CUMBERLAND
RESOURCES LTD.

MEADOWBANK GOLD PROJECT

RECLAMATION & CLOSURE PLAN

JANUARY 2005

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DESCRIPTION OF SUPPORTING DOCUMENTATION

Cumberland Resources Ltd. (Cumberland) is proposing to develop a mine on the Meadowbank property. The property is located in the Kivalliq region approximately 70 km north of the Hamlet of Baker Lake on Inuit-owned surface lands. Cumberland has been actively exploring the Meadowbank area since 1995. Engineering, environmental baseline studies, and community consultations have paralleled these exploration programs and have been integrated to form the basis of current project design.

The Meadowbank project is subject to the environmental review and related licensing and permitting processes established by Part 5 of the Nunavut Land Claims Agreement. To complete an environmental impact assessment (EIA) for the Meadowbank Gold project, Cumberland followed the steps listed below:

1. Determined the VECs (air quality, noise, water quality, surface water quantity and distribution, permafrost, fish populations, fish habitat, ungulates, predatory mammals, small mammals, raptors, waterbirds, and other breeding birds) and VSECs (employment, training and business opportunities; traditional ways of life; individual and community wellness; infrastructure and social services; and sites of heritage significance) based on discussions with stakeholders, public meetings, traditional knowledge, and the experience of other mines in the north.

2. Conducted baseline studies for each VEC and compared / contrasted the results with the information gained through traditional knowledge studies (see Column 1 on the following page for a list of baseline reports).

3. Used the baseline and traditional knowledge studies to determine the key potential project interactions and impacts for each VEC (see Column 2 for a list of EIA reports).

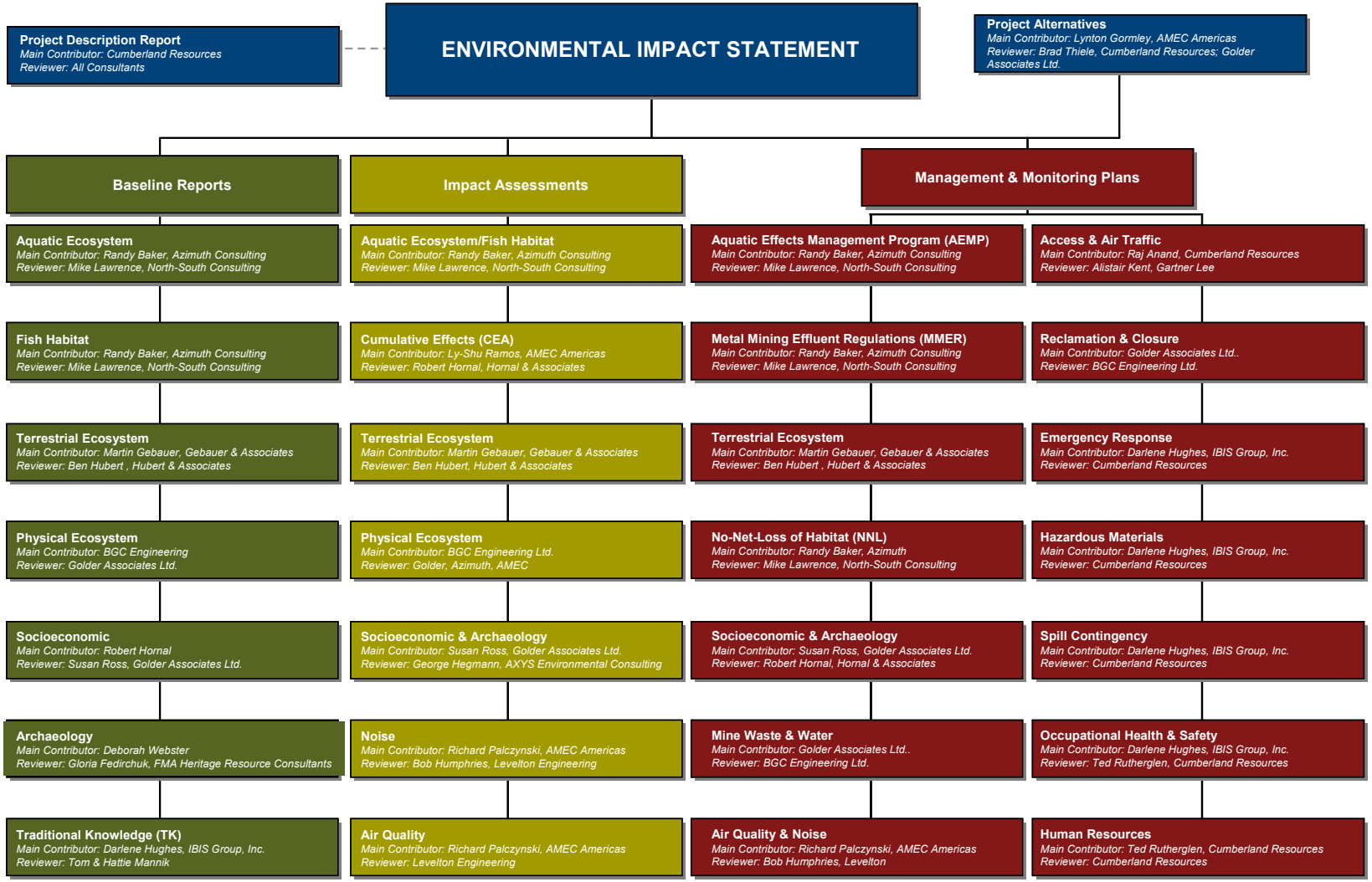
4. Developed preliminary mitigation strategies for key potential interactions and proposed contingency plans to mitigate unforeseen impacts by applying the precautionary principle (see Column 3 for a list of management plans).

5. Developed long-term monitoring programs to identify residual effects and areas in which mitigation measures are non-compliant and require further refinement. These mitigation and monitoring procedures will be integrated into all stages of project development and will assist in identifying how natural changes in the environment can be distinguished from project-related impacts (monitoring plans are also included in Column 3).

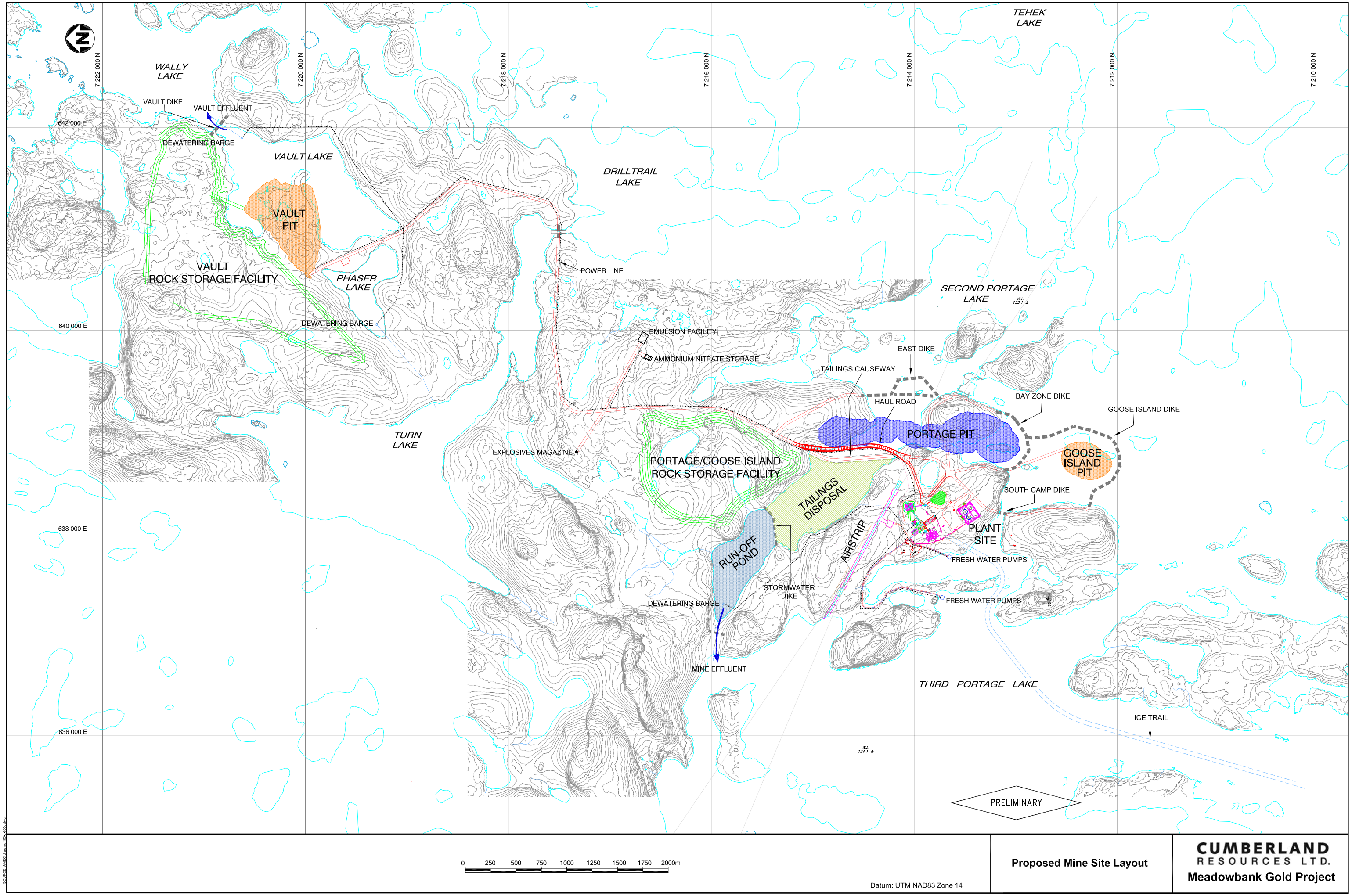
6. Produce and submit an EIS report to NIRB.

As shown on the following page, this report is part of the documentation series that has been produced during this six-stage EIA process**.**

EIA DOCUMENTATION ORGANIZATION CHART



PROJECT LOCATION MAP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VAULT EFFLUENT
DEWATERING BARGE
VAULT LAKE
DRILLTRAIL LAKE
VAULT PIT
VAULT ROCK STORAGE FACILITY
PHASER LAKE
POWER LINE
SECOND PORTAGE LAKE
DEWATERING BARGE
EMULSION FACILITY
AMMONIUM NITRATE STORAGE
EAST DIKE
TAILINGS CAUSEWAY
HAUL ROAD
BAY ZONE DIKE
GOOSE ISLAND DIKE
PORTAGE PIT
GOOSE ISLAND PIT
TURN LAKE
EXPLOSIVES MAGAZINE
PORTAGE/GOOSE ISLAND ROCK STORAGE FACILITY
TAILINGS DISPOSAL
SOUTH CAMP DIKE
PLANT SITE
AIRSTRIP
FRESH WATER PUMPS
RUN-OFF POND
STORMWATER DIKE
FRESH WATER PUMPS
DEWATERING BARGE
MINE EFFLUENT
THIRD PORTAGE LAKE
ICE TRAIL
PRELIMINARY
0 250 500 750 1000 1250 1500 1750 2000m
Datum: UTM NAD83 Zone 14
Proposed Mine Site Layout
CUMBERLAND RESOURCES LTD.
Meadowbank Gold Project

SECTION 1 • EXECUTIVE SUMMARY

This report presents the proposed reclamation and closure plan for the Meadowbank Gold project in Nunavut. The site is located in an arctic environment and is underlain by continuous permafrost. Key issues for successful completion of the reclamation and closure plan are related to both physical components (open pits, buildings, site infrastructure, and waste storage areas) and chemical components (clean and "contact" waters, potential spills of contaminated waters, tailings, and hazardous materials). The plan emphasizes permanent, environmentally sound disposal and storage of tailings, waste rock, and other waste materials generated over the 10-year life of the project.

The project entails a 5,500 t/d mine and processing operation designed to produce gold dore bars on site. The operation will also produce a total of 160 million tonnes (Mt) of mine waste rock and 20 Mt of tailings over the life of the mine. Four deposits containing the following rock types will be developed:

- North Portage – iron formation, intermediate volcanic, ultramafic, and minor quartzite rocks
- Third Portage – iron formation, intermediate volcanic, ultramafic, and minor quartzite rocks
- Goose Island – iron formation, intermediate volcanic, ultramafic, and minor quartzite rocks
- Vault – intermediate volcanic rocks.

The North Portage, Third Portage, and Goose Island deposits are located in a centralized mining and milling area. The Vault deposit is approximately 7 km to the north.

Most of the waste rock types and all of the tailings are potentially acid-generating (PAG). Only the ultramafic rocks and some of the intermediate volcanic rocks are expected to be non-PAG. Suitable mine waste rock will be used for mine development and construction purposes. The rest will be stockpiled in separate waste rock storage facilities in the Portage and Vault open pit areas. Tailings from process operations will be deposited by pipeline in the tailings impoundment.

Water management facilities will include some 4 km of dewatering dikes, water diversion and collection systems, attenuation ponds, and treatment plants. The dewatering dikes will be constructed and maintained to enable open pit mine operations to progress from on-land pits initially to deposit extensions beneath adjacent lakes. Diversion ditches will direct clean runoff water away from areas affected by mining activities. Contact water originating from project use areas will be intercepted, collected, and conveyed to central storage facilities and decanted to treatment facilities, if necessary, or to receiving lakes. Areas within the dewatered Vault Lake and west arm of Second Portage Lake will serve as central water attenuation facilities.

The conceptual reclamation and closure plan is based on the anticipated site conditions and water balance during the final year of mine operations and is summarized below.

Open Pits

- At the end of active mining operations, rock berms will be placed around the perimeters of the pits to prevent access and minimize hazards to people and wildlife. The pits will eventually be flooded.

Buildings & Infrastructure

- The process plant and related buildings will be dismantled and either removed off site as salvage materials or disposed of in the open pits or waste storage areas. This includes the primary crusher, ore storage building, mill complex, site services, and power plant.

- Other structures and buildings, including the camp complex, the shop, warehousing, and office complex, the mine site tankfarm, and miscellaneous dry storage facilities, will be dismantled and disposed of on site.

- The ground surface in areas used for the facilities listed above and for other infrastructure associated with mine operations, such as the airstrip, roads, storage pads, quarries, and granular borrow areas (if present), will be recontoured and treated according to site-specific conditions to minimize erosion from surface runoff and wind-blown dust and to enhance the sites for wildlife habitat.

Tailings & Waste Rock Storage Facilities

- The tailings impoundment and the waste piles will be closed progressively during mine operations.

- A dry cover of non-PAG ultramafic rockfill will be placed over rock piles containing PAG materials and the tailings impoundment to confine the active permafrost layer within relatively inert materials. Based on current kinetic test results, approximately 240 ha of the total Portage waste rock storage area of approximately 400 ha, and all of the tailings deposit area, will need to be covered at closure.

- At present, no need for a cover is anticipated at the Vault waste rock storage facility.

- The progressive closure activities will be monitored, inspected, and maintained during and post mine operations. Procedures will be modified as required to achieve the objectives of the reclamation and closure plan.

Water Management Facilities

- The attenuation ponds will remain in place until mine closure activities are completed and monitoring results demonstrate that the water quality of all contact water is acceptable for discharge to the environment without further treatment.

- The tailings attenuation pond and sumps will be drained and capped to minimize erosion from surface runoff and wind-blown dust.
- The dewatering dikes will be breached after the pits have been successfully flooded.

The final reclamation and closure plan will be developed in conjunction with the mine plan so that considerations for site closure can be incorporated into the mine design. Monitoring will be carried out during all stages of the mine life to demonstrate the safe performance of the mine facilities. If any non-compliant conditions are identified, then maintenance and planning for corrective measures will be completed in a timely manner to ensure successful completion of the reclamation and closure plan.

SECTION 2 • INTRODUCTION

Cumberland Resources Ltd. (Cumberland) is currently evaluating the development of the Meadowbank Gold project, approximately 70 km north of Baker Lake in Nunavut. As part of the feasibility level studies that are nearing completion for the project, Golder Associates Ltd. (Golder) assessed open pit design, mine waste management, and water quality and management, and is providing geochemical and geotechnical input for the conceptual design of the dewatering dikes, tailings dam, plant site, and ancillary facilities.

As defined in Cumberland's Project Description Report (2003), project design goals include minimizing the area of surface disturbance, stabilizing disturbed land surfaces against erosion, and returning the land to suitable conditions for post-mining uses such as traditional pursuits and wildlife habitat. Successful completion of the reclamation and closure plan involves both physical components (open pits, buildings, site infrastructure, and waste storage facilities) and chemical components (clean and contact waters, potential spills of contaminated waters, tailings, and hazardous materials). To provide flexibility, the reclamation and closure plan is based on adaptive management methods and will be progressively modified in accordance with the results of ongoing monitoring and assessment during mine operations. The strategy outlined in this plan is considered appropriate at this stage of the project.

The proposed facility layout for the project is shown in Figure 2.1. The site will include the following structures and facilities:

- open pits
- dewatering dikes
- tailings impoundment
- waste rock storage facilities
- plant site and ancillary facilities
- airstrip, roads, and storage areas
- quarries and granular borrow areas, if present
- water management facilities
- dry storage and marshalling facilities at Baker Lake.

The conceptual reclamation and closure plan addresses all of these project components as well as the handling of contaminated materials, hazardous wastes, and non-hazardous wastes.

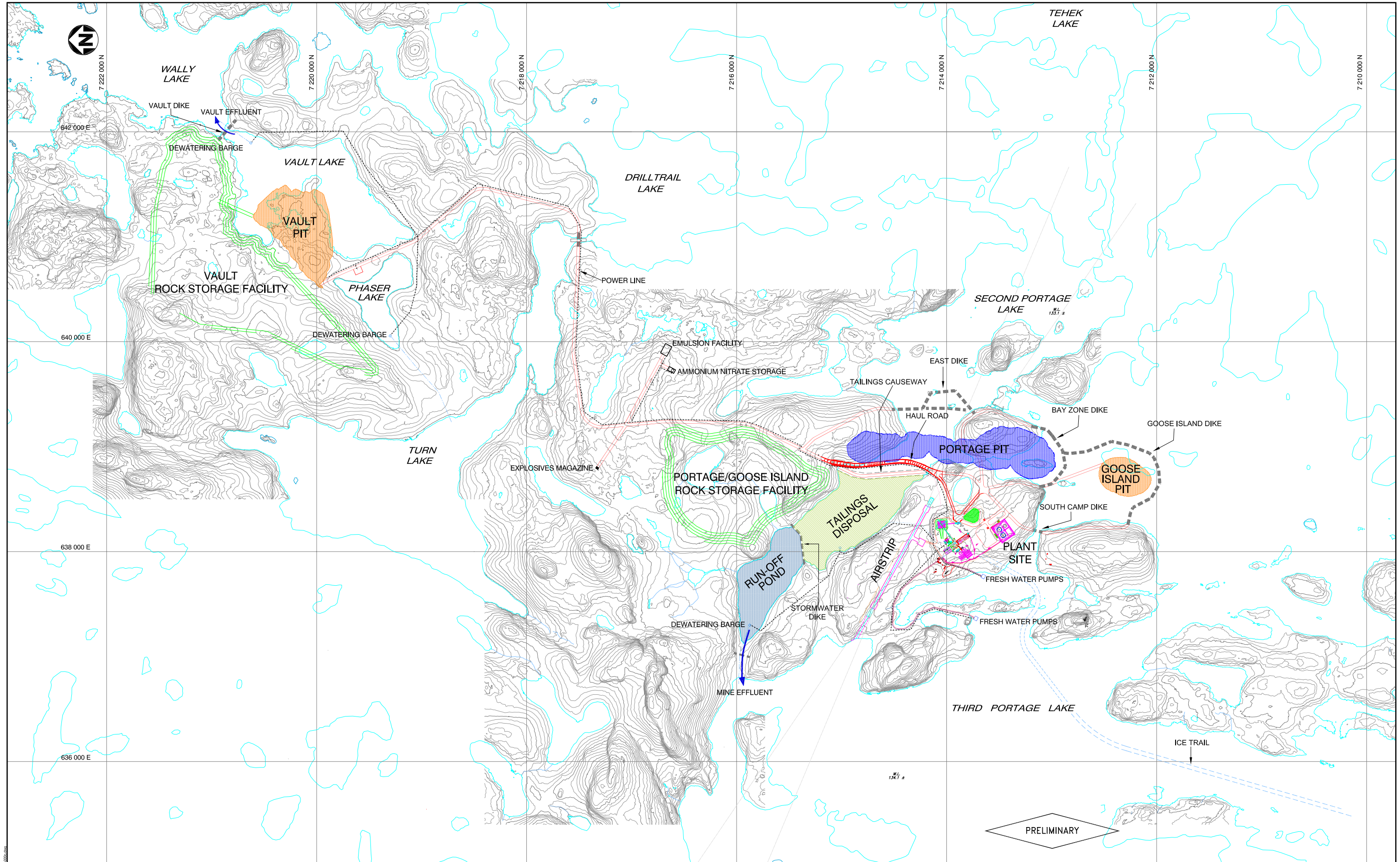


Figure 2.1
General Site Plan

CUMBERLAND RESOURCES LTD.
Meadowbank Gold Project

SECTION 3 • BACKGROUND INFORMATION

The Meadowbank Gold project consists of several gold-bearing deposits within reasonable proximity to one another. There are four main deposits:

- Third Portage (including the Bay zone and the Connector zone)
- North Portage
- Goose Island
- Vault.

The Third and North Portage deposits will be mined as a single pit (Portage pit) approximately 2 km long running north-south. The Third Portage deposit extends from a peninsula northward under Second Portage Lake and southward under Third Portage Lake. The North Portage deposit is on the northern shore of Second Portage Lake.

The Goose Island deposit lies approximately 1,000 m south of the Third Portage deposit and extends beneath Third Portage Lake. The Vault deposit is located on a peninsula approximately 6 km north of the other mining areas and extends eastward under Vault Lake.

The deposits will be mined as truck-and-shovel open pit operations. Underground mining methods may be considered near the end of mine life to extract ore from deeper areas of the various deposits. A series of dewatering dikes will be required to isolate the mining activities from the lakes overlying or adjacent to parts of the deposits. It is proposed to use overburden and rock materials produced during mining or stripped from the footprint of the proposed waste rock storage areas for dike construction.

Run-of-mine (ROM) ore from the open pits will be trucked to a primary crusher and stockpiled for plant feed. Ore from the stockpile will be conveyed through a crushing and milling circuit to the process plant for treatment through gravity and leach circuits for the production of gold doré bars.

The mining plan indicates that approximately 20 Mt of ore will be mined and processed over 10 years. The mine and processing operation will generate approximately 160 Mt of waste rock materials comprising 12 Mm^3 of tailings, 80 Mm^3 of ROM mine waste rock, and 3.7 Mm^3 of overburden soil and organic materials. Most of the ROM mine rock will be delivered directly to waste rock storage areas, with lesser amounts used to construct graded surfaces for the plant site, ancillary facilities, airstrip, and roads; to construct the dewatering dikes; and to cap the tailings impoundment and PAG sections of the waste rock piles.

Subject to project viability and obtaining environmental approvals and permits, mine pre-stripping and plant-site construction activities are scheduled to commence in 2006, followed by the start-up of mining and process operations in 2007. Mine decommissioning and closure activities will commence on completion of mine operations, by 2017, and will be primarily complete by 2019. Pit flooding, water management, and closure monitoring will continue to at least 2022. Post-closure monitoring will commence in 2023.

SECTION 4 • RECLAMATION & CLOSURE PLAN

This section describes the closure activities as shown in Figure 4.1.

4.1 OPEN PITS

The open pits are designed to have stable slopes during the mine life and post-closure. The slopes will be monitored as part of mine operations and will be progressively modified as required to maintain stability.

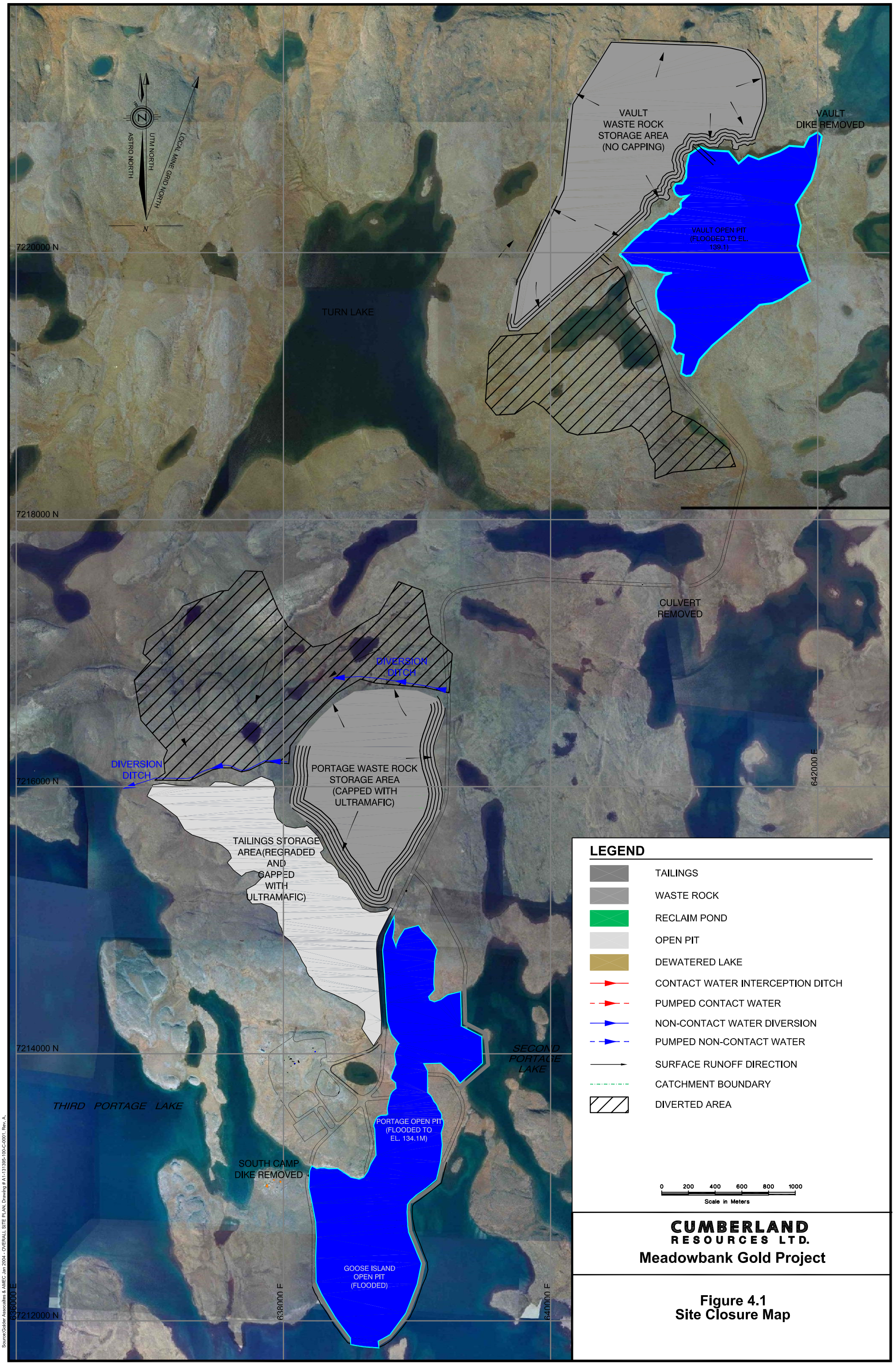
At the end of mining, all pit equipment will be removed and closure activities will proceed. The mined-out pits may be used for the final placement and permanent storage of waste materials, including but not limited to waste rock, non-salvaged buildings and structures, and non-hazardous wastes. Any waste rock deposited in the pits would be assessed for water quality implications. After disposal of these materials, all pit access ramps will be secured by rock berm barricades, and berms will be constructed around the perimeter of each pit in accordance with applicable mine regulations.

The open pits will be flooded once closure activities are complete. Rather than simply breaching the dewatering dikes and permitting rapid inflow of lake water, water will be pumped in at controlled rates from the surrounding lakes using barge-mounted, high-capacity mechanical pump systems. In the case of the Portage pit, water may also flow in through a weir control spillway at the South Camp dike. The maximum fill rate will be based on the maximum acceptable drawdown in each lake. To minimize impacts to aquatic habitat in the surrounding lakes, pumping will be done during periods of increased flow in the summer months. Water quality in the pits will be monitored continuously throughout the flooding process.

All dewatering dikes will be kept intact to provide a barrier between the open pits and surrounding lakes until the pit lake water levels achieve static conditions and the water quality is considered acceptable for discharge without treatment to the environment. Impacts will be minimized by breaching the dikes during spring freshet.

At closure, the walls of the mined-out open pits will have been exposed for several years during mine operation, and some oxidation will have occurred. During flooding, water quality will be affected by increased concentrations of dissolved metals, lower pH, and blasting residues. Treatment with lime may be required to adjust pH levels; modelling should be carried out to determine the appropriate treatment method. The water quality within the flooded pits will be managed and monitored until the water is of acceptable quality to be allowed to mix freely with the surrounding lake water. Steady-state post-closure effluent water quality from the Portage attenuation pond is predicted to meet MMER.

The predicted pH of the pit lake is neutral. Concentrations in lake water are predicted to meet MMER for all constituent and CCME criteria for the majority of regulated constituent except for cadmium, copper, and zinc, which report concentrations of the same order of magnitude than the criteria Flooding of the Portage pit will take between four and five years. The water level will then the same as that of Third Portage Lake (approximately 134 m elevation), although some small pit wall surfaces will remain visible above the lake level. The resulting pit lake will subsequently receive overland runoff



Source:Golder Associates & AMEC Jan 2004 - OVERALL SITE PLAN, Drawing # A1-1313985-100-C-20001, Rev. A.

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Meadowbank Gold Project

Figure 4.1
Site Closure Map

inflows from the lake watershed and will discharge south through the breached Bay Zone and Goose Island dewatering dikes into Third Portage Lake. Goose Island will be completely flooded. The East dike will be preserved to maintain a water level differential of about 1 m between Second and Third Portage lakes.

Given the size of Third Portage Lake, this area is thought to currently contain a talik that penetrates through the permafrost. No significant alteration of the adjacent permafrost regime is anticipated due to the flooding of Portage pit.

Flooding of the Vault pit will take three to four years. Some small pit wall surfaces will remain visible above the lake level. As the pit fills, the lake water will mix with attenuation pond storage water and discharge north through the breached Vault dewatering dike into Wally Lake. Subsequent inflows to the Vault pit will include overland runoff from the lake watershed and water from Wally Lake. The Vault pit lake conditions are expected to create an open talik through the permafrost.

4.2 DEWATERING DIKES

The dewatering dikes will be designed in accordance with best practices to enable controlled flooding of the open pits, if required, and to ensure long-term stability of the dike sections to be left in place. The possible need for a weir and/or open channel spillway to help flood the Portage pit will be addressed in detail design; the spillway would be developed in sound rock adjacent to the South Camp dike.

Once the Portage pit is completely flooded, the south end of the Goose Island dike will be breached at a location selected to provide the maximum attenuation period for surface water runoff to mix with the pit lake water before discharge to Third Portage Lake. For preliminary feasibility assessment only, it is estimated that at least 200 m of the dike will be lowered by at least 5 m below the existing lake level to provide all-season aquatic access through the dike. The till core of the excavated dike will be covered with at least 1 m of rockfill to limit sedimentation.

The eastern part of the Bay Zone dike will be preserved as the northern extension of the Goose Island dike to provide access to the east side of the Goose Island dike breach. The East dike will be preserved to maintain the lake level differential between Second and Third Portage lakes.

4.3 TAILINGS IMPOUNDMENT

All tailings will be deposited in the tailings impoundment facility until the end of mine operations in approximately 2016. The tailings dike and storage facility will be designed so that the tailings freeze after deposition and remain frozen after closure. The tailings impoundment will be closed progressively during the mine life as the tailings deposit reaches its ultimate elevation. Closure will include the placement of an erosion barrier consisting of a minimum 2 m thick layer of non-PAG rock over the tailings. Final capping of the tailings will be completed in 2017. The surface of the final cover will be graded to blend into the existing topography.

On closure, the tailings attenuation storage pond, runoff collection sumps, and drainage ditches will be utilized to collect and manage drainage water from the Portage watershed area. Once the water quality from the mine development area meets discharge criteria, the water collection system will be

drained and recontoured to blend with the surrounding topography and to allow uninterrupted drainage of surface runoff to the lakes. A layer of sand or non-PAG rock cover will be placed over any sediment in the sumps and the tailings attenuation pond to minimize dusting and erosion of these materials. Water quality monitoring and assessment will be required during closure to determine when the tailings attenuation pond can be drained and closed.

The discharge water quality and the water management structures for the tailings impoundment will be monitored and assessed according to an approved environmental protocol during each stage of the mine life, including pre-development, operations, closure, and post-closure.

4.4 WASTE ROCK STORAGE FACILITIES

All waste rock from the open pit mines not used for site development purposes will be deposited in the Portage and Vault waste rock storage facilities until the end of mine operations. The waste rock piles will be closed progressively during the later stages of mine operations as the lifts of rock reach their ultimate elevation. Although all rock placed in the storage facilities is expected to freeze, facility design in terms of permanent stability is not dependent on freezing.

The mine plan will ensure that enough non-PAG rock is released from the Portage pit to adequately cover the Portage waste rock storage facility, during both normal mining operations and immediately after mine closure, so that the underlying PAG waste rock is kept frozen. For the feasibility-level assessment, it is assumed that the cover layer of non-PAG rock will be at least 2 m thick, requiring at least 5 Mt, or about 15% of the total amount of ultramafic rock supplied from Portage pit operations. This cover may need to be thicker, depending on the results of thermal monitoring during mining operations. If the mine plan cannot provide the quantities of non-PAG rock required at the scheduled times, it may be necessary to stockpile cover material adjacent to the waste rock pile for rehandle when needed.

A cover layer of non-PAG rock is not required at the Vault waste rock storage facility because this rock is considered to be non-PAG.

The final surfaces of both waste rock piles will be regraded to blend into the existing topography and to enhance conditions for wildlife access.

On closure, the seepage and runoff collection sumps at all waste rock storage facilities will be drained. A layer of sand or non-PAG rock cover will be placed over any sediment in the sumps to prevent dusting and erosion.

The water discharge quality and management structures for the waste rock storage facilities will be monitored and assessed according to an approved environmental protocol during each stage of the mine life, including pre-development, operations, closure, and post-closure.

4.5 SITE FACILITIES

Salvageable buildings, surface structures, and equipment will be dismantled and demobilized from the site. Non-salvageable buildings and structures will be dismantled or demolished and disposed of in either the waste rock storage facilities or the open pits. Concrete structures and foundations will be

removed to about 1 m below the final ground surface. All disturbed site areas will be regraded to suit the surrounding topography. In areas where the original ground surface was lowered for site grading or structural requirements, the slopes will be stabilized and contoured. Cover materials may be required for erosion and dust control.

All site roads not required for post-closure monitoring will be decommissioned and the terrain restored. Wildlife access will be provided at suitable intervals along the mine haul road by regrading the embankment shoulders to flatter slopes. Culverts will be removed and original drainage patterns restored.

The water treatment plant in the Portage mining and milling area will likely be kept in operation for at least five years after mining operations cease, until the open pit flooding and mine closure activities are complete.

The airstrip is expected to be closed near the end of the reclamation and closure phase, as it will not be needed to support the post-closure monitoring program. The actual timing of closure will depend on the progress of mine reclamation and closure monitoring. Airstrip reclamation will involve removing culverts, recontouring fill slopes for wildlife access, and scarifying the gravel surface to facilitate natural revegetation. A cover may be required for erosion and dust control.

Reclamation and closure of quarries and granular borrow pits not located within the open pits will depend on the individual site conditions. All mobile and stationary equipment be removed, the excavation slopes stabilized and contoured, and disturbed areas covered for erosion and dust control. Any stockpiled materials not used for mine operation and closure activities will be spread and contoured to blend with the natural surroundings.

4.6 WATER MANAGEMENT FACILITIES

4.6.1 Portage Mining & Milling Area

The proposed water management plan for the Portage mining and milling area during closure involves the following:

- abandoning the waste rock storage facility and mill area collection sumps and reinstating natural surface flows to their respective catchments
- contouring the cover material on the tailings and rock storage facilities to ensure good drainage of surface runoff
- controlled flooding of the Portage and Goose Island pits
- monitoring water quality to ensure continued compliance
- localized breaching of the Goose Island dike to establish aquatic habitat and attenuation of the pit lake water.

It is currently planned to progressively place a cover layer of non-PAG ultramafic waste rock material over the waste rock storage and tailings disposal facilities. The capping material will be contoured to direct surface runoff toward nearby lakes after acceptable water quality has been achieved. Pumping

from the perimeter sumps at the waste rock storage facility will be discontinued once capping and final contouring of the pile are complete and water quality monitoring indicates that the surface runoff is acceptable for discharge.

Flooding of the mined-out pits will be done gradually over a number of years through the accumulation of precipitation and seepage and redirection of freshet flows from Third Portage Lake. The amount of water taken from Third Portage Lake will likely be governed by allowable lake level fluctuations and geochemical requirements. Flooding rates will be established during the latter part of the mine life to minimize impact to the surrounding environment. Complete flooding is expected to take about five years.

Once the mill site is reclaimed, the local stormwater sump will be abandoned, and surface runoff will flow to its original catchment.

4.6.2 Vault Mining Area

The proposed water management plan for the Vault mining area during closure involves the following:

- suspending the Phaser Lake diversion and reinstating natural flows from Phaser Lake to Vault Lake
- abandoning the collection sumps at the waste rock storage facility and reinstating natural surface flows to their respective catchments
- controlled flooding of the Vault pit
- water quality monitoring to ensure continued compliance
- localized breaching or removal of the Vault dike to establish aquatic habitat and attenuation of the pit lake water.

Water management activities for reclaiming the Vault mining area will focus on reinstating the surface hydrology to pre-existing conditions. The small berm between Vault and Phaser lakes will be removed, and pumping from Phaser to Turn Lake will be discontinued. Vault Lake will gradually refill with runoff contributed from its tributary watershed and controlled flows across the Vault dike from Wally Lake. The amount of water taken from Wally Lake to flood the Vault pit and Vault Lake will likely be governed by allowable lake level fluctuations and geochemical requirements. Complete flooding is expected to take three to four years. Flooding rates will be established during the latter part of the mine life to minimize impact to the surrounding environment. Once the Vault Lake and pit are flooded, the Vault dike may be removed.

Pumping from the sumps at the waste rock storage facility will be discontinued once final contouring of the pile is complete and water quality monitoring indicates that the water reporting to the perimeter sumps is acceptable for discharge.

4.7 BAKER LAKE STORAGE & MARSHALLING FACILITY

It may prove desirable to leave some or all of the storage structures at the Baker Lake storage and marshalling facility in place for sustainable use by the local community. Any structures, materials, and

equipment not required for future use will be dismantled and demobilized from the site. Non-salvageable buildings and structures will be dismantled or demolished and disposed of off site. Any site roads and storage pads not required for future use will be decommissioned and the terrain restored. Culverts will be removed and original drainage restored. All disturbed site areas will be regraded to suit the surrounding topography. Cover materials may be required for erosion and dust control in some areas.

4.8 CONTAMINATED MATERIALS

All remaining hazardous and non-hazardous materials at the end of the mine life will be collected and safely disposed of to minimize their exposure to people and wildlife and to minimize the potential release of contaminants to the terrestrial and aquatic environments.

Hazardous Materials

All potentially hazardous materials remaining at the site, including materials in storage, spilled materials, and materials generated from the demolition of buildings and equipment, will be collected and disposed of according to an approved plan and procedure comparable to the current best management practice for disposal of particular wastes. Hazardous materials will likely be transported to approved disposal facilities off site.

Non-Hazardous Waste Materials

All non-hazardous materials remaining at the site, including materials in storage, spilled materials, and materials generated from the demolition of buildings and equipment, will be collected and disposed of according to an approved plan and procedure comparable to the current best management practice for disposal of particular wastes. Non-hazardous materials with a net salvage value and those that can be cost-effectively recycled will probably be removed from the site. All other non-hazardous materials will be buried in either the waste rock storage facilities or the open pits prior to flooding.

4.9 SUMMARY OF RECLAMATION & CLOSURE PLAN

Table 4.1 summarizes the key reclamation and closure commitments proposed in the preceding sections.

Table 4.1: Summary of Proposed Reclamation & Closure Methods

Item	Proposed Reclamation & Closure Method	Reference
Secure Open Pits	Close access ramps and secure pit perimeters.	Section 5.1
Flooding Open Pits	Flood pits over five-year period.	Sections 5.1, 5.6
Pit Lake Discharge	Manage and monitor pit lake water during and post flooding for increased concentrations of dissolved metals and lower pH.	Section 5.2
Breach Dewatering Dikes	Breach dewatering dikes at prescribed locations after the open pits are completely flooded.	Sections 5.2, 5.6
Maintain East Dike	Leave the East dike intact to maintain water level differential between Second and Third Portage lakes.	Section 5.2
Tailings Impoundment	Place a minimum 2 m thick cover layer of non-PAG rock over the tailings deposition surface.	Section 5.3
Maintain Tailings Water Management	Maintain tailings attenuation storage pond, runoff collection sumps, and discharge ditches and monitor runoff until water quality meets design discharge criteria.	Section 5.3
Waste Rock Piles	Regrade and improve the surface for wildlife access through neighbouring areas.	Section 5.4
Portage Waste Rock Pile	Cover Portage waste rock pile with a minimum 2 m thickness of non-PAG waste rock.	Section 5.4
Buildings and Equipment	Remove all hazardous materials, remove salvageable materials, and demolish all buildings.	Section 5.5
Roads and Airstrip	Remove culverts, regrade surfaces, recontour embankment slopes, and provide wildlife access.	Section 5.5
Dry Storage	Remove all storage materials and regrade site to suit surrounding topography.	Section 5.7
Hazardous Waste	Collect and dispose of hazardous waste at off-site licensed facility. Incinerate acceptable hydrocarbon waste on site.	Section 5.8
Non-Hazardous Waste	Collect and disposal of in waste rock storage facilities or open pits.	Section 5.8

SECTION 5 • TEMPORARY OR INDEFINITE

5.1 DEFINITIONS

Temporary shutdown – A cessation of mining and processing operations for three to twelve months. The intention is that the mine will resume operations as soon as possible after the cause for the temporary shutdown has been removed. Possible causes for a temporary shutdown include a major mechanical equipment failure, late delivery of critical equipment or supplies, or labour conflict.

Indefinite shutdown – A cessation of mining and processing operation for an indefinite period of time greater than twelve months. The intention is that the mine will resume operations as soon as possible after the cause for the indefinite shutdown has been removed. The site must maintain safety and environmental stability during this time. Possible causes for an indefinite shutdown include prolonged adverse economic conditions or extended labour disputes.

5.2 TEMPORARY SHUTDOWN

Care and maintenance measures to be taken during a temporary shutdown at the Meadowbank Gold project will include:

- minimum staffing levels maintained to carry out care and maintenance
- camp operated at reduced staffing level
- environmental and geotechnical monitoring and sampling would continue at regular intervals as set out in the mine operations and monitoring program
- continue to monitor the pumps in the open pits and maintain the pits in a dry condition to maintain dry, stable pit slopes
- if shutdown is prior to the construction of the water treatment plant, then water from the Portage Pit and Portage rock storage facility that does not meet discharge quality requirement would be accumulated in the reclaim pond
- if shutdown is after the construction of the water treatment plant, then water from the Portage Pit, Goose Pit, and Portage rock storage facility would be allowed to accumulate in the tailings reclaim pond up to the allowable storage capacity (i.e., allowing for tailings dam freeboard plus storm attenuation volume). Once the available storage capacity has been reached, water would be treated and discharged
- all water would be treated and discharged during a four-month period from June to September each year. Therefore, if the temporary shutdown occurs during the October to May period, then little or no water would need to be considered for storage or treatment
- water from the Vault Pit and Vault rock storage facility would continue to be accumulated within the Vault attenuation storage facility prior to discharge regardless if shutdown was prior to, or after water treatment plant construction
- surface water control structures would be maintained

- tailings and water distribution lines would be drained or emptied of tailings, flushed with water, and allowed to drain, but would be left in place
- critical facilities (plant and camp would have nominal heat to prevent freezing of the facilities and possible damage
- sewage treatment plant would continue to operate, as needed
- hazardous wastes on site would be collected and stored in an appropriate area for disposal later.

5.3 INDEFINITE SHUTDOWN

Care and maintenance measures to be taken during an indefinite shutdown at the Meadowbank Gold project will include:

- minimum staffing levels maintained to carry out care and maintenance
- camp operated at reduced staffing levels
- environmental and geotechnical monitoring and sampling would continue at the regular level as set out in the mine operations and monitoring program
- continue to monitor the pumps in the open pits and maintain the pits in a dry condition to maintain dry, stable pit slopes
- place a two-metre cover of ultramafic rock over potentially acid-generating rock, and exposed tailings beach areas, to minimize acid generation and to control dust
- the working face of the waste rock pile slopes would be graded to ensure stability, and to promote drainage to the surface water drainage system adjacent the dumps
- if shutdown is for labour reasons, monitor the tailings area and dumps and if needed work with labour force to ensure any short term environmental concerns are addressed
- monitor and maintain the perimeter dikes, and don not breach any of the dewatering dikes
- if shutdown is prior to the construction of the water treatment plant, then water from the Portage Pit and Portage rock storage facility that does not meet discharge quality requirements would be accumulated in the reclaim pond
- if shutdown is after the construction of the water treatment plant, then water from the Portage Pit, Goose Pit, and Portage rock storage facility would be allowed to accumulate in the tailings reclaim pond up to the allowable storage capacity (i.e., allowing for tailings dam freeboard plus storm attenuation volume). Once the available storage capacity has been reached, water would be treated and discharged
- treatment and discharge would occur during a four-month period from June to September each year
- water from the Vault Pit and Vault rock storage facility would continue to be accumulated within the Vault attenuation storage facility prior to discharge, regardless if shutdown was prior to, or after, water treatment plant construction

- surface water control structures would be maintained as required. In areas where water quality is suitable for discharge, natural drainage courses could be re-established
- tailings and water distribution lines would be drained or emptied of tailings, flushed with water, and allowed to drain. The lines would be removed and placed in a secure laydown area, to reduce impacts on wildlife
- hazardous wastes and hazardous materials should be removed from site and sent for proper disposal.

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SECTION 6 • RECLAMATION & CLOSURE SCHEDULE

Based on the current mining schedule, most reclamation and closure activities are scheduled to commence at the end of mining and processing operations in December 2017, and be completed by December 2019. Exceptions are listed below.

- Progressive closure of the tailings impoundment and waste rock storage facilities will commence in 2013 and be finished by December 2019. Closure of the east half of the tailings impoundment is expected to be completed between Years 6 to 10 and the balance of the tailings impoundment and attenuation pond in Years 11 and 12.

- The waste rock storage piles are expected to be created in 5 m lifts, with the final lifts achieved in the later stages of pile development. Therefore, depending on actual mine operations, progressive closure of waste rock piles will probably commence in about Year 8 and be completed in Year 12.

- Flooding of the open pits, water management, and closure monitoring activities will take approximately five years, extending the closure period through to at least December 2022. Post-closure monitoring will commence in 2023.

Table 6.1 summarizes the project schedule time line for the reclamation and closure activities.

Table 6.1: Timeline for Reclamation & Closure Activities

Activity	2006	2007	2008	2013	2017	2018	2019	2022	2023	2048
Mine Construction										
Mine Operation										
Progressive Closure										
Mine Closure										
Pit Flooding										
Water Management										
Post-Closure										

SECTION 7 • MONITORING & MAINTENANCE

The reclamation and closure plan outlined in Section 4 will require a commitment to monitoring during all stages of the mine life to demonstrate the safe performance of the mine facilities. Monitoring will identify non-compliant conditions, allow timely maintenance and planning for corrective measures, and enable successful completion of the reclamation and closure plan.

Key features of the reclamation and closure plan will be developed in conjunction with the mine plan so that closure considerations are incorporated into the mine design. Wherever practical, surface facilities will be designed to facilitate reclamation requirements and natural recovery of areas affected by the project. In line with this objective, reclamation will be carried out progressively during operations whenever possible, notably at the tailings impoundment and waste rock storage facilities.

The reclamation and closure phase of the project will commence after the economic ore reserves have been exhausted and mining and processing operations have ceased. With open pit mining currently planned to commence in 2007 and continue until 2017, most mine reclamation and closure activities will take place in 2018 and 2019. Remaining closure activities related to water management will continue until the post-closure period commencing in 2023.

Monitoring and maintenance programs will be implemented during the closure and post-closure phases of the mine life to prevent environmental degradation and assess the performance of the reclamation and closure procedures. The data collected during post-closure monitoring will allow the planned procedures and activities to be adjusted or modified as necessary to ensure optimal environmental protection.

The monitoring and maintenance programs discussed in this section are inherently generic at this stage of planning and will be developed in more detail in consultation with communities and regulators as the project advances. Programs will include but not be limited to the following:

- *Environmental Management* – Cumberland will design and implement an environmental management system (EMS) that incorporates training, environmental monitoring, audits, inspections, and other tools to measure and manage actual environmental performance against established objectives. The monitoring program will consider regulatory compliance and project-related regional socioeconomic and environmental effects. It will also identify circumstances under which additional mitigation should be undertaken if impact predictions prove to be incorrect or underestimated.

- *Aquatic Effect Monitoring* – Cumberland will design and implement an aquatic effects monitoring program (AEMP, 2005) for both biological and water chemistry sampling.

- *Water Quality Monitoring* – Cumberland will continue with the current water quality monitoring program at existing sampling stations and frequencies.

- *Environmental Monitoring* – During operations, Cumberland will continue to develop and refine the AEMP through adaptive management and consultation with regulators and communities on

the program elements and design specifications. Later in the mine life, the program will be further refined to focus on monitoring and key issues during the reclamation and closure period. Environmental monitoring and maintenance requirements are expected to decline once the project facilities have been fully decommissioned and the mine development area has been restored to the endpoints agreed upon in the water licence.

- *Post-closure Monitoring* – Reclamation and closure of the project facilities is expected to be completed by the end of the fifth year after the cessation of mining and processing. The project will then enter the post-closure phase. There will be no full-time personnel presence at the site during this time, and environmental monitoring will be carried out less often, most likely during short site visits. The level of monitoring required will be a function of environmental performance at the site and is expected to reduce in sub-stages over an agreed period of time.

- *Post-Closure Revegetation Considerations* – The pre-development terrain is covered by continuous vegetation interspersed with bedrock outcroppings and continuously aggrading surfaces. The vegetation includes lichens, mosses, shrubs, heaths, grasses, and sedges (Cumberland, 2005). The reclamation plan will be designed to encourage a natural succession of indigenous plant species within disturbed site areas. Where appropriate, grading and contouring will be done to control soil stability and promote revegetation. Where rock slopes or other site features preclude revegetation, a layer of capping rock will be placed on the surface to ensure long-term stability.

SECTION 8 • REFERENCES

AMEC Mining and Metals Ltd., 2003. Electronic correspondence from AMEC titled "PreliminaryMineSchedule.xls" received 4 September 2003.

Cumberland Resources Ltd., 2003. Project Description Report, Meadowbank Gold Project, Nunavut, dated March 2003.

Cumberland Resources Ltd. 2004a. Mine Waste and Water Management, Meadowbank Gold Project, Nunavut. February, 2004.