APPENDIX 9-O AIR QUALITY AND FUGITIVE DUST MANAGEMENT PLAN

BW GOLD LTD
a subsidiary company of Artemis Gold Inc

Blackwater Gold Project

Air Quality and Fugitive Dust Management Plan

November 2021

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ACRONYMS AND ABBREVIATIONS

Aboriginal Groups or Indigenous nations	Aboriginal Groups include: Lhoosk'uz Dené Nation, Ulkatcho First Nation, Nadleh Whut'en First Nation, Stellat'en First Nation, Saik'uz First Nation, and Nazko First Nation (as defined in the Project's Environmental Assessment Certificate #M19-01)
AAQO	Ambient Air Quality Objective
AQDMP	Air Quality and Fugitive Dust Management Plan
AQO	Air Quality Objective
Artemis	Artemis Gold Inc.
BC	British Columbia
Blackwater	Blackwater Gold Project
BW Gold or Proponent	BW Gold LTD.
CAAQs	Canadian Ambient Air Quality Standards
CCME	Canadian Council of Ministers of the Environment
CEA Agency	Canadian Environmental Assessment Agency
CEO	Chief Executive Officer
CO	Carbon monoxide
COO	Chief Operating Officer
CFMP	Country Foods Monitoring Plan
CM	Construction Manager
COO	Chief Operating Officer
DS	Decision Statement
EAC or Certificate	Environmental Assessment Certificate
EC	Environment Canada
ECCC	Environment and Climate Change Canada
ECD	Environmental Control Dam
EM	Environmental Manager
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
FSR	Forest Service Road
GM	General Manager
ha	Hectares
HHRA	Human Health Risk Assessment
HQ	Hazard quotient
HVAC	Heating, ventilation and air conditioning
Indigenous groups or Aboriginal Peoples	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 (as defined in the Project's federal Decision Statement)
km	Kilometre
KP	Knight Piésold Ltd.
LGO	Low grade ore
MAR	Mine Access Road
MOE	Ministry of Environment
MOH	Ministry of Health
MP	Management plan
Mtpa	Million tonnes per annum
New Gold	New Gold Inc.
NO_x	Nitrogen oxides
OVB	Overburden
PASS	Passive Air Sampling System
PM	Particulate matter
POC	Parameter of concern
POPC	Parameter of potential concern
Project	Blackwater Gold Project
QA/QC	Quality control/quality assurance
SO_2	Sulphur dioxide

SOP	Standard operating procedure
t	Tonne
Tatelkus Lake 28	Tatelkus Lake Indian Reserve 28
TSF	Tailings Storage Facility
µm	Microns
WMMP	Wildlife Management and Monitoring Plan
VP	Vice President

1. PURPOSE AND SCOPE

The purpose of the Air Quality and Fugitive Dust Management Plan (AQDMP) is to identify measures to minimize the effects of the Project's air emissions on human health and the natural environment. The AQMP identifies the Project's fugitive dust-emitting sources and mitigation and contingency measures in the event that primary control measures are not effectively controlling dust emissions.

Pursuant to Part 2, Section 14 of the *Environmental Management Act*, BW Gold is seeking an authorization for air discharges during the Construction and Operation phases as follows:

- Discharge of fugitive dust generated at the mine site during the Construction and Operations phases; and
- Discharge of air emissions from the processing plant and assay lab during the Operations phase.

The AQDMP is being submitted with Blackwater's Joint Application for *Mines Act/Environmental Management Act* permits (Application). It addresses the requirements of EAC #M19-01 Condition 20 and federal Decision Statement (DS) Conditions 6.1, 6.3, 6.12 and 6.15. The AQDMP also includes the information requested in *Developing a Fugitive Dust Management Plan for Industrial Projects* (Guidance; EMPR & ENV 2018).

Concordance tables identifying where the requirements in EAC Condition 20 and DS conditions can be found in the AQDMP are provided in Appendix A and Appendix B respectively. A concordance table identifying where the requirements in the Guidance (EMPR & ENV 2018) can be found in the plan is provided in Appendix C.

The AQDMP will be implemented during construction, operations and closure.

1.1 Company Information

BW Gold LTD. (BW Gold) is a wholly-owned subsidiary of Artemis Gold Inc., a publicly-traded company listed on the TSX Venture Exchange (TSX-V: ARTG - https://www.artemisgoldinc.com/). Artemis and BW Gold are incorporated in BC (#71616 9511 and #73237 6876 respectively).

The BW Gold corporate office is in Vancouver, BC:

Physical Mailing Address:	Suite 3083 – 595 Burrard Street, Vancouver BC V7L 1L3
Telephone:	(604) 558-1107
General Email:	info@artemisgoldinc.com

The Blackwater community office is in Vanderhoof, BC:

Physical Mailing Address:	139 – 1st Street, P.O. Box 440
Mailing Address:	P.O. Box 440, Vanderhoof BC V0J 3A0
Telephone:	(250) 567-3276
General Email:	office.blackwater@artemisgoldinc.com

1.2 Existing Permits

BW Gold has a permitted diesel-fired putrescible waste incinerator (*Environmental Management Act* Authorization #106530, the Authorization), which is located near the exploration camp. The Authorization allows a maximum discharge rate of 110 m^3/minute and maximum waste feed of 1.1 tonnes/day. Authorized waste for incineration includes putrescible camp waste, paper, cardboard and lumber scraps that cannot be recycled. Condition 2.1.3 of the Authorization requires that every effort be made to minimize incineration of plastics.

1.3 Exclusions

Consistent with the Guidance (EMPR & ENV 2018), the AQDMP does not address occupational health and safety requirements pertaining to workplace exposures to dust. Worker health and safety at mine sites is regulated by the Health, Safety and Reclamation Code for Mines in British Columbia (EMLI 2021). The Project's Occupational Health and Safety Program is discussed in Chapter 8 of the Application (Blackwater Project Joint Application for a *Mines Act* and *Environmental Management Act* Permits).

1.4 Related Documents

Environmental Assessment Certificate Condition 20 requires the AQDMP to indicate how this plan informs the Country Foods Monitoring Plan (CFMP) and the Wildlife Mitigation and Monitoring Plan (WMMP). Fugitive dust deposition monitoring is not recommended by the Ministry of Environment and Climate Change Strategy (ENV) for the purposes of wildlife and human health protection (ENV 2020) and is not included in the AQDMP. However, as required by EAC Condition 41, analysis of dust for metal concentrations will be included in the CFMP and data collected under the CFMP can be used to inform the WMMP.

Monitoring of trace element (metals) uptake in vegetation and soils is considered in the Reclamation and Closure Plan (Chapter 4) and the CFMP. Plant tissue metals can be affected by the deposition of dust (particulate matter) containing metals generated by Project activities. Plants can also accumulate metals from the soil through uptake of metals through the root. Monitoring under the CFMP will determine whether concentrations of metals have changed in soil or in vegetation tissue because of Project activities. The results of trace metals monitoring and potential implications for wildlife based on results from monitoring under the CFMP will be addressed in the WMMP (Appendix 9-H of the Application).

Results of the AQDMP for monitoring of particulate matter (Section 8.3.3) and nitrogen dioxide and sulfur dioxide (Section 8.3.4) will inform the CFMP, as this monitoring is required by EAC Condition 41 for the CFMP.

2. 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; MAR) 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 years 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 (EAC) #M19-01 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.

3. ROLES AND RESPONSIBILITIES

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

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, Independent Tailings Review Board, TSF qualified person, and other qualified persons and professionals.

Table 3-1: Blackwater Gold Roles and Responsibilities

Position	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 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 Development is responsible for managing project permitting, the 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, 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, 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 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, the Company 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, including reviewing the effectiveness of the Project's dust control measures. 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.

Position	Responsibility
Community Relations Advisor	Community Relations Advisor is responsible for managing the Community Liaison Committee and Community Feedback Mechanism. Reports to Indigenous Relations Manager.
Aboriginal Monitors	Aboriginal Monitors are required by EAC #M19-01 Condition 17 and will be responsible for monitoring the Project's potential effects on Aboriginal interests. Aboriginal Monitors will be involved in adaptive management and follow-up monitoring programs. Report to EM.
Employees and Contractors	Employees and contractors are responsible for being aware of permit requirements specific to their roles and responsibilities. Report to Departmental Managers.
Qualified Professionals or Qualified Persons	Qualified professionals and qualified persons will be retained to review objectives and conduct various aspects of the Project's 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 throughout the Construction phase the EMS requirements are established, implemented and maintained, and that environmental performance is reported to 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 Environmental Monitors that will include Environmental Specialists and Technicians and a consulting team of subject matter experts in the fields of environmental science and engineering.

During the Construction phase, the EPCM contractor and sub contractors, will report to the CM. The EPCM contractor will 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, 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 has been addressed and concerns 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 Managers (e.g., mining, milling, and plant/site services) will be directly responsible for implementation of the EMS and MPs and standard operating procedures (SOPs) 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.

Pursuant to Condition 19 of the Project's EAC #M19-01, 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), ENV 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. ADAPTIVE MANAGEMENT FRAMEWORK

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

- Plan
  - Identify and characterize fugitive dust sources;
  - Identify composition and size distribution of particulate emissions;
  - Identify contributing factors to dust generation;
  - Describe fugitive dust control for each source; and
  - Prepare schedule for implementation and operation of control measures.
- Do
  - Implement mitigation measures;
  - Identify maintenance and record keeping procedures for control and monitoring equipment; and
  - Develop training procedures.
- Monitor
  - Conduct inspections and maintenance; and
  - Complete and maintain monitoring records.
- Adjust
  - Follow up on the evaluation of monitoring results;
  - Review of the monitoring program in terms of effectiveness in detecting effects;
  - Recommendations provided by a qualified professional for changes to the monitoring plan, objectives, frequency, methods, or timing;
  - Engagement tracking to record input from Indigenous groups and regulators such as the EAO, ENV and Impact Assessment Agency; and
  - Revise the AQDMP as new and/or altered measures introduced.

5. FACILITY DESCRIPTION AND SETTING

5.1 Physical Location and Access

The Project is an open pit gold and silver mine located approximately 112 kilometres (km) southwest of Vanderhoof and 160 km southwest of Prince George, BC. The Project falls within NTS map sheet 93F/02, centred at 5893000 N and 375400 E (UTM Zone 10 NAD83). The mine site is centred at 53°11'22.872" N and 124°52'0.437" W. The Project is 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 124.5.

Figure 5.1-1 and Figure 5.1-2 identifies the Project location and the access route from Vanderhoof in relation to nearby communities. The mine site is located within the traditional territories of LDN and UFN and downstream of the traditional territories of NWFN, SFN and StFN (collectively, the Carrier Sekani First Nations).

BW Gold holds a 100% recorded interest in 328 mineral claims covering an area of 148,688 hectares (ha) distributed among the Blackwater, Capoose, Auro, Key, Parlane, and RJK claim blocks (Artemis 2020). The Blackwater mine site is located within the Blackwater claim block 5.1-2 identifies the mineral tenures within the proposed *Mines Act* permit boundary.

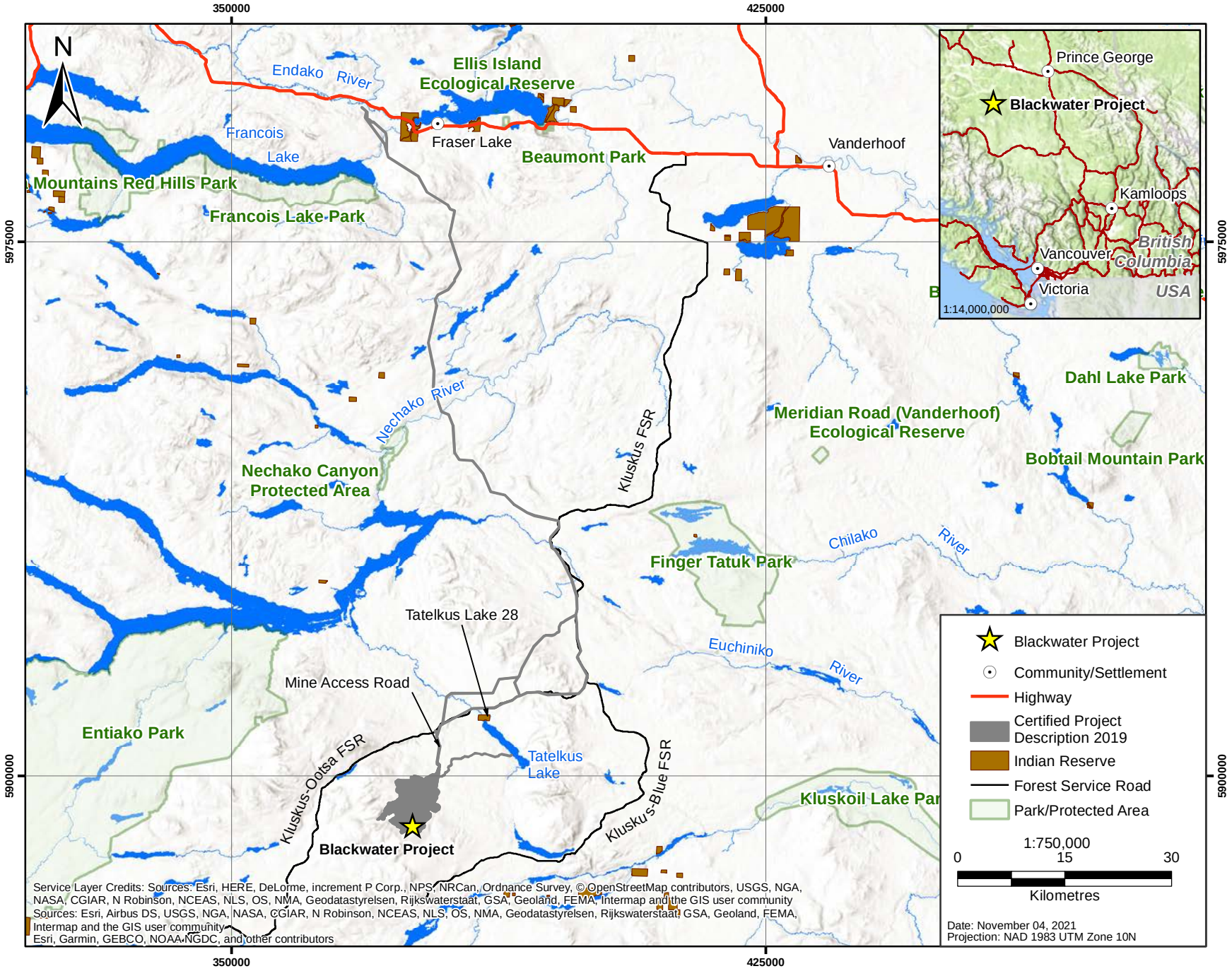


Figure 5.1-1: Blackwater Project Location

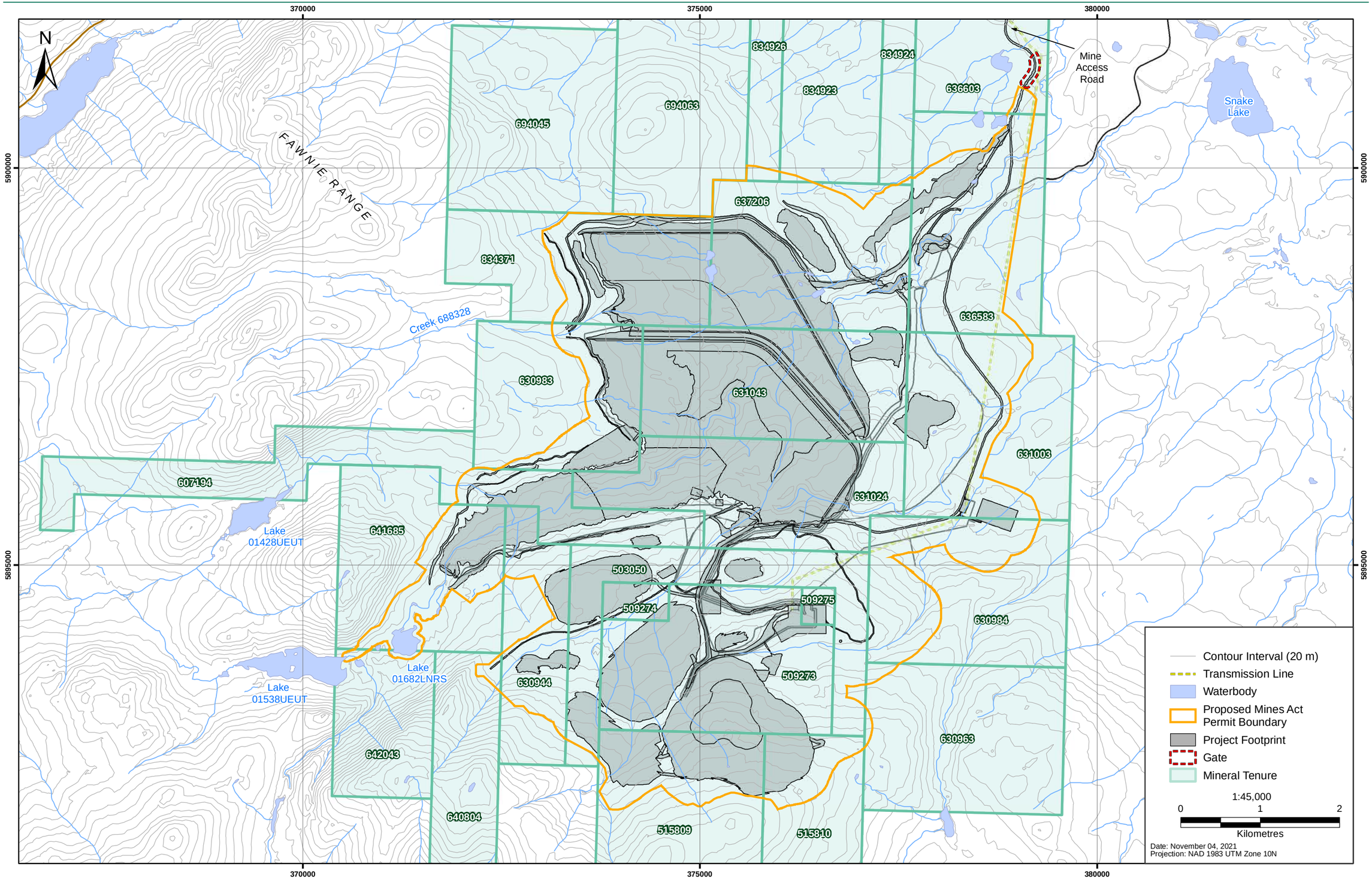


Figure 5.1-2: Blackwater Mineral Tenures within Proposed Mines Act Permit Boundary

5.2 Environmental Setting

The Project is located on the Nechako Plateau, a region of flat to gently rolling terrain on the northern slope of Mount Davidson. The mean annual wind speed at the Blackwater low elevation meteorological station (Blackwater Low) is approximately 2.2 m/s (7.9 km/h), with the wind direction being predominantly from the west and southwest. Strong southeast winds were also evident in the fall and winter at the Blackwater Low station (Figure 5.2-1). At the Blackwater high elevation station (Blackwater High) the wind direction is predominately from the west with strong southwest gusts during the fall and winter (Figure 5.2-2). The mean annual wind speed at the Blackwater High station is approximately 3.0 m/s (10.8 km/h). Meteorological baseline reports are provided in Appendix 2-A and 2-B of the Application.

5.3 Facility and Process Description

The Project includes an open pit, Plant Site and processing plant, waste and topsoil stockpiles, borrow areas and TSF. The general arrangement of the proposed mine site at Year +23 (full mine buildout) is shown in Figure 5.3-1.

5.3.1 Open Pit

Ore will be extracted using drilling and blasting from the Open Pit located in the southern portion of the proposed mine site. At its greatest extent, the Open Pit will be 228 ha, approximately 2.0 km long on the east to west axis and 1.8 km long on the north to south axis. When fully developed, the anticipated depth of the pit will range between 350 m to 550 m below the surrounding ground surface (masl). The initial production ramp up (Year +1 to Year +5) will be undertaken using 400 t class hydraulic shovels and 190 t payload class haul trucks. As production increases, the load and haul fleet will be expanded with 550 t class hydraulic shovels and 220 t payload class haul trucks. The initial drill and loading fleets are planned to be diesel drive, with expansion of the fleet to include electric drills and shovels after Year +5.

5.3.2 Processing Plant

The processing plant, located north of the Open Pit, will utilize a carbon in leach gold recovery process, with gold doré produced on-site. The plant will operate on a 5,500 kt per annum throughput from Year +1 to Year +5, 12,000 kt per annum throughput from Year +6 to Year +10, and a 20,000 kt per annum throughput from Year +11 to Year +23, the end of operations. The general arrangement for the processing plant at Year +1 is shown in Figure 5.3-2. An ore process flow diagram is presented in Figure 5.3-3.

BW Gold has integrated engineering controls to mitigate fugitive dust emissions from the processing plant, which includes active dust collection, wet grinding, enclosures, and stack emissions (Ausenco 2021). These controls are outlined below.

Active Dust Collection

Active dust collection systems will be installed in the following areas:

- Primary crusher – baghouse collector including blower and ducting with pickups at jaw crusher feeder and vibrating grizzly discharge;
- Secondary & tertiary crusher – baghouse collector including fan and ducting with pickups at screen feed and discharge chutes and cone crusher feeder head; and
- Reclaim tunnel – cartridge style collector including fan and ducting with pickups at each reclaim feeder discharge.

Wet Grinding

Wet grinding will be utilized for the grinding circuit. This medium is more energy efficient than dry grinding and eliminates dust associated with the ore grinding process.

Enclosures

Most handing and processing equipment at the Plant Site will be contained in enclosures to limit fugitive dust emissions. These enclosures and associated heating, ventilation and air conditioning (HVAC) considerations include:

- Primary crusher (building will be enclosed, cladded, insulated and heated);
- Secondary & tertiary crusher (building will be enclosed, cladded, insulated, and heated);
- Stockpile cover (will be enclosed, covered without insulation or HVAC;
- Reclaim tunnel (will be enclosed, without insulation or heating [HVAC – ventilation only]); and
- Mill building/ wet process plant (will be enclosed, cladded and insulated [HVAC – heated to 10°C minimum and ventilated]).

Stack Emissions

Stack emissions will be generated by the following components (height in metres above ground):

- Rotary kiln (grinding building; 15 m);
- Propane smelting furnace (associated with electrowinning and refinery in gold room; 15 m); and
- Strip solution boiler (15 m).

5.3.3 Tailings Storage Facility

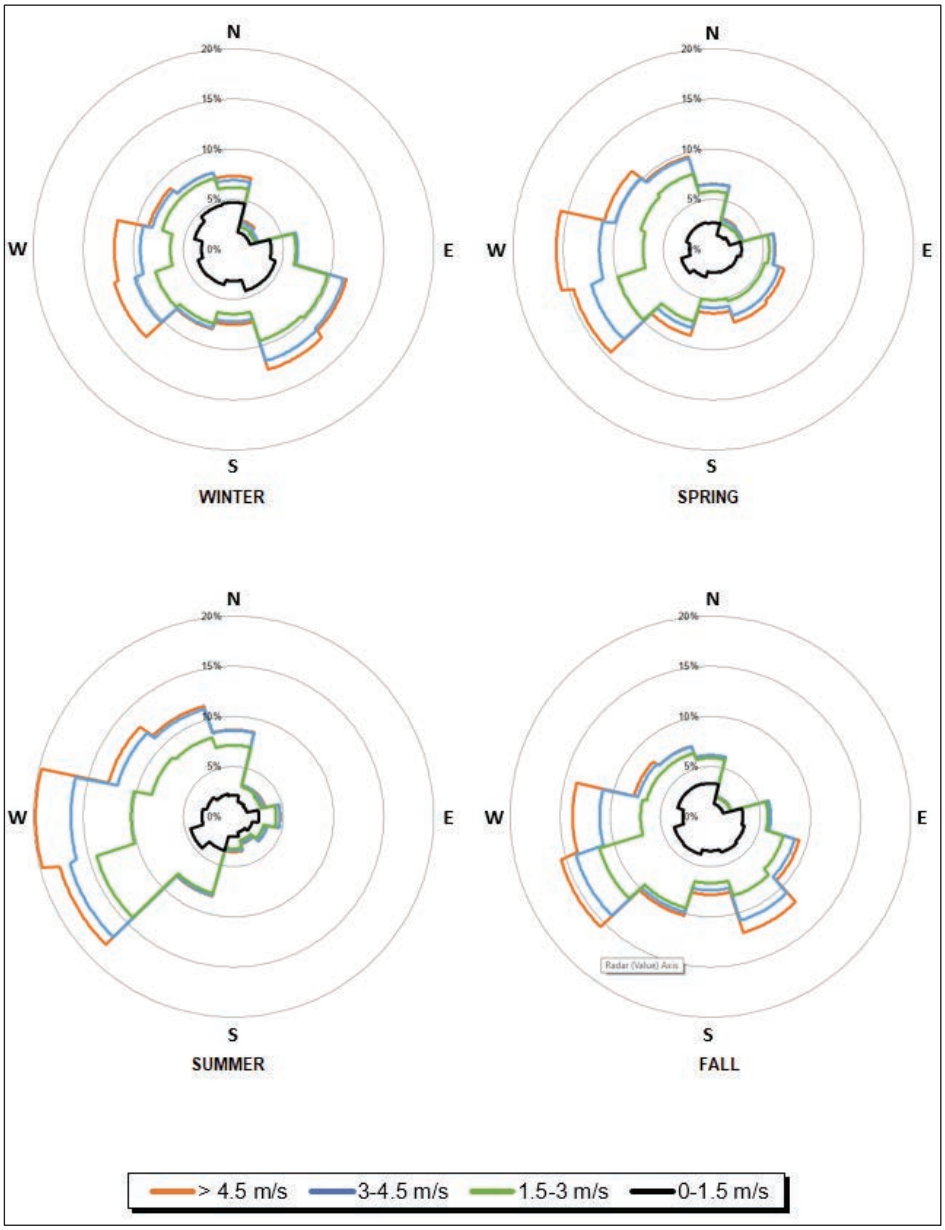
The TSF comprises two adjacent sites, TSF Site C and TSF Site D and four embankments (Site C Main Dam, Site D Main Dam, Site C Saddle Dam, and Site C West Main Dam). The TSF is designed to permanently store tailings and potentially acid generating waste rock, provide water for processing, and support mine site water balance management. During operations, tailings will be delivered by gravity via a pipeline from the processing plant to either TSF Site C or TSF Site D.

Tailings beaches will be developed and maintained throughout the life of mine for each dam. Tailings beaches prevent direct contact of the pond supernatant with dam embankments and limits the infiltration of seepage into the embankment. The particle size distribution of the tailings samples were approximately 44% fine sand, 46% silt, and 10% clay. The tailings are fairly coarse with good packing density and low rheology.

5.3.4 Stockpiles

Upper and Lower Waste Stockpiles

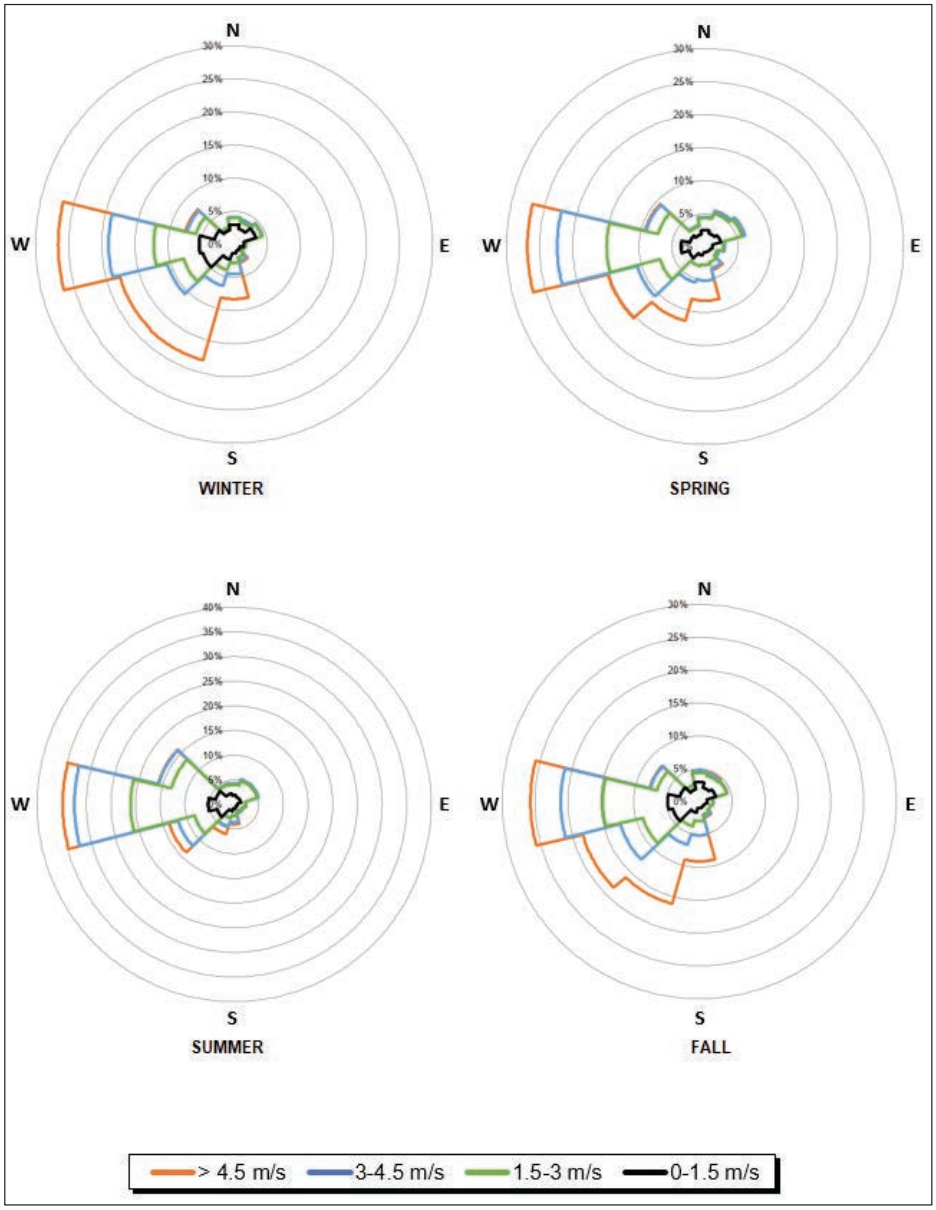
Two stockpiles will store NAG overburden (OVB) and NAG waste rock from stripping and open pit mining. The Upper Waste Stockpile will be located west of the Open Pit and has a planned maximum capacity of 31 Mt. The Lower Waste Stockpile will be located between the TSF and explosives storage road and has a planned maximum capacity of 29 Mt.



NOTES:
1. WINTER CONSISTS OF DECEMBER TO FEBRUARY, SPRING CONSISTS OF MARCH TO MAY, SUMMER CONSISTS OF JUNE TO AUGUST, AND FALL CONSISTS OF SEPTEMBER TO NOVEMBER.
2. THE PREVAILING WIND DIRECTION IS THE ONE WITH THE LONGEST SPOKE (HIGHEST PERCENTAGE).

Figure 5.2-1: Blackwater Low Station Wind Roses

Source: Knight Piésold Consulting (2021).



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2. THE PREVAILING WIND DIRECTION IS THE ONE WITH THE LONGEST SPOKE (HIGHEST PERCENTAGE).

Figure 5.2-2: Blackwater High Station Wind Roses

Source: Knight Piésold Consulting (2021).

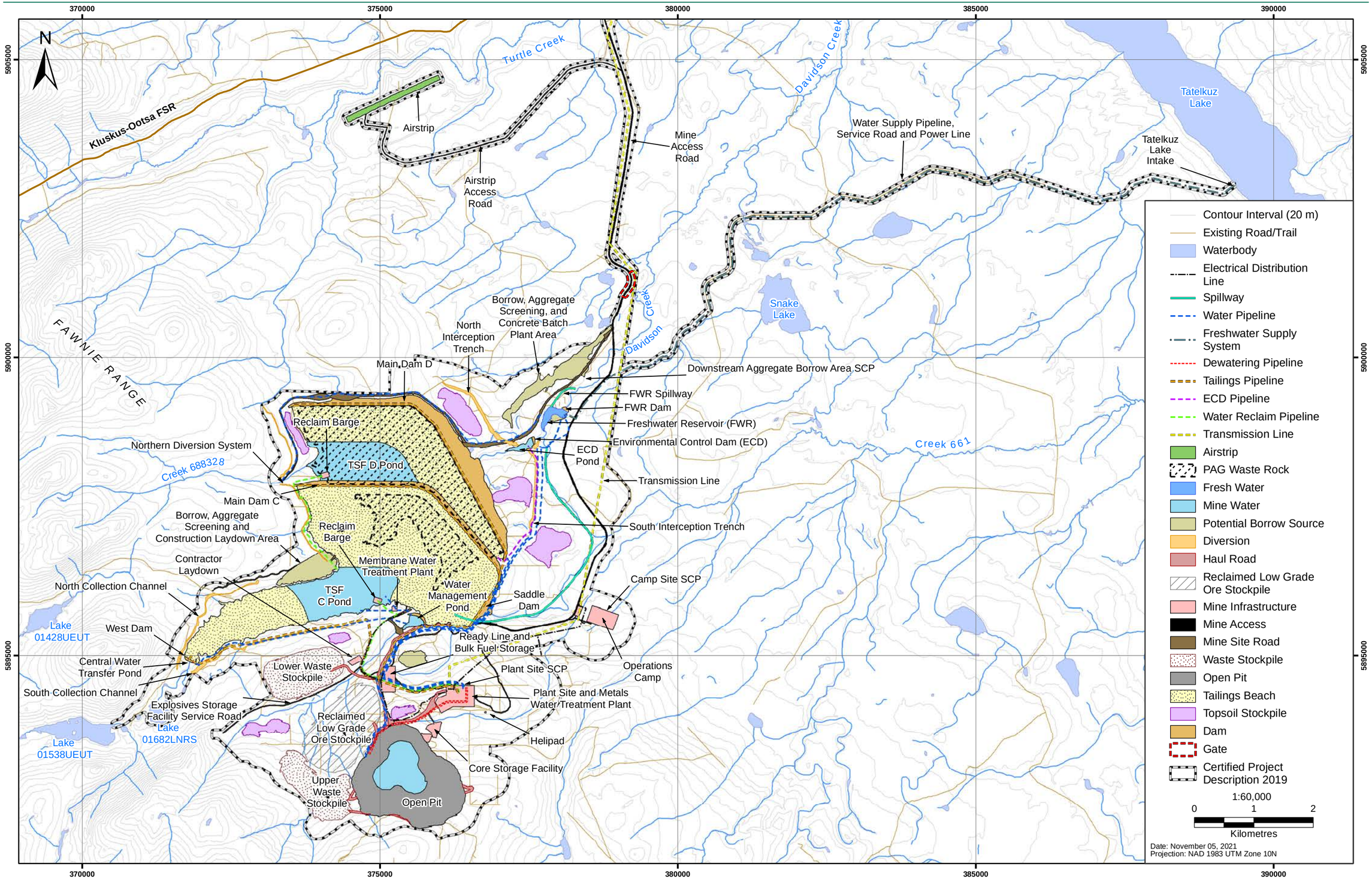

Figure 5.3-1: Mine Site General Arrangement (Year +23)

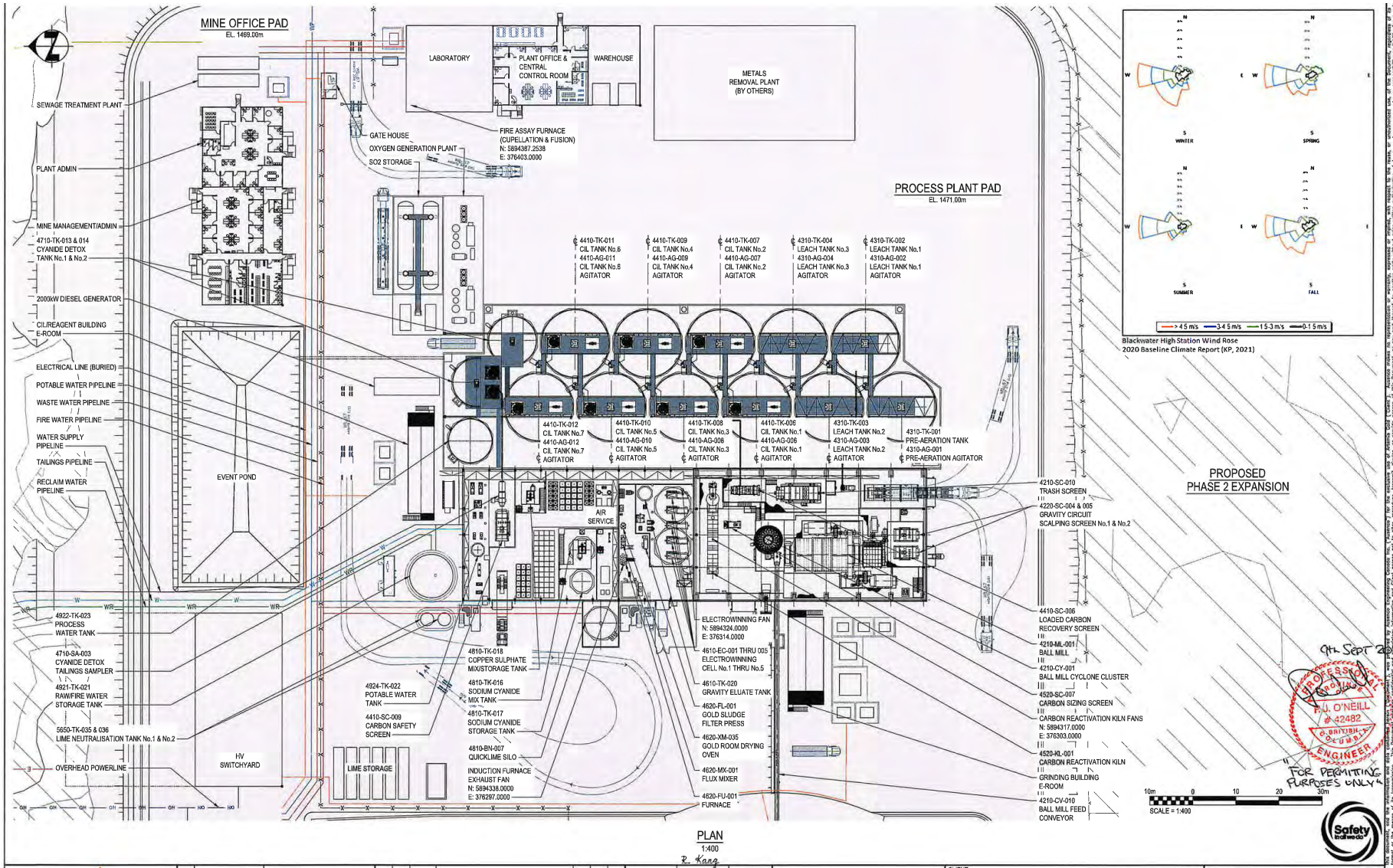

Figure 5.3-2: Blackwater Process Site Plan

Source: Ausenco (2021; Appendix 3-F)

Figure 5.3-3: Ore Process Flow Diagram

Source: Ausenco (2021).

Low Grade Ore Stockpile

The Low Grade Ore (LGO) Stockpile will store ore prior to processing. The stockpile will be located northwest of the open pit with a planned maximum capacity of approximately 111 Mt.

Topsoil Stockpiles

During the mine life, reclamation materials (i.e., topsoil with subsoil, organic soil) will be salvaged and stored for use in progressive or final reclamation. The total estimated volume of potentially salvageable soil is 8.46 Mm^3. There will be seven soil stockpiles on the proposed mine site. Stockpiles will be seeded with non-propagating grass species, native grasses and forbs, and tree and shrub species to reduce erosion and invasive-species establishment and to control fugitive dust dispersal.

5.3.5 Borrow and Aggregate Crushing and Screening Areas

Eight borrow areas will be developed in Year -2 in order to produce aggregate to construct mine infrastructure and include:

- Mine site borrow area;
- Borrow, aggregate screening, and construction laydown area;
- TSF C additional borrow area;
- TSF C North borrow area;
- TSF C South borrow area;
- TSF D borrow areas;
- Freshwater reservoir borrow area; and
- Borrow, aggregate screening and concrete plant area.

Two aggregate crushing and screening plants will produce concrete aggregates, structural fills, road general fills, sub base and base coarse fills. The primary aggregate plant will be associated with the borrow area, aggregate screening and concrete batch plant area. The second plant will be located in a borrow and aggregate screening and construction laydown area.

5.3.6 Concrete Batch Plants

Two concrete batch plants will be mobilized in Year -2. A high volume plant (100m^3/hr) will operate during construction with the second plant available during peak pouring periods and as a backup to the 100 m^3/hr plant. Both dry mix concrete batch plants will be winterized and located adjacent to the crushed aggregate storage area in the mine access borrow area.

5.3.7 Refuse Incinerator

A putrescible refuse incinerator (CY-2050-FA) is located at 53.1923 N and 124.81354 W. The incinerator will be utilized during all Project phases. The incinerator is authorized to burn a maximum of 1.1 tonnes/day of the following:

- Putrescible camp waste;
- Paper;
- Cardboard, and
- Lumber scraps that cannot be recycled.

BW Gold plans to use the incinerator as permitted. Incinerator ash is disposed of in accordance with existing approval for the facility, *Environmental Management Act* Permit #106530. Ash is deposited in an off-site landfill. If operational conditions change such that an ash landfill is required, a landfill will be located, permitted and constructed. Any excess waste above and beyond what the permitted incinerator can process will be disposed of in an alternate manner, for example taken off-site for disposal. As the site develops and head count increases, consideration will be given to expanding site incineration capacity if the waste generated exceeds the permitted capacity of the existing incinerator.

6. IDENTIFICATION OF POTENTIAL AIR EMISSION SOURCES

Fugitive dust is the primary source of air emissions. Potential dust sources include material handling/ re-handling, construction and use of unpaved roads, blasting, compaction, drilling, grading, material (including ore) loading and unloading, and ore processing. Erodible surface areas such as stockpiles and the TSF beach) are also sources of fugitive dust.

Table 6-1 provides an overview of the Project activities anticipated to emit fugitive dust by Project phase. Table 6-2 provides further detail on dust emissions by Project component, further illustrated by Figure 6-1. Table 6-3 identifies emission sources and predicted emissions of total suspended particulate (TSP), particulate matter less than 10 µm (microns) in diameter (PM_{10}), particulate matter less than 2.5 µm in diameter ($PM_{2.5}$), carbon monoxide (CO), nitrogen oxides (NO_x); and sulphur dioxide (SO_2).

Non-dust air emission sources include mine fleet exhaust (multiple), backup diesel generators (x6), NO_x and SO_2 from blasting and the existing diesel-fired putrescible waste incinerator. Additional air emission sources include the processing plant and associated refinery system, which include: rotary kiln (15 m stack), propane smelting furnace (15 m stack), and strip solution boiler (15 m stack).

Table 6-1: Activities Resulting in Fugitive Dust by Project Phase

Construction	Operations	Closure	Post-closure
■ Land clearing and earthworks for all on-site and off-site Project components ■ Construction and use of unpaved access and mine site roads ■ Surface blasting, drilling, and material handling for starter pits ■ Construction of Project-owned roads ■ Construction of the transmission line ■ Construction of the freshwater supply system ■ Construction of TSF dams, and interim environmental control dam (ECD) ■ Material handling/re-handling at Lower and Upper Waste stockpiles, LGO and topsoil stockpiles, borrow areas, and laydown areas ■ Construction of water management structures (e.g., diversion channels) ■ Aggregate extraction from borrow pits ■ Borrow and aggregate screening areas ■ Concrete batch plants ■ Parking lot and road grading	■ Pit slopes ■ Surface blasting and mining activities during open pit operations ■ Ore extraction in the open pit ■ Ore transport to the processing plant ■ Ore processing ■ Construction of TSF Main Dam D and Final ECD ■ Wind erosion from exposed TSF beach and stockpiles ■ Land clearing and earthworks associated with production ramp ups ■ Use of unpaved surfaces including the mine site haul roads ■ Material handling/re-handling at Lower and Upper Waste stockpiles, LGO and topsoil stockpiles, borrow areas, and laydown areas ■ Borrow and aggregate screening areas ■ Parking lot and road grading	■ Pit slopes ■ Earthworks, land forming and soil stockpile rehandling ■ Use of unpaved mine site roads ■ Wind erosion from exposed TSF beach ■ Parking lot and road grading	■ Pit slopes above inundation level ■ Use of unpaved mine site roads ■ Parking lot and road grading

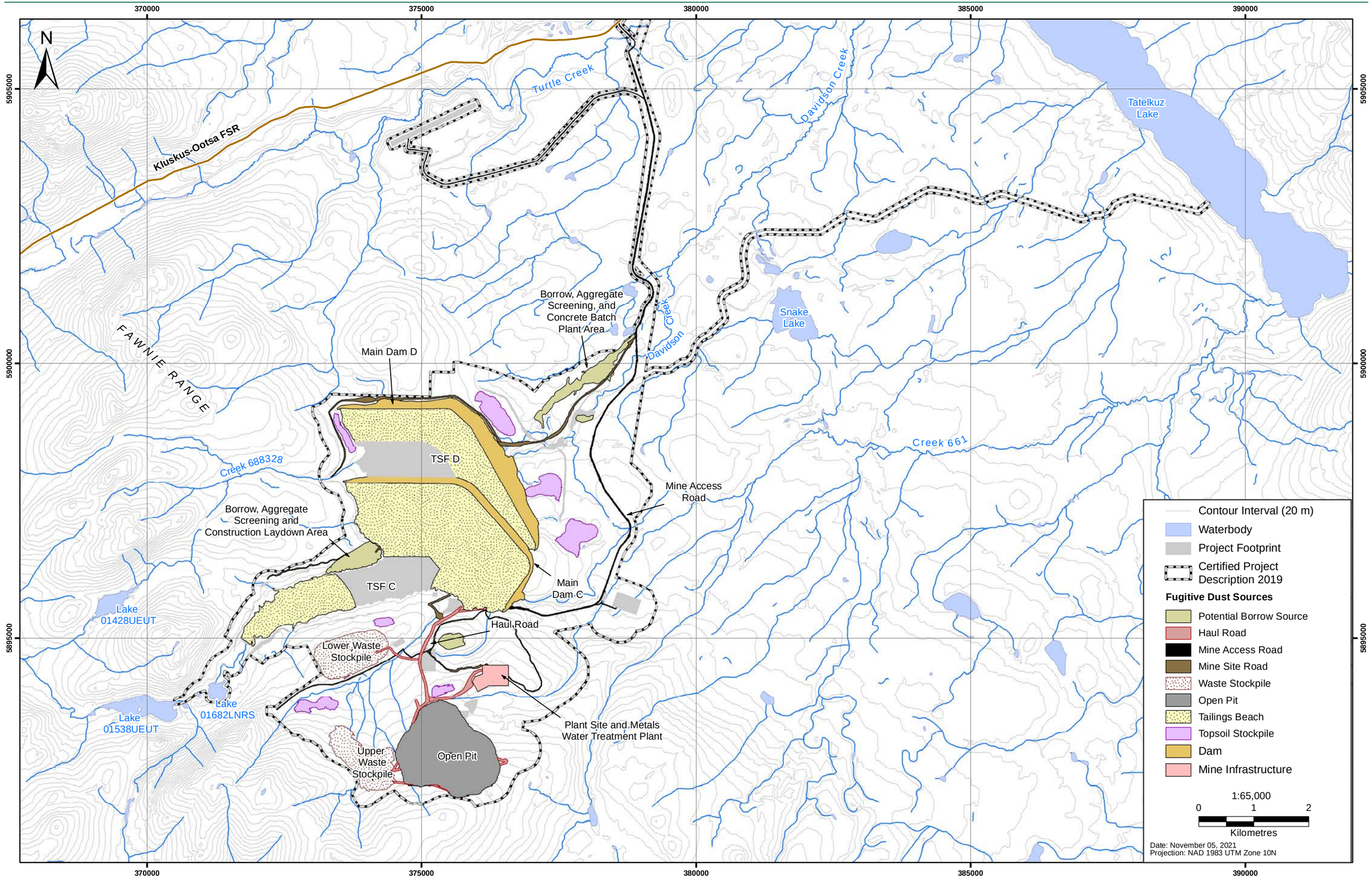

Figure 6-1: Project Components with Potential to Generate Fugitive Dust

Table 6-2: Fugitive Dust Emission Sources by Project Component

Component	Location	Potential Source	Dust-generating Material	Generating Conditions	Additional Comments
Open Pit	Figure 6-1	OVB and waste rock removal, blasting, drilling, material handling/re-handling, vehicle traffic	OVB, waste rock, ore, aggregate, waste rock	Any conditions	Pit will become deeper and wetter as it is developed, mitigating fugitive dust
TSF, Site C and Site D Main dams, Site C Saddle and West dams	Figure 6-1	Excavation (drilling and blasting), compaction, material placement and handling, vehicle traffic	Waste rock, tailings	Windy, dry, hot days or extremely cold weather	TSF will expand and begin to inundate upstream dam faces as it is developed, mitigating dust
TSF beach	Figure 6-1	Wind erosion, blasting, drilling, vehicle traffic	OVB, waste rock, aggregate, tailings	Windy, dry, hot days or extremely cold weather	
Concrete batch plants	Figure 6-1	Material handling	Cement, aggregate	Any conditions	Active during Construction phase and intermittent use thereafter; Plants will confirm to Code of Conduct for Concrete Batch plants (EC 2010)
Aggregate screening areas	Figure 6-1	Material handling/re-handling, vehicle traffic	aggregate	Windy, dry, hot days or extremely cold weather	
Borrow areas	Figure 6-1	Material handling/re-handling, vehicle traffic	OVB, waste rock and aggregate	Windy, dry, hot days or extremely cold weather	
Processing plant (located at Plant Site)	Figures 5.3-2; 5.3-3; 6-1	Conveyor drop, primary crusher building, Secondary and tertiary crusher building, reclaim tunnel, rotary kiln, propane smelting, fire assay furnace	Ore	Windy, dry, hot days or extremely cold weather	Covered conveyors; baghouse collector systems
Upper and Lower Waste stockpiles	Figure 6-1	Wind erosion, material handling, vehicle traffic	OVB and waste rock	Windy, dry, hot days or extremely cold weather	

Component	Location	Potential Source	Dust-generating Material	Generating Conditions	Additional Comments
LGO stockpile	Figure 6-1	Wind erosion, material handling/ re-handling, vehicle traffic	Ore	Windy, dry, hot days or extremely cold weather	
Topsoil stockpiles	Figure 6-1	Wind erosion, material handling, vehicle traffic	Topsoil	Wind, dry, hot days or extremely cold weather	Until stockpiles are vegetated
Freshwater Reservoir and dam	Figure 6-1	Excavation (drilling and blasting), compaction, material placement and handling, vehicle traffic	Cement, aggregate	Windy, dry, hot days or extremely cold weather	
Interim, and final Environmental Control dams	Figure 6-1	Excavation (drilling and blasting), compaction, material placement and handling, vehicle traffic	Cement, aggregate	Windy, dry, hot days or extremely cold weather	
TSF, mine site haul and service roads	Figure 6-1	Vehicle traffic, grading	Aggregate	Any conditions	
MAR	Figure 6-1	Vehicle traffic, grading	Aggregate	Windy, dry, hot days or extremely cold weather	

Table 6-3: Operations Emission Sources and Predicted Emissions

Emission Source	Maximum Emissions (tonnes/day)					
	TSP	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO
Material Handling	4.40	1.63	0.34	-	-	-
Unpaved Road (Haul Roads)	3.29	0.72	0.089	0.0015	2.17	0.091
Unpaved Roads (FSR+MAR)	0.57	0.14	0.014	1.1E-04	0.018	0.0056
Dump/Storage Areas	6.02	3.01	0.45	-	-	-
Incinerator	0.041	0.041	0.038	0.0022	0.0054	0.065
Processing Plant	0.0051	0.0022	6.0E-04	-	-	-
Refinery System	1.8E-04	1.8E-04	1.5E-04	3.7E-05	0.048	0.028
Fired Sources	0.049	0.049	0.047	0.026	0.38	0.12
Total Emissions	**14.38**	**5.59**	**0.98**	**0.03**	**2.62**	**0.31**

7. IDENTIFICATION OF POTENTIAL EFFECTS OF FUGITIVE DUST

7.1 Air Quality Objectives and Parameters of Concern

The *Canadian Environmental Protection Act, 1999* establishes National Ambient Air Quality Objectives (NAAQOs) and Canadian Ambient Air Quality Standards (CAAQS) to protect human health and the environment. BC has established Ambient Air Quality Objectives (AAQOs) pursuant to the *Environmental Management Act*. Federal and BC air quality objectives are provided in Table 7.1-1 and are non-legally binding limits. As even low levels of air pollution can affect some individuals, air quality objectives should not be viewed as levels that can be 'polluted up to', but levels to stay well below.

Table 7.1-1: Federal and BC Ambient Air Quality Objectives

Contaminant	Averaging Period	Objectives/Standards (µg/m^3)				
		Federal[a,b,c,d]			British Columbia[e]	
		Maximum Desirable	Maximum Acceptable	Maximum Tolerable	BCAAQO[f]	CAAQS[g]
TSP	24-hour	-	120	400	120	
	Annual	60	70	-	60[h]	
PM_{10}	24-hour	-			50	
$PM_{2.5}$	24-hour	27 to 28[i]			25[j]	28[k]
	Annual	8.8 to 10[l]			8[m]	10[n]
CO	1-hour	15,000	35,000	-	14,300	
	8-hour	6,000	15,000	20,000	5,500	
NO_2	1-hour	79 to 113[o]			188[p]	113[q]
	Annual	23 to 32[r]			60[s]	32
SO_2	1-hour	170 to 183[t]			196[u]	183[v]
	Annual	10 to 13[w]			13[x]	

Sources: [a] CCME 1999, [b] Government of Canada 2013, [c] Government of Canada 2017a, [d] Government of Canada 2017b, and [e] ENV 2020.

Notes:

µg/m^3 = micrograms per cubic metre; mg/dm^2/d = milligrams per square decimetre per day; TSP = total suspended particulate; PM_{10} = Particulate matter less than 10 µm (microns) in diameter; $PM_{2.5}$ = Particulate matter less than 2.5 µm (microns) in diameter; CO = carbon monoxide; NO_2 = nitrogen dioxide; SO_2 = sulphur dioxide

"-" signifies that no air quality objective is available.

[f] BC AAQO.

[g] CAAQS.

[h] Based on geometric mean.

[i] CAAQS is 28 µg/m^3 in 2015 and 27 µg/m^3 in 2020 (CCME 1999); compliance based on annual 98th percentile value, averaged over three consecutive years.

[j] Achievement based on annual 98th percentile of daily average, over one year.

[k] Achievement based on annual 98th percentile of daily average, averaged over three consecutive years.

[l] CAAQS is 10 µg/m^3 in 2015 and 8.8 µg/m^3 in 2020 (CCME 1999); compliance based on the average over three consecutive years.

[m] Achievement based on annual average, over one year. There is a planning goal of 6 µg/m^3.

[n] Achievement based on annual average, averaged over three consecutive years.

(o) CAAQS is 113 µg/m^3 from December 2017 through December 2024 and 79 µg/m^3 as of January 2025 (Government of Canada 2017a); compliance based on a three-year average of the annual 98th percentile of the daily 1-hour maximum concentration (D1HM).

(p) Interim provincial AAQO, currently under review. Achievement based on annual 98th percentile of D1HM, over 1 year.

(q) Achievement based on annual 98th percentile of D1HM, averaged over three consecutive years.

(r) CAAQS is 32 µg/m^3 from December 2017 through December 2024 and 23 µg/m^3 as of January 2025 (Government of Canada 2017a); compliance based on a one-calendar-year average of all the 1-hour average concentrations.

(s) Interim provincial AQO, currently under review.

(t) CAAQS is 183 µg/m^3 from October 2017 through December 2024 and 170 µg/m^3 as of January 2025 (Government of Canada 2017b); compliance based on a three-year average of the annual 99th percentile of the daily-maximum 1-hour average concentrations.

(u) Achievement based on annual 97th percentile of D1HM averaged over 2015-2017, annual 97.5th percentile of D1HM averaged over 2016-2018 and annual 98th percentile of D1HM averaged over 2017-2019, with one allowable excursion above 75 ppb to a maximum of 85 ppb over a three-year period prior to 2020. Superseded by CAAQS level and metric January 1, 2020.

(v) Achievement based on annual 99th percentile of D1HM, averaged over three consecutive years, effective January 1, 2020. Used to inform new air management decisions beginning January 1, 2017 and all air management decisions beginning January 1, 2020.

(w) CAQQS is 13 µg/m^3 from October 2017 through December 2024 and 10 µg/m^3 as of January 2025 (Government of Canada 2017b); compliance based on a one-calendar-year average of all the 1-hour average concentrations.

(x) Used to inform new air management decisions beginning January 1, 2017 and all air management decisions beginning January 1, 2020.

Particulate matter ($PM_{2.5}$ and PM_{10}) are the main parameters of concern for mining operations as they relate to human health. For the Project's human health risk assessment (HHRA), emissions of nitrogen oxides, SO_2, CO and PM ($PM_{2.5}$ and PM_{10}) were modelled to estimate concentrations at each human receptor location (including full-time residents, temporary land users and off-duty workers) for comparison with BC objectives (ERM 2021; Appendix 6-A). The HHRA considered estimated metal concentrations in dust that is predicted to be deposited at soils and vegetation sampling locations.

Figure 7-1 identifies sensitive receptors in relation to the Project. The closest on-site receptor is the operations camp which will house off-duty workers (Figure 7-1). The closest off-site receptor is Tatelkus Lake Indian Reserve 28 (Tatelkus Lake 28), located approximately 5.8 km northeast of the mine site (Figure 5.1-1).

Air dispersion modelling was conducted to predict concentrations of parameters of concern.

7.2 Air Dispersion Modelling Results and Effects

Modelling results represent a Level 3 assessment using the CALPUFF modelling system. The CALPUFF modeling system was used to prepare meteorological data, model concentrations and deposition, and to post-process results for specific pollutants and applicable averaging periods. CALPUFF was run using 2011 meteorology data. The results presented below represent predicted concentrations during the Phase 1 of the Project.

Table 7.2-1 summarizes the results of air dispersion modelling for all off-site human receptor locations, and Table 7.2-2 summarizes the results of air dispersion modelling for the operations camp. The results at all off-site receptor locations indicate there are no exceedances of applicable ambient air quality objectives, with all results being less than 80% of the objectives and hence are not considered parameters of potential concern (POPC).

Table 7.2-1: Baseline Case and Project Case Concentrations for Criteria Air Contaminants for All Off-site Receptor Locations

Parameter	Averaging Period	Concentration (µg/m^3)			AAQO (µg/m^3)	POPC?	POC?
		Baseline Case	Project Only	Project Case			
$PM_{2.5}$	24-hour	4	0.4	4.4	25	No	No
	Annual		0.1	4.1	8	No	No
PM_{10}	24-hour	9	2	11	50	No	No
NO_2	1-hour	8	5	13	79	No	No
	Annual		0.3	8.3	23	No	No
SO_2	1-hour	2	1.0	3.0	170	No	No
	Annual		0.03	2.0	10	No	No
CO	1-hour	120	30	150	14,300	No	No
	8-hour		12	132	5,500	No	No

Table 7.2-2: Baseline Case and Project Case Concentrations for Criteria Air Contaminants at the Operations Camp

Parameter	Averaging Period	Concentration (µg/m^3)			AAQO (µg/m^3)	POPC?	POC?
		Baseline Case	Project Only	Project Case			
$PM_{2.5}$	24-hour	4	3.6	7.6	25	No	No
	Annual		1.0	5.0	8	No	No
PM_{10}	24-hour	9	17.9	26.9	50	No	No
NO_2	1-hour	8	29.1	37.1	79	No	No
	Annual		1.8	9.8	23	No	No
SO_2	1-hour	2	6.6	8.6	170	No	No
	Annual		0.2	2.2	10	No	No
CO	1-hour	120	197.5	317.5	14,300	No	No
	8-hour		85.0	205.0	5,500	No	No

Notes:

$PM_{2.5}$ = particulate matter less than 2.5 µm in diameter; PM_{10} = particulate matter less than 10 µm in diameter

NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide; CO = carbon monoxide

AAQO = Ambient Air Quality Objective, based on the most conservative BC AAQO or CAAQS (including standards anticipated for 2025)

POPC = Parameter of Potential Concern, identified if the parameter concentration is higher than 80% of the AAQO.

POC = Parameter of Concern, identified if the parameter concentration is higher than the AAQO.

Baseline Case concentrations are from Table 2.2-4 in Chapter 2 of the Application.

Project Case concentrations include both background and Project contributions.

The HHRA (Appendix 6-A of the Application) found that predicted 24-hour ground-level $PM_{2.5}$ and PM_{10} concentrations do not result in any acute short-term exposure hazard quotient (HQ) values above 1.0 for any of the offsite sensitive receptor locations. The highest HQ values for 24-hour $PM_{2.5}$ and PM_{10} are 0.176 and 0.225 respectively, at Tatelkuz Lake Resort and Tatelkus Lake 28. The contributions of Project emissions to the total HQ for 24-hour $PM_{2.5}$ and PM_{10} are 0.016 and 0.045 respectively, based on the

effects assessment. At the operations camp, the highest HQ values for 24-hour $PM_{2.5}$ and PM_{10} are 0.304 and 0.539 respectively. The contributions of Project emissions to the total operations camp HQ for 24-hour $PM_{2.5}$ and PM_{10} are 0.144 and 0.359 respectively, based on the effects assessment. Adverse health effects for human receptors are unlikely to occur following acute short-term exposures to $PM_{2.5}$ and PM_{10}.

Predicted annual ground-level $PM_{2.5}$ concentrations do not result in any chronic HQ values above 1.0 for any of the receptor locations. The highest HQ value for annual chronic exposure to $PM_{2.5}$ at any offsite sensitive receptor is 0.512 at Tatelkuz Lake Resort and Tatelkus Lake 28. The contribution of Project emissions to the total HQ for annual chronic exposure is 0.012 based on the effects assessment. At the operations camp, the HQ value for annual chronic exposure to $PM_{2.5}$ is 0.629 with a contribution from Project emissions of 0.129. These values show that the contribution of Project emissions to the total HQ is small – maximum of 2% for offsite receptors, 21% at the operations camp, Since the total HQ values for the baseline condition and effects assessment remain less than 1.0, adverse health effects for human receptors are unlikely to occur following chronic exposure to $PM_{2.5}$.

Particulate emissions can have effects on aquatic resources and fish, vegetation, wildlife, and human health. Potential effects on the aquatic environment from dust include increase in turbidity levels which could affect habitat quality and organism health. Deposition of dust can lead to contamination of soils with metals, which may adversely affect vegetation abundance, composition, nutritional value, and toxicity. Fugitive dust can cause physical injuries to vegetation, including the alteration of photosynthetic receptors, respiration, and transpiration. Potential effects to wildlife and people include health effects from ingestion of plants and/or animals that have been exposed to chemicals contained with the dust. The amount of dust generated by haul trucks and mining equipment depend on a variety of factors including road material, waste rock moisture content, chemical composition, and the amounts of particulates ready to be emitted, known as silt content. The distance the particles will travel depends on particle size distribution (bigger particles are deposited to the ground closer to the source) and meteorological conditions. With higher winds, the higher mass concentration of larger size particles increases faster than smaller sized particles. (Haller et al. 1999).

Naturally occurring small particulates produced by forest fires can elevate $PM_{2.5}$ and PM_{10} levels above guidelines.

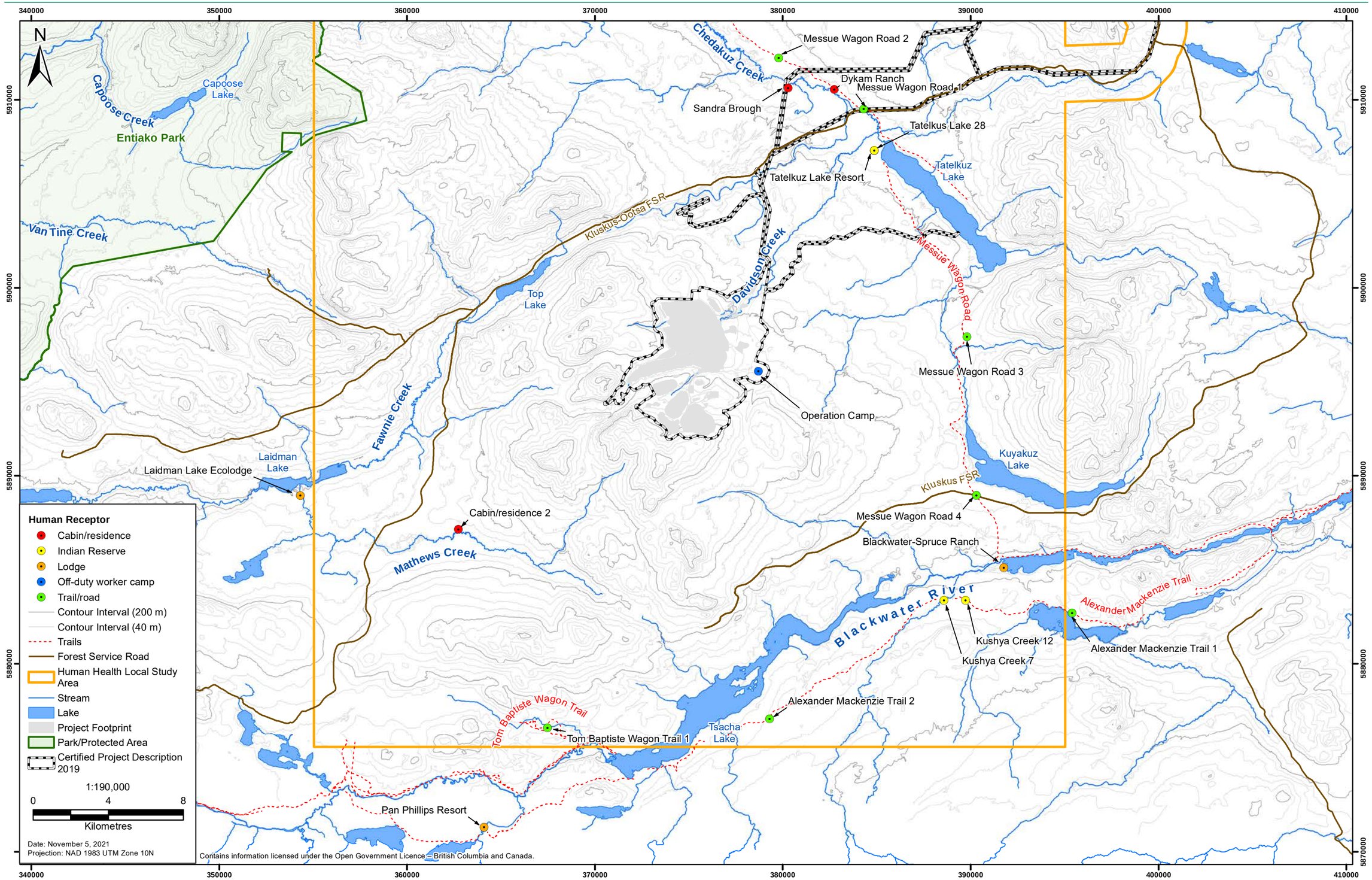

Figure 7-1: Air Quality Human Receptors

8. IMPLEMENTATION

The following sections present the mitigation measures, training, and monitoring that will be implemented to manage fugitive dust and confirm mitigation measures are working.

8.1 Training and Awareness

Employees and contractors will receive training in fugitive dust management and air quality awareness on their arrival on site through an environmental on-boarding training session 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.

Site supervisors will be provided with a copy of the AQDMP and will receive additional training with respect to the requirements that are outlined in the form of operational SOPs. Targeted training related to dust management will be provided to individuals and/or groups of workers assuming a specific authority or responsibility related to air quality. This training will be delivered by means of classroom instruction, toolbox/tailgate meetings or other means as appropriate.

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

8.2 Mitigation Measures

Site-specific mitigation measures, including best management practices, will be applied to all dust sources as listed in Table 8.2-1. In the event that measures are ineffective, contingency measures are also proposed, where relevant. Appendix D contains the Dust Emissions SOP that will be implemented during construction, operations and closure.

Table 8.2-1: Air Quality Mitigation Measures, Best Management Practices, and Contingency

Emission Source	Best Management Practices and Mitigation Measures	Contingency
Open Pit	■ Minimize drop height from loaders and excavators (shovels) to the truck. ■ Ensure an available fleet of water trucks to be deployed, weather depending. ■ Use weather forecasts to inform blasting plan (e.g., wind forecast, lightning and thunder warnings).	n/a
Production drilling	■ Technical Document for Batch Waste Incineration (EC 2010).	n/a
Production blasting	■ Immediately prior to blasting, the “Drill and Blast Engineer / Blast Coordinator” must check weather conditions to determine if the blast is likely to cause any dust or fume impacts on the surrounding environment. ■ Where dust or fume impacts on employees and environment cannot be avoided, blasting must be postponed until weather conditions improve. The Mine Supervisor and Mine Superintendent will decide when to postpone blasting.	n/a
Concrete batch plants	■ When unloading material, piles should form low piles that extend horizontally, where practical. ■ Minimize drop height from loaders and excavators (shovels) to the truck.	n/a

Emission Source	Best Management Practices and Mitigation Measures	Contingency
Aggregate crushing and screening areas	■ Use portable crushers equipped with onboard water based suppression systems. ■ Apply water when temperatures are above freezing and there are very dry conditions (less than 0.25 mm/day of precipitation in the previous week). ■ Use screener and crusher covers. ■ Check cover for tears, holes and cracks on a monthly basis. Repair as soon as possible.	n/a
TSF, Site C and Site D Main dams, Site C Saddle and West dams	■ Advance planning of weekly workload activities. ■ Apply water in non-freezing, very dry conditions (less than 0.25 mm/day of precipitation in the previous week).	■ Maintain higher water levels ■ Application of calcium chloride or magnesium chloride during freezing conditions
Freshwater Reservoir and dam	■ Advance planning of weekly workload activities. ■ Apply water in non-freezing, very dry conditions (less than 0.25 mm/day of precipitation in the previous week).	■ Application of calcium chloride or magnesium chloride during freezing conditions
Interim and Final ECD	■ Advance planning of weekly workload activities. ■ Apply water in non-freezing, very dry conditions (less than 0.25 mm/day of precipitation in the previous week).	■ Application of calcium chloride or magnesium chloride during freezing conditions
Borrow areas	■ Apply water when temperatures are above freezing and there are very dry conditions (less than 0.25 mm/day of precipitation in the previous week). ■ Minimize drop height. ■ Only open areas required when needed. ■ Once suitable materials have been salvaged, place topsoil on disturbed areas and seed using a native seed mix to re-establish vegetative cover as soon as reasonably possible. ■ When unloading material, piles should form low piles that extend horizontally. ■ Minimize drop height from loaders and excavators (shovels) to the truck.	n/a
Processing Plant	■ Apply water when temperatures are above freezing and there are very dry conditions (less than 0.25 mm/day of precipitation in the previous week). ■ Use screener and crusher covers. ■ Minimize drop height. ■ Baghouse, control emissions from fully enclosed conveyor. ■ Enclose conveyors. ■ Check cover for tears, holes and cracks on a monthly basis. Repair or replace as soon as possible.	n/a

Emission Source	Best Management Practices and Mitigation Measures	Contingency
Upper and Lower Waste stockpiles	■ Water stockpiles on dry windy (average wind speed above 10 m/s) days above freezing temperatures. ■ Apply calcium chloride or magnesium chloride during freezing conditions. ■ Minimize stockpile areas.	n/a
Low Grade Ore Stockpile	■ When unloading material, stockpiles should form low piles that extends horizontally. ■ Spray water on stockpiles during hot dry weather (a hot, dry day is defined as a day with less than 0.25 mm of rainfall for the preceding 24 hours and a temperature greater than 20ºC).	n/a
Topsoil stockpiles	■ When unloading material, the piles should form low piles that extend horizontally. ■ Seed stockpiles to reduce erosion and establishment of invasive species.	n/a
MAR	■ Conduct spot checks of vehicle speeds. ■ Apply water to road, as required during non-freezing conditions. ■ If needed, annual application of dust suppressant reagents after spring melt (e.g., calcium chloride, magnesium chloride or other equivalent). Use of road salts to be avoided, if possible, so as not to attract wildlife to the road. ■ Grader maintenance with road crush as required. ■ Regular compaction. ■ Use coarse aggregate on roads with low silt content.	n/a
TSF and mine haulage and service roads	■ Conduct spot checks of vehicle speeds. ■ Visual inspection for dust emissions from roadways and active stockpiles – mine and Infrastructure supervisors, or designate, as well as the mine dispatch office who have a number of real-time stationary but rotating cameras with multiple angles of the open pit and haul roads will monitor for visible emissions from the trucks equipment, and active stockpiles on the site during moderate weather conditions. A hot, dry day is defined as a day with less than 0.25 mm of rainfall for the preceding 24 hours and a temperature greater than 20ºC. ■ Ensure an available fleet of water trucks to be deployed, weather depending (non-freezing conditions). ■ Annual application of dust suppressant reagents after spring melt (e.g., calcium chloride, magnesium chloride or other equivalent). ■ Use coarse aggregate on roads with low silt content. ■ Grader maintenance with road crush as required. ■ Regular compaction.	■ Trial installation of a fog/sprinkler system that releases small droplets of water on roadways to supress airborne dust and not cause water seepage on high traffic haul roads (e.g., primary crusher ramp, stockpile access roads).
Primary and secondary crusher circuits, conveyors and stockpile drop points	■ Install spray bar sprinklers at material transfer points to limit dust emissions. ■ During periods of air temperatures below 0ºC, reagents can be used to limit the formation of frost balls.	n/a
Vehicles	■ Conduct regular vehicle maintenance. ■ Restrict speeds and reducing idling. ■ Use Tier IV engines for mine fleet.	n/a

Note: n/a – not applicable.

8.3 Monitoring

The air quality monitoring program will be initiated prior to the start of construction and remain in place during all phases of the Project. Figure 8.3-1 illustrates the existing and planned monitoring sites, with further details provided in the following sections.

8.3.1 Meteorological Stations

There are two existing, automated meteorological stations (Figure 8.3-1). Table 8.3-1 provides information on the locations, parameters measured, and the available period of data. Prevailing winds have historically been observed to come from the west (see Section 5.2), which can cause fugitive dust events.

The parameters identified in Table 8.3-1 will be monitored over all phases of the Project. Data will be downloaded on a daily basis and reviewed at a minimum of a monthly basis.

Table 8.3-1: Blackwater Project Meteorological Stations

Station Name	Station Height	Latitude (deg N)	Longitude (deg W)	Elevation (masl)	Meteorological Parameters Monitored	Data Period Available
Low	10 m	53.29979	124.80025	1,050	Air temperature, relative humidity, precipitation, wind speed and direction, barometric pressure, snow depth, net radiation, solar radiation	August 2011 - present
High	10 m	53.18113	124.84620	1,470	Air temperature, relative humidity, precipitation, wind speed and direction, barometric pressure, snow depth, net radiation, solar radiation	July 2012 - present

8.3.2 Dustfall Monitoring

According to ENV 2020, dustfall monitoring and the dustfall Pollution Control Objectives have outdated methodology and criteria, and are no longer recommended by BC ENV. Visual monitoring of dust will be undertaken.

Mine personnel will be trained to be observant for dust related concerns which may arise. These observations, together with meteorological conditions and mitigation efforts taken to deal with a problem, will be recorded and included in monthly and annual reports. Visual monitoring will focus on areas where there are active surface earthworks, haul roads and overburden and soil stockpiles. Visual monitoring will occur on a daily basis at all locations where fugitive dust generation is occurring.

8.3.3 Particulate Matter Monitoring

A Thermo Scientific Partisol-FRM Model 2025i-D PM sampler will be installed on the mine site at the exploration camp before the start of construction, and moved to the operations camp at the start of operations. The camp is the nearest sensitive receptor to mine operations. The station will measure PM < 10 microns (PM_{10}) and PM < 2.5 microns ($PM_{2.5}$) mass concentrations on a 47 mm filter contained in a single-action filter change mechanism.

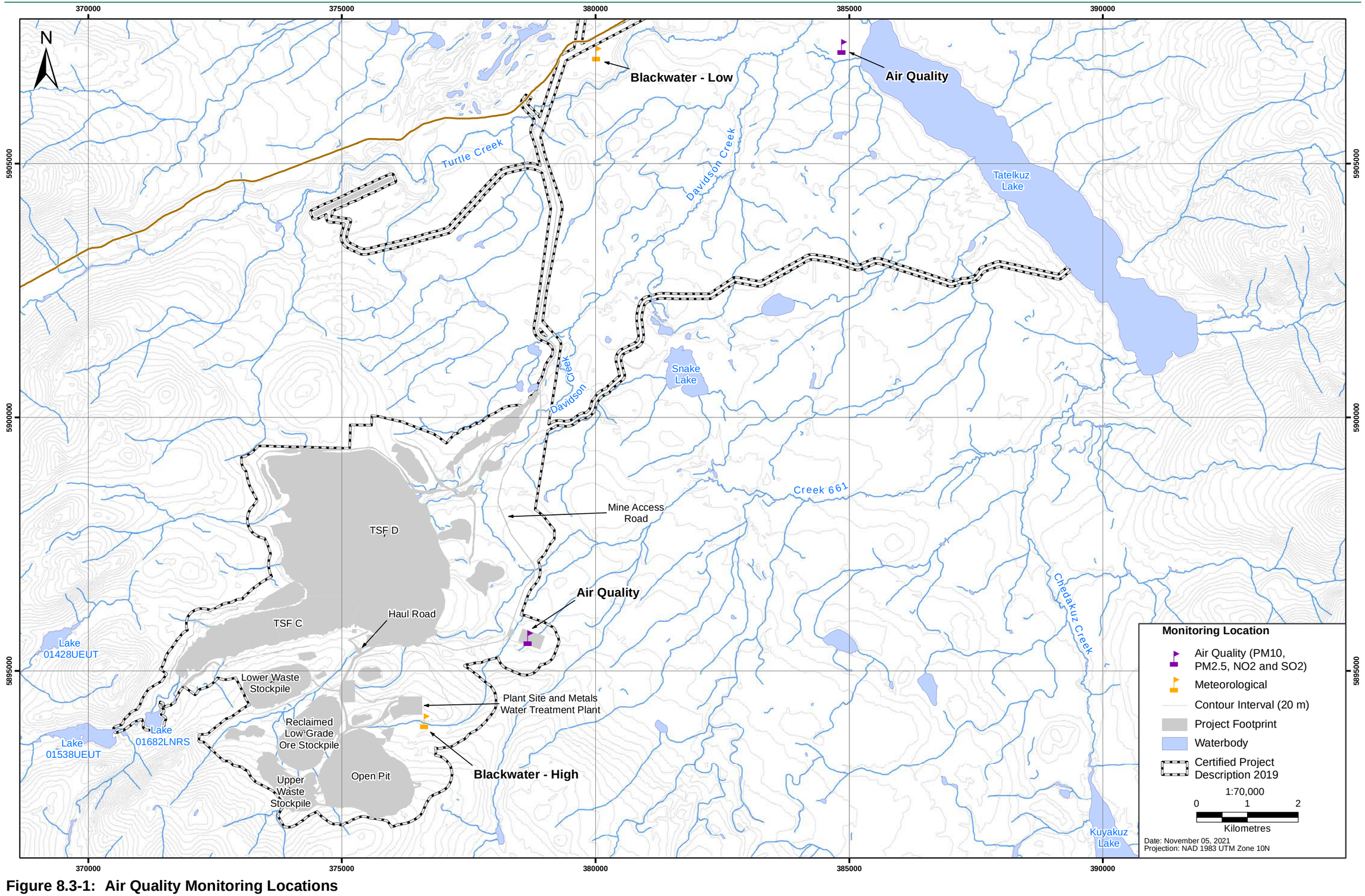

Figure 8.3-1: Air Quality Monitoring Locations

Samples will be collected over a 24-hour period at a target flow rate of 1 m^3/h. Sample volumes will be recorded and divided into the mass concentration to yield a 24-hour average concentration in units of µg/m^3. The Partisol sampler is suitable for a wide variety of climate conditions and meets the United States Environmental Protection Agency guidelines for manual air samplers.

Fine particulate sampling will occur every third day, alternating between $PM_{2.5}$ and PM_{10}, between May and October. During winter conditions, sampling frequency will be weekly.

8.3.4 Nitrogen Dioxide and Sulfur Dioxide Monitoring

Nitrogen dioxide (NO_2) and SO_2 will be sampled using a passive air sampling system (PASS) whereby gas pollutants are monitored by passive diffusion through a diffusive surface onto an adsorbent membrane or filter. PASS monitors will be installed at the exploration camp prior to the start of construction and at the operations camp at the start of operations.

Monitors will be under a protective rain shelter, attached to a supporting pole. Site personnel will collect and replace the PASS units approximately every 30 days, and submit the units to an accredited laboratory for analysis.

PASS laboratory results will be reviewed for sample integrity issues and erroneous data. Field notes, chains of custody, comments from the laboratory, and professional judgement will also be considered during the review process. Invalid data will be omitted from final analyzed datasets. Because PASS sampling is passive, hourly NO_2 and SO_2 concentrations cannot be sampled using this method and therefore will not be compared against the hourly CAAQS.

8.3.5 Carbon Monoxide

Based on the air dispersion modelling results, CO monitoring is not recommended as CO levels are below BC air quality objectives at the human receptor locations (i.e., less than 5% of the objective). The maximum 1-hr CO concentration at any human receptor is 317 ug/m^3 while the objective is 14,300 ug/m^3.
The maximum 8-hr CO concentration is 205 ug/m^3 while the objective is 5,500 ug/m^3.

8.3.6 Quality Assurance / Quality Control

The quality assurance/quality control (QA/QC) program for air quality will include:

- Use of standard field data sheets and SOPs (e.g., for calibration of the Partisol and PASS sampling equipment) for field sampling and data collection;
- Review of data once transferred to a database to minimize the potential for transcription errors;
- Appropriate training for field personnel responsible for collecting samples;
- Use of chain of custody (COC) forms and CALA-accredited laboratory for analysis of samples;
- Duplicate dustfall metals samples collected at each dustfall monitoring site; and
- Appropriate laboratory-based QA/QC programs, consistent with the requirements of the British Columbia Environmental Laboratory Manual (BC ENV 2020a).

8.4 Community Feedback Mechanism

Pursuant to DS Condition 6.3, BW Gold will establish a feedback mechanism to manage input and complaints related to exposure to dust from the Project during construction, operation and decommissioning. Complaints may arise from Project-related use of the FSRs between Vanderhoof and the Project site. Monitoring activities will include a review of any complaints received from the public related to fugitive dust and air quality and an initial response within 48 hours. Complaints will be carefully investigated,

tracked and logged, contributing factors that may have resulted in the complaint, and any actions that were undertaken and follow-up to address the complaint. Complaints may require a more in-depth root cause analysis and result in modification of the Plan.

In the event that COPC limits and corresponding concentration triggers identified in Section 8.4 (Adaptive Management Trigger Action Response) of the AQDMP are exceeded, BW Gold will notify the EAO, ENV, EMLI, Northern Health and Aboriginal Groups and Independent Environmental Monitor. As required by EAC Condition 20, the notification will include both a technical report and a plain language summary of the technical report. The report will be public by posting it to the Blackwater Project website.

9. ADAPTIVE MANAGEMENT AND FOLLOW-UP PROGRAM

The AQDMP is a living document that will evolve over time in response to the results of the monitoring program, changing conditions or development at the Project, updates to scientific methods, and through consultation and discussions with Indigenous Nations, regulators, or other stakeholders. This process of continuous improvement with changing conditions is referred to as adaptive management.

Condition 6.12 of the DS requires BW Gold to develop an air quality follow-up program (AQFP) as follows:

> *The Proponent shall develop, prior to construction and in consultation with Indigenous groups and relevant authorities, a follow-up program to verify the accuracy of the environmental pertains to adverse environmental effects of the Designated Project on the health of Indigenous Peoples as a result of changes to air quality and determine the effectiveness of mitigation measures. As part of the implementation of the follow-up program, the Proponent shall monitor nitrogen dioxide (NO_2), sulfur dioxide (SO_2), fine particulate matter ($PM_{2.5}$), particulate matter (PM_{10}), dust, and carbon monoxide (CO) in air. The Proponent shall implement the follow-up program during all phases of the Designated Project and shall apply conditions 2.9 and 2.10 when implementing the follow-up program.*

The federal DS requirements related to follow-up and adaptive management are:

> *"2.5 The Proponent shall, where a follow-up program is a requirement of a condition set out in this Decision Statement, have a Qualified Professional, where such a qualification exists for the subject matter of the follow-up program, determine, as part of the development of each follow-up program and in consultation with the party or parties being consulted during the development, the following information:*
>
> *2.5.1 the follow-up activities that must be undertaken by a qualified individual;*
>
> *2.5.2 the methodology, location, frequency, timing and duration of monitoring associated with the follow-up program;*
>
> *2.5.3 the scope, content, format and frequency of reporting of the results of the follow-up program;*
>
> *2.5.4 the levels of environmental change relative to baseline conditions that would require the Proponent to implement modified or additional mitigation measure(s), including instances where the Proponent may require Designated Project activities to be stopped; and*
>
> *2.5.5 the technically and economically feasible mitigation measures to be implemented by the Proponent if monitoring conducted as part of the follow-up program shows that the levels of environmental change referred to in condition 2.5.4 have been reached or exceeded.*
>
> *2.6 The Proponent shall update and maintain the follow-up and adaptive management information referred to in condition 2.5 during the implementation of each follow-up program in consultation with the party or parties being consulted during the development of each follow-up program."*

Condition 3 of the EAC requires an adaptive management plan to provide a framework for identifying triggers to determine effectiveness of mitigation and whether additional mitigation is required to address air quality effects. The adaptive management plan, as defined in Condition 3(d) to 3(l) of the EAC, must include at least the following:

> *"3(d) the monitoring program that will be used including methods, location, frequency, timing and duration of the monitoring;*

3(e) the baseline information that will be used, or collected where existing baseline information is insufficient, to support the monitoring program;

3(f) the scope, content and frequency of reporting of the monitoring results;

3(g) the identification of qualitative and quantitative triggers, which, when observed through monitoring required under paragraph d), will require the Holder to alter existing, or develop new, mitigation measures to avoid, reduce, and/or remediate effects;

3(h) methods that will be applied to detect when a numeric trigger, or type or level of change referred to in paragraph g) occurs;

3(i) a description of the process for and timing to alter existing mitigation measures or develop new mitigation measures to reduce or avoid effects;

3(j) identification of the new and/or altered mitigation measures that will be applied when any of the changes identified in paragraphs a) to c) occur, or the process by which those will be established and updated over the relevant timeframe for the specific condition;

3(k) the monitoring program that will be used to determine if the altered or new mitigation measures and/or remediation activities are effectively mitigating or remediating the effects and or avoiding potential effects; and

3(l) The scope, content and frequency of reporting on the implementation of altered or new mitigation measures."

9.1 Air Quality Trigger Response Framework

Triggers are provided for the following action levels of the adaptive management framework: none, and low, medium; and high. The framework is intended to provide an early-warning system such that when defined action levels are triggered there is sufficient time to prevent irreversible adverse environmental effects to health of Indigenous Peoples.

The air quality adaptive management triggers and responses are provided in Table 9-1. The actions that will be taken are based on visual inspections of fugitive dust on the MAR and mine site roads, and fine PM (PM_{10} and $PM_{2.5}$) and SO_2 and NO_2 measurements at the operations camp. The following guideline has been used as triggers to identify the appropriate action level in the adaptive management framework: British Columbia Ambient Air Quality Objectives (BC ENV 2020c) for particulate matter and gases such as nitrogen dioxide and sulfur dioxide.

It is important to note that appropriate action responses resulting from dust observations are quite different than appropriate action responses resulting from fine PM measurements. When visible dust is observed, typically the source of the dust will be evident, and the mitigation measures are well-defined as shown in Table 9-1.

Fine PM concentrations will be measured on a 24-hour basis every three days during summer and weekly during winter and there will be a delay between the measurement date and reporting results after weighing the filter for the 24-hour period. Additionally, unlike a visible dust observation, the source of the elevated fine PM concentration may or may not be immediately apparent. Some analysis may be required to determine the cause and specify appropriate corrective action(s). For these reasons, the action/ response associated with each level of alert is expressed in terms of how quickly the analysis and response is to be carried out. It is possible that fugitive dust will contribute to fine PM concentrations, and thus actions taken in response to visual observations may be part of the response for elevated fine PM. The actions/responses for fine PM listed in Table 9-1 are triggered based on 24-hour measurements since annual averages will only be known on an annual basis. As part of the adaptive management process the frequency of elevated 24-hour fine PM concentrations and the rolling average of fine PM

concentrations will be tracked and evaluated to provide assurance that the standards and objectives are achieved.

The EM or a qualified person will be responsible for calculating the 3-month rolling average $PM_{2.5}$ concentration and will evaluate the frequency of occurrence of elevated 24-hour fine PM concentrations. Based on the findings, the EM may propose modifications to emissions control equipment and/or to dust management monitoring and amend the AQDMP. In addition, the EM will compare measurements to predictions from the effects assessment and make recommendations regarding modifications to mitigation measures if warranted.

If there is an air quality advisory issued by ENV that affects the region where the mine is located, the EM will determine if an adjustment to a higher alert level described in Table 9-1 is required to further mitigate dust emissions.

9.2 Follow-up Program

To determine if modified or additional mitigation measures are required the results of the monitoring program will be compared to the predicted concentrations of criteria air contaminants shown in Tables 7.2-1 and 7.2-2. The predicted concentrations are considered to be baseline concentrations for the purposes of the FUP. None of the baseline concentrations reported in Tables 7.2-1 and 7.2-2 exceeded ambient air quality standards.

If the monitoring program shows exceedances of the criteria air contaminant standards shown in Table 7.1-1 then additional mitigation measures including contingency measures described in Table 8.2-1 will be considered and implemented where required. The final determination of which additional mitigation will be required will be based on an analysis of the causes of the exceedances. The FUP will, over time, inform the monitoring program and adaptive management to improve mitigations, and result in closer tracking of predicted results with monitored results:

- Low = exceed baseline – continue monitoring
- Medium = exceed baseline and predicted – continue monitoring, develop casual analysis (if observed concentrations are approaching the guidelines)
- High = exceed baseline, predicted, and guideline – implement mitigations plan, increase sampling frequency, etc.

Table 9-1: Trigger Action Response

Component	Location	Level	Trigger	Management Response
Fugitive Dust	Unpaved Roads	None	■ Dust plume less than half the height of a haul truck tire	■ No action. Continue work in accordance with site management procedures
		Low	■ Dust plume less than half the size of a haul truck for any period of time up to 30 minutes	■ Limited watering of high traffic areas. ■ Repeat visual inspection every 2 hours depending on weather.
		Medium	■ Dust plume same size as a haul truck extending beyond local area for periods longer than half a day	■ Continuous watering of high traffic areas until dust plume subsides. ■ Speed limit restrictions in high traffic areas.
		High	■ Dust plume greater than the size of a haul truck for periods longer than 1 day, or when dust plumes extend beyond the active mine area/infrastructure.	■ Increase frequency of watering and if not successful examine longer use of alternative dust suppressants (e.g., calcium or magnesium chloride, lignin compounds, environmentally friendly oils or clay additives). ■ Speed limit restrictions may be required if dust cannot be controlled by watering. ■ Closure of certain routes may be required if dust cannot be controlled by watering or speed restrictions.
	Surface Earthworks	None	■ Minor localized dust during construction and normal mine operations	■ No action. Continue work in accordance with site management procedures
		Low	■ Visible dust plumes rising over 2 m above the active construction area for longer than 30 minutes	■ Minimize material movement in areas with active construction or operation and heavy equipment use.
		Medium	■ Triggers per level 1 but with dust plume extending beyond local area for periods longer than half a day	■ Application of water to exposed construction area (if this is a source).
		High	■ Extensive areas of dust generation with large dust plumes for periods longer than 1 day or when dust plumes extend beyond the active mine area/infrastructure.	■ Increase frequency of watering and if not successful apply gravel to exposed construction area (if this is a source). ■ Investigate long term solutions if dust plumes persist.
	Stockpiles	None	■ Minor localized dust during construction and normal mine operations	■ No action. Continue work in accordance with site management procedures
		Low	■ Visible dust plumes rising over 2 m above the ground for longer than 30 minutes	■ Turn on spray bar sprinklers. ■ During periods where temperature are below freezing add reagents to control dust

Component	Location	Level	Trigger	Management Response
		Medium	■ Triggers per level 1 but with dust plume extending beyond local area for periods longer than half a day	■ Increase the rate of water application using spray bar sprinklers. During periods where temperature are below freezing, add reagents to control dust
		High	■ Extensive areas of dust generation with large dust plumes for periods longer than 1 day or when dust plumes extend beyond the active mine area/infrastructure.	■ Examine the possibility of re engineering the spray bar sprinklers to provide more effective water coverage of transfer points.
	Material handling transfer locations	None	■ Minor localized dust during construction and normal mine operations	■ No action. Continue work in accordance with site management procedures
		Low	■ Visible dust plumes rising over 2 m above the ground for longer than 30 minutes	■ Turn on spray bar sprinklers. ■ During periods where temperature are below freezing add reagents to control dust
		Medium	■ Triggers per level 1 but with dust plume extending beyond local area for periods longer than half a day	■ Increase the rate of water application using spray bar sprinklers. ■ During periods where temperature are below freezing, add reagents to control dust
		High	■ Extensive areas of dust generation with large dust plumes for periods longer than 1 day or when dust plumes extend beyond the active mine area/infrastructure.	■ Examine the possibility of re engineering the spray bar sprinklers to provide more effective water coverage of transfer points.
Fine PM	Operations Camp	None	■ The annual average PM_{10} and $PM_{2.5}$ concentration is: ■ at or below the Baseline Case annual average concentration but ■ below the predicted concentrations and the Ambient Air Quality Objective	■ No action. Continue monitoring.
		Low	■ The annual average PM_{10} and $PM_{2.5}$ concentration is: ■ higher than the Baseline Case annual average concentration but ■ below the predicted concentrations and the Ambient Air Quality Objective	■ Continue monitoring ■ Develop causal analysis and associated mitigations in addition to a schedule for implementation based on the exceedance level

Component	Location	Level	Trigger	Management Response
		Medium	■ The annual average PM_{10} and $PM_{2.5}$ concentration is: ■ higher than the Baseline Case annual average concentration and ■ higher than the predicted annual average concentration plus 50% but ■ below the Ambient Air Quality Objective	■ Develop causal analysis and associated mitigations in addition to a schedule for implementation ■ Increase sampling frequency to every other day.
		High	■ The annual average PM_{10} and $PM_{2.5}$ concentration is: ■ higher than the Baseline Case annual average concentration and ■ higher than the predicted annual average concentration plus 50% and ■ higher than the Ambient Air Quality Objective	■ Implement mitigations developed at the medium action level ■ Increase sampling frequency to daily.
SO_2 and NO_2	Operations Camp	None	■ The annual average SO_2 and/or NO_2 concentration is: ■ higher than 50% of the Baseline Case annual average concentration but ■ below the predicted concentrations and the Ambient Air Quality Objective	■ No action. Continue monitoring.
		Low	■ The annual average SO_2 and/or NO_2 concentration is: ■ higher the Baseline Case annual average concentration but ■ below the Ambient Air Quality Objective	■ Continue monitoring ■ Develop causal analysis and associated mitigations in addition to a schedule for implementation based on the exceedance level
		Medium	■ The annual average SO_2 and/or NO_2 concentration is: ■ higher than the Baseline Case annual average concentration and ■ higher than the predicted annual average concentration plus 50% but ■ below the Ambient Air Quality Objective	■ Develop causal analysis and associated mitigations in addition to a schedule for implementation ■ Increase sampling frequency to every other day.

Component	Location	Level	Trigger	Management Response
		High	■ The annual average SO_2 and/or NO_2 concentration is: ■ higher than the Baseline Case annual average concentration and ■ higher than the predicted annual average concentration plus 50% and ■ higher than the Ambient Air Quality Objective	■ Implement mitigations developed at the medium action level ■ Increase sampling frequency daily.

10. REPORTING AND RECORD KEEPING

10.1 Reporting

10.1.1 Environmental Management Act Annual Reporting

Environmental Management Act permits for mine projects require annual reports be submitted to ENV. Annual reports are public documents and include a summary of environmental incidents, all monitoring under permits, an assessment of the data by a qualified professional, and recommendations as appropriate. The reporting must also conform to the requirements outlined in Developing a Fugitive Dust Management Plan for Industrial Projects (BC EMMPR & ENV, 2018) which require that adaptive management be used to evaluate the effectiveness and direct continual improvement of the AQDMP. Separate reports or sections of the annual report are expected for air, refuse and water/receiving environment (ENV 2016).

BW Gold will follow reporting requirements in Technical Guidance 4 (ENV 2016) and any amendments or updates thereto.

10.1.2 Decision Statement Annual Reporting

Annual reporting and information sharing requirements in the federal DS applicable to this plan are identified below. Conditions 2.11, 2.12, 2.13 and 2.14 identify annual reporting and information sharing requirements as follows:

- Condition 2.11 requires “The proponent [BW Gold] shall, commencing in the reporting year during which the proponent begins the implementation of the conditions set out in the DS, prepare an annual report that describes the activities undertaken by the proponent [BW Gold] in the reporting year to comply with each condition in the DS” as well as other matters identified in the Condition.
- Condition 2.12 requires “The proponent [BW Gold] shall provide a draft annual report in condition 11 to Indigenous groups, no later than June 30 following the reporting year to which the annual report applies. BW Gold shall consult the Indigenous groups on the content and findings in the draft annual report”.
- Condition 2.13 requires “The proponent [BW Gold] in consideration of any comments received from Indigenous groups pursuant to condition 2.12, shall revise and submit to the Agency [Impact Assessment Agency of Canada] and Indigenous groups a final annual report, including an executive summary in both official languages, no later than September 30 following the reporting year to which the annual report applies”.
- Conditions 2.14 requires:
  - “The Proponent [BW Gold] shall publish on the Internet, or any medium which is publicly available, the annual reports and the executive summaries….” Names and contact information will be removed from the annual reports to protect confidentiality.
  - “The Proponent [BW Gold] shall keep these documents publically available for 25 years following the decommissioning of the Designated Project”.
  - “The Proponent [BW Gold] shall notify the Agency and Indigenous groups of the availability of these documents within 48 hours of their publication.”

In addition, the DS Condition 6.15 requires that the results of the follow up program be communicated in plain language to Indigenous Groups and the relevant authorities as discussed in Section 10. This will be satisfied through the Annual Report.

10.1.3 Environmental Assessment Certificate #M19-01 Annual Reporting

Condition 5 of the EAC sets out reporting requirements. BW Gold will submit a report to the attention of the Environmental Assessment Office and Aboriginal Groups on the status of compliance with EAC #M19-01 at the following times:

a. at least 30 days prior to the start of Construction;
b. on or before March 31 in each year after the start of Construction;
c. at least 30 days prior to the start of Operations;
d. on or before March 31 in each year after the start of Operations;
e. at least 30 days prior to the start of Closure;
f. on or before March 31 in each year after the start of Closure until the end of Closure;
g. at least 30 days prior to the start of Post-Closure; and
h. on or before March 31 in each year after the start of Post-Closure until the end of Post-Closure.

10.2 Record Keeping

The EM will be responsible for ensuring dust events are logged, including details of the on-site activities, meteorological conditions, and the management actions taken. The EM will also be responsible for ensuring that analysis and mitigation for any fine PM event is completed in a timely manner. Records will be maintained for:

- Public complaints;
- Meteorological stations;
- Dust visual observations;
- Particulate matter monitoring; and
- Nitrogen dioxide and SO_2 monitoring.

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 records will be maintained and retained in accordance with Conditions 12.1 and 12.2 of the federal DS respectively. The records will be made available upon request.

11. PLAN REVISIONS

The AQDMP will be reviewed annually to: review the monitoring program; confirm that the measures in the plan are being implemented; and identify any improvements to ensure effectiveness of fugitive dust best management practices. AQDMP revisions will be required:

- If the monitoring program shows that the effects of the Project are not mitigated to the extent contemplated or predicted in the Application/EIS (New Gold 2015) or exceed adaptive management triggers;
- There are new and /or changes to emission sources; and
- There are changes to other relevant management plans and regulatory requirements.

Proposed revisions to the AQDMP will be reviewed and discussed with the Blackwater Environment Committee and EMC (members include representatives from ENV, EMLI, FLNRORD and Aboriginal Groups) prior to adopting and implementing the changes to the AQDMP. As required by EAC #M19-01 Condition 20, the plan and any amendments thereto, will be implemented to the satisfaction of a qualified professional throughout construction, operations, and closure and to the satisfaction of the EAO. Revised draft and final versions of the AQDMP will be provided to EAO and EMC.

12. QUALIFIED PROFESSIONALS

This management plan has been prepared and reviewed by the following qualified professionals:

Prepared by:

Andres Soux, M.Sc.
Principal Consultant

Reviewed by:

Rolf Schmitt, P.Geo.
Technical Director

13. REFERENCES

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

Legislation and Regulations

Canadian Environmental Protection Act, 1999, SC 1999, c. 33.

Code of Practice for the Concrete and Concrete Products Industry, BC Reg. 329/2007.

Declaration on the Rights of Indigenous Peoples Act, SBC 2019, c. 44.

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APPENDIX A CONCORDANCE WITH ENVIRONMENTAL ASSESSMENT CERTIFICATE #M19-01 (JUNE 21, 2019)

Appendix A: Concordance with Environmental Assessment Certificate #M19-01 (June 2019)

Condition #	Description	Action/Location in the Plan
1.	**Document Review and Implementation** Where a condition of this Certificate requires the Holder to provide a plan, program or other document, the Holder must provide the plan, program or other document to the EAO and Aboriginal Groups in the timeframe referenced in such condition, unless otherwise approved by the EAO. The EAO may, within 60 days of receiving a copy of such plan, program or other document, advise that: 1. the Holder may proceed to implement the plan, program or other document with or without revisions; or 2. a revised plan, program, or other document must be provided for approval of the EAO prior to a specified activity or milestone. If the EAO advises pursuant to paragraphs (a) or (b) that changes are required to a plan, program, or other document, then the Holder must follow the instructions of the EAO in that regard. If the EAO does not advise on paragraphs (a) or (b) within 60 days of the EAO receiving a plan, program, or other document, the Holder may proceed to implement the plan, program or other document. The Holder may, or the EAO may require the Holder to, revise any plan, program or other document if the Holder or the EAO determines that the implementation of the plan, program or other document is not: 3. meeting one or more objectives of the plan, program or other document set out in the relevant condition of this Certificate; 4. having the effects contemplated or intended, as set out in the plan, program or other document itself; 5. consistent with the Certificate; or 6. consistent with changes in industry best practices or technology.	Draft AQDMP provided to Aboriginal Groups in August 2021 for review and comment.
2.	**Plan Development** Where a condition of this Certificate requires the Holder to develop a plan, program or other document, any such plan, program or other document must, at a minimum, include the following information:	
	a. purpose and objectives of the plan, program or other document;	Section 1
	b. roles and responsibilities of the Holder and Employees;	Section 3, Table 3-1
	c. names and, if applicable, professional certifications and professional stamps/seals, of those responsible for the preparation of the plan, program, or other document;	Signed by qualified professional
	d. schedule for implementing the plan, program or other document throughout the relevant Project phases;	Section 1 – The AQDMP will be implemented during construction, operations and closure.
	e. means by which the effectiveness of the mitigation measures will be evaluated including the schedule for evaluating effectiveness;	Section 9.2

Condition #	Description	Action/Location in the Plan
	f. schedules and methods for the submission of reporting to specific agencies, Aboriginal Groups and the public and the required form and content of those reports; and	Section 10
	g. process and timing for updating and revising the plan, program or other document, including any consultation with agencies and Aboriginal Groups that would occur in connection with such updates and revisions.	Section 11
3.	**Adaptive Management** Where a condition of this Certificate requires the Holder to develop a plan, program or other document that includes monitoring, including monitoring of mitigation measures or monitoring to determine the effectiveness of the mitigation measures, the Holder must include adaptive management in that plan. The objective of the adaptive management is to address the circumstances that will require the Holder to implement alternate or additional mitigation measures to address effects of the Project if the monitoring shows that those effects: a. are not mitigated to the extent contemplated in the Application; b. are not predicted in the Application; or c. have exceeded the triggers identified in paragraph g) of this condition. The adaptive management in the plan must include at least the following: d. the monitoring program that will be used including methods, location, frequency, timing and duration of the monitoring;	Sections 4, 9
	e. the baseline information that will be used, or collected where existing baseline information is insufficient, to support the monitoring program;	n/a (the baseline information is sufficient and monitoring data will continue to be collected over the LoM)
	f. the scope, content and frequency of reporting of the monitoring results;	Section 10.1
	g. the identification of qualitative and quantitative triggers, which, when observed through monitoring required under paragraph d), will require the Holder to alter existing, or develop new, mitigation measures to avoid, reduce, and/or remediate effects;	Section 9.1, Table 9-1
	h. the methods that will be applied to detect when a numeric trigger, or type or level of change referred to in paragraph g), has occurred.	Section 9.1, Table 9-1
	i. a description of the process for and timing to alter existing mitigation measures or develop new mitigation measures to reduce or avoid effects;	Section 9.2
	j. identification of the new and/or altered mitigation measures that will be applied when any of the changes identified in paragraphs a) to c) occur, or the process by which those will be established and updated over the relevant timeframe for the specific condition;	Identification of new or altered mitigation measures will be determined based on monitoring results.

Condition #	Description	Action/Location in the Plan
	k. the monitoring program that will be used to determine if the altered or new mitigation measures and/or remediation activities are effectively mitigating or remediating the effects and or avoiding potential effects; and,	Monitoring results and will be used to determine if mitigation measures are effective or need to be modified. The monitoring program is described in Section 8.3.
	l. the scope, content and frequency of reporting on the implementation of altered or new mitigation measures.	Section 10.1
	If there are any requirements or mitigation measures required in the plan, program or other document for which adaptive management, or elements of adaptive management listed in paragraphs d) to l) are assessed to be not appropriate or applicable, the plan must include identification of those requirements and measures, and the rationale for that assessment.	This will be assessed in future plan updates.
4.	**Consultation** Where a condition of this Certificate requires the Holder consult a particular party or parties regarding the content of a plan, program or other document, the Holder must, to the satisfaction of the EAO: 1. provide written notice to each such party that: i) includes a copy of the plan, program or other document; ii) invites the party to provide its views on the content of such plan, program or other document; and iii) indicates: 1.1 if a timeframe for providing such views to the Holder is specified in the relevant condition of this Certificate, that the party may provide such views to the Holder within such time frame; or 1.2 if a timeframe for providing such views to the Holder is not specified in the relevant condition of this Certificate, specifies a reasonable period during which the party may submit such views to the Holder;	Draft AQDMP provided to Aboriginal Groups in August 2021 for review and comment. While BW Gold sets general timeframes for review and comments via written notice, BW Gold and Aboriginal Groups engage in ongoing communication to establish flexible timeframes agreed to by all parties.
	2. undertake a full and impartial consideration of any views and other information provided by a party in accordance with the timelines specified in a notice given pursuant to paragraph (a);	Comments from Aboriginal Groups and corresponding BW Gold responses are maintained in a tracking table. BW Gold comprehensively and impartially reviews received comments received within agreed upon timeframes on a regular basis.
	3. provide a written explanation to each such party that provided comments in accordance with a notice given pursuant to paragraph (a) as to: 3.1 how the views and information provided by such party to the Holder have been considered and addressed in a revised version of the plan, program or other document; or	Responses BW Gold provides in the tracking table include explanations on how comments from Aboriginal Groups have been addressed in a

Condition #	Description	Action/Location in the Plan
	3.2 why such views and information have not been addressed in a revised version of the plan, program or other document;	revised version of the AQMP. In cases where such comments have not been addressed in the revised version, BW Gold similarly explains its rationale for doing so.
	4. maintain a record of consultation with each such party regarding the plan, program or other document; and	BW Gold is maintaining consultation records are being maintained.
	5. provide a copy of such consultation record to the EAO, the relevant party, or both, promptly upon the written request of the EAO or such party. The copy of such consultation record must be provided to the EAO, relevant party, or both, no later than 15 days after the Holder receives the request for a copy of the consultation record, unless otherwise authorized by the EAO.	Potential future requirement.
20.	The Holder must retain a Qualified Professional to develop an Air Quality and Dust Management Plan. The plan must be developed in consultation with ENV, EMPR, NHA and Aboriginal Groups. The plan must include at least the following: a. the means by which the mitigation measures identified in the Mitigations Table required under Condition 43 for the valued component Air Quality will be implemented;	Section 12
	b. the means by which guidance contained in EMPR's and ENV's guidance: Developing a Fugitive Dust Management Plan for Industrial Projects (May 2018, or as updated or replaced from time to time) is addressed;	Appendix C
	c. the identification and detailed descriptions of dust-emitting sources from the Project;	Section 6
	d. the identification of environmental receptors to be monitored;	Section 8.3
	e. a compliance monitoring program, including the locations of monitoring stations and equipment that will be used to conduct the monitoring;	Section 8.3
	f. the contaminants of potential concern (COPC) and corresponding concentrations (triggers) that would cause the Holder to take corrective action to reduce contaminant concentrations to avoid adverse health effects to receptors identified in paragraph d);	Section 7.1
	g. how this plan will inform the Wildlife Management and Monitoring Plan (Condition 23), and Country Foods Monitoring Plan (Condition 41); and	Section 1.4
	h. how the Holder will notify the EAO, ENV, EMPR, NHA, Aboriginal Groups, IEM, and the public in the event that contaminant concentration triggers identified in paragraph f) are exceeded. The notification must include both a technical report and a plain language summary of the technical report.	Section 8.4

Condition #	Description	Action/Location in the Plan
	The Holder must provide the draft plan that was developed in consultation with ENV, EMPR, NHA, and Aboriginal Groups to ENV, EMPR, NHA, Aboriginal Groups and the EAO for review a minimum of 60 days prior to the planned commencement of Construction or as listed in the Document Submission Plan required by Condition 10 of this Certificate.	To be submitted 60 days prior to planned commencement.
	The plan and any amendments thereto, must be implemented to the satisfaction of a Qualified Professional throughout Construction, Operations, and Closure and to the satisfaction of the EAO.	Future requirement.

APPENDIX B CONCORDANCE WITH CANADIAN ENVIRONMENTAL ASSESSMENT AGENCY DECISION STATEMENT (APRIL 2019)

Appendix B: Concordance with Canadian Environmental Assessment Agency Decision Statement (April 2019)

Condition #	Description	Location in Plan
6.1	The Proponent shall mitigate, during all phases of the Designated Project, emissions of fugitive dust from the Designated Project, including dust associated with vehicles on project roads.	Section 8.2, Table 8.2-1
6.3	The Proponent shall develop, prior to construction and in consultation with Indigenous groups, a protocol for receiving complaints related to the exposure to noise and dust from the Designated Project. The Proponent shall respond to any noise or dust complaint(s) within 48 hours of the complaint being received and shall implement corrective actions to reduce exposure to noise or dust in a timely manner. The Proponent shall implement the protocol during construction, operation and decommissioning.	Section 8.4
6.12	The Proponent shall develop, prior to construction and in consultation with Indigenous groups and relevant authorities, a follow-up program to verify the accuracy of the environmental assessment as it pertains to adverse environmental effects of the Designated Project on the health of Indigenous Peoples as a result of changes to air quality and determine the effectiveness of mitigation measures. As part of the implementation of the follow-up program, the Proponent shall monitor nitrogen dioxide (NO_2), sulfur dioxide (SO_2), fine particulate matter ($PM_{2.5}$), particulate matter (PM_{10}), dust, and carbon monoxide (CO) in air. The Proponent shall implement the follow-up program during all phases of the Designated Project and shall apply conditions 2.9 and 2.10 when implementing the follow-up program.	Section 9
6.15	The Proponent shall develop, prior to construction and in consultation with Indigenous groups and relevant authorities, and implement, during all phases of the Designated Project, a plan to communicate the results of the follow-up program referred to in conditions 6.11, 6.12, 6.13 and 6.14 in plain language to Indigenous groups and relevant authorities. The communication plan shall include the procedures to communicate, including the frequency of communication.	Section 10.1.2

APPENDIX C CONCORDANCE TABLE WITH DEVELOPING A FUGITIVE DUST MANAGEMENT PLAN FOR INDUSTRIAL PROJECTS (EMPR & ENV 2018)

Appendix C: Concordance Table with Developing a Fugitive Dust Management Plan for Industrial Projects (EMPR & ENV 2018)

Section	Description	Location in the Plan
1 Introduction	This section provides contextual background information on the project, project overview, and regulatory framework.	Section 1 Section 2
1.1 Company Information	Provide an overview including the name, organization and structure of the operating company.	Section 1.1
1.2 Permitting	Identify the permit for which this document is being developed and other relevant licences, authorizations and regulations which impact on this document.	Section 1
1.3 Purpose/Objectives and Scope	Describe the purpose and/or objectives that this plan will address.	Section 1
1.4 Authorship	A record of the development of the FDMP should be included.	Section 12
1.5 Submitted to	A record of the development and submission of the FDMP should be included.	n/a – The plan is being submitted with a Joint *Mines Act/Environmental Management Act* permit application. This application seeks authorizations for air discharges.
2 Roles and Responsibilities	Describe the roles and responsibilities for implementation of, and compliance with, the plan.	Section 3 (AQDMP)
3 Facility Description and Setting		
3.1 Site Ownership and Physical Location	Provide information on the site ownership, all relevant tenures/ permit boundaries, and the project location in relation to local communities and other sensitive receptors.	Section 5.1 and 5.2
3.2 Descriptive Overview of the Facility	Provide a brief overview of the site and activities that could result in fugitive dust.	Section 5.3
3.3 Process Flow Diagram or Description of the Facility	Provide a process flow diagram and/or use descriptions to indicate the process, operations and equipment that have the potential to emit fugitive dust.	Figure 5.3-3
3.4 Facility Site Map (Including Dust Sources)	The site map will clearly identify the locations of all fugitive dust emission sources and site features discussed in the facility description.	Figure 5.2-3
4 Identification of Potential Sources or Activities which Generate Fugitive Dust	The FDMP must contain a list of potential sources and/or activities which may generate fugitive dust.	Section 6
4.1 Source List Review	The FDMP must include a procedure to ensure the source list is reviewed on a regular schedule to reflect current conditions.	Section 11
4.2 Source List Update Procedure	Outline the procedure to take when updating or removing existing sources or adding new sources to the list established in Section 4.1	Section 11

Section	Description	Location in the Plan
4.3 Fugitive Dust Source List	The fugitive dust source list must include the following: ■ unique identification number or designation for each source; ■ location of the source within the facility (or reference id on the included site map); ■ potential source of fugitive dust; ■ factors influencing generation of dust (e.g. wind, operational activities); and ■ identification of the dust-generating material (e.g. aggregate, clean coal, road dust).	Table 6-2
5 Identification of Potential Effects of Fugitive Dust	The potential effects of dust both on and off the site should be identified.	Section 7
6 Fugitive Dust Management	The FDMP must contain a description of how fugitive dust will be managed onsite.	Section 8.2
6.1 Best Management Practices (BMP)	BMPs represent the current 'state of practice' approach to manage dust impacts and effects, and aim to produce outcomes consistent with social, economic and environmental expectations.	Table 8.2-1
6.2 Site Specific Mitigation Measures	The FDMP is most effective when it is developed to be a site-specific, operational plan.	Section 8.2
7 Plan Implementation		
7.1 Training	The plan should identify training and frequency of training of site personnel identified in the 'Roles and Responsibilities' section to ensure that they are aware of their responsibilities under the plan.	Section 8.1
7.2 Monitoring and Maintenance	Monitoring activities may include tracking of public complaints, visual inspection of facilities by site personnel, and quantitative monitoring of the environment, such as passive particulate deposition (dustfall) or active suspended particulate (TSP, PM_{10} or $PM_{2.5}$) sampling on and off site, to evaluate the effectiveness of dust control practices and to quantify levels of fugitive dust and its composition leaving the site.	Section 8.3
7.3 Trigger Action Response Plan (TARP)	The Response Plan should include specific triggers, actions to be taken, and reporting protocols.	Section 9
7.4 Record Keeping	The FDMP must include information on record keeping, including a complaint tracking tool and a record of dust events and responses.	Section 10.2
8 Adaptive Management	Adaptive management may be used to evaluate the effectiveness and direct continual improvement of the FDMP.	Section 9
9 Reporting	Outline the structure and timing of reporting, taking into account the annual reporting requirements of regulatory agencies, updates to First Nations and the public, and reporting related to the TARP (i.e., reporting out on dust events).	Section 10.1
10 References	References	Section 13.0

APPENDIX D DUST EMISSIONS STANDARD OPERATING PROCEDURE

Blackwater Gold Project

Fugitive Dust Management

STANDARD OPERATING PROCEDURE

November 2021 Version: C.1

Scope:	To define a standard operating procedure (SOP) for safe and efficient work practices to manage fugitive dust emissions from mining, including drilling, blasting, material handling and re-handling and use of the Mine Access Road, haul and service roads. The SOP provides guidance to personnel to assess working conditions to prevent excessive dust from equipment or processes.
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. RESPONSIBILITIES

Individuals with key roles and responsibilities with respect to fugitive dust 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 General Manager Development.
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 dust management during mine site construction. Reports to General Manager Development.
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, Blasting 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 Air Quality and Fugitive Dust Management Plan, including monitoring requirements, mitigation measures, adaptive management trigger action response, and reporting and record keeping.

3. FUGITIVE DUST SOURCES

Fugitive dust is the primary air emission from the mine site. Table 3-1 lists potential fugitive dust sources by Project phase. These dust sources represent key facilities / activities that will be monitored for dust generation and receive active management, if required.

Broadly, the sources can be categorized as Construction, Road Use, Blasting, Material Handling, and Processing-related. Section 5 of this SOP provides management procedures based on these five categories.

Table 3-1: Potential Fugitive Dust Sources by Project Phase

Construction	Operations	Closure	Post-closure
■ Land clearing and earthworks for all on-site and off-site Project components ■ Construction and use of unpaved access and mine site roads ■ Surface blasting, drilling and handling for starter pits ■ Construction of Project-owned roads ■ Construction of the transmission line ■ Construction of the freshwater supply system ■ Construction of tailings storage facility (TSF) dams and interim environmental control dam ■ Material handling/re-handling at Lower and Upper Waste stockpiles, low grade ore (LGO) and topsoil stockpiles, borrow areas, and laydown areas ■ Construction of water management structures (e.g., diversion channels) ■ Aggregate extraction from borrow pits ■ Borrow and aggregate screening areas ■ Concrete batch plants ■ Parking lot and road grading	■ Pit slopes ■ Surface blasting and mining activities during open pit operations ■ Ore extraction in the open pit ■ Ore transport to the processing plant ■ Ore processing ■ Construction of TSF Main Dam D and final Environmental Control Dam ■ Wind erosion from exposed TSF beach and stockpiles ■ Construction of TSF dams ■ Land clearing and earthworks associated with production ramp ups ■ Use of unpaved surfaces including the mine site haul roads ■ Material handling/re-handling at Lower and Upper Waste stockpiles, LGO and topsoil stockpiles, borrow areas, and laydown areas ■ Borrow and aggregate screening areas ■ Parking lot and road grading	■ Pit slopes ■ Earthworks ■ Use of unpaved mine site roads ■ Wind erosion from exposed TSF beach ■ Parking lot and road grading	■ Pit slopes above inundation level ■ Use of unpaved mine site roads ■ Parking lot and road grading

4. INSPECTIONS

All Supervisors (or designates) are responsible for monitoring fugitive dust generation. They will conduct an inspection each day, at relevant sources listed in Table 3-1, during hot and dry weather. A hot and dry day is defined as having a daytime high greater than 20°C with less than 0.25 mm of precipitation in the preceding 24 hours.

5. RESPONSE PROCEDURES

5.1 Road Construction and Use

Dust mitigation associated with road construction and road use share similarities with respect to dust management. The relative size of dust plumes and the corresponding response action level are to be assessed using the guidance provided in Table 5.1-1. Further details on each response action is provided in Sections 5.1.1 to 5.1.3.

Table 5.1-1: Fugitive Dust Response Actions

Plume Size	Measure	Response Action Level
Large	Greater than the size of a haul truck	**Level 3 Alert** 1. Continuous watering of all Project roads and construction areas. 2. Speed limit restrictions may be required if dust cannot be controlled by watering. 3. Closure of certain routes or construction areas may be required if dust cannot be controlled by watering or speed restrictions.
Moderate	Same size as a haul truck	**Level 2 Alert** 1. Continuous watering of high traffic areas of Project roads. 2. Speed limit restrictions in high traffic areas if dust cannot be controlled by watering.
Small	Less than half the size of a haul truck	**Level 1 Alert** 1. Limited watering of high traffic areas of haul and service roads. 2. Repeat visual inspection every 12 hours depending on weather.
No Plume	Less than half the height of a haul truck tire	**Normal** 1. No action.

5.1.1 Watering

Watering is the primary control mechanism to manage fugitive dust on Project-owned roads and in active construction areas. Supervisors are responsible for determining which roads or specific construction areas require watering and dispatching a watering truck accordingly based on Table 5-1.

The following guidelines apply to watering:

- Watering in any area is to be carried out until the entire surface is wetted. Watering shall be controlled so there is no overland water flow. Watering must be stopped before notable surface run-off occurs. Water application is controlled by the use of a nozzle or spray application.
- Report unexpected runoff to the shift supervisor who will request maintenance or re-grading of the area.
- Use only clean water for dust suppression on roadways.
- Chemical dust suppressant (e.g., calcium chloride) shall only be used on roadways following approval from the Mine Manager.

5.1.2 Speed Limit Restrictions

Mobile equipment and light vehicles are restricted to designated routes and must abide by posted speed limits for normal activities. Speed limits are noted during site orientation and training, and are posted along roadways. Speed limits on Project-owned roads may be reduced based on weather conditions that cause higher fugitive dust emissions and dust cannot be controlled by watering.

Speed limit restrictions will be communicated by Supervisors at the start of each shift or via radio.

5.1.3 Road Maintenance

Roadways are to be maintained in good condition and inspected regularly by Supervisors. To reduce silt loading on roads, coarse aggregate is available and can be applied to areas of the roadway where significant dust generation has been noted during inspections.

5.2 Blasting

Blasting-related management measures are intended to limit fugitive dust migration. The Blasting Supervisor is responsible for the following pre-blast actions:

- Use weather forecasts to inform blasting plan (e.g., wind forecast, lightning and thunder storm warnings);
- Check weather conditions to determine if the blast is likely to cause dust or fume impacts on the surrounding environment; and
- Where dust or fume impacts on employees and environment cannot be avoided, blasting must be postponed until weather conditions improve. The Mine Manager will decide when to postpone blasting.

5.3 Material Handling

Material can include ore, overburden, topsoil or aggregates. Production Supervisors are responsible for ensuring employees and contractors implement procedures to limit fugitive dust generation from material handling as follows:

- Minimize drop height from loaders (or excavators) to trucks (or stockpiles);
- Apply water to materials when temperatures are above freezing and there are very dry conditions (less than 0.25 mm/day of precipitation in the previous week); and
- Only open new borrow areas when required.

Procedures to limit fugitive dust generation from stockpiles include:

- When unloading material, stockpiles should form low piles that extend horizontally;
- Water stockpiles on dry windy days (average wind speed above 10 m/s) above freezing temperatures, as necessary;
- Apply calcium chloride or magnesium chloride during freezing conditions;
- Minimize stockpile areas; and
- Seed topsoil stockpiles to reduce erosion and invasive-species establishment.

5.4 Processing

Production Supervisors are responsible for ensuring dust suppression and capture systems in the processing plant are functional and operating, as required. Systems include:

- Spray bar sprinklers at material transfer points; and
- Screener and crusher covers.

Screening and crusher covers should be checked for tears, holes and cracks on a monthly basis. Cover must be repaired as soon as possible or replaced.

6. REPORTING

Records of inspection, maintenance, and suppression activity will be kept onsite and available for government agency review for a period of two years. Records will include:

- Daily visual inspection log completed by Supervisors;
- Road maintenance completed (as detailed in the daily mine plan);
- Records of dust mitigation measures such as number of water trucks running (as detailed in the daily mine plan);
- Records of application of chemical dust suppressants;
- Complaint logs and follow-up actions; and
- Weather records from two on-site meteorological stations.

7. STANDARD OPERATING PROCEDURE REVIEW

Reviewed by:

Health and Safety Representative

_____	_____	_____
Print Name	Signature	Date

Approved by:

Mine Manager

_____	_____	_____
Print Name	Signature	Date