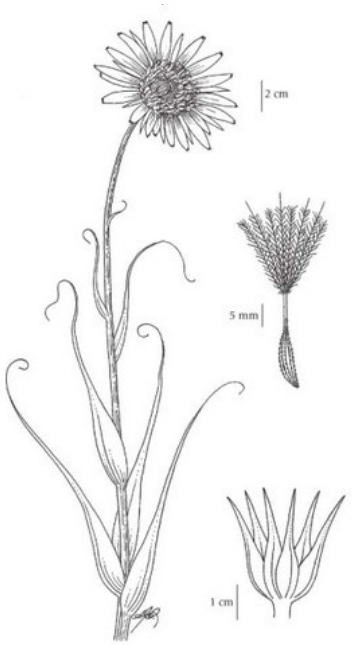
Common Name(s): Meadow Goat's beard or Meadow Salsify

Scientific Name: ***Tragopogon pratensis L.***

Legal Status: Exotic with a low extant.

*There are significant inventory gaps.

Invasiveness: High Threat: Low



Tragopogon pratensis

General:

Biennial herb from a taproot; stems erect, solitary, simple or more commonly branching from the base, lightly woolly-hairy when young, becoming glabrous except at leaf bases, exuding milky juice when broken, 15-80 cm tall.

Leaves:

Basal leaves lacking; stem leaves entire, grasslike, becoming broader just above the base then tapering uniformly to the apex, parallel-veined with clasping bases, 5-30 cm long, 0.5-2 cm wide.

Flowers:

Heads with strap-shaped flowers, solitary, on straight, hollow stalks terminating the stems or few branches; involucres 1.2-2.4 cm tall; involucral bracts lanceolate, swollen at the base, equal, 5-11 or more commonly about 8, equalling or shorter than the ray flowers; ray flowers bright yellow; disk flowers lacking.

Fruits:

Achenes elongate, 5- to 10-ribbed, 1.2-2.4 cm long, abruptly tapering to the slender beak; pappus of whitish, slender tipped, feathery bristles, the feather branches interwebbed.

Control: Most effective control is chemical as mowing will not eradicate the plant.

Chemical: A combination of 2, 4-D and dicamba applied during the rosette stage provides effective control and helps to increase perennial grasses.

Important Note*** Herbicide recommendations and use must consider site characteristics and be prescribed based on site goals and objectives. Herbicide labels and other sources of information must be reviewed before selecting and applying herbicides.

- Ensure that chemical treatments do not injure or kill susceptible, non-target vegetation.
- The following herbicides provide effective control for common tansy: picloram, picloram/2,4 D, metsulfuron methyl, and aminopyralid.
- Application of pesticides on Crown land must be carried out following a confirmed Pest Management Plan *(Integrated Pest Management Act)* and under the supervision of a certified pesticide applicator:www.env.gov.bc.ca/epd/ipmp/

References

Mangold, J.M. & Lansverk, A.L. 2013. Testing control options for Western salsify (*tragopogon dubius*) on Conservation Reserve Program Lands. Weed Technology, 27(3), 509-514.

EfloraBC. 2013. Electronic Access of Plants in British Columbia. Retrieved from http://linnet.geog.ubc.ca/DB_Query/CommonName.aspx

Images from Google images and EfloraBC

Northwest INVASIVE PLANT COUNCIL

APPENDIX C ORANGE HAWKWEED (*HIERACEUM AURANTIACUM*) FACTSHEET

Appendix C: Orange Hawkweed (*Hieraceum aurantiacum*) Factsheet

Orange Hawkweed (*Hieraceum aurantiacum*)

Description: Orange hawkweed was introduced to North America as an ornamental species towards the end of the 19th century in the eastern United States. Within 25 years it had spread from New England to Michigan and is currently one of the most widespread invasive plants in North America (Wilson and Callihan 1999).

Orange hawkweed is a creeping perennial with milky sap and a shallow, fibrous root system (Wilson and Callihan 1999). The basal rosette of hairy leaves and the cluster of dark orange compound flowers at the top of a 0.3 to 1.2 m tall, leafless flower stalk serve to distinguish this species from other hawkweeds in British Columbia.

Type: Perennial

Habitat and Impacts: Orange hawkweed occupies a wide range of well-drained habitats, but prefers coarse soils and unshaded sites.

Method of Spread: It reproduces by seed or by stolon or rhizome and can form large, continuous mats with up to 3500 plants per square metre (Wilson and Callihan 1999). Seed production is generally low, but seeds can be produced sexually or asexually without pollination. Animals, people or vehicles disperse the majority of seeds. Although seeds are plumed, they are not widely spread by wind. Seeds can remain viable in the soil for more than 7 years, although most germinate within one year of production.

Management Options

Mechanical: Hand pulling of young plants can be effective, but small root fragments can resprout and allow the infestation to persist. Mowing can control seed production, but encourages vegetative growth and spread.

Digging plants or otherwise disturbing roots can help spread orange hawkweed, since new plants can become established from root, stolon, or rhizome fragments (Wilson and Callihan 1999). Orange hawkweed should not be tilled unless this treatment is done in combination with a chemical treatment and followed by reseeding.

Chemical: Dicamba, Picloram, Aminopyralid, Clopyralid or Picloram and 2,4-D are effective at controlling orange hawkweed during the spring growing season.

Biological: Biological control agents are currently being developed but are not yet available for distribution.

Cultural: Ammonium Sulphate (Nitrogen fertilizer) can be applied to fields to suppress the competitive edge of orange hawkweed.

Treatment Options: *Local Level* – hand pulling small infestations, chemical and fertilization for larger sites**.** *Landscape Level* – chemical treatments**.**

Orange Hawkweed (*Hieraceum aurantiacum*)

CCCIPC Priority and Treatment Strategy and Location: Preventing additional sites from establishing in western parts of the region is a priority. A containment line is established east of Highway 97 along the Interior Douglas Fir/Sub-Boreal Pine Spruce biogeoclimatic zone boundary to Williams Lake, then along the West Fraser Road to Narcosli/Deep Creek, then west to the Itcha Mountains (see maps in Appendix 6). All sites outside the containment line will be aggressively controlled.

Year	North Cariboo	Central Cariboo	South Cariboo	Nazko	Chilcotin	Outer Coast	Hagensborg East	Bella Coola
2008: Orange hawkweed is currently concentrated in the eastern part of the Cariboo Chilcotin Coast from east of 100 Mile House to the northern boundary but there are sites along the length of Highway 97. Scattered sites are recorded in the Chilcotin, and it is not recorded in the coastal areas of the region.								
2009	3	2	2	3	1	1	1	1
Notes: Sites found on private property in Bella Coola								
2010	3	2	2	3	1	1	1	1
2011	3	2	2	3	1	1	1	1
2012	3	2	2	3	1	1	1	1
2013	3	2	2	3	1	1	1	1
Notes: Containment line moved to Dog Creek Road: to TNRD boundary in the south, north to Highway 97. Line moved for both orange hawkweed and yellow hawkweed.								
2014	3	2	2	3	1	1	1	1
Notes: Orange hawkweed is still being managed in the Chilcotin, need to be on the lookout for it in the Tatlayoko and Bella Coola Valleys.								
2015	3	3	3	3	1	1	1	1
Notes: Containment line moved to Dog Creek Road: to TNRD boundary in the south, north to Highway 97. Line moved for both orange hawkweed and yellow hawkweed.								
2016	3	3	3	3	1	1	1	1

Notes:

Species ranks that are in white indicate the species is NOT known to exist in that sub-region (i.e., if black, the species is present).

An N/A indicates that this species is not ecologically suited to that given sub-region and is not expected to occur there.

Source: CCCIPC. 2017. Regional Strategic Plan for Invasive Plant Management.

APPENDIX D INVASIVE PLANT MANAGEMENT STANDARD OPERATING PROCEDURE

Blackwater Gold Mine

Invasive Plant Management

STANDARD OPERATING PROCEDURE

March 2022 Version A.1

Scope:	To define a standard operating procedure (SOP) for safe and efficient work practices to decrease the likelihood of invasive plant colonization.	
Contacts:	Travis Desormeaux Environmental Manager	tdesormeaux@artemisgoldinc.com 250.278.7788
Document Ownership:	Mine Manager	

1. SCOPE

This standard operating procedure (SOP) applies to all employees, contractors, and subcontractors/vendors at the Blackwater Gold Mine (Blackwater) during construction, operation and closure.

This SOP is applicable to the following activities or operations that could potentially introduce or spread invasive plants at the mine site:

- Road construction and maintenance;
- Construction activities that create ground disturbance;
- Transport and usage of vehicles and machinery; and
- Re-vegetation of disturbed areas.

2. RESPONSIBILITIES

Individuals with key roles and responsibilities with respect to invasive plant management are presented in Table 2-1.

Table 2-1: Blackwater Roles and Responsibilities

Mine Manager	The Mine Manager, as defined in the *Mines Act*, has overall responsibility for mine operations, including the health and safety of workers and the public, Environmental Management System (EMS) implementation, overall environmental performance and protection, and permit compliance. The Mine Manager may delegate their responsibilities to qualified personnel. Reports to Artemis Gold's Chief Operating Officer.
Construction Manager (CM)	The CM is accountable for ensuring environmental and regulatory commitments/ and obligations are being met during the construction phase. The CM is responsible for riparian area management during mine site construction. Reports to Mine Manager.
Environmental Manager (EM)	The EM is responsible for the day-to-day management of the Project's environmental programs and compliance with environmental permits, updating EMS and MPs. The EM or designate will be responsible for reporting non-compliance to the CM, and Engineering, Procurement and Construction Management (EPCM) contractor, other contractors, the Company and regulatory agencies, where required. Supports the CM and reports to Mine Manager.

Supervisors	Supervisors include the Construction Supervisor and Production Supervisor and are responsible for implementation of this SOP relevant to their areas. Report to the Mine Manager.
Departmental Managers	Departmental Managers are responsible for implementation of this SOP relevant to their areas. Report to the Mine Manager.
Employees and Contractors	Employees and contractors are responsible for being aware of the Invasive Plant Management Plan, including monitoring requirements, mitigation measures, adaptive management trigger action response, and reporting and record keeping.

3. INVASIVE PLANT SPECIES MANAGEMENT

Control of noxious weeds and their seeds is regulated by the British Columbia (BC) *Weed Control Act*. Noxious weeds are any invasive plant species designated by regulation to be noxious under the BC *Weed Control Act* and Regulations. They can displace native vegetation and reduce wildlife habitat and forage. Invasive plants are non-native or alien to the ecosystem under consideration. Their introduction causes, or is likely to cause, economic or environmental damage, or harm to human health. In BC the term invasive plant is synonymous with invasive alien plant.

4. IDENTIFICATION

Sufficient training and identification resources will be supplied to the site managers including invasive plant lists and species profiles provided in the Invasive Plant Species Management Plan.

Mine personnel responsible for vegetation management will be provided with: *Best Practices for Preventing the Spread of Invasive Plants During Forest Management Activities: a Pocket Guide for British Columbia's Forest Workers, 2013 Edition*[1]

5. STANDARD OPERATING PROCEDURES

The SOPs to reduce the colonization and control of invasive plant species, are presented in Table 5-1.

Table 5-1: Invasive Plant Management Standard Operating Procedures

Invasive Plant Species Control	Standard Operating Procedures
Vehicles/Earth Moving Equipment	■ Employees and contractors will use project-designated roads and established pull-outs. ■ Earth moving equipment and trucks are expected to be clean and free of soil and vegetation when they arrive on the mine site. ■ Keep equipment yards and storage areas free of invasive species. ■ Equipment and vehicles will not be parked in infested areas. ■ Inspect clothing and vehicle/equipment undercarriages when working in, and prior to leaving, areas known to contain invasive plants.

[1] BC FLNRORD and ISCBC. 2013. *Best Practices for Preventing the Spread of Invasive Plants during Forest Management Activities: A Pocket Guide for British Columbia's Forest Workers*. 2013 Edition. BC Ministry of Forests, Lands and Natural Resource Operations and Invasive Species Council of BC.

Invasive Plant Species Control	Standard Operating Procedures
Vehicle and Equipment Cleaning	■ Upon arrival at the mine site, EM or designate inspects earth moving equipment and trucks and direct cleaning if required. ■ Vehicles and earth moving equipment will be cleaned using portable higher pressure washers within a portable containment structure at the infested site or cleaning will be done in an area where contamination and seed spread is unlikely, such as a mud-free, gravel, concrete, or other hard surface. ■ Cleaning will occur at least 30 m away from watercourses or undisturbed areas. ■ Employees will inspect vehicle and equipment to ensure mud, soil, vegetation, and debris is removed and left at the site of infestation. ■ If vehicles or earth moving equipment are causing the spread of invasive plants, subject to the direction of a qualified person, a quarantine area may be established which may include blocking off the infestation, implementing treatment and control measures, and using portable wash stations.
Pre-clearing surveys	■ Conduct pre-clearing surveys to identify invasive plant species established by Northwest Invasive Plant Council (NWIPC).[1] ■ Identify control measures to be implemented to prevent further spread through project related activities.
Clearing	■ Minimize clearing dimensions during construction. ■ Minimize ground and soil disturbance and vegetation removal, including along road edges and outside work areas. ■ Identify short-term disturbances of clearings and re-vegetate as soon as possible to avoid soil degradation. ■ Minimize soil erosion and degradation through adherence to the Surface Erosion Prevention and Sediment Control Plan. If straw bales are used for erosion control, only certified weed-free straw will be used. ■ Monitor newly disturbed sites for invasive plants and promptly eradicate.
Re-vegetation	■ Stabilize exposed soils and promptly re-seed with native seeds mix and monitor to confirm effective vegetation recolonization. ■ To re-vegetate road ways, use species that prevent erosion and are not wildlife attractants to prevent the establishment of invasive plants in accordance with the IPMP. Wildlife attracting species to be avoided include: legumes (family Fabaceae), brome (*Bromus* sp.), alfalfa (*Medicago sativa*), annual rye (*Lolium multiflorum*), barley (*Hordeum vulgare*), timothy (*Phleum pretense*), alpine bluegrass (*Poa Alpina*), and American sloughgrass (*Beckmannia syzigachne*).
Treatment and Control Measures	■ Determine and develop the appropriate treatment plan in accordance with the IPMP (i.e., consider the species status, the potential to eradicate, and risk to native communities, sensitive ecosystems, and revegetated areas). ■ Treatment options include: <u>Mechanical Control</u>: ○ Collecting and bagging, hand cutting or mowing, hand pulling or digging, and revegetation and seeding. ○ During removal, all of the plant, including flowers, branches, roots, or seeds needs to be removed and properly disposed of to prevent spread to new areas. ○ Disposal methods may vary by species and could include burning, deep burial in a landfill, or bagging. In remote areas, it is recommended that to bag flowers/seeds for disposal and leave uprooted plant parts to dry out and decay. <u>Biological Control</u>: ○ Biological control agents are usually insects that attack or weaken target invasive species, reducing the competitive ability and population density of the target species over time.

Invasive Plant Species Control	Standard Operating Procedures
	Chemical Control: ○ The Handbook for Pesticide Applicators and Dispensers[2] will inform application methods and measures to protect waterbodies and riparian areas. ○ Use and handling of herbicides will be in accordance with the IPMP.

Notes:

EM = Environment Manager; IPMP = Invasive Plant Management Plan

[1] NWIPC. 2015. Northwest Invasive Plant Council Strategic Plan. Prince George, BC.

[2] BC MOE. 2005. Handbook for Pesticide Applicators and Dispensers. Prepared by British Columbia. Ministry of Water, Land and Air Protection, British Columbia. Environmental Management Branch.

6. REFERENCES

BC FLNRORD and ISCBC. 2013. *Best Practices for Preventing the Spread of Invasive Plants during Forest Management Activities: A Pocket Guide for British Columbia's Forest Workers.* 2013 Edition. BC Ministry of Forests, Lands and Natural Resource Operations and Invasive Species Council of BC.

BC MOE. 2005. *Handbook for Pesticide Applicators and Dispensers. Prepared by British Columbia.* Ministry of Water, Land and Air Protection, British Columbia. Environmental Management Branch.

NWIPC. 2015. *Northwest Invasive Plant Council Strategic Plan*. Prince George, BC.

7. REVIEW AND APPROVAL

Reviewed by:

Name (Print) Environmental Manager	Signature	Date

Approved by:

Name (Print) Mine Manager	Signature	Date

APPENDIX E CCCIPC INVASIVE PLANT SPECIES PROFILE

Invasive Plant Species Profiles

The recommended treatments have been used as effective means of control in our region. Other options do exist should jurisdictions prefer alternative treatments. **Please check with your local government to confirm the correct treatment for the plant and area of concern.**

Baby's Breath *(Gypsophila paniculata)*

Type: perennial
Method of Spread: seed spread by wind or by plant tumbling

Black Henbane *(Hyoscyamus niger)*

Type: annual or biennial
Method of Spread: exclusively by seed

Blueweed *(Echium vulgare)*

Type: biennial
Method of Spread: exclusively by seed sticking to hair, clothing or feathers

Caraway

Type: biennial
Method of Spread: seeds

Common Tansy *(Tanacetum vulgare)*

Type: perennial
Method of Spread: seed or creeping roots

Dalmatian Toadflax *(Linaria dalmatica)*

Type: perennial
Method of Spread: seed or creeping root

Diffuse Knapweed *(Centaurea diffusa)*

Type: biennial or short-lived perennial
Method of Spread: exclusively by seed

Field Scabious *(Knautia arvensis)*

Type: perennial
Method of Spread: exclusively by seed

Flowering Rush *(Butomus umbellatus)*

Type: perennial
Method of Spread: seed, root buds and root fragments

Himalayan Balsam *(Impatiens glandulifera)*

Type: annual
Method of Spread: seed

Hoary Alyssum *(Berteroa incana)*

Type: biennial or short-lived perennial
Method of Spread: exclusively by seed

Hoary Cress *(Cardaria draba)*

Type: perennial
Method of Spread: spreading roots, seed

Hound's Tongue *(Cynoglossum officinale)*

Type: biennial to short-lived perennial
Method of Spread: exclusively by seeds encapsulated in burrs

Knotweeds including Himalayan Knotweed *(Polygonum polystachyum)*, other Knotweeds *(Fallopia spp.)*

Type: perennial
Method of Spread: seeds and vegetative through rhizomes and root fragments

Leafy Spurge *(Euphorbia esula)*

Type: perennial
Method of Spread: seed or lateral roots

Marsh Plume Thistle *(Cirsium palustre)*

Type: biennial
Method of Spread: exclusively by seed

Meadow Knapweed *(Centaurea pratensis spp)*

Type: perennial
Method of Spread: primarily by seed, but also from root and crown fragments

Mountain Bluet *(Centaurea montana)*

Type: annual
Method of Spread: primarily by seed, but also from rhizomatous roots

Nodding Thistle *(Carduus nutans L.)*

Type: biennial
Method of Spread: primarily by seed

Perennial Pepperweed *(Lepidium latifolium)*

Type: perennial
Method of Spread: seed or root fragments

Plumeless Thistle *(Carduus acanthoides)*

Type: biennial
Method of Spread: primarily by seed

Purple Loosestrife *(Lythrum salicaria)*

Type: perennial
Method of Spread: plant parts and seed spread by water and wind

Russian Knapweed *(Acroptilon repens)*

Type: perennial
Method of Spread: primarily through seed; however, it can re-grow from root and crown fragments

Spotted Knapweed *(Centaurea stoebe)*

Type: biennial to short-lived perennial
Method of Spread: exclusively by seed

St. John's Wort *(Hypericum perforatum L.)*

Type: perennial
Method of Spread: seed and roots

Sulphur Cinquefoil *(Potentilla recta)*

Type: perennial
Method of Spread: seed and roots

Wild Chervil *(Anthriscus sylvestris)*

Type: Annual, biennial or perennial
Method of Spread: seed and roots

Yellow Flag Iris *(Iris pseudacorus)*

Type: perennial
Method of Spread: seed and roots

TREATMENT SYMBOLS LEGEND

herbicide
covering
mowing
cutting
livestock
digging
bio-control
dead heading hand pulling
fertilization

FOR MORE INFO AND TO REPORT WEEDS: 1-800-665-1636(CRD) or with your cell phone www.reportweedsbc.ca »www.cccipc.ca » #100 - 197 2nd Ave. N., Williams Lake, BC V2G 1Z5

APPENDIX F HERBICIDE APPLICATION AND USE GUIDANCE

Appendix F: Herbicide Use and Handling

Topic	Requirement
Qualifications and Responsibilities of Persons Applying Herbicides	■ The required practices for pesticide applicators are detailed in BC Ministry of Environment, Canadian Pesticide Education Program Applicator Core Manual and Work Safe B.C. (2009) Standard Practices for Pesticide Applicators. ■ Herbicide applications must be conducted or supervised by a person who holds a Pesticide Applicator Certificate endorsed for the class of pesticide. ■ Those authorized to treat invasive plants will be provided with pre-work information and sufficient oversight to ensure they fully understand the legislative requirements.
Herbicide Transportation Section 58(3)(a)(i) of the Integrated Pest Management Regulation (IPMR)	■ Ensure that the herbicide is properly secured during transport to prevent accidental discharge or unauthorized removal, and to prevent contamination of food or drink intended for animal or human consumption, household furnishings, toiletries, clothing, bedding, or similar items transported with the herbicide. ■ Keep herbicides in their original containers and with original packaging and labelling affixed, or in appropriate containers with trade name, name of active ingredient, concentration of active ingredient, and pesticide registration number affixed. ■ Keep in the vehicle a first aid kit, fire extinguisher, spill contingency plan, and spill contingency kit (with WorkSafe BC regulated contents). Vehicle operators must be trained to handle spills
Herbicide Storage Section 58(3)(a)(ii) of IPMR	■ Keep herbicides in their original containers and with original packaging. If original packaging is not available, the herbicides shall be placed in appropriate containers that have the trade name, active ingredient concentration and pesticide registration number affixed. ■ Store herbicides separately from food intended for human consumption. ■ Keep herbicides in storage facilities that are locked when unattended, not used for storage of food intended for human or animal consumption, ventilated to the outside, and accessible only to authorized persons. ■ Mark storage facility in block letters: *"WARNING: CHEMICAL STORAGE – AUTHORIZED PERSONS ONLY"* so signs are visible to persons approaching each door providing access to the facility. ■ Store fumigants and other pesticides that release vapours or bear a poison symbol on the label in a storage facility that is not attached to or within a building used for living accommodations ■ Within 60 days after starting to store an herbicide at a location, provide notice of the storage location to the fire department closest to that location. ■ Keep storage facilities separate from work and living areas, and away from flammable materials, and bodies of water. ■ Keep a herbicide inventory log book, current product labels, Safety Data Sheets, and a copy of WorkSafe BC's *Occupational Health & Safety Regulation* at the storage facility. ■ Keep at the storage facility a first aid kit, fire extinguisher, Spill Response Contingency Plan, and a spill kit with WorkSafe BC regulated contents. Persons storing herbicides must be trained to handle spills.

Topic	Requirement
Mixing, Loading and Applying Herbicides Section 58(3)(a)(iii) of IPMR	■ Do not wash or submerge in a body of water any container used to prepare, mix, or apply herbicides. ■ When drawing water from a body of water or an irrigation system into a container for herbicide use, maintain a gap between the herbicide and the equipment to prevent herbicide from entering the body of water. ■ Before mixing, read the product label and Safety Data Sheet, and follow all safety precautions. ■ Ensure that persons mixing or loading herbicides are Certified Pesticide Applicators, and use proper protective equipment and clothing as recommended on the label. ■ Ensure that emergency wash facilities, first aid equipment, spill kits spill response plans, and emergency phone numbers are close at hand. ■ Use clean water free of any suspended particles. Use appropriate procedures to prevent backflow of herbicides into the water source. ■ Conduct mixing and loading in areas selected to prevent any spilled herbicides from entering the pesticide free zones for bodies of water, wells, and water intakes. ■ Mix herbicides in well-ventilated areas outdoors, under low wind conditions. Ensure there is adequate light and stand upwind to avoid contaminating yourself. ■ Keep containers well below eye level to prevent splashing or spilling herbicides in the face or eyes.
Herbicide Disposal Section 58(3)(a)(iv) of IPMR	■ Plan all applications carefully to minimize excess and waste. Any leftover herbicide mix should be saved for future use or disposed of in an appropriate manner. ■ Triple -rinse empty metal, glass, or plastic containers before disposal. Rinse sprayers and containers well away from any body of water or well. ■ Puncture or break any non -recyclable containers so that they cannot be reused, then discard at an approved sanitary landfill.
Spill Response Plan Section 58(3)(a)(v) of IPMR	■ Ensure the safety of workers and public by limiting access to the area, protecting people from exposure, and ensuring wash facilities are nearby. ■ Put on protective equipment before cleaning up the spill, including protective clothing, respirators, and eye protection. ■ Contain the spill. ■ Report spills to the Provincial Emergency Program (PEP) as per the Spill Reporting Regulation. ■ Clean up the site.
Pre-treatment Inspection Procedures Section 58(3)(b)(iv) of IPMR	■ Before vegetation management is conducted at a specific site, a pre -treatment inspection is completed to ensure that environmentally -sensitive areas are protected. At this stage, the work method is confirmed to ensure it is appropriate for the site, and specific environmental concerns are identified.

Source: Integrated Vegetation Management Plan For Control of Vegetation at BC Hydro Facilities (BC Hydro 2021).

APPENDIX G IAPP SITE AND INVASIVE PLANT SURVEY RECORD

IAPP Site & Invasive Plant Survey Record

Entered into IAPP (YYYY-MM-DD):	*By:*	*Assigned Site IDs recorded on this form:* ☐

Site Created Date (YYYY-MM-DD): *

Invasive Plant Survey Date (YYYY-MM-DD): *
(only if different from Site Created Date)

Site ID: (assigned at IAPP data entry)

Site Details

Jurisdiction: * (see reverse for choices/codes)

District Lot Nr:

Range Unit:

Site Paper File ID:

UTM Zone: *

UTM Easting: * (no initial zero)

UTM Northing: * (7 digits)

Site Soil Texture:
coarse ☐ fine ☐ organic ☐

Slope:

Aspect:

Elevation (m):

Site specific use: *

Site Location (and directions how to get there):

Site Comments (anything else important /useful):

Invasive Plant Survey Details

Survey Agency: *

Employer:

Surveyor(s):

Invasive Plants * Species name or code	**Area** * Dimension or Ha	Distr. Code (see reverse for codes)	Density Code	**Survey Type** * **C**ursory /**O**perational /**P**recise	Proposed Activity Man	Chem	Bio
				C ☐ O ☐ P ☐	☐	☐	☐
				C ☐ O ☐ P ☐	☐	☐	☐
				C ☐ O ☐ P ☐	☐	☐	☐

Site Image Details

Date taken (YYYY-MM-DD): *

Reference No. *

Perspective: *
(see reverse for codes)

Image Comments:

Site Created Date (YYYY-MM-DD): *

Invasive Plant Survey Date (YYYY-MM-DD): *
(only if different from Site Created Date)

Site ID: (assigned at IAPP data entry)

Site Details

Jurisdiction: * (see reverse for choices/codes)

District Lot Nr:

Range Unit:

Site Paper File ID:

UTM Zone: *

UTM Easting: * (no initial zero)

UTM Northing: * (7 digits)

Site Soil Texture:
coarse ☐ fine ☐ organic ☐

Slope:

Aspect:

Elevation (m):

Site Location (and directions how to get there):

Site Comments (anything else important /useful):

Invasive Plant Survey Details

Survey Agency: *

Employer:

Surveyor(s):

Invasive Plants * Species name or code	**Area** * Dimension or Ha	Distr. Code (see reverse for codes)	Density Code	**Survey Type** * **C**ursory /**O**perational /**P**recise	Proposed Activity Man	Chem	Bio
				C ☐ O ☐ P ☐	☐	☐	☐
				C ☐ O ☐ P ☐	☐	☐	☐
				C ☐ O ☐ P ☐	☐	☐	☐

Site Image Details

Date taken (YYYY-MM-DD): *

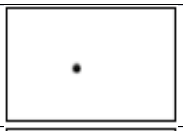
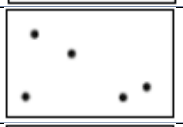
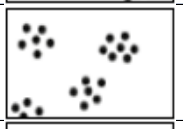
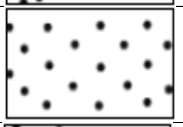
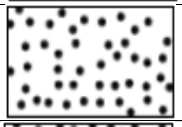
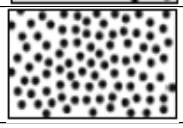
Reference No. *

Perspective: *
(see reverse for codes)

Image Comments:

** indicates mandatory field - this form may be used for 2 sites, with their invasive plant surveys, and site images (if taken).*

Some commonly used codes in IAPP:

Distribution Code		
Code	Reference	Description
1		Rare individual, a single occurrence
2		Few sporadically occurring individuals
3		Single patch or clump of a species
4		Several sporadically occurring individuals
5		A few patches or clumps of a species
6		Several well-spaced patches or clumps of a species
7		Continuous uniform occurrence of well-spaced individuals
8		Continuous occurrence of a species with a few gaps in the distribution
9		Continuous dense occurrence of a species

Density Code		
Code	Reference	Description
1	Low	≤ 1 plant/m^2
2	Medium	2-5 plants/m^2
3	High	6-10 plants/m^2
4	Dense	> 10 plants/m^2

Jurisdiction Codes	
MFR	Ministry of Forests and Range
AH	Alaska Highway
HYDR	BC Hydro
BCR	BC Rail
BCTC	British Columbia Transmission Corp.
BNSF	Burlington Northern Santa Fe
CNR	CN Rail
CPR	CP Rail
DND	Department of National Defense
GL	Grazing Lease
FN	First Nations Reserves
MN	Mining Companies
MOT	Ministry of Transportation and Infrastructure
MOE	Ministry of Environment - *except Provincial Parks*
MOP	Municipality owned land
PIPE	Oil and Gas Companies
PNG	Pacific Northern Gas
PCAN	Parks Canada
P	Private Land
PP	Provincial Parks
MRD	Regional District owned land
TEL	Telus
TER	Terasen Gas Inc.
TRP	TransCanada Pipelines
WE	Westcoast Energy Inc.

APPENDIX H INVASIVE PLANT MONITORING STANDARD OPERATING PROCEDURE

Blackwater Gold Mine

Invasive Plant Species Monitoring

STANDARD OPERATING PROCEDURE

March 2022 Version A.1

Scope:	To define a standard operating procedure (SOP) for safe and efficient work practices for monitoring invasive plants.	
Contacts:	Travis Desormeaux Environmental Manager	tdesormeaux@artemisgoldinc.com 250.278.7788
Document Ownership:	Mine Manager	

1. SCOPE

This standard operating procedure (SOP) applies to all employees, contractors, and subcontractors/vendors at the Blackwater Gold Mine (Blackwater) during construction, operation and closure.

2. OBJECTIVES

- Identify invasive plant species in re-vegetated areas to ensure invasive plant species have not become established.
- Identify and document specific locations where invasive plant species are newly discovered or have been previously identified.
- Monitor the effectiveness of treatments, where treatment or control activities were undertaken.
- Reduce the spread of invasive plant species during monitoring.

3. RESPONSIBILITIES

Individuals with key roles and responsibilities with respect to invasive plant monitoring are presented in Table 3-1.

Table 3-1: Blackwater Roles and Responsibilities

Mine Manager	The Mine Manager, as defined in the Mines Act, has overall responsibility for mine operations, including the health and safety of workers and the public, Environmental Management System (EMS) implementation, overall environmental performance and protection, and permit compliance. The Mine Manager may delegate their responsibilities to qualified personnel. Reports to Artemis Gold's Chief Operating Officer.
Construction Manager (CM)	The CM is accountable for ensuring environmental and regulatory commitments/ and obligations are being met during the construction phase. The CM is responsible for riparian area management during mine site construction. Reports to Mine Manager.

Environmental Manager (EM)	The EM is responsible for the day-to-day management of the Project's environmental programs and compliance with environmental permits, updating EMS and MPs. The EM or designate will be responsible for reporting non-compliance to the CM, and Engineering, Procurement and Construction Management (EPCM) contractor, other contractors, the Company and regulatory agencies, where required. Supports the CM and reports to Mine Manager.
Supervisors	Supervisors include the Construction Supervisor and Production Supervisor and are responsible for implementation of this SOP relevant to their areas. Report to the Mine Manager.
Departmental Managers	Departmental Managers are responsible for implementation of this SOP relevant to their areas. Report to the Mine Manager.
Employees and Contractors	Employees and contractors are responsible for being aware of the Invasive Plant Species Management Plan, SOP, including monitoring requirements, mitigation measures, adaptive management trigger action response, and reporting and record keeping.

4. EQUIPMENT

- Camera
- Hand-held GPS
- Tape measure
- Field book and pen
- Inventory data sheets[1]
- Plant identification books
- Sealable plastic bag

5. HEALTH AND SAFETY HAZARDS

- Required PPE: protective gloves, safety glasses.
- Field Safety Hazards:
  - Noxious Weeds
  - Working Remotely
  - ATV Use
  - Wildlife Encounter
  - Insect bites
  - Working in and Around Water

[1] Invasive plant surveys will be completed in accordance with the Invasive Alien Plant Program (IAPP) standardized methods: https://testwww.for.gov.bc.ca/hra/Plants/IAPP_Reference_Guide/IAPP_Reference_Guide_Part_I.pdf

6. FIELD MONITORING/COLLECTION PROCEDURES

Monitoring Timing and Duration

- Monitoring timing and duration will be in accordance to Table 9-1 of the Invasive Plant Management Plan (IPMP).
- Vegetation should be monitored close to the peak summer growth prior to seed set, generally in the middle of July.
- Monitoring should occur a minimum of two weeks between treatments.
- A second monitoring/survey should occur around August to September to prevent any missed plants from producing viable seed (may involve bagging seed heads and disposal at an appropriate waste disposal location).

Monitoring Locations

- Monitoring locations in accordance with the IPMP:
  - Pre-clearing visual surveys within confirmed clearing boundaries;
  - Known locations of invasive plant species;
  - Junction of Mine Access Road and Kluskus-Ootsa FSR;
  - Disturbed areas (roads, ditches or pond perimeters, utility corridors, trails, etc.), cleared and revegetated areas;
  - Treated areas;
  - Truck washing bay, other designated cleaning areas, equipment yards, and storage areas, Operations camp parking lot; and
  - Newly disturbed areas and not yet vegetated.

Monitoring Procedures

- Mark all survey locations on a field map prior to entering field.
- Develop a track log with GPS for plotting to show areas inventoried.
- For each invasive plant observation record the following on a Invasive Alien Plant Program (IAPP) Site & Invasive Plant Survey Record form[2]:
  - Site location
  - Date and time of observation
  - UTM coordinates at the center of the infestation
  - Plant species
  - Photograph IDs taken of each plant species collected
- If the species was found on a new site, information about the site must be recorded in addition to the data gathered during the inventory of the infestation(s).

[2] Appendix G of the Invasive Plant Management Plan (https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/iapp)

- **Site Location:** Generally, continuous invasive plant occurrences with less than a 100-m gap between plants are recorded as one site. Occurrences over 100 m apart with no target species between them are recorded as separate sites.
- **Species:** If needed to confirm the invasive plant species, collect a sample (bag and label). When a single site supports multiple invasive plant species, record all the species on that site.
- **Aerial Extent:** Assess the estimated area that the invasive species occupies in square metres. If site is larger than 0.2 ha, make a visual estimate of the infestation:
  - Draw the infestation using reference points on mine site plan or orthophoto at a scale of 1:5,000. These polygons can be digitized later and loaded into IAPP Site & Invasive Plant Survey Record form.
  - Or, capture the spatial data with a GPS unit by walking the perimeter of the site and downloading the polygon that is generated.
  - Or, pace the length and width of the infestation or measure with a tape measure

  Extremely large infestations (greater than 5 ha), for which creating a spatial polygon by walking the perimeter of the infestation would be impractical, can be assigned a best estimate of the total area, average density, and distribution.
- **Density:** estimate the number of plants per square metre as one of the following density classes:
  - Low (≤ 1 plant/m^2)
  - Medium (2-5 plants/m^2)
  - High (6-10 plants/m^2)
  - Dense (> 10 plants/m^2)
- **Growth Stage:** assess the growth stage as:
  - Seedling – Occurring when the first two true leaves are present to when the first bud occurs.
  - Bud – Occurring when the first flower bud is present but there are no petals visible.
  - Flower – Occurring when one flower has fully opened until the first seed head is visible.
  - Seed set – Occurring when the first seed head is visible to when the majority of seed heads are no longer present on the plant.
  - Expired – The majority of seeds or seed heads are no longer present on the plant to when the plant is dead.
- **Photographs:** a photographic record should be completed at each site surveyed to observe the overall changes to the landscape over time. Photographs are taken from the four cardinal directions (north, south, east and west) from the center of the weed infestation (where the UTM co-ordinate was taken).
- Before leaving the area after the inventory, be sure to check all clothing and travel equipment for any invasive plant parts, to avoid spread to other areas.

Quality Assurance/Quality Control

- All persons collecting samples must be capable of identifying plant species that will be collected and will be trained on appropriate monitoring techniques to minimize the potential for cross-contamination.
- Field data sheets will be used to standardize data collection.
- Field data will be reviewed for accuracy after input into a database to minimize the potential for transcription errors.

7. REPORTING

Recorded observations and records will be updated using the IAPP Site & Invasive Plant Survey Record. Any new observations will be reported to the EM immediately and entered into IAPPs "Report-a-Weed Program", a provincial online mapping and reporting tool, by the EM or designate.

Incidental observations of invasive plant species in the field will be flagged, photographed and recorded as follows:

- Type of observation (e.g., if suspected invasive species);
- Project area (UTM coordinates if possible);
- Date of observation; and
- Name of observer.

Incidental observations will be recorded using a standard field data sheet and submitted to the EM daily. The EM will follow up on incidental observation reports within one week.

8. REFERENCE AND DOCUMENTS

BC Ministry of Forests and Range. 2010. *Invasive Alien Plant Program Reference Guide Part I*. Available at: https://testwww.for.gov.bc.ca/hra/Plants/IAPP_Reference_Guide/IAPP_Reference_Guide_Part_I.pdf

ERM. 2022. *Blackwater Gold Project: Invasive Plant Management Plan.* Vancouver, BC.

9. REVIEW AND APPROVAL

Reviewed by:

Name (Print) Environmental Manager	Signature	Date

Approved by:

Name (Print) Mine Manager	Signature	Date