Baffinland Iron Mines Corporation

Mary River Project

Attachment 5: Environmental Protection Plan

Appendix 10B

2012-01-12	B	Approved for Use Environmental Permit	A. Grzegorczyk	J.Binns	S.Perry	
2012-01-06	A	Approved for Use	A. Grzegorczyk	J.Binns	S.Perry	
DATE	REV.	STATUS	PREPARED BY	CHECKED BY	APPROVED BY	APPROVED BY
			HATCH			CLIENT

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Section 0 - Contents and Revision Control

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
0	Contents and Revision Control	H	January 6, 2012

The Environmental Protection Plan (EPP) is a living document and is subject on on-going updates. This Contents and Revision Control Operational Standard presents the contents of the EPP and the most up-to-date revision that has been issued for each Operational Standard. This Contents List will be updated and re-issued when any Operational Standard is added or revised.

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.18	Tote Road Watercourse Crossing Installation	E	January 6, 2012
2.19	Road Traffic Management	E	January 6, 2012
2.20	Drilling, Blasting and Crushing	D	January 6, 2012
2.21	Exploration Drilling Operations	C	January 6, 2012
2.22	Water Sampling for On-Ice Drilling	C	January 6, 2012
2.23	Wildlife Log Instructions	A	June 4, 2008
2.24	Blasting in Water	A	January 6, 2012
2.25	Quarry and Barrow Pit Operation	A	January 6, 2012
2.26	Concrete Production	A	January 6, 2012
2.27	Excavation and Foundations	A	January 6, 2012
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SECTION 3			
3.0	Documentation Logs	C	June 4, 2008
3.1	Human Use Log	A	August 8, 2007
3.2	Voluntary Self-Registration of Land Use	B	August 14, 2007
3.3	Wildlife Log	B	June 4, 2008
3.4	Drill Inspection Forms: Pre-Drilling, Daily, and Post Drilling	B	June 19, 2009
3.5	Fuel Storage Facility Inspection Form	B	June 4, 2008
3.6	Off-Site Waste Disposal Log	B	June 4, 2008
3.7	Caribou Decision Tree	A	June 4, 2008
3.8	Watercourse Crossing Data Monitoring Form	A	June 4, 2008
3.9	Turbidity Monitoring Data Form	A	June 4, 2008
3.10	Compliance Monitoring Form	A	June 4, 2008
3.11	Compliance Inspection Form	A	June 4, 2008
3.12	Landfill Inspection Form	A	June 4, 2008
3.13	Fuel Reconciliation Form	A	January 6, 2012
3.14	Water Use Log Form	A	January 6, 2012
3.15	Sewage Effluent Disposal Log Form	A	January 6, 2012
3.16	Waste Disposal Log Form	A	January 6, 2012
3.17	Water Treatment Facilities Inspection Form	A	January 6, 2012
SECTION 4			
4.0	Request for Revision to an Operational Standard	B	August 8, 2007

Section 1.1 - Purpose of the Environmental Protection Plan

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
1.1	Purpose of the Environmental Protection Plan	B	August 8, 2007

The EPP provides a practical way to facilitate field implementation of environmental regulations, practices, and procedures required to eliminate or reduce potential environmental effects. It is a working document for use in the workplace for project personnel and contractors, as well as at the corporate level for ensuring commitments made in policy statements are implemented and monitored. EPP's provides a quick reference for project personnel to monitor compliance and to make suggestions for improvements. This EPP thus provides the general protection measures for routine and unplanned activities associated with the Mary River Project. The plan is developed in recognition of applicable permits, authorizations, approvals and Inuit Knowledge. As well, the plan provides operational procedures that comply with aforementioned permits, approvals, etc.

The specific purposes of the EPP are as follows:

- Provide a reference document to ensure that commitments to minimize environmental effects will be met;
- Document environmental concerns and ensure appropriate protection measures are implemented;
- Provide concise (short and clear) instructions to project personnel regarding procedures for protecting the environment and minimizing environmental effects;
- Provide a reference document for personnel when planning and/or conducting specific activities and working in specific areas;
- Provide for a training aid during implementation efforts;
- Communicate changes in the program through the revision process; and
- Provide a reference to applicable legislative requirements and guidelines.

Section 1.2 - Organization of the Environmental Protection Plan

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
1.2	Organization of the Environmental Protection Plan	D	January 6, 2012

The EPP provides instructions to ensure project personnel understand and implement environmental protection procedures for both routine activities and unplanned events associated with the construction, operation and closure of the Mary River Project. The format of the EPP is intended to enhance its use by project personnel in the workplace and to provide an important support document between the overall approach to environmental protection planning and the specific requirements in various permits, approvals and authorizations issued for specific project components and activities.

The EPP is comprised of the following sections:

- Section 0 is the Contents List and Revision Control, serving as the Table of Contents listing the latest revisions for each Operational Standard;
- Section 1 outlines the purpose and organization of the EPP, Baffinland's environmental commitment, corporate resources and regulatory requirements;
- Section 2 provides Operational Standards for a variety of specific activities anticipated to occur in relation to the Project. Each Operational Standard provides an overview, environmental concerns and general environmental protection procedures associated with that activity, to meet regulatory requirements, corporate commitments and/or best management practices;
- Environmental protection operational standards will be reviewed, expanded, created and/or omitted on a periodic basis to reflect all project activities associated with the current Project lifecycle that are expected to have an environmental impact.
- Section 3 provides the inspection and recording keeping forms that will be used by project personnel to verify adherence or audit compliance to the Operational Standards;
- Section 4 includes a Request for Revision, which allows for users to recommend changes or additional Operational Standards, to facilitate continuous improvement;
- PLEASE NOTE: In the addition to the expansion of current operational standards, it is expected that the following operational standards may also be added throughout the project lifecycle, prior to the activity occurring, based on proposed project activities:
    - Floating Construction Dock Operation;
    - Tanker Truck Refueling Procedure;
    - Day Tank Re-Supply;

- Field Equipment Refueling; and
- Fuel System Inspection Procedure.
- Dredging;
- Dredge Material Handling;
- Docking Procedures;
- Small Craft Operations;
- Marine Mammal Protection;
- Freight Dock Operation;
- Local Vessel Interaction Procedure;
- Railway Embankment Construction;
- Railway Tunnel Construction;
- Railway Vehicle Noise Control;
- Railway Tie and Rail Construction;
- Railway Alignment Clearing;
- Railway Rail Camp Waste Handling;
- Railway Rail Camp Sewage Handling;
- Railway Access Road Vehicle Traffic Procedure; and
- Railway Access Road Wildlife Encounter Procedure.
- Ore Carrier Inland Waters Procedure;
- Ore Dock Operations;
- Railway Wildlife Crossing;
- Railway Maintenance Materials Handling Procedure;
- Railway Usage Notification Procedure;
- Mine Pit Traffic Coordination Procedure;
- Mine Pit Dust Suppression Procedure;
- Mine Pit Heavy Precipitation Event Procedure;
- Waste Rock Stockpile Construction Procedure;
- Waste Rock Stockpile Bird Nesting Procedure;

- Ore Stockpile Stacking Procedure;
- Ore Stockpile Reclaiming Procedure; and
- Ore Stockpile Heavy Precipitation Event Procedure.

Section 1.3 – Environmental Commitment

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
1.3	Environmental Commitment	C	January 6, 2012

Baffinland is committed to conducting its work in a manner that minimizes potential impacts to the natural environment and contributes to positive social and economic effects, particularly as they relate to communities in the North Baffin region. Baffinland seeks to ensure that its procedures and construction methods meet these commitments and regulatory requirements, and that, the commitments and requirements are understood, implemented and maintained by personnel at all levels involved with the Mary River Project.

Baffinland has developed the Environmental Protection Plan (EPP) to help ensure a high level of environmental protection throughout the project lifecycle. It is the objective of Baffinland to apply appropriate and effective management practices to advance environmental management to all facets of its operations related to the Mary River Project. Officers, management, employees and contractors of Baffinland are all responsible for the incorporation of environmental protection measures into their work responsibilities.

To this end, Baffinland has developed this EPP to demonstrate this commitment. In implementing the EPP, Baffinland is committed to continuous environmental improvement. Since environmental protection planning is an important component of overall project planning and implementation, the EPP is the operational component of a larger Comprehensive Environmental Monitoring Plan (CEMP) that has been developed as a management and monitoring tool.

Section 1.4 – Environmental Approvals

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
1.4	Environmental Approvals	E	January 6, 2012

Baffinland has been issued or applied for the environmental approvals found in Table 1 - 1 below.

Table 1 - 1: Environmental Approvals Issued to Baffinland

Type of Authorization	Permit No.	Authorizing Agency	Period Valid
Water License (Type A)	TBD	NWB	TBD
Water License (Type B)	2BB-MRY-1114	NWB	April 5, 2011 to April 5, 2014
Letter of Advice (July 25, 2007)	File No. NU-06-0084	DFO	No expiry
Authorization under S.35(2) of *Fisheries Act*	File No. NU-06-0084	DFO	No expiry
Approvals under S.5(1) of *Navigable Waters Protection Act*	8200-09-10414 8200-09-10415 8200-09-10424 8200-09-10425	Transport Canada	June 22, 2009 to June 30, 2015
Inuit Land Use Lease and Aggregate Concession	Q07L3C001	QIA	November 1, 2010 to December 31, 2012
Land Use Permit (Crown Land)	N2007F0004	INAC	July 4, 2011 to July 4, 2012
Land Use Permit (Crown Land)	N2006C0036	INAC	April 3, 2011 to April 3, 2012
Quarry Permit (Crown Land)	2007QP0079	INAC	June 28, 2010 to May 12, 2012

The terms and conditions of these approvals are incorporated into the Operational Standards. Project personnel are directed to the applicable approvals. If there are any discrepancies between the Operational Standards and the above approvals, the approvals govern. Official copies of the approvals are maintained on-site by the HSE Manager.

Section 1.5 – Responsibilities

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
1.5	Responsibilities	C	June 4, 2008

Vice-President of Sustainable Development

- Provide corporate resources and overall direction to the implementation of the EPP.

HSE Manager

- Conduct a review of the EPP on an as needed basis to determine if updates are required;
- Review revisions to the EPP and approve as required;
- Ensure revisions are distributed to managers and supervisors;
- Perform document controls;
- Ensure that managers, supervisors and their staff are familiar with the EPP and its procedures;
- Obtain approvals from management;
- Environmental Leads, Operations and Site Managers;
- Implement the EPP in daily operations;
- Maintain a current copy of each Operational Standard and the Content List (Section 0);
- Provide training and support to ensure successful implementation of the EPP; and
- Initiate changes to improve and update the plan.

Site Personnel

- Familiarize them with the EPP; and
- Have knowledge of reporting procedures.

Environmental Consultants

- Provide technical support to EPP development and ongoing revisions; and
- Provide audits of EPP implementation, as requested by the VP Sustainable Development.

Section 2.1 – Archaeological Resources

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.1	Archaeological Resources	E	June 4, 2008

Environmental Concerns

The Mary River area has had a long time period of occupation by humans, from over 4000 years ago through to recent Inuit times. Archaeological sites are very common throughout the region, mostly consisting of stone structures that usually represent tent rings and shelters, caches, traps, hunting blinds, cairns and inukshuks. Stone tool making sites are also present. These types of archaeological sites and features are often difficult to recognize. All archaeological sites are valuable non-renewable sources of information about local people's history and provide crucial data for scientists studying Northern life ways throughout the past. It is against the law to disturb known or suspected archaeological sites, punishable by fine or imprisonment. Many areas of the Project have not been surveyed by a qualified archaeologist, and approvals must be obtained before traveling off existing roads or disturbing ground surfaces.

Milne Inlet, the Milne Inlet Tote Road, Steensby Inlet, and the Mary River area have been rated as having high overall archaeological potential. The Proposed Rail Alignment also has sections of good archaeological potential. All project areas have been assessed to some degree and a number of archaeological sites have already been identified near proposed areas of activity. Archaeological constraints have been identified and provided to Baffinland. A copy of these constraints maps are maintained by the HSE Manager.

NOTE: Environmental Concerns must be altered once survey of all Project areas is done by qualified archaeologist.

Environmental Protection Procedures

The following measures will be implemented to minimize the potential for impacting any archaeological site:

- Do not deviate from already disturbed areas or established routes (existing roads and camp areas);
- Check to see if archaeology assessments have been done before operating equipment on previously undisturbed ground, and assume an area has not been approved for use until you find out otherwise;
- Remember that archaeological sites could still be uncovered during work even if clearance has been obtained, so be observant and careful;
- Artifacts must be left where they are found. If artifacts are disturbed or removed, their location shall be reported to the HSE Manager and the Project Archaeologist;
- Do not talk about any specific location since archaeological site locations must be kept confidential to prevent unauthorized collection or disturbance of artifacts;

- Known sites near project activities that must be avoided will have painted stakes or metal posts with black and yellow flagging, and/or rope installed at the 30 m buffer from the site;
- Remain more than 30 m from all known or suspected archaeological sites, staying as far as possible from any temporary protection measures such as flagging, stakes, metal posts or fencing;
- Do not build new inukshuks or rock piles or unnecessarily disturb rocks – building new rock piles can clutter the archaeological record, and the rocks used may unknowingly come from an existing archaeology site;
- Known archaeological sites will be avoided by re-routing roads and establishing borrow excavations where the archaeologist has approved for use, or will be mitigated prior to construction activities;
- If suspected archaeological or human remains (structures, artifacts or bones) are unearthed during work operations, stop work immediately and notify the HSE Manager or his/her designate. The HSE Manager will contact the appropriate lands inspector and Government of Nunavut as required by law, and will consult the Project Archaeologist; and
- The Project Archaeologist will complete an archaeological review of all proposed project areas as they are finalized to identify areas with possible conflicts and areas where project activities can proceed.

Section 2.2 – Avoiding Disturbance to Local Land Users

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.2	Avoiding Disturbance to Local Land Users	D	January 6, 2012

Environmental Concern

Land and resource use in the project area include hunting, fishing, trapping, and tourism. Potential impacts to existing land use will include the interruption of camping, hunting, tourism and marine activities mainly in Milne Port, Steensby Port and Mary River Mine Site areas, but also extending throughout north Baffin Island. During open water, Pond Inlet residents boat to Milne Port where they often camp along the east portion of the Milne Port beach, and either hunt marine mammals in Milne Port or travel inland by all-terrain vehicle to hunt caribou. During fall, winter and spring, hunters travel to various Project site areas to hunt seals on the sea ice and caribou inland. Baffinland is committed to minimize disturbance to other land users to the extent possible.

Environmental Protection Procedure

Measures will be implemented to minimize disturbance to current land use patterns for the duration of the Project. These measures include:

- Advanced notification of railway and shipping schedules to the community of Pond Inlet and to Nunavut Tourism. This will allow other land users (e.g. hunters, tourist operators) to re-schedule or modify travel plans, if desired;
- Limit activities at Milne Port to the west portion of the beach in the vicinity of Baffinland's Milne Port camp and do not operate equipment along the east half of the beach or off existing roads;
- Aircraft to fly in accordance with Section 2.8 (Aircraft Flights);
- Road traffic to operate in accordance with Section 2.19 (Road Traffic Management);
- Pilots and others will record the presence of other land users in the Human Use Log (Section 3.1) posted at each site, and will notify the Site Manager(s);
- Other land users are encouraged to record their presence at each project site as well as information they are prepared to share regarding proposed destination and time of return through Self-registration at the Baffinland office in Pond Inlet (Section 3.2); and
- Documentation of any disruptions to land use so that this information can be considered in subsequent phases of project development.

Section 2.3 – Ground Disturbance

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.3	Ground Disturbance	C	January 6, 2012

Environmental Concern

Many aspects of the project involve ground disturbances, including camp, rail and road construction, quarrying and mobile vehicle operation. The arctic environment is very fragile and vegetation is very slow to recover. Areas disturbed during exploration in the 1960s are still evident today! There are many reasons to minimize ground disturbances to the extent possible:

- Protection of archaeological resources (Section 2.1);
- Reducing disturbance to wildlife habitats;
- Reduce the potential disturbance to sensitive landforms such as ice-rich permafrost features; and
- Reduce the potential for erosion and the movement of sediment into watercourses (Section 2.9).

The various permits, licenses and approvals issued to Baffinland are specific regarding ground disturbances and measures that should be undertaken to minimize ground disturbances and the environmental effects that may result.

Environmental Protection Procedure

The following measures are to be implemented to minimize ground disturbance:

- Equipment and personnel must stay on existing roads and trails;
- Approval for new areas of disturbance must be approved by the Operations Manager;
- Rutting (furrow creation) shall be avoided on ground surfaces; overland travel of equipment or vehicle will be suspended when rutting occurs;
- All camps shall be located on gravel, sand or other durable land;
- No materials shall be stored on the surface ice of streams;
- No material shall be removed from below the ordinary high water mark of any stream; and
- Greywater sumps must be located a distance of at least thirty (30) meters above the ordinary high water mark of any water body.
- Focus on environmental protection during Quarry and Barrow Pit Operation (Section2.25) and work involving Excavation and Foundation (Section 2.28)

Section 2.4 – Water Use

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.4	Water Use	D	January 6, 2012

Environmental Concern

Water is an important resource that must be protected. The use of water by Baffinland for the project is currently governed by a water license issued to the Company by the Nunavut Water Board. A Type "B" Water License 2BB-MRY1114 governs how Baffinland uses water and disposes of waste.

During the mine construction and operation phases due to take place starting in 2013 a new Type "A" Water Licence has been applied for that will govern how Baffinland uses water and disposes of waste. This document refers to environmental protection during this period.

This Operational Statement highlights the key terms and conditions of Baffinland's water license and other approvals with respect to water use.

For the terms and conditions related to the management and disposal of wastes, please refer to:

- Section 2.14 Solid Waste Management;
- Section 2.15 Sewage Treatment; and
- Section 2.16 Hazardous Waste Management.

Environmental Protection Procedures

Camp Water Supply

- Only approved water sources shall be used for project activities.
- All water for the Mary River Camp is to be obtained from Camp Lake.
- All water for the Milne Port Camp is to be obtained from Phillips Creek during summer and km 32 lake or another approved source during winter.
- Water for the Mid-Rail Camp is to be obtained from Nivek Lake during summer and Ravn Camp Lake during winter.
- Water for the Ravn River Camp is to be obtained from Ravn Camp Lake.
- Water for the Cockburn North Camp is to be obtained from Cockburn Lake.
- Water for the Cockburn South Camp is to be obtained from Cockburn Lake.

- All water for the Steensby Port Camp is provided from either lake ST347 north of the camp or 3 km lake east of the camp. Small quantities of water will also be drawn from the ocean.
- Water supply facilities are to be maintained to the satisfaction of the DIAND Inspector.

Drilling Water and Dust Suppression Water Supply

- Streams cannot be used as a water source unless authorized and approved by the Water Board.
- If water is required from a source that may be drawn down, Baffinland shall submit a request for approval to the Board 10 days prior to taking the water.
- All water intake hoses shall be equipped with a screen of an appropriate mesh size to ensure that fish are not entrained and shall withdraw water at a rate such that fish do not become drawn into the pipe.
- No material shall be removed from below the ordinary high water mark of any stream (the only exception being in-water work at watercourse crossings (Section 2.18).
- No erosion is permitted on the banks of any body of water, and measures shall be provided to control such erosion (Section 2.9).

Section 2.5 – Geotechnical Drilling Operations

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.5	Geotechnical Drilling Operations	D	January 6, 2012

Environmental Concern

Environmental concerns with drilling include surface disturbances, drilling fluid and cutting disposals, impacts on dust, noise, water quality, and habitat encroachment.

Use of water for drilling for the Mary River Project is subject to the conditions outlined in the water use license (2BBMRY1114 Type "B").

See also Section 2.4 Water Use, of the EPP, regarding the extraction of water for drilling.

Environmental Protection Procedures

Acceptable Locations to Drill

- Do not construct drill sites or drill sumps within 30 meters of the normal high water mark of a water body unless specific approval is obtained by Baffinland from regulatory agencies. Note: Nunavut Water Board Amendment No. 2 allows drilling within 30 m of the high water mark of any water body and provides provisions for drilling on-ice and the monitoring required for carrying out these activities.
- Do not store material on the surface of frozen streams or lakes, including immediate banks, except material that is for immediate use.
- Obtain archaeology clearance for all geotechnical drill locations (Section 2.1 Archaeology).
- Ensure that Pre-Drilling Checklist (Section 3.5 Drilling Checklists) is completed prior to finalizing drill site and water source locations.

Drill Operations and Movements

- Ensure that the drilling area is kept clean and tidy at all times. No littering is permitted - collect and package all waste for disposal at camp.
- Do not feed wildlife.
- Carry out all operations so as to minimize surface disturbance.
- Minimize overland transportation for transport of workers due to the potential for ground disturbance.
- Do not use surface vehicles to move drill rigs or other equipment, without prior authorization of the Environmental Superintendent. The use of any vehicles off approved routes is prohibited.
- Do not move equipment or vehicles unless the ground surface is in a state capable of fully supporting the equipment or vehicles without rutting or gouging.

- Carry out daily inspections for fuel leaks, equipment condition, sediment and erosion control, water intakes and water management (See Inspectors Daily Report, Section 3.4 Drilling Checklists). Repair all leaks immediately.
- Equip drill rigs with oil absorbent materials in the event of leaks, releases and spills.
- If the bottom of the permafrost is broken through by the drill, the depth of the bottom of permafrost and location should be reported to the Project Manager/HSE Manager for subsequent reporting to the Nunavut Water Board.
- Do not cause any obstruction of any stream.
- Establish water quality conditions prior to and upon completion of any drilling program through lake ice where there is a water column (See Water Sampling for On-Ice Drilling, Section 2.21).
- Implement sediment and erosion control measures prior to drilling operations and maintain these during the operation to minimize spillage of sediment onto ice and prevent entry of sediment into water.
- Conduct wildlife inspection immediately prior to movement of the drill, involving aerial survey and ground survey of the new site (see Drill Operation Work Restrictions, below).

Drill Operation Work Restrictions

Caribou

- If caribou are observed within 3 km (between May 15 and July 15) or 2 km (at all other times) of the proposed new drill site and disturbance is noted, the drill should be moved to an alternative location and activity at the site deferred until after the caribou leave the area. If the drill is already in place and operating, and caribou move into the area (within 3 km between May 15 and July 15, and within 2 km at any other time), the animals should be monitored. If the caribou show no obvious signs of disturbance, drilling activities can continue. If the animals appear agitated, then activities must cease until the caribou leave or are guided away.

Carnivores and/or Den Sites

- No drilling activity should take place within 2 km of an active wolf den between mid May and mid August if direct line of sight and disturbance is noted. Foxes or wolves approaching humans must be discouraged by shouting and making threatening moves. Feeding wildlife is prohibited. All work areas must be kept clear of food scraps and garbage.

Raptor (Hawks, Falcons, Owls) Nest Sites

- No drilling activity should take place within 500 m of an active raptor nest site during the breeding season (approximately mid May to August) unless an individual nest protection plan has been prepared by an avian biologist in conjunction with HSE Manager. Report all active nest sites to the HSE Manager.

Songbirds, Shorebirds, Loons and Waterfowl

- Drills, pumps and waterlines should be placed at least 500 m from active bird nests and every precaution should be taken to avoid disrupting the nests. All project personnel should remain more than 100 m from active nest sites. Time spent on the hose alignment should be minimized to reduce disturbances in areas between the water source and project activities. Active nests must not be destroyed.

Marine Mammals

- Do not drill near concentrations of animals or destroy in-ice breathing holes.

Water Use

- No brine (calcium chloride salt mixed with water) or other additive is to be used in geotechnical drilling;
- Re-circulate drilling fluids to the extent reasonably possible;
- Do not use streams as a water source unless authorized and approved by the Nunavut Water Board;
- DFO approved screens must be placed over the intake hoses. The pumping rate must be kept sufficiently low to ensure that fish do not become entrained (drawn against the screen) and that water is withdrawn at a rate that fish do not become impinged on the screen;
- Do not remove any material below the high water mark of any water source; and
- Provide necessary controls to prevent erosion. No erosion is to be caused to the banks of any body of water. Install erosion control structures as the land use operation progresses.

Drill Water and Runoff

- Contain and re-circulate drill water to the fullest extent possible and prevent it from running into watercourses;
- Separate clean water from "dirty" water streams whenever possible, (e.g., by means of hose extensions and snow berms or other means that direct and keep discharge away from the immediate area of the drillhole) to prevent migration and expansion of a "dirty" water plume;
- The drill water supply temperature should be monitored during drilling and kept to a temperature as low as possible (but not so low as to cause an imminent risk of frozen water lines);
- To maximize drill return water recirculation, casing is to be frozen into the ground to a depth of 3 to 6 m below grade. The specific depth of casing to be frozen into each hole and length of time to allow for freezing will be specified by the Baffinland Project Manager;
- Minimize the footprint of any drill water and cuttings spillage by means of berms and/or other means of containment;

- Dispose of drill water into a properly constructed sump, or a naturally occurring contained depression. Do not deposit any deleterious substance into any water body. Recycle drill water wherever possible;
- Prior to the commencement of drilling for each hole, establish a dedicated sump location where collected "dirty" drill water and cuttings are to be disposed. The location should be a minimum of 30 m from surface water bodies and preferably be located such that any flow toward a surface water body is minimized. This implies that the location for the sump should be either in a bowl or depression or be on a relatively flat surface;
- Use portable containment sumps (e.g., bins), for drill water and cuttings where containment in the ground is impractical. The bins are not to be allowed to overflow and are to be dumped by means of helicopter or pump to the location identified for disposal of dirty drill water and cuttings;
- Install silt fences, diversion channels or berms downstream of drill rigs if required to contain drill water runoff;
- Drilling waste must not be allowed to spread to the surrounding lands or water bodies; the footprint of any spillage must be minimized to the greatest degree practicable;
- If artesian flow is encountered, drillholes shall be immediately plugged and permanently sealed to prevent induced contamination of groundwater or salinization of surface waters. Report the artesian occurrence within 48 hr to the Engineer and HSE Manager. All artesian flows, including location (GPS NAD83), should be reported in the annual report to the Project Manager/HSE Manager for subsequent reporting to the Nunavut Water Board;
- For on-ice drilling, returned water released must be nontoxic, and not result in an increase in Total Suspended Solids (TSS) in the immediate receiving water above the CCME guidelines for the protection of Fresh Water Aquatic life (i.e. 10 mg/L for lakes with background levels under 100 mg/L or 10% for those above 100 mg/L); and
- Sampling of drill water decant collected in bins is to be undertaken on occasion at the direction of the Baffinland HSE Manager using established water quality protocols.

Drillhole Abandonment

- During winter conditions, where there has been spillage of dirty drill water and cuttings at locations on ice or within 30 m of a water body, periodic monitoring of the drill site will be conducted prior to freshet and a clean- up crew may be mobilized to the drill site at the direction of the Baffinland Project Manager and HSE Manager;
- No materials (i.e. debris, drill cuttings) shall be left on the ice when there is potential for that material to enter the water (i.e. during freshet);
- Plug all drillholes upon completion, and where possible return drill cuttings at surface to the drillhole at all land-based drilling locations;

- Restore all constructed drill sumps to the natural surrounding contours of the land immediately upon completion of drilling (before drill is moved);
- Contour and stabilize all other disturbed areas upon completion of work and restore these areas to a predisturbed state;
- Upon completion of a hole in rock, the casing will be removed. If the casing cannot be removed it will be cut off to be flush with surface and backfilled;
- Remove all non-combustible garbage and debris from the land use area to an approved disposal site;
- Return all combustible waste and petroleum products to camp for proper management; and
- Ensure that Post-Drilling Checklist (Section 3.5 Drilling Checklists) is completed at the completion of each drill hole. The consultant will be asked to complete all drill forms and submit copies of them to Baffinland after the completion of each borehole as soon as practical.

Section 2.6 – Equipment Operations & Mobilization

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.6	Equipment Operations & Mobilization	C	January 6, 2012

Environmental Concerns

Mobile equipment emits noise and air emissions, are potential sources of leaks and spills and can cause rutting and land disturbances, as well as disturbance of archaeological sites if necessary clearances have not been obtained.

Noise associated with equipment use and mobilization may negatively affect neighbours. Air emissions may have air quality implications. Accidental leaks or spills of fuel or other hazardous materials may affect soils, water quality, fish and fish habitat, and wildlife.

Environmental Protection Procedures

- Damage to archaeology sites will be avoided by following the protection measures outlined in Section 2.1 Archaeology;
- Rutting and land disturbance will be minimized by following the protection measures outlined in Section 2.3 Ground Disturbance;
- All equipment will be equipped with properly functioning mufflers;
- In the case of an incident involving the use of equipment (e.g., vehicle incident, spill, etc.), the incident will be reported immediately to the Operations Manager or designate and the spill action plan activated;
- Regular maintenance inspections for leaks will be made on all equipment. If problems are identified the equipment will be taken out of service and repaired; and
- Equipment operators will be trained and licensed to operate their particular equipment; training will be provided for operators before operating any new equipment.
- Equipment will be securely stored and ignitions devices (e.g. keys) will be stored separately.

Section 2.7 – Fuel Storage and Handling

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.7	Fuel Storage and Handling	D	January 6, 2012

Fuel storage facilities have been constructed and are operated at Milne Inlet, the Mary River Mine Site, the Rail Camp and the Steensby Port. At Milne Inlet, Mary River, Mine Site and Steensby Inlet fuel is stored in bulk storage facilities consisting of fuel tanks located within lined containment berms. At the Rail Camp fuel is stored in barrels within containment berms or in double walled ISO containers.

Environmental Concerns

Accidental and uncontrolled leaks, releases and spills of fuel may occur due to improper storage, poor handling procedures or equipment malfunction. Fuel releases to the environment have the potential to negatively affect worker health and safety as well as soil quality, aquatic life and wildlife. The potential for fuel spills is addressed through the Emergency Response and Spill Contingency Plan attached to the EPP.

Environmental Protection Procedures

The following measures will be undertaken for general fuel management:

- Personnel refuelling equipment or vehicles will supervise re-fuelling at all times and will not leave fuel transfer operations unattended;
- Petroleum fuel storage containers shall not be placed within 31 meters of normal high mark of any water body;
- All mobile equipment will be serviced and fuelled on land at least 30 m from any water body;
- No petroleum or chemical product will be allowed to spread to surrounding lands or into water bodies;
- All spills will be immediately reported in accordance the Emergency Response and Spill Contingency Plan. The telephone line for the 24-hour spill line is (867) 920-8130;
- All fuel containers shall be sealed and labelled with the name Baffinland Iron Mines Corporation;
- Waste oils, lubricants, and other used oil shall be placed in drums, labelled as waste materials, and stored in a contained area until removed from site for disposal at an approved, licensed waste management facility;
- All fuel storage areas shall be inspected on a regular basis using the Fuel Storage Facility Inspection Form in Section 3.5;
- Examine all fuel storage containers for leaks at least once per day; and

- Repair all leaks immediately.

Section 2.8 – Aircraft Flights

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.8	Aircraft Flights	D	January 6, 2012

The 2012 work, construction and operation phases of the Mary River Project all involve air traffic; this will consist of flights made by helicopters, smaller twin-engine fixed wing aircraft and charted flights into the site. The high level of aircraft use requires pilots, and project personnel directing pilots, to be aware of the potential disturbances to wildlife and the requirements of the various permits and licenses issued to Baffinland. In addition, Inuit hunters may be moving through the project area at any time of the year, and Baffinland has committed to minimizing disturbance of local users to the extent possible. All Project personnel are responsible for operating in accordance with the legal requirements and commitments outlined in this Operational Standard.

Concerns Regarding Wildlife

Aircraft can cause disturbance to wildlife by interrupting their activities (i.e. feeding, calving, migration, etc.) and possibly causing the animals to leave the area and leave important habitats. Caribou are particularly sensitive to aircraft noise and are of great importance to local Inuit culturally and as a source of food. Disturbance of caribou has the greatest effect prior to, during and following calving (approximately mid-May to mid-July).

Concerns Regarding Inuit Land Use

Aircraft can cause disturbance to hunters or other land users (i.e. tourists) during low level flights that disturb the people and/or the wildlife they may be pursuing. Land users travel over ice and over land by snowmobile from roughly November through late June / early July. The month of August is particularly important due to the short duration of open water. Land users may travel by boat and camp at Milne Inlet, and may travel inland hunting caribou using all-terrain vehicles or walking. Remember that local land users were here first.

Environmental Protection Procedures

- Minimize the number of flights to the extent possible;
- The minimum flight altitude of 610 m will be maintained when possible during horizontal flights; or 1,000 m near concentrations of birds (with exceptions where required);
- Employees are responsible for reporting to the Operations Manager any improper flight practices;
- Avoid caribou calving sites between May 15 and July 15, as identified by project biologists or observed by aircraft pilots;
- Pilots shall report caribou movements and locations during calving and post-calving periods, so that these areas can be avoided;

- Avoid a large concentration of wildlife, (i.e. Migratory Bird Sanctuaries, breeding colonies and caribou calving grounds), and take alternate routes;
- Plan routes that are likely to have least occurrences of wildlife;
- Use small aircraft rather than large aircraft and fixed-wing aircraft rather than helicopters whenever possible;
- Hovering or circling may greatly increase disturbances and must be avoided;
- Flights between Pond Inlet and Mary River will be routed so as to minimize interruption with community activities within the fiords between the site and the community; and
- Inform pilots of wildlife sensitive area.

Exceptions

- Low-level flights are required during slinging operations in the vicinity of Mary River, Steensby Inlet, and the Rail Camp and on occasion at other locations, where short distances are involved; and
- Low-level flights are permitted during wildlife surveys, as directed by the project biologists in accordance with the wildlife research permit.

Section 2.9 – Sediment and Erosion Control

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.9	Sediment and Erosion Control	C	June 4, 2008

Environmental Concern

Land disturbances during road construction and operation, culvert installation, and excavation of borrow locations and quarries have the potential to cause erosion and release sediment-laden runoff into nearby watercourses.

Elevated Total Suspended Solids (TSS) levels affect water clarity and, subsequently, aquatic life by reducing feeding success and fish egg and larval survival and fish habitat through alterations to the nutritional base of fish.

Environmental Protection Procedures

The following measures will be taken to prevent or mitigate erosion and sediment-laden runoff impacts:

- Construct the road embankment, install watercourse crossings and develop borrow areas in accordance with approved plans and procedures;
- Stabilize cut and fill areas by constructing gentle slopes less prone to erosion;
- Install appropriate measures to limit erosion and reduce sediment runoff around stockpiles, down-gradient of excavations, and along the banks of watercourses during construction;
- Appropriate sediment and erosion control measures will include a combination of: silt fences and silt (turbidity) curtains, sediment traps, and gravel berms;
- Sediment control measures will be installed prior to watercourse crossing installations;
- Fording of watercourses by equipment is limited to one-time only;
- Maintain sediment and erosion control measures as required until all disturbed areas have been stabilized;
- Borrow activities will be concentrated to the maximum extent possible to limit the area of disturbance;
- At borrow areas, drainage patterns will be re-established to near the natural condition;
- Work areas will be inspected regularly by the site engineer and/or environmental monitors; and
- Turbidity monitoring will be conducted by environmental monitors during and after construction at watercourses.

Section 2.10 – Polar Bear Encounters

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.10	Polar Bear Encounters	C	June 4, 2008

Environmental Concern

Polar bears are dangerous animals. The potential to encounter a polar bear is greatest at the coast, however, polar bears may be found anywhere on Baffin Island: the Mary River Mine Site was visited by polar bears in the summer of 2006 and polar bears were sighted at both Milne Inlet and Steensby Port in the summer of 2007. All encounters so far have been without consequence. Measures must be taken to reduce the risk of an encounter, and to be prepared if one should occur.

Environmental Protection Procedures

The following procedures will be implemented to minimize the potential for bear-human encounters:

- Site and working areas will be kept clean of food scraps and garbage;
- Do not attempt to chase, catch, follow or otherwise harass wildlife by ATV, aircraft, on foot or otherwise;
- Wildlife that attempt to approach personnel will be actively deterred by shouting or use of noise makers such as bear bangers, if necessary;
- Mobile equipment and vehicles will yield the right-of-way to wildlife;
- All polar bear sightings must be reported immediately to the or his/her designate;
- Bear monitors will be posted at coastal locations and will accompany remote field crews that do not have full-time air support;
- The HSE Manager will authorize the use of deterrent measures, and a defense kill is a last resort;
- Helicopters may be used to haze/deter polar bears away from site as a last resort;
- Any defensive kill will be reported immediately to the HSE Manager, who will notify the Hunters and Trappers Organization (HTO) and wildlife officer; and
- Polar bear safety is a part of the Site Orientation Program.

Section 2.11 – Fox and Wolf Encounters

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.11	Fox and Wolf Encounters	C	June 4, 2008

Environmental Concern

The primary concern related to foxes and wolves is the habituation and food-conditioning that occurs if site personnel feed these animals. Such food-conditioned animals regularly come to site and work places for food. The danger of such habituation lies in the fact that these animals have lost the fear of humans and can become aggressive. These animals, even food-conditioned, are still wild and they may attack personnel. Rabies is usually endemic in fox populations, and Arctic foxes are a primary vector of rabies.

Foxes and wolves also den in sand and gravel deposits throughout the region. Dens are environmentally sensitive features that, when located, should be avoided.

Environmental Protection Procedures

The following procedures will be implemented to minimize potential impacts to foxes and wolves:

- Site and working areas will be kept clean of food scraps and garbage;
- Wildlife will not be fed under any circumstance;
- Wildlife that attempt to approach personnel will be actively deterred by shouting, chasing and use of noise makers, such as bear bangers, if necessary. However, no firearms will be used;
- Qualified biologists have and will continue to survey for carnivore (wolf and fox) dens, and a 2 km avoidance barrier will be implemented. Locations of dens will be identified and project personnel advised accordingly. All site personnel will adhere to all avoidance announcements by project biologists, and project activities will occur within the 2 km radius area only after the project biologists have determined the carnivores have left the area; and
- Wildlife encounters will be reported to project biologists, and any indications of disease should be noted.

Section 2.12 – Caribou Protection Measures

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.12	Caribou Protection Measures	C	August 14, 2007

Environmental Concern

Caribou are present in relatively low numbers in the project area. Harvesting of caribou is very important to local communities, so there is added importance to ensuring that project activities are carried out to minimize potential impacts to caribou. The potential impact to caribou is disturbance, primarily due to noise from aircraft and project activities. The primary mitigation for caribou is avoidance followed by monitoring.

A Zone of Influence (ZOI) of 3 km from project activities has been defined for stationary activities such as camps, mining and drilling during the pre- to post-calving time period of May 15 to July 15. At other times of the year the caribou are less sensitive and a ZOI of 2 km has been defined.

Environmental Protection Procedures

The following procedures will be implemented to minimize disturbance to caribou:

- All caribou sightings are to be reported to the HSE Manager and Project biologists, and recorded in the wildlife log at camp. This will enable Project biologists to monitor caribou activity in relation to the Project;
- Along the Milne Inlet Tote Road, animals including caribou have the right-of-way. Traffic is to slow down and keep distance from the animals as much as possible. If necessary, traffic will stop to enable crossings of groups or to allow groups of caribou paralleling the road to move into adjacent habitat. Caribou occurrence in the vicinity of the road and their responses to traffic will be monitored by on the ground behavioral observations, to determine if it is apparent that caribou are being disturbed or displaced by construction or traffic;
- Employees will not be permitted to hunt while they are at Mary River for work; they will be returned to the community between shift rotations and will not be permitted to stay in the area to hunt as part of their shift rotations;
- If any females (one or more) are observed within 3 km of a planned project activity such as drilling or road construction from May 15 through to July 15, then the activity location will either be moved or the activity deferred as appropriate and if possible, until a later date when caribou are not present;
- Should a female caribou or a female with calves approach within 3 km of project activities (between May 15 and July 15), the animals will be observed on the ground. If it is obvious they are being disturbed, the activity will cease until they have moved at least 3 km away;

- If caribou approach a project activity site before work commences, the animals will be observed on the ground and if it is obvious that they are being disturbed, work will not commence until they have moved on;
- If caribou approach a project site while work is in progress, caribou will be observed for signs of disturbance; and
- If the caribou are disturbed, the activity will be modified or cease until the caribou have moved away or they are guided away from the worksite

Section 2.13 – Bird Protection Measures

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.13	Bird Protection Measures	D	January 6, 2012

Environmental Concern

Birds are generally widespread and often encountered in the Baffin region. Virtually all of these birds are migratory. The main concern with birds is that, the potential exists that some aspects of the project may disrupt nesting and migratory patterns. Birds are an important part of the food chain in the Arctic ecosystem and changes in their numbers and distribution will directly affect predators like raptors and foxes that rely on them as a readily available source of food. It is against the law to disturb or destroy a bird nest (Migratory Bird Convention Act and regulations).

Environmental Protection Procedures

The following procedures will be implemented to minimize disturbance to birds and bird nests:

- Project personnel are not permitted to hunt birds;
- Inspections of each work area for nests will be conducted prior to commencement of project activity;
- On-ground inspections will be conducted for bird nest and eggs of each area prior to equipment placement or project activity. Active nest sites will be identified through observation of high densities of birds, nests, or birds exhibiting territorial behaviour indicating a nearby nest. Active nests must not be destroyed;
- Select new equipment placement location, at least 500 m from identified active nest sites;
- Every precaution will be taken to avoid disrupting nest sites, if these are discovered;
- Songbirds, shorebirds, loons and waterfowl - If nests of these birds are found then drills, pumps and waterlines should be placed at least 500 m from these nest sites and every precaution should be taken to avoid disrupting them;
- Shoreline and waterline routes will be inspected for breeding birds, nests, and post-hatch young, before waterlines for drills are placed. Project personnel should remain more than 100 m from these nest sites at all times and time spent on the hose alignment should be minimized to reduce disturbances in areas between water source and project activities;
- Raptors (falcons, hawks and owls) - Active raptor nests will be avoided by relocation of project activities, if possible. Project activities will be relocated at least 500 m from known active raptor nests during the breeding season, or the activity will be rescheduled to outside the breeding season (mid May to mid August). An individual nest protection plan will be produced by an avian biologist to direct activities within 500 m of the nest if it is not possible to relocate or delay the project activities; and

- Bird sightings, particularly raptors or large concentrations of birds, should be recorded in the wildlife log at camp and reported to project biologists.

Section 2.14 – Solid Waste Management

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.14	Solid Waste Management	E	January 6, 2012

Environmental Concern

Solid wastes are non-liquid, non-soluble materials including domestic garbage, food wastes, construction debris, commercial refuse, non-combustible and non-hazardous materials. Solid waste materials at site will be re-used and recycled wherever possible and feasible. Where it is not possible or feasible, the two main methods of solid waste disposal for the project lifecycle will be incineration and landfilling. Solid waste, if not properly disposed of, may cause health and safety concerns to project personnel, attract animals, and would impair the aesthetics of the area. If unapproved wastes (i.e. hazardous or domestic wastes) are placed in the landfill, then poorer quality landfill leachate may be generated in greater quantities, potentially affecting nearby watercourses.

Incineration

All non-hazardous wastes that cannot feasibly be re-used or recycled, including food wastes, paper and some un- treated wood products, will be incinerated on site and the ash residue placed in the landfill. Untreated wood that is not incinerated will be burned in the landfill or other approved locations upon permitting from the Nunavut Water Board. Waste oil and waste fuel may be burned when possible in on-site incinerator. If this disposal method is not available it will be amalgamated, stored in appropriate containers and shipped off site.

Inert Waste Landfill

The landfill will be used for disposal of inert, non-hazardous, bulky waste with little to no salvage value. This will include scrap metal, ash, rubber, concrete, plastics, and treated wood (which includes manufactured wood such as particle board and plywood). Existing bulky wastes from the 1960s, as well as equipment and materials associated with recent project activities, will also be placed in the landfill. No organic or hazardous wastes will be disposed of in the landfill. Drums or barrels that have been crushed will not be placed in the landfill as per the North Baffin Land Use Plan. This material will be shipped to an approved facility for recycling.

Environmental Protection Procedures

- Depending on the type of waste, solid waste generated on site will be disposed of in the incinerator or landfill;
- Inert wastes such as scrap metal, discarded machinery parts, kegs, concrete, building materials, wood, rubber, and plastics will be landfilled;
- Food wastes and packaging, and paper will be incinerated. Kitchen grease will be shipped to Iqaluit for disposal, using the Off-Site Waste Disposal Log (Section 3.7) for tracking purposes;

- All wildlife attracting waste (e.g. food scraps, human waste) will be stored in sealed animal proof containers;
- Untreated wood products will be burned in the incinerator, or will be segregated and placed in the landfill and burned upon receipt of a permit from the Nunavut water Board;
- Until an inert landfill is constructed at site, non-hazardous landfill materials will be stored on site. Waste transported off site is to be recorded in the Off-Site Waste Disposal Log (Section 3.7);
- Sewage sludge will be dewatered and incinerated;
- Waste accumulated on site prior to disposal will be confined so that it does not pose health or environmental hazards;
- Time lapse between collection and disposal shall be minimized to the extent practical;
- All combustible garbage and debris will be stored and covered until disposal; and
- This Operational Statement will be revised as required to reflect the operation and maintenance plans developed and approved in the landfill design and permitting process.

Section 2.15 – Sewage Treatment

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.15	Sewage Treatment	E	January 6, 2012

Environmental Concern

The quantity of treated sewage effluent discharged from the package sewage treatment plants by Baffinland for the project will be monitored and recorded using inline flow monitors. The quality of the treated effluent will be monitored on a weekly basis to confirm that effluent quality meets the requirements of the pending Type 'A' Water License (applicable during mine construction and operation phases), and is acceptable for release into the receiving environment. The table below specifies the volume of effluent discharged and identifies the receiving water body for the different camps.

Treated Effluent Generation and Discharge/Outfall Locations

Camp/Site	Discharge/Outfall Location		Coordinates	Treated Effluent (m3/d)	
	Summer	Winter		Construction	Operation
Milne Port	Ocean at Milne Inlet		N: 7976482.047 E:503211.450	54.6	13.7
Mary River (Mine Site)	Mary River	Storage Pond	Mary River: N:7912429.349 E:562962.542	559.8	170.6
Steensby Port	Ocean at Steensby Port		N: 7801412.600 E: 593378.100	308.0	102.4
Ravn River Area	Conveyed to Mary River Sewage Treatment		n/a	n/a	
Mid-Rail Area	Conveyed to Mary River Sewage Treatment		n/a	n/a	
Cockburn North Area	Conveyed to Steensby Sewage Treatment		n/a	n/a	
Cockburn South Camp	Conveyed to Steensby Sewage Treatment		n/a	n/a	

Note: The treated effluent generated at the Mine Site and Steensby Port includes the treated sewage from the rail camps which is treated at these sites.

The accidental release of untreated sewage may have impact on human health, water quality, and fish and fish habitat.

Environmental Protection Procedures

The following measures will implemented to minimize the potential or accidental releases:

- Operation of the Wastewater Treatment Facilities (WWTFs) at Mary River Project sites shall be undertaken in accordance with the Type 'A' water license issued by the Nunavut Water Board
- Raw sewage and final effluent quality will be sampled and tested according to the requirements of the water license (outlined in the Site Water Management Plan and in the Comprehensive Environmental Monitoring Plan)
- Any problems with operation of WWTFs (e.g., improper operation, pipeline rupture, or system breakdown, etc.) shall be immediately reported to the HSE Manager or his/her designates
- In the event of accidental release of sewage into the environment (e.g., pipeline rupture, etc.) immediate action will be taken to ensure that the release is contained and prevented from reaching any water body. Refer to the Emergency Response and Spill Contingency Plan. Untreated sewage effluent will be retained in the treated sewage effluent tank and then pumped back into the WWTF. All sewage spills must be reported immediately to the HSE Manager or his/her designates.
- Quantity of sewage treated will be documented continuously using in-line flow or vacuum truck counts monitors
- Quantity of sludge generated will be tabulated (Section 3.15)
- Data will be reported as required by the water license and other relevant approvals
- The existing and proposed sewage treatment systems will be designed to treat generated sewage to meet effluent quality established by the Nunavut Water Board in the Type 'A' Water Licence. Each system will include an inlet screen, equalization tank, biological treatment system (RBC based or superior) and filtration system followed by a UV or chlorine disinfection system.
- The effluent tank for the new systems will have a hydraulic retention of time of 2 days (at minimum) based upon nominal flows. It is intended that the effluent tank will be at a low level during operation such that if sampling indicates that the effluent quality does not meet the applicable criteria further discharge can be prevented for a period in excess of a day to allow this effluent to be mixed, retreated, and retested. In addition this retention volume will allow for a minimal amount of recirculation through the STP using any spare STP capacity. This will improve the quality of the effluent in the tank. The volume is sufficient to allow for periodic sampling and testing of the treated effluent before discharge or reuse.
- The sludge generated will be dewatered using a mechanical dewatering device such as belt filter or filter press and then incinerated. Sludge will be stored in an animal proof secure

area. Odour generation will be limited because the sludge will be aerobically digested, dewatered and incinerated regularly such that the sewage cake is not stored for significant periods. Odour control carbon vents will be installed where deemed necessary. The incinerator design will consider the solids content of the sludge from the dewatering device.

Section 2.16 – Hazardous Material and Hazardous Waste Management

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.16	Hazardous Material & Hazardous Waste Management	E	January 6, 2012

Environmental Concern

Hazardous materials (other than fuels) that will be used during the project lifecycle will include oils, greases, antifreeze, calcium chloride salt, ammonium nitrate, lead acid batteries, cleaners and other chemicals. If generation of hazardous waste cannot be prevented its management will focus on the prevention of harm to health, safety, and the environment, according to the protection measures outlined below.

Exposure to hazardous materials resulting from spills, leaks or releases can cause human safety and health concerns.

Environmental Protection Procedures

The following measures will implemented to ensure proper management of hazardous wastes and to minimize the potential for accidental releases to the environment:

- Hazardous Materials and Hazardous Waste will handled in accordance to the Hazardous Materials and Hazardous Waste Management Plan (attached to the EPP)
- Bulk storage of hazardous materials (including wastes) is to be stored within designated lined and contained areas or within shipping containers at the laydown area;
- Storage containers will be leak proof and have content names and labels securely affixed;
- All drums shall be marked with the name Baffinland Iron Mines Corporation;
- Materials arriving by sealift will be temporarily stored in their original sea containers at laydown locations at Milne Port or Steensby Port until transported to their final destination;
- Lubricating oils and antifreeze will be dispensed from drums or cubes using either fitted taps or pumps and will employ drill trays;
- Regular visual inspection for leaks, drips or indications of loss at all storage areas will be conducted for evidence of accidental releases and verification that wastes are properly labelled and stored;
- Waste storage sites will be monitored and sampled in accordance with the water license
- Chemical spills will be reported immediately to the HSE Manager or his/her designate, and the Emergency Response and Spill Contingency Plan will be implemented;
- Cleaning materials (rags, gloves, etc.) will be properly wrapped in sealed plastic bag and will be directed to disposal by incineration;

- All hazardous waste shall be clearly labeled and at no time shall hazardous waste be combined with other solid non-hazardous waste.
- There shall be no smoking within 10 m of the hazardous waste storage location.
- A special class of hazardous wastes are biological wastes generated at the medical clinic and first aid stations. While the amounts will be small, the nature of such waste requires separate packaging and disposal. All such waste will be packaged, labeled and transported for disposal to a facility licensed to dispose of such waste.
- Waste Oil generated during the construction phase shall be properly handled, stored and disposed of according to Used Oil Control Regulations (82/02).

Section 2.17 – Road Construction and Borrow Development

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.17	Road Construction and Borrow Development	D	January 6, 2012

Environmental Concern

Excavations disturb the ground surface and any vegetative cover that stabilizes the ground and reduces the potential for erosion. The excavation of sand and gravel from borrow areas, as well as the cut and fill technique that will occur on the Tote Road and other site roads throughout the project tends to expose soil that is more prone to erosion.

These activities will result in a change in the thermal regime of the ground, as a new active layer is created. Modification to the thermal regime may induce melting of any ground ice present, resulting in thaw settlement and depressions caused by these settlements leading to erosion and possibly ponding of water.

Environmental Protection Procedures

The ground surface will re-establish thermal equilibrium and will be suitable for re-colonization over time of natural vegetation.

The following measures will be implemented to enhance this re-establishment of equilibrium and minimization of erosion and water ponding:

- Cut and fill areas will be stabilized by constructing gentle slopes less prone to erosion;
- Cut and fill areas are expected to be relatively small in horizontal and vertical extent. The side slopes of the borrow pits will be between 1H: 1V to 2H: 1V, slightly gentler than the slopes in the natural condition to reduce erosion;
- At low lying areas where roadbed fill is in the order of 1 m and the permafrost can be expected to rise to a meaningful degree, swales or culverts will be installed as part of road maintenance to prevent the pending of water;
- At closure, swales will be left in place, or alternatively, the road bed will be breached to allow drainage;
- Borrow activities will be concentrated to limit the area of disturbance;
- Thawed layer removal will be done sequentially;
- Areas of unexpected settlement will be filled to re-establish the natural contours and eliminate ponding of water; and
- Regular inspection of borrow locations will be completed and unstable slopes re-graded to eliminate depressions and re-establish natural drainage patterns.
- See also Section 2.9 Sediment and Erosion Control, Section 2.18 Watercourse Crossing Installation and Section 2.25 Quarry and Barrow Pit Operation.

Section 2.18 –Tote Road Watercourse Crossing Installation

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.18	Tote Road Watercourse Crossing Installation	E	January 6, 2012

Three major crossing types have been developed as follows:

- Conventional single or multiple culverts crossings designed to pass select design flows;
- Culvert crossings (single or multiple) with an additional swale to accommodate flows during flood conditions; and
- Structurally-reinforced sea container crossings (which may include culverts and/or swales).

At least 73 drainage-crossing structures are planned for installation to pass runoff flows during operation of the road. For 69 of these crossings, corrugated steel culvert pipes will be used. Modified sea containers will be installed as box culverts for the remaining four. Many of the crossings will require multiple culvert installations in order to provide the required capacity to pass the design flows.

Environmental Concerns

Project activities have the potential to impact fisheries resources through the:

- Alteration of fish habitat or blockage of fish passage;
- Accidental releases of deleterious substances (i.e., fuel spills, sediment); and
- Potential entrainment of fish through water supply intakes for drilling and potable water.

The construction of watercourse crossings has the potential to negatively affect fish and fish habitat from construction of the crossing structures or post-construction influence of the completed structures on fish habitat. Elevated levels of suspended sediment are the primary change in water quality that could result from work on or around water. Construction activities typically result in short-term effects, while long term effects can arise through erosion of ditches and slopes if not mitigated. Sediment sources related to construction activities include equipment crossings, excavation, blasting, and installation of bank protection measures (riprap), erosion from ditches and steep slopes, erosion from exposed areas on the right-of-way, and increased bed scour or bank erosion due to changes in downstream flow patterns.

There are four main groups of crossings with respect to fish habitat and the environmental protection measures required:

- Crossings with no fish habitat (listed in Table 2.18-1);
- Small crossings with fish habitat, subject to the conditions of a DFO Letter of Advice (listed in Table 2.18-2);

- Crossings with fish habitat, subject to an authorization under Section 35(2) of the Fisheries Act (listed in Table 2.18-3); and
- Fish habitat compensation sites – crossings where remedial work will be carried out to improve conditions for fish, as agreed upon as a condition of the above fisheries authorization (listed in Table 2.18-4).

There are basic environmental protection measures that apply to all groups of crossings, and additional measures that apply to the crossings subject to the fisheries authorization.

Environmental Protection Procedures

The following measures will be implemented to minimize the potential impacts of stream crossing and installations:

- Culverts and box culverts will be installed in accordance with approved plans;
- Work should be conducted during low flow conditions – avoid conducting work during large precipitation/runoff events;
- Sediment and erosion control measures shall be implemented prior to work and sediment and erosion control measures shall be left in place and maintained until all disturbed areas have been stabilized (See Section 2.9 Sediment and Erosion Control);
- Any stockpiled materials shall be stored and stabilized above the high water mark of any water body;
- All materials and equipment shall be operated and stored in a manner that prevents any deleterious substance (e.g. petroleum products, silt, debris, etc.) from entering the water. This includes checking that equipment is free of fluid leaks, and that grease and other debris is wiped or washed clean from the equipment, before entering the water. Re-fuelling and equipment maintenance is to be conducted away from watercourses;
- Install crossings at right angles to the watercourse and such that the original direction of stream flow is not significantly altered;
- Minimize in-water work (get-in and get-out quickly); and
- Backfill water crossings with substrate (fill) material that is clean, competent, and consistent with the existing substrate size and texture found within the watercourse and will remain in/under the crossing.

Additional Environmental Protection Measures - Table 2.18-2 Crossings Subject to "Letter of Advice"

- Water depth within the water crossing should be not be less than 20 cm or the same depth as the natural channel especially during low flows;

- Water crossings should be backfilled with substrate material that is consistent with the existing substrate size and texture found within the watercourse and will remain in/under the crossing; and
- All disturbed areas shall be stabilized immediately upon completion of work and restored to a pre-disturbed state or better.

Additional Environmental Protection Measures - Table 2.18-2 Crossings Subject to Fisheries Authorization and Table 2.18-4 Fish Habitat Compensation site;

- An environmental inspector shall be on on-site to assess the crossings prior to the onset of construction to confirm the absence or presence of spawning sites at least 20 meters upstream or downstream of the crossing location, and whether spawning Arctic char are present in the vicinity (applies to Table 2.18-3 sites only and not the fish habitat compensation sites in Table 2.18-4);
- A qualified biologist or environmental inspector shall be on-site during all in-water construction, compensation and restoration works to ensure implementation of the designs as intended in the Plan and conditions of the fisheries authorization;
- Construct new crossings at the existing crossing sites;
- If machinery is required to bring material or equipment to the opposite side of the watercourse, then it shall be restricted to a onetime event (over and back) and only if no other existing crossing can be used. If the stream bed and banks are highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation is likely to occur as a result of equipment crossing, then a temporary crossing structure or other practices shall be used to protect these areas;
- Machinery fording shall occur at least 20 meters upstream or downstream of location where fish and/or spawning sites are noted; and
- Material used for habitat compensation features shall not be taken from below the ordinary high water mark or shoreline of any water body.

Table 2.18 - 1: Crossings With No Fish Habitat

Crossing	Road Chainage (km)	Size Category	Crossing	Road Chainage (km)	Size Category	Crossing	Road Chainage (km)	Size Category
CV087	46.225	M	CV037	73.105	ES	CV139	12.679	ES
CV091	42.962	M	CV038	72.943	ES	CV140	12.501	ES
CV092	42.949	M	CV039	72.845	ES	CV141	12.453	ES
CV098	38.525	M	CV041	69.369	ES	CV142	12.266	ES
CV075	53.336	S	CV042	69.294	ES	CV143	12.236	ES
CV165	7.038	S	CV044	67.036	ES	CV144	12.205	ES
BG030	84.636	S	CV045	66.873	ES	CV145	11.832	ES
CV023	83.169	S	CV050	62.495	ES	CV147	11.208	ES
CV043	67.472	S	CV051	62.390	ES	CV148	11.180	ES
CV047	66.427	S/M	CV052	62.332	ES	CV149	10.954	ES
CV083	47.644	S	CV053	62.117	ES	CV150	10.507	ES
CV085	46.424	S	CV054	62.018	ES	CV155	9.328	ES
CV090	44.832	S	CV055	61.904	ES	CV156	9.223	ES
CV093	42.215	S	CV056	61.810	ES	CV158	8.648	ES
CV117	27.074	S	CV061	57.761	ES	CV161	8.230	ES
CV146	11.347	S	CV062	55.692	ES	CV162	7.922	ES
CV215	79.575	S	CV063	55.524	ES	CV163	7.832	ES
BG002	96.041	ES	CV064	55.469	ES	CV164	7.299	ES
BG003	95.735	ES	CV065	55.401	ES	CV168	5.882	ES
BG007	93.123	ES	CV066	55.383	ES	CV169	5.427	ES
BG008	92.514	ES	CV067	55.197	ES	CV171	4.867	ES
BG009	91.890	ES	CV068	54.861	ES	CV172	4.722	ES
BG010	91.705	ES	CV069	54.669	ES	CV174	3.734	ES

Crossing	Road Chainage (km)	Size Category	Crossing	Road Chainage (km)	Size Category	Crossing	Road Chainage (km)	Size Category
BG011	91.601	ES	CV070	54.173	ES	CV175	2.867	ES
BG012	91.394	ES	CV071	54.144	ES	CV177	2.427	ES
BG013	90.995	ES	CV073	53.842	ES	CV178	1.776	ES
BG015	90.331	ES	CV077	52.091	ES	CV180	0.796	ES
BG016	90.218	ES	CV080	49.929	ES	CV184	101.557	ES
BG018	90.092	ES	CV081	49.792	ES	CV185	101.764	ES
BG019	89.815	ES	CV084	47.045	ES	CV188	104.5	ES
BG020	89.512	ES	CV088	45.991	ES	CV189	105.342	ES
BG021	89.415	ES	CV089	45.016	ES	CV190	105.454	ES
BG022	89.275	ES	CV095	43.871	ES	CV191	106.047	ES
BG023	87.784	ES	CV096	40.967	ES	CV192	106.189	ES
BG025	87.054	ES	CV097	39.028	ES	CV193	106.216	ES
BG026	86.978	ES	CV100	37.052	ES	CV194	106.430	ES
BG028	86.263	ES	CV101	36.954	ES	CV195	15.008	ES
BG031	82.076	ES	CV103	35.885	ES	CV196	15.839	ES
BG033	77.025	ES	CV105	33.307	ES	CV197	25.633	ES
CV002	93.199	ES	CV107	33.091	ES	CV198	26.444	ES
CV003	92.908	ES	CV108	32.513	ES	CV199	26.658	ES
CV004	92.660	ES	CV109	32.441	ES	CV200	28.938	ES
CV005	91.513	ES	CV110	32.220	ES	CV201	30.483	ES
CV006	91.092	ES	CV116	27.388	ES	CV204	35.154	ES
CV007	90.670	ES	CV118	25.878	ES	CV205	43.871	ES
CV008	89.696	ES	CV121	23.199	ES	CV206	49.031	ES

Crossing	Road Chainage (km)	Size Category	Crossing	Road Chainage (km)	Size Category	Crossing	Road Chainage (km)	Size Category
CV009	88.896	ES	CV122	21.949	ES	CV207	50.762	ES
CV010	88.316	ES	CV123	21.399	ES	CV208	64.672	ES
CV011	88.232	ES	CV124	20.626	ES	CV209	64.847	ES
CV012	88.171	ES	CV126	19.243	ES	CV210	71.871	ES
CV013	86.934	ES	CV127	18.279	ES	CV211	73.779	ES
CV014	86.834	ES	CV130	15.202	ES	CV212	74.410	ES
CV015	86.765	ES	CV131	14.709	ES	CV213	78.401	ES
CV016	86.434	ES	CV132	14.625	ES	CV214	78.877	ES
CV017	85.891	ES	CV133	14.201	ES	CV218	87.617	ES
CV018	85.813	ES	CV134	14.014	ES	CV219	92.093	ES
CV019	85.763	ES	CV135	13.675	ES	CV220	92.207	ES
CV020	85.614	ES	CV136	13.425	ES	CV221	92.288	ES
CV021	85.079	ES	CV137	13.042	ES	CV222	95.216	ES
CV022	85.062	ES	CV138	12.784	ES			
CV031	77.219	ES						
CV032	77.343	ES						
CV033	75.783	ES						
CV036	73.351	ES						

Table 2.18 - 2: Crossings Subject to DFO Letter of Advice

Location Code	Road Chainage (km)	Easting (NAD 83)	Northing (NAD 83)	Catchment Area Size Reference
BG27	86.606	547,876	7,919,342	Small
BG29	84.805	546,229	7,919,877	Small
CV001	94.728	553,782	7,914,922	Small
CV030	77.503	540,123	7,921,310	Small
CV046	66.489	531,686	7,924,265	Small
CV057	60.714	528,379	7,928,657	Small
CV058	60.523	528,322	7,928,839	Small
CV059	59.960	528,102	7,929,356	Small
CV076	53.028	526,617	7,935,335	Small
CV082	49.656	525,254	7,938,131	Small
CV086	46.300	523,746	7,940,983	Small
CV102	36.029	521,934	7,950,591	Small
CV106	33.170	521,663	7,953,392	Small
CV112	31.446	521,033	7,954,935	Small
CV113	30.656	520,747	7,955,659	Small
CV115	27.686	519,222	7,958,135	Small
CV119	24.264	517,762	7,961,153	Small
CV120	23.510	517,294	7,961,707	Small
CV125	20.448	515,296	7,963,841	Small
CV151	10.460	508,341	7,969,584	Small
CV152	10.282	508,201	7,969,684	Small
CV153	10.219	508,152	7,969,718	Small
CV154	9.570	507,620	7,970,076	Small
CV157	8.960	507,374	7,970,538	Small
CV166	6.055	505,538	7,972,370	Small
CV170	5.268	505,015	7,972,923	Small
CV176	2.637	503,834	7,975,057	Small
CV186	102.812	560,705	7,913,498	Small
CV187	103.078	560,957	7,913,414	Small
CV202	32.825	521,603	7,953,731	Small
CV203	34.150	521,782	7,952,435	Small
CV159	8.407	506,909	7,970,830	Extra Small
CV167	5.960	505,519	7,972,462	Extra Small
CV173	4.425	504,465	7,973,535	Extra Small

Table 2.18 - 3: Crossings Subject to DFO Fisheries Authorization

Location Code	Road Chainage (km)	Easting (NAD 83)	Northing (NAD 83)
BG50	62.836	529,334	7,926,846
CV128	17.683	513,545	7,965,895
CV217	79.824	542,219	7,922,158
CV223	97.230	555,818	7,914,691
BG17	90.168	550,703	7,917,643
BG32	78.163	540,706	7,921,622
CV040	72.263	535,175	7,920,305
CV048	64.312	530,415	7,925,875
CV049	63.303	529,677	7,926,542
CV072	53.878	526,897	7,934,576
CV078	51.172	525,852	7,936,787
CV079	50.599	525,562	7,937,276
CV094	41.613	522,805	7,945,397
CV099	37.840	521,811	7,948,820
CV129	15.651	512,381	7,966,783
CV216	80.647	542,774	7,921,700
CV225	99.033	557,407	7,915,138
BG01	99.676	557,991	7,914,919
BG04	94.148	553,250	7,915,113
BG24	87.710	548,766	7,918,878
CV060	58.853	527,622	7,930,342
CV104	33.794	521,732	7,952,788
CV111	31.991	521,355	7,954,524
CV114	29.648	520,278	7,956,528
CV224	97.758	556,238	7,915,044

Table 2.18 - 4: Fish Habitat Compensation Sites

Location Code	Road Chainage (km)	Easting (NAD 83)	Northing (NAD 83)
CV001	94.728	553,782	7,914,922
CV154	9.570	507,620	7,970,076
CV159	8.407	506,909	7,970,830
CV181	0.145	504,133	7,976,216
CV183	0.145	504,696	7,976,417
CV187	103.078	560,957	7,913,414
CV113	30.656	520,747	7,955,659
CV152	10.282	508,201	7,969,684
CV157	8.960	507,374	7,970,538
CV166	6.055	505,538	7,972,370
CV170	5.268	505,015	7,972,923
BG16	90.218	550,742	7,917,611
CV156	9.223	507,580	7,970,389
CV176	2.637	503,834	7,975,057

Section 2.19 – Road Traffic Management

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.19	Road Traffic Management	E	January 6, 2012

Project-related traffic will be managed to:

- Ensure smooth flow of road traffic during construction and project operation;
- Ensure that adequate information is given to drivers and pedestrians in a timely manner to avoid accidents and holdups of construction work; and
- Ensure assessment, monitoring and improvement on the plan.

Over the period of the project lifecycle, there will be different levels of traffic flow. The peak flow periods of vehicles and equipment, and construction workers are expected to be during the day. Low flow periods will be during the night.

Traffic during construction and operation, if not properly managed, may cause disruption, accidents and interference in local community lifestyle.

Environmental Protection Procedures

- The Tote Road has an established right to public access, and therefore project-related traffic must share the road and be respectful of other users;
- Traffic will be restricted to 50 km/hr, which can be monitored by tracking the arrival times of trucks at the final destination, as well as by road superintendents if necessary;
- Signposts will be established at every kilometre along road corridors;
- Radio towers will be established as required and with approval of the landowner. All vehicles will call out on the radio their location, direction and type of vehicle for all other road users to hear (example: ore truck, loaded, kilometre 34, northbound);
- Road traffic updates will be provided on community radio. Community members will be encouraged not to discharge firearms within 1 km of Project roads, for the duration of the Project;
- Wildlife has the right-of-way;
- Any substantial movements of caribou in the vicinity of the road during the spring (when the caribou are either migrating or possibly calving) will be reported to the HSE Manager – see Section 2.12 Caribou Protection Measures; and
- A strict no hunting policy will be implemented among employees of Baffinland and its contractors while at the work site.

Section 2.20 – Drilling Blasting and Crushing

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.20	Drilling, Blasting and Crushing	D	January 6, 2012

Drilling and blasting will be conducted at all stages of the project lifecycle. Various blasting locations will include the pit at Mary River, the rock quarry locations near Mary River and Milne Port, as well as the various quarrying locations along the railway. Drilling should proceed in accordance with Section 2.21 Drilling Operations. Throughout that life of the project carious blasting methods will be utilized. This will include the use of: high explosives, pre-packaged emulsions, ANFO, and emulsion produced on sit. Although all of these explosives contain ammonium nitrate the chance of AN escaping and contaminating the surrounding area is extremely low when using emulsions or high explosives. When ANFO is used it will be in dry conditions thus significantly reducing the risk of AN contamination. Ammonia is toxic to aquatic life at certain concentrations. Therefore, the proper handling of explosives during blasting operations is important to minimize spillages, which can runoff into nearby watercourses.

Ammonium nitrate may be spilled on snow during mining, and while some of the ammonium nitrate will be volatile and disperse with the wind some may be contained in spring runoff to watercourses. Blasting associated with rock quarries may occur in non-winter conditions when runoff may occur and impacts can be more immediate.

Crushing will occur on both the Mary River mine site, as well as the Steensby port, a screening system will be used to filter the ROM ore into the crusher where it will then be dispelled into a stockpile. It is expected the crusher will generate air and noise emissions.

Environmental Protection Procedures

- Explosives use at the site, and worker safety around mining and crushing activities, is governed by the NWT/Nunavut Occupational Health and Safety Act and Regulations;
- Contractor employees using explosives shall have all required certifications including the blasters certificates; and
- All necessary precautions shall be taken to safely handle the explosives and to minimize spillage during blasting operations.

Section 2.21 – Exploration Drilling Operations

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.21	Exploration Drilling Operations	C	January 6, 2012

Environmental Concern

Environmental concerns with drilling include surface disturbances, drilling fluid and cutting disposals, impacts on dust, noise, water quality, and habitat encroachment.

All drilling muds and other additives must be approved by the HSE Manager prior to being transported and used on site for the exploration drilling program. Data on drilling muds and other additives must be included as part of the Emergency Response and Spill Contingency Plan.

Use of water for drilling for the Mary River Project is subject to the conditions outlined in the water use license (Type "A").

See also Section 2.4 Water Use, of the EPP, regarding the extraction of water for drilling.

Environmental Protection Procedures

Acceptable Locations to Drill

- Prior to drill placement, investigate site drainage to determine the proper downstream placement of the collection/settling sump(s), if warranted. Note that in most situations, sumps will be required; however, in some circumstances sumps may not be practical. In these cases, approval must be obtained by the Environmental Lead;
- Ensure sumps are of sufficient capacity based on a combination of proposed drill hole length and water usage, and potential residence time in the sumps;
- Do not construct drill sites or drill sumps within 30 meters of the normal high water mark of a water body unless specific approval is obtained by Baffinland from regulatory agencies;
- Ensure that Drilling Checklists are completed prior to finalizing drill site, sump locations, and silt fence locations; and
- Silt fences shall be placed immediately down-gradient of drill set-ups / sumps and up-gradient of any water body or stream. The selection of silt fence locations will be based on optimization of the following factors: minimizing the transport distance of drill cutting/mud and placement of fences in locations that will be functionally effective.

Drill Operations and Movements

- Ensure that the drilling area is kept clean and tidy at all times. No littering is permitted - collect and package all waste for disposal at camp;
- Do not feed wildlife;
- Carry out all operations so as to minimize surface disturbance;

- Minimize overland transportation for transport of workers off of approved roads and trails due to the potential for ground disturbance;
- Do not use surface vehicles to move drill rigs or other equipment, without prior authorization of the Environmental Lead. The use of any vehicles off approved routes is prohibited;
- Do not move equipment or vehicles unless the ground surface is in a state capable of fully supporting the equipment or vehicles without rutting or gouging;
- Daily checks of active sumps will be conducted to ensure that any sump water spill-over occurs in a controlled manner. Sumps are to be constructed so that there is an overflow notch cut into the sump embankment to allow the sump water decant to flow from the sump in a controlled fashion;
- Silt fences will be placed downstream of the sumps as described previously and will be checked weekly;
- Weekly samples will be collected along various streams, tributaries, and rivers as per sampling schedule;
- Carry out daily inspections of drill and drill sites for fuel leaks, equipment condition, sediment and erosion control, and brine water management (See Inspectors Daily Report, Section 3.13 Exploration Drilling Checklists). Repair all hydrocarbon leaks immediately;
- Equip drill rigs with oil absorbent materials (spill kits) in the event of leaks, releases and spills;
- If the bottom of the permafrost is broken through by the drill, the depth of the bottom of permafrost and location should be reported to the Project Manager/HSE Manager for subsequent reporting to the Nunavut Water Board;
- Do not cause any obstruction of any naturally occurring stream;
- Implement sediment and erosion control measures prior to drilling operations and maintain these during the operation to minimize spillage of salt and other additives onto water; and
- Conduct wildlife inspection immediately prior to movement of the drill, involving aerial survey and ground survey of the new site (see Drill Operation Work Restrictions, below).

Drill Operation Work Restrictions

Caribou

- If caribou are observed within 3 km (between May 15 and July 15) or 2 km (at all other times) of the proposed new drill site and disturbance is noted, the drill should be moved to an alternative location and activity at the site deferred until after the caribou leave the area. If the drill is already in place and operating, and caribou move into the area (within 3 km between May 15 and July 15, and within 2 km at any other time), the animals should be monitored. If the caribou show no obvious signs of disturbance, drilling activities can

continue. If the animals appear agitated, then activities must cease until the caribou leave or are guided away.

Carnivores and/or Den Sites

- No drilling activity should take place within 2 km of an active wolf den between mid May and mid August if direct line of sight and disturbance is noted. Foxes or wolves approaching humans must be discouraged by shouting and making threatening moves. Feeding wildlife is prohibited. All work areas must be kept clear of food scraps and garbage.

Raptor (Hawks, Falcons, Owls) Nest Sites

- No drilling activity should take place within 500 m of an active raptor nest site during the breeding season (approximately mid May to August), unless an individual nest protection plan has been prepared by an avian biologist in conjunction with Baffinland Environmental Superintendent. Report all active nest sites to the Environmental Lead.

Songbirds, Shorebirds, Loons and Waterfowl

- Drills, pumps and waterlines should be placed at least 500 m from active bird nests and every precaution should be taken to avoid disrupting the nests. All project personnel should remain more than 100 m from active nest sites. Time spent on the hose alignment should be minimized to reduce disturbances in areas between the water source and project activities. Active nests must not be destroyed.

Marine Mammals

- Do not drill near concentrations of animals or destroy in-ice breathing holes.

Water Use/Brine Stations

- Brine (calcium chloride salt mixed with water) to be used in exploration drilling are to be controlled to the maximum extent practicable. Drilling muds contained in drilling fluids must be settled out in sumps or by silt fences prior to entering any downstream water bodies or streams;

- Salt and water use for each drill is to be controlled by the use of brine mixing stations. These stations must be inspected daily and conditions documented by means of an established checklist. The brine station operator will be in continuous communication with each exploration drill. Brine conservation measures will be adopted which will include: shutting off the flow of brine to drills when brine is not required (i.e., when drills are temporarily shut down), eliminating all spillage in the vicinity of the brine stations, and minimizing to the greatest extent practicable the salt concentrations in water;

- Do not use streams as a water source unless authorized and approved by the Nunavut Water Board;

- DFO approved screens must be placed over the intake hoses. The pumping rate must be kept sufficiently low to ensure that fish do not become entrained (drawn against the screen) and that water is withdrawn at a rate that fish do not become impinged on the screen;

- Do not remove any material below the high water mark of any water source;

- Provide necessary controls to prevent erosion. No erosion is to be caused to the banks of any body of water. Install erosion control structures as the land use operation progresses; and
- Storage of hydrocarbons for the operation of pumps must be kept a minimum of 30 m from the high water mark of a water body or stream. Spill trays must be used as appropriate and spill kits must be stored nearby.

Drill Water and Runoff

- Minimize the volume of brine to be used for drilling to the greatest extent practicable and prevent sediment laden water (from drilling muds and cuttings) from discharging into watercourses;
- Dispose of sediment laden drill water into a constructed sump and minimize the discharge of sediment into any water body or stream;
- Minimize the footprint of any sediment laden drill water and cuttings spillage by means of berms and/or other means of containment;
- Prior to the commencement of drilling for each hole, establish a dedicated sump location where collected "dirty" drill water and cuttings are to be discharged. The location should be a minimum of 30 m from surface water bodies and preferably be located such that any flow toward a surface water body is minimized. For the most part below grade sumps established as part of the exploration drilling program are to be excavated into the ground surface due to steep topography and lack of natural topographic depression or relatively flat ground surfaces;
- Install silt fences, diversion channels or berms downstream of drill rigs if required to contain sediment laden drill water runoff;
- Sediment laden drilling waste must not be allowed to spread to the surrounding lands or water bodies; the footprint of any spillage must be minimized to the greatest degree practicable;
- If artesian flow is encountered, drillholes shall be immediately plugged and permanently sealed to prevent induced contamination of groundwater or salinization of surface waters. Report the artesian occurrence within 48 hr to the Engineer and HSE Manager. All artesian flows, including location (GPS NAD83), should be reported in the annual report to the Project Manager/ HSE Manager for subsequent reporting to the Nunavut Water Board;
- Once sumps are no longer needed, allow sumps to free drain naturally, and once empty of drill fluids, restore drill sumps to the natural surrounding contours of the land;
- When no further drilling is planned for a site, contour and stabilize the area and restore these areas to a stabilized state;
- Upon completion of a hole in rock, the casing will be removed or will be dealt with in accordance with the requirements of the Exploration Project Manager;

- Remove all non-combustible garbage and debris from the land use area to an approved disposal site;
- Return all combustible waste and petroleum products to camp for proper management; and
- Ensure that Post-Drilling Checklist (Section 3.13 Exploration Drilling Checklists) is completed at the completion of each drill hole. The Exploration Manager will ensure that all drill forms are completed and copies submitted to the Environment Department after the completion of each drill hole as soon as practical.

Section 2.22 – Water Sampling for On Ice Drilling

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.22	Water Sampling for On-Ice Drilling	C	January 6, 2012

Environmental Concerns

On-ice drilling is critical for geotechnical investigations so that information for bridges and water crossing structures may be collected for use in design. Marine and lake environments are sensitive to disturbances, such as on-ice drilling. As such, overall water quality, including occurrence and concentrations of suspended solids and trace metals, must be monitored and protected. Water samples should be taken prior to on-ice drilling and after on-ice drilling to ensure appropriate water quality standards are maintained. Water sampling, for the purposes of water monitoring and detection of exceedences will ensure that the water quality is not compromised in the water bodies where on-ice drilling occurs.

Environmental Protection Procedures

The following procedures will be followed to ensure that on-ice drilling (for both inland and marine environments) will not compromise the water quality of the underlying water body:

- A location not more than 30 m downstream (if applicable) from the proposed drill hole location will be selected for pre-drilling and post-drilling water samples;
- The pre-drilling water sample will be taken no more than four hours prior to drilling commencing at that location;
- The post-drilling water sample will be taken within four hours of the rods and casing being removed from the hole and the drill being decommissioned;
- The following methodology will be used to collect the water samples:
    1. A hole will be augured through the ice and ice cuttings will be cleared from the hole;
    2. A bailer will be used to obtain a representative water sample from the water column below the bottom of the ice;
    3. The water sample will be transferred to sample bottles; and
    4. The same hole will be used to collect the pre-drilling and post-drilling water samples.
- Water samples will be tested to ensure that the total suspended solids (TSS) concentration does not increase by more than 10 mg/L for water bodies with background levels under 100 mg/L, or by more than 10% of the background level for water bodies with background levels above 100 mg/L;
- Before and after water samples will be tested to monitor TSS, pH and electrical conductivity in the field;

- Before and after water samples will be submitted for laboratory testing to monitor total trace metals as determined by a standard ICP scan (to include at a minimum, the following elements: Al, Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Li, Mn, Mo, Ni, Se, Sn, Sr, Tl, Ti, U, V, Zn), and total arsenic and mercury;
- Drill water and cuttings reporting to surface from on-ice drilling will be discharged into a portable containment sump and removed from the ice. Water and cuttings will be stored in a pit at least 30 m from any water body, as specified by Baffinland; and
- The Operational Standard (Section 2.5) for Drilling Operations will also be followed in conjunction with the procedures listed above.

Section 2.23 – Wildlife Log Instructions

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.23	Wildlife Log Instructions	A	June 4, 2008

Baffinland is required to keep a log of all wildlife sightings at the Mary River Project Sites as a requirement of the land use permits. A system of tracked wildlife log sheets has been set up which have been assigned to responsible parties.

All personnel on site at the Mary River Project are required to record all wildlife sightings on the posted wildlife logs, or with their supervisor. Wildlife logs are to be posted at each camp by the responsible parties.

Responsible parties will ensure that a numbered log sheet is posted in their camp or site, will encourage their use and will replace the log form as needed. The information from these sheets will be regularly collected. Completed log forms are to be returned to the party responsible for tracking wildlife log data.

Wildlife species potentially in the Project Area include caribou, wolf, wolverine, fox, arctic hare, lemmings, polar bear, walrus, seals, whales, raptors, loons, ducks, geese, songbirds and shorebirds. Sightings of any of these animals must be recorded. Identify the animal to the best of your knowledge. If you do not know the species, record a general group name, such as 'duck' or 'small bird'. If you are unsure, indicate this, such as 'fox or wolf?' Record tracks only if they are fresh.

Wildlife Log Instructions

- Record your name and the date of the observation;
- Briefly describe the location, noting any significant landmarks, water bodies or other features. This is particularly important if you are not equipped with a GPS;
- Record the GPS coordinates if possible. Ensure coordinates are recorded in NAD83;
- Record the type of animal. Identify the species, if possible, or the general type or group;
- Record the number of animals observed and the life stage (juvenile or adult), if known; and
- Record observations on the behaviour of the animal. What was it doing at the time you observed it? Was it making any sound? How did it react to your presence? How far away was it? Were you walking/driving/flying?

Section 2.24 – Blasting in Water

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.24	Blasting in Water	A	January 6, 2012

Environmental Concern

Throughout that life of the project various blasting methods will be utilized. Some of these will include the use of: high explosives and pre-packaged emulsions. Although these explosives contain ammonium nitrate the chance of AN escaping and contaminating the water is extremely low. Ammonia is toxic to aquatic life at certain concentrations, therefore the proper handling and use of explosives during blasting operations is important to minimize potential impacts on the environment.

Blasting in or near water produces shock waves and vibrations that may have a potential impact on fish and marine mammals so it is important that the appropriate and safe vibration limits are implemented to minimize the impact in and around the surrounding environment.

Potential silt and sediment production resulting from blasting activities may also have negative effects on fish and fish habitat. Silt and sediment can be transported in the water which may cause turbidity and a variety of harmful effects on fish. Some of these negative effects include; clogging and abrasion of the gills of fish and other aquatic organisms, behavioral changes such as movement and migration, decreased resistance to disease, impairment of feeding, for example, turbidity interferes with feeding for visual feeders such as trout and bass, poor egg and fry development. These are just a few of the potential harmful effects that silt, sediment and turbidity can have on the surrounding marine and freshwater environment so ensuring the appropriate precautions are put in place when blasting is essential.

Environmental Protection Procedures

- Explosives use at the site, and worker safety is governed by the NWT/Nunavut Occupational Health and Safety Act and Regulations
- Contractor employees using explosives shall have all required certifications including the blasters certificates
- Modern explosive materials and blasting will reduce the risk of Ammonia contaminating the water.
- Best Management Practices will be used to ensure that blasting operations in water stay within 100kPa IPC threshold set forth by the DFO Guidelines for Use of Explosives in or Near Canadian Waters.
- The production of Silt in the water from the use of Explosives will be minimized using Best Management Practices.

- All necessary precautions shall be taken to safely handle the explosives and to minimize spillage during blasting operations.
- Adaptive Management will be implemented in all phases of the project in order to ensure that all the precautionary measures are in place to reduce the environment impact of the associated activities.

2.25 – Quarry and Borrow Pit Operation

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.25	Quarry and Barrow Pit Operation	A	January 6, 2012

Environmental Concern

Quarrying and borrow pit operation may be responsible for a number of environmental impacts throughout the life of the project. Potential impacts include: soil erosion and sediment deposition, habitat loss, dust generation, permafrost degradation, water ponding. In addition to this there is the potential for water quality impacts such as silt, fuel contamination, and contamination from explosives residue.

Various activities required both directly and indirectly with quarrying will be undertaken during both the development stage as well as the operations and monitoring stage of the project. These activities are anticipated to have a direct environmental impact and will need to be addressed and mitigated. During site layout timber will be cleared along with all other vegetation in the area. In addition to this soil and other overburden will be removed to expose the bedrock. This will increase the chances of erosion and create habitat loss. During Operations Basting, stockpiling, crushing and road maintenance will all be preformed and will impact the environment in a variety of way.

Environmental Protection Procedures

Measures will be implemented to minimize the environmental impact of the quarrying and borrow pit operation for the duration of the program. These measures include:

- Retain as much vegetation as reasonable practicable to the maintain slope stability;
- Maintain natural drainage patters;
- Maintain vegetation buffer zones to protect water bodies;
- Construct ditches to direct runoff away from site;
- Locate the development in a well drained area;
- Salvage and properly store organics, topsoil, and overburden for use in reclamation;
- Limit sediment movement using silt fences or straw bales;
- Use rip-rap to reinforce drainage channel corners and water discharge points;
- Revegetate where required to stabilize slopes;
- Limit sediment movement or use settling ponds before discharging;
- Use proper fuel containment and handling techniques, and have spill kits accessible;

- Use proper explosives handling techniques to minimize waste;
- Minimize sources of in-pit water by diverting surface water away from the development area;
- Place ice-rich material to thaw in a location where melt water will not re-enter pit ;
- Limit pit or quarry depth; and
- Dust skirts on conveyors to minimize dust.

2.26 – Concrete Production

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.26	Concrete Production	A	January 6, 2012

Environmental Concern

During the major works, concrete will be provided from a batching plant located at the construction laydown areas. Cement will be shipped on site and mixed with water and aggregate to make the concrete. Waste concrete will arise from off-spec mixes, residual concrete at the end of a pour, and from wash down of the equipment. It is important to ensure that there are no spills on site as concrete is corrosive and waste runoff can impact the surrounding environment.

Another major concern is dust formation from the production of concrete. Dust will have a significant impact on the air quality on site so it is important that all precautionary measures are taken to contain the impact.

Environmental Protection Procedures

- All aggregate and concrete will be stored inside the batch plant and will be monitored;
- All concrete production shall occur within the batch plant in order to ensure the dust is contained and Best Management Practices will be implemented to minimize the production and effects of dust onsite;
- Shipping of cement to site will be done using tote bags stored in sealed c-can containers which will reduce the likelihood of any spills occurring onsite;
- A purpose built concrete waste pond shall be used to receive all of concrete contaminated wash water. This pond is designed to allow for settling of solids, decant analysis and if necessary pH adjustment prior to discharge;
- All concrete product waste shall be disposed in the concrete waste pond;
- Lined containment areas will be used to wash concrete delivery trucks drum and shoot on-site in order to eliminate runoff of waste wash water; and
- Waste hardened concrete will be used as either fill, or disposed of in one of the onsite landfills.

2.27 – Excavation and Foundations

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.27	Excavation and Foundations	A	January 6, 2012

Environmental Concern

Excavations and Foundations on site may have several environmental impacts that could potentially occur throughout the life of the project. Possible environmental impacts that may occur include: The loss of vegetation and wildlife habitat, effects on permafrost, erosion, soil drainage, and ponding of water.

Various activities requiring excavation and foundations will be undertaken during throughout the development stage as well as the operations and monitoring stage of the project. These could potentially have a direct environmental impact and will need to be addressed and mitigated. Such activities include: driving pile foundations for buildings, excavating foundations for buildings, and driving the tunnels for the railway.

Environmental Protection Procedure

Measures will be implemented to minimize the environmental impact the excavations and foundations that will be constructed throughout the duration of the program. These measures include:

- Minimize vegetation disturbance as much as possible to enhance stability;
- Ensure adequate drainage and maintain natural drainage patterns;
- Locate the development in a well drained area whenever feasible;
- Ensure excavation are properly drained; and
- Minimize sources of in-excavation water by diverting surface water away from the development area.

Section 2.28 – Watercourse Crossings

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
2.28	Watercourse Crossings	A	January 6, 2012

Environmental Concerns

Project activities require the construction and operation of Water Crossings. Water Crossings specifically used on the Tote Road are addressed in Section 2.18. Water Crossing have the potential to impact fisheries resources through the:

- Alteration of fish habitat or blockage of fish passage;
- Accidental releases of deleterious substances (i.e., fuel spills, sediment); and
- Potential entrainment of fish through water supply intakes for drilling and potable water.

The construction of watercourse crossings has the potential to negatively affect fish and fish habitat from construction of the crossing structures or post-construction influence of the completed structures on fish habitat. Elevated levels of suspended sediment are the primary change in water quality that could result from work on or around water. Construction activities typically result in short-term effects, while long term effects can arise through erosion of ditches and slopes if not mitigated. Sediment sources related to construction activities include equipment crossings, excavation, blasting, and installation of bank protection measures (riprap), erosion from ditches and steep slopes, erosion from exposed areas on the right-of-way, and increased bed scour or bank erosion due to changes in downstream flow patterns.

There are four main groups of crossings with respect to fish habitat and the environmental protection measures required:

- Crossings with no fish habitat
- Small crossings with fish habitat, subject to the conditions of a DFO Letter of Advice
- Crossings with fish habitat, subject to an authorization under Section 35(2) of the Fisheries Act
- Fish habitat compensation sites – crossings where remedial work will be carried out to improve conditions for fish, as agreed upon as a condition of the above fisheries authorization.

There are basic environmental protection measures that apply to all groups of crossings, and additional measures that apply to the crossings subject to the fisheries authorization.

Environmental Protection Procedures

The following measures will be implemented to minimize the potential impacts of stream crossing and installations:

- Culverts and box culverts will be installed in accordance with approved plans;

- Work should be conducted during low flow conditions – avoid conducting work during large precipitation/runoff events;
- Sediment and erosion control measures shall be implemented prior to work and sediment and erosion control measures shall be left in place and maintained until all disturbed areas have been stabilized (See Section 2.9 Sediment and Erosion Control);
- Any stockpiled materials shall be stored and stabilized above the high water mark of any water body;
- All materials and equipment shall be operated and stored in a manner that prevents any deleterious substance (e.g. petroleum products, silt, debris, etc.) from entering the water. This includes checking that equipment is free of fluid leaks, and that grease and other debris is wiped or washed clean from the equipment, before entering the water. Re-fuelling and equipment maintenance is to be conducted away from watercourses;
- Install crossings at right angles to the watercourse and such that the original direction of stream flow is not significantly altered;
- Minimize in-water work (get-in and get-out quickly); and
- Backfill water crossings with substrate (fill) material that is clean, competent, and consistent with the existing substrate size and texture found within the watercourse and will remain in/under the crossing.
- Water depth within the water crossing should be not be less than 20 cm or the same depth as the natural channel especially during low flows;
- Water crossings should be backfilled with substrate material that is consistent with the existing substrate size and texture found within the watercourse and will remain in/under the crossing; and
- All disturbed areas shall be stabilized immediately upon completion of work and restored to a pre-disturbed state or better.
- An environmental inspector shall be on on-site to assess the crossings prior to the onset of construction to confirm the absence or presence of spawning sites at least 20 meters upstream or downstream of the crossing location, and whether spawning Arctic char are present in the vicinity. Applies only to sites where Crossings subject to Fisheries Authorization and Fish Habitat Compensation sites.
- A qualified biologist or environmental inspector shall be on-site during all in-water construction, compensation and restoration works to ensure implementation of the designs as intended in the Plan and conditions of the fisheries authorization;
- Construct new crossings at the existing crossing sites;
- If machinery is required to bring material or equipment to the opposite side of the watercourse, then it shall be restricted to a onetime event (over and back) and only if no

other existing crossing can be used. If the stream bed and banks are highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation is likely to occur as a result of equipment crossing, then a temporary crossing structure or other practices shall be used to protect these areas;

- Machinery fording shall occur at least 20 meters upstream or downstream of location where fish and/or spawning sites are noted; and
- Material used for habitat compensation features shall not be taken from below the ordinary high water mark or shoreline of any water body.

Section 3.0 – Documentation Logs

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.0	Documentation Logs	C	June 4, 2008

Documentation Procedures

A key aspect of the Environmental Protection Plan is effective record-keeping. The following logs or forms are to be used to record key information:

- Human use log by site personnel (Section 3.1);
- A voluntary self-registration of land use (Section 3.2);
- Wildlife Log (Section 3.3);
- Pre-and Post-Drilling Checklists (Section 3.4);
- Fuel Storage Facility Inspection Form (Section 3.5);
- Off-Site Waste Disposal Log (Section 3.6);
- Caribou Decision Tree (Section 3.7);
- Watercourse Crossing Monitoring Data Form (Section 3.8);
- Turbidity Monitoring Data Form (Section 3.9);
- Compliance Monitoring Form (Section 3.10);
- Compliance Inspection Report (Section 3.11);
- Landfill Facility Inspection Form (Section 3.12);
- Fuel Reconciliation Form (Section 3.13);
- Water Use Log Form (Section 3.14);
- Sewage Effluent Disposal Log Form (Section 3.15);
- Waste Disposal Log From (Section 3.16); and
- Water Treatment Facilities Inspection Form (Section 3.17).

The record keeping forms are described further in their respective sections of the EPP. All completed logs and forms are to be filed with the HSE Manager immediately upon completion.

Section 3.1 – Human Use Log

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.1	Human Use Log	A	August 8, 2007

Environmental Concern

Land and resource uses in the project area include; hunting, fishing, trapping, and tourism. Potential impacts to existing land use will include the interruption of camping, hunting, tourism and marine activities mainly in Milne Inlet and Mary River areas, but also extending throughout North Baffin Island. Baffinland has made a commitment to minimize disturbance to other land users to the extent possible.

Approvals issued to Baffinland require that the Company monitor the potential effects of its activities on Inuit harvesting activities. To do so, Baffinland wants to be aware of when people come into the area. The objective is to understand the activities of other land users only as much as needed to be able to modify Project activities to minimize disruption to other land users. Baffinland does not want to know other people's personal business!

Table 3.1 - 1: Mary River Human Use Observation Log

Date	Where (Gps)	Number of People In Party	Inuit or Non-Inuit	Activities Observed (Camp, Hunting, Travel, Etc)

Section 3.2 – Voluntary Self Registration of Land Use

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.2	Voluntary Self-Registration of Land Use	B	August 14, 2007

Voluntary Self-registration of Land Use

Baffinland wants to understand existing land uses in the region, so that it may respect others and try to minimize disturbance to others as much as possible. We would also like to understand how you use the land. We appreciate if you would take the time to complete this entry before and after you travel to Nuluujaak.

Part 1- Self-Registration

Table 3.2 - 1: Self-Registration

Name	Number of in Party	Destination	Primary Location	Date In	Date Out	Reason / Activities

Part 2 – Post-Trip Information Collection

Table 3.2 - 2: Post-Trip Information Collection

Name	
Date in / out	
Location Visited / used (show on map)	
Primary Camp location(s)	
Number and species of animals / birds / fish harvested	
Location of harvests (see attached map)	
Mary River work observed (drilling, aircraft, etc)	
Other Comments	

Section 3.3 – Wildlife Log

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.3	Wildlife Log	B	June 4, 2008

Figure 3.3 - 1: Wildlife Log 2008 Wildlife Monitoring Program Mary River Project

Office Use Only	
Issue Date:	
Return Date:	
Contact:	
Location:	
Tracking ID:	

WILDLIFE LOG
2008 WILDLIFE MONITORING PROGRAM
MARY RIVER PROJECT

Your Name	Date	Location Description	Coordinates (NAD 83)		Type of Animal (species)	# of Animals	Comments (behavior/sound)
			Northing	Easting			

Section 3.4 – Drilling Inspection Reports

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.4	Drill Inspection Forms: Pre-Drilling, Daily, and Post Drilling	B	June 19, 2009

Table 3.4 - 1:Pre-Drilling Inspection Report

PRE-DRILLING INSPECTION REPORT

BIM personnel:
Date:
Time:
Proposed hole ID:
Final hole ID:

PROPOSED HOLE INFORMATION:

Deposit #:	1	**Collar location:**	E
Project:	MARY RIVER	(NAD 83)	N
Area:	BAFFIN ISLAND	**Dip:**	
NTS:	37G/5	**Azimuth:**	
Elevation:		**Target depth:**	

Description of drill hole location:
Purpose of drill hole:

DRILLING INFORMATION:

Has site been approved by drill foreman?
Drill contractor: Drill personnel: Drill #:
Expected start of drilling:
Is moving of drill hole required?:
If yes, provide reason:
New collar location: E N

WATER MANAGEMENT:

Water source: Mary River
Pump Station #: PS2
Sump location identified and constructed?: Yes / No (Photo required)
Corner 1: E N
Corner 2: E N
Silt fence(s) constructed?: Yes / No (Photo required)
Corner 1: E N
Corner 2: E N

SITE ASSESSMENTS:

Are wildlife present?: (If yes, record in log)
Is site safe for drilling?

Stable platform	Yes / No	Fire Extinguisher	Yes / No
First Aid kit	Yes / No	Eye Wash	Yes / No
PPE	Yes / No	Spill Kits	Yes / No

Safety concerns/issues:
Environmental concerns?

PHOTOGRAPHIC RECORD:

Photo of drillhole location prior to setup? Yes / No
Name: Folder:
Uploaded to hard drive?

COMMENTS:

Table 3.4 - 2: Daily Drilling Inspection Report

Baffinland Iron Mines Corporation	**DAILY DRILL INSPECTION REPORT**
	BIM personnel: **Date:** **Time:** **Hole ID:**

HOLE INFORMATION:

Deposit #:	1	**Collar location:**	E
Location:		(NAD 83)	N

DRILLING INFORMATION

Drill contractor: Boart Longyear
Drill personnel:
Drill #:

DRILLING PROGRESS:

Day Shift	Night Shift
Start depth:	**Start depth:**
End depth:	**End depth:**
Total depth drilled:	**Total depth drilled:**
Casing installed:	**Casing installed:**

Any rods/casing/tools lost in the drillhole? If yes, what was lost?

Delays/Problems: (breakdowns, stuck rods, bit change, weather, wait time, drill move, etc) Provide time estimate

WATER USE ASSESSMENT:

Sediment control measures in place:
Assessment of effectiveness:
Approximate water level in sump:
Color of water in sump:
Color of runoff?

Conductivity readings?:	Station #	Reading
	Station #	Reading
	Station #	Reading
Turbidity sample(s) taken?:	Sample #	Reading
	Sample #	Reading

SITE ASSESSMENT:

Are wildlife present?: (check log for previous wildlife activity)

Is site safe for drilling?

Stable platform	Yes / No	Fire Extinguisher	Yes / No
First Aid kit	Yes / No	Eye Wash	Yes / No
PPE	Yes / No	Spill Kits	Yes / No
Lined Berms	Yes / No		

Safety concerns/issues:
Environmental concerns?
Corrective action required?: Action plan (if required):
Responsible party:
Date to be completed: Photograph (only required to document problems and corrective actions)

PHOTOGRAPHIC RECORD:

Photo of drillhole during drilling? Photo of water management measures? Yes / No
Name: Folder:
Uploaded to hard drive?

COMMENTS:

Table 3.4 - 3: Post-Drilling Inspection Report

Baffinland Iron Mines Corporation	**POST-DRILLING INSPECTION REPORT** **BIM personnel:** **Date:** **Time:** **Final hole ID:**

HOLE INFORMATION:

Deposit #:		**Collar location:**	E
Project:	MARY RIVER	(NAD 83)	N
Area:	BAFFIN ISLAND	**Dip:**	
NTS:	37G/5	**Azimuth:**	
Elevation:		**EOH:**	

Description of drillhole location:
Purpose of drillhole:

DRILLING INFORMATION:

Drill contractor:
Drill personnel:
Drill #:
End of drilling:
Casing:
Any rods/casing/tools lost in the drillhole? If yes, what was lost?

Are rods/casing left in the ground cut at ground level and is the hole properly plugged and capped? Yes / No
Next set-up collar location: E N

WATER USE ASSESSMENT:

Water source: Mary River
Pump station #:
Total amount of hours water was pumped from pump station:

SITE ASSESSMENT:

All materials and debris removed from site? Yes / No
Any environmental concerns? Yes / No If yes, please describe below:

Any additional work required? Yes / No If yes, please describe below:

Corrective action:
Responsible party:
Date to be completed by:

PHOTOGRAPHIC RECORD:

Photo of drillhole location following demobilization and clean up? Yes / No
Name: Folder:
Uploaded to hard drive?

COMMENTS:

INSPECTION COMPLETED BY:

BIM signature: Drill contractor signature:

Section 3.5 –Fuel Storage Facility Inspection Form

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.5	Fuel Storage Facility Inspection Form	B	June 4, 2008

Date:

Inspector name:

Inspector's position:

Today's inspection was carried out at the following sites (check all that apply):

- Milne Inlet camp
- Midway camp
- Mary River camp
- Crusher area at Mary River
- Steensby Inlet camp
- Other (please describe location)

Bulk Fuel Storage Facilities

Please review and complete the checklist for each of the three bulk fuel storage facilities (tank farms):

	Milne Inlet Camp		Mary River Camp		Crusher Area	
	Yes	No	Yes	No	Yes	No
Is re-fueling being supervised full-time?						
(When people take fuel, do they stay next to the fuel						
Are there any signs of fuel spills on the ground near						
Is the vehicle/equipment positioned on the fuel pad						
Walking around the storage facility – is there any fuel						
If there is water in the berm, is there a visible sheen						
Can you see any obvious damage to piping or the						
Can you see any damage to the berm or the plastic						
Do you notice anything else of concern? If so, please describe below.						

Drum Storage Areas

Please review and complete the checklist for the drum storage areas at each project location:

	Milne Inlet		Mary River		Midway Camp		Steensby Camp		Other:	
	Yes	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
Are all drums labeled with "Baffinland"?										
Are all full drums located within a lined containment?										
Are any fuel drums leaking? Are there signs of spills on the ground or snow?										
Are there any fuel drums that are damaged or missing bungs?										
Do you Any fuel odours detected (more than you would expect)?										
Are all drums located more than 30 m (100 feet) from any water body?										

Section 3.6 – Off-Site Waste Disposal Log

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.6	Off-Site Waste Disposal Log	B	June 4, 2008

Report any spills immediately and implement the Spill Contingency Plan

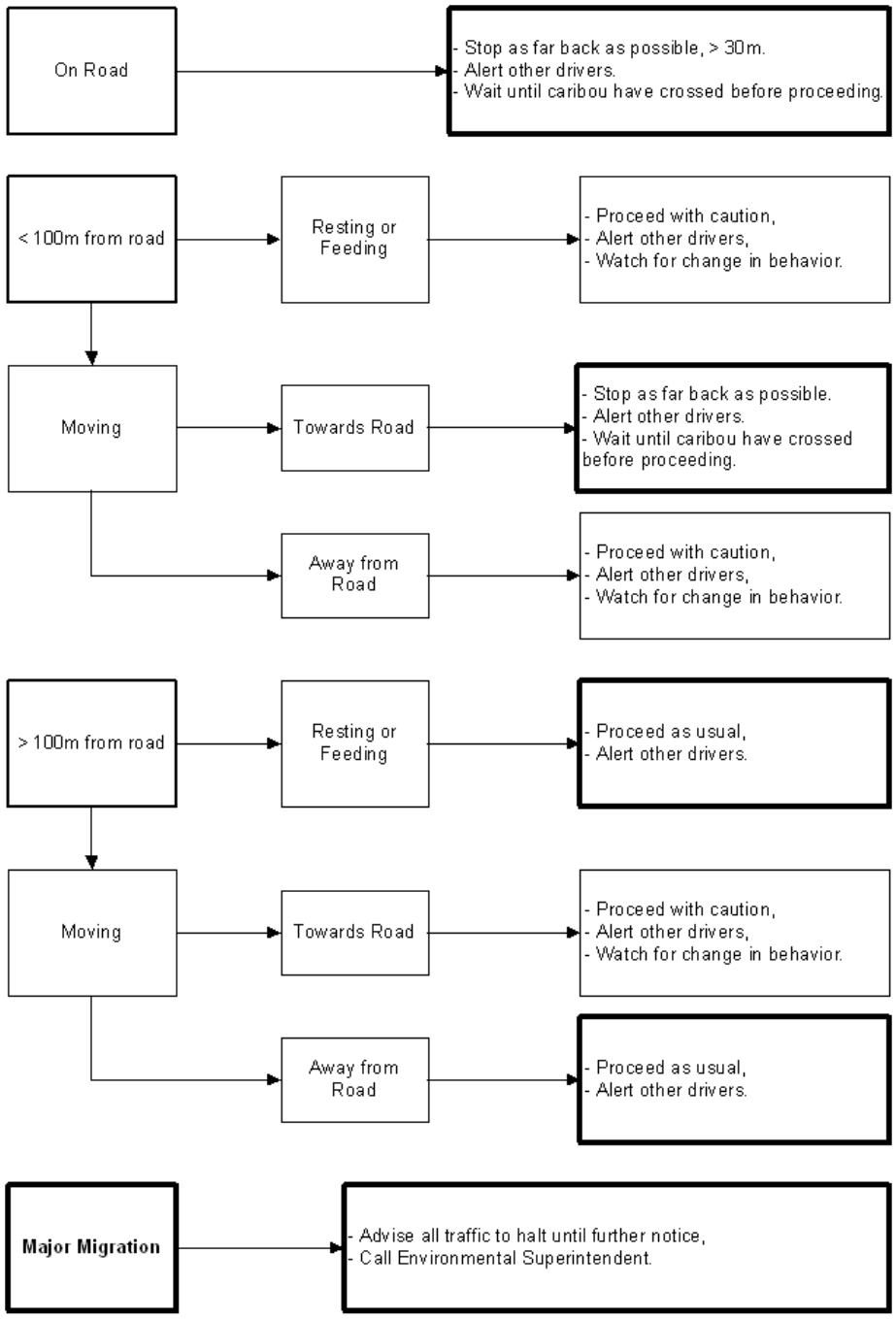
Baffinland's water license requires that the company record the volume of wastes that are removed from site for off- site disposal. This includes all non-hazardous waste transported to the landfill at Pond Inlet. Hazardous wastes will be tracked through manifests required under the Transportation of Dangerous Goods (TDG) Regulations.

Waste that is incinerated, or inert wastes that are landfilled on-site, are do not need to be logged.

Date Waste	Volume (Weight, no. bags)	Destination Response	Ib le Person	Signature

Section 3.7 – Caribou Decision Tree

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.7	Caribou Decision Tree	A	June 4, 2008



Section 3.8 – Watercourse Crossing Monitoring Data Form

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.8	Watercourse Crossing Data Monitoring Form	A	June 4, 2008

CROSSING ID:										
Construction Duration:		**Start:**			**Finish:**					
	Environmental Inspector:			**Start (Date and Time):**			**Finish (Date and Time):**			
Env. Inspector on site during in-water work:										
LOCATION	**Datum:**			**Zone:**						
Easting (m):		**Northing (m):**		**Elevation (from mapping):**			**Other notes:**			
FISH ASSESSMENT PRIOR TO CONSTRUCTION			**Date of Inspection:**							
Fish Present?	**Y / N**	**If Yes, distance from crossing:**					**US / DS**			
Spawning Arctic Char present at crossing?	**Y / N**	**(If yes, contact biologist)**								
Spawning site present 20 m upstream or downstream of crossing?	**Y / N**									
CHANNEL CHARACTERISTICS	**Date Measured:**									

		Pre-Construction					Post Construction				
Location	**Distance**	**Width (m)**		**Water Depth (m)**			**Width (m)**		**Water Depth (m)**		
		Wetted	**High W**	**Max**	**Avg.**		**Wetted**	**High W**	**Max**	**Avg.**	
Crossing											
Upstream											
Dwnstrm											

SEDIMENT AND EROSION CONTROL MEASURES			
Measure installed:		**Date installed:**	
		Dated removed:	
		Turbidity monitored	Y / N
Measures taken to stabilize disturbed areas:			
CROSSING INSTALLATION DETAILS			
1.2 m	**culverts**	**lengths of culvert**	**Notes:**
1.0 m	**culverts**	**lengths of culvert**	
0.5 m	**culverts**	**lengths of culvert**	

PHOTOS *View across crossing, view from upstream, view from downstream and any other to illustrate conditions.*

	Photo #	Date	Direction	Vantage point		Photo #	Date	Direction	Vantage point
Before					**After**				
across					across				
from US					from US				
from DS					from DS				
During					**Sed Con**				
across					across				
from US					from US				
from DS					from DS				

NOTES

Section 3.9 – Turbidity Monitoring Data Form

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.9	Turbidity Monitoring Data Form	A	June 4, 2008

CROSSING ID:			
Field Crew:		**Date:**	**Time:**
LOCATION **Datum:**		**Zone:**	
Easting (m):	**Northing (m):**	**Elevation (from mapping):**	**Other notes:**
CURRENT WEATHER: Wind:	**Air Temp:**	**Precipitation:**	**Cloud Cover (%):**
Recent Weather Events:			
CONSTRUCTION **Construction Phase (circle one):** Pre-Construction	During Construction	Post-Construction	
Type of Activity:	**Equipment in Use:**		
Date Construction Began:			
Is the crossing location changing? (i.e. Is the crossing moving upstream or downstream of its original location? How far? Which direction?)			
SITE SKETCH, NOTES, REMARKS: (i.e. high water table, high turbidity, natural bank erosion, water color, char observed in stream, algae in water, etc.)			
Is there anything unique about this crossing compared to other watercourses? (i.e. steep banks, clay in water, etc.)			

Substrate Particles **% Areal Coverage (est.)** **% sand/silt/clay (<2mm)** **% gravel (2 - 64 mm)** **% cobble (64 - 256 mm)** **% boulder (> 256 mm)** **% bedrock**	**Riparian Vegation and Shading (describe):**

***IN SITU* TURBIDITY READINGS** (complete at least one measurement upstream and downstream of crossing)

Meter Make and Model:

Location	Distance from crossing (m)	Turbidity (NTU)	Time	Location	Distance from crossing (m)	Turbidity (NTU)	Time
Upstream				Upstream			
Crossing				Crossing			
Dwnstrm				Dwnstrm			

FLOW ESTIMATES **Location :**	
High Water Width (m):	**Distance between points (m):**
Wetted Channel Width:	**Time (min): /**
Approx. Average Depth:	**Surface velocity estimate:**
	Average Velocity (0.8 [(1)] x Surface Velocity) (V) =
Note (1) - depends on substrate composition: 0.8 for rough, loose rocks or coarse gravel / 0.9 for smooth mud, sand, or hard pan rock	
PHOTOS: (upstream, crossing, downstream)	
NOTES:	

Section 3.10 – Compliance Monitoring Form

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.10	Compliance Monitoring Form	A	June 4, 2008

Date: _____

Inspector(s): _____

Camp: _____

Item No.	Environmental Concern Observed	Environmental Recommendation	Action taken to address Immediate Hazard(and Basic Cause)	Date	Person Accountable
1					
2					
Notes:					

Section 3.11 – Compliance Inspection Report

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.11	Compliance Inspection Form	A	June 4, 2008

Site Inspection – MMMM DD, YYYY XXXXXXXX Camp

A site compliance inspection was conducted by Environmental Staff on MMMM DD, YYYY. Findings are presented below in bullet form with photos attached.

1. (Area 1)

•

•

Photos # through # –

1.1 Recommendations

2. (Area 2)

Photo # –

Photos # through # –

2.1 Recommendations

3. (Area 3)

Photo # –

3.1 Recommendations

Section 3.12 – Landfill Facility Inspection Form

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.12	Landfill Inspection Form	A	June 4, 2008

Date: _____

Inspector Name: _____

Inspector's Position: _____

Please review and complete the checklist as applicable.

Surface Water and Site Runoff

Please inspect within landfill area, around berms and follow drainage to observe the following:

	Yes	No
Any pooling of water present within landfill area or against berms?		
If so, where?		
Any leachate developing in and around landfill area?		
If so, where?		
Is site runoff draining properly around landfill and directed towards Sheardown Lake?		
If no, explain.		

Geotechnical Assessment

Please examine the integrity of the berms and floor of landfill area to observe the following:

	Yes	No
Any evidence of ground temperature warming? i.e. soil creep, subsidence, heaving, etc.		
If so, where?		
Any indication of berm settlement?		
If so, where?		

Waste Composition and Placement

Please inspect contents of landfill and areal placement to observe the following:

	Yes	No
Are there any hazardous wastes present or proposed for landfill?		
Where and of what material type?		
Any recyclable or salvageable material present?		
Where and of what material type?		
Any burnable wastes such as cardboard, paper, food wastes or light plastics present?		
Where and of what material type?		
Do the wastes appear to be compacted on a regular basis?		

Other

Please observe the following:

	Yes	No
Is the route to the landfill in suitable condition to provide truck access?		
If not, describe location and problem.		

Is open burning occurring or is there evidence of open burning?		
If so, list the applicable permit.		

Other comments:

Please note, any non-conformances with the landfill should be reported to the Site Manager(s) in writing, for action.

SITE (CIRCLE ONE): LANDFILL

Date: **Observers:**

Time start: **Time end:** **Duration:**

Estimated time since last turnover (circle one): **hours** **days** **weeks**

Attractants:	**Attractant Levels (circle one):**			
Food	None	1-5 pieces	6-10 pieces	>10 pieces
Food packaging	None	1-5 pieces	6-10 pieces	>10 pieces
Oil products and containers	None	1-5 pieces	6-10 pieces	>10 pieces
Oil contaminated waste	None	1-5 pieces	6-10 pieces	>10 pieces
Aerosol cans	None	1-5 pieces	6-10 pieces	>10 pieces
Batteries	None	1-5 pieces	6-10 pieces	>10 pieces
Other_____	None	1-5 pieces	6-10 pieces	>10 pieces
Other_____	None	1-5 pieces	6-10 pieces	>10 pieces

Wildlife Observations:

Species	Number	Comments

Wildlife Sign (tracks, scats, or chews):

Species	Type of Sign	Number	Comments

Additional Comments:

3.13 - Fuel Reconciliation Form

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.13	Fuel Reconciliation Form	A	January 6, 2012

Baffinland Iron Mines Corporation

Mary River Project
Form No: 00001

BIM PERSONNEL
Name:
ID:
Dates Covered:
Time of Completion:
Signature:
Date:

FUEL RECONCILIATION LOG FORM

Please complete form each day, preferably at about the same time. Dipstick and meter readings must be taken together while pumps are closed. Automatic tank gauge printouts may be used. This form has two (2) parts and requires signatures and dates.

INSTRUCTIONS: *Please see reverse*

Emergency Contact: HSE Manager, Tel: TBD

PART A

1 Date	2 Opening Dipstick Inventory (liters)	3 Fuel Delivered/Added (liters)	4 Fuel in Tank (liters)	5 Closing Dipstick (m)	6 Closing Dipstick (liters)	7 Fuel Used (liters)	8 Fuel Used by Meter (liters)	9 Loss or Gain (+/- liters)
Weekly Reconciliation								+/- _____ liters

PART B		
A	Enter Total Number of Liters Pumped *or* Total Volume of AST System (if greater)	Liters
B	Total Liters over or short?	Liters
C	Leak Check (total liters pumped x 0.005)	Liters

Is 'Total Liters over or short' (row B) larger than Leak Check result (row C)? **If Yes,** notify the HSE Manger immediately by calling: TBD

Part A - Write in the columns, as numbered:

1. Column 1: Record the date includes the month, date and year.
1. Column 2: Record the opening dipstick inventory in liters. The number is the previous day's closing dipstick inventory in Column 5.
2. Column 3: Record any fuel deliveries or additions that day, in liters.
3. Column 4: Add the sum of Column 2 plus Column 3 – the total of fuel in tank.
4. Column 5: Record the closing dipstick reading in meters (to the nearest cm).
5. Column 6: Record the closing dipstick reading converted to liters from tank chart (Column 4).
6. Column 7: Gone from tank – Record the liters of fuel leaving the tank since last dipstick inventory based on opening dipstick inventory (e.g. Column 2 subtract Column 6).
7. If Column 8 is less than Column 7, enter a minus (-) in Column 9 to show that the closing dipstick inventory is "short" compared to deliveries and use. Also, subtract Column 8 from Column 7 and enter the difference. If column is larger than Column 7, enter a plus (+) in Column 9 to show that the closing dipstick inventory is "over". Also, subtract Column 7 from Column 8 and enter the difference. If Column 8 is equal to Column 7, enter a zero in Column 9 to show that the closing dipstick inventory is neither over nor short.

Part B - To be completed at the end of each week.

1. Add the numbers in Column 9 and write the number at the bottom of that column.
2. Determine whether an abnormal loss or gain has occurred. An abnormal loss or gain is an apparent loss or gain in liquid exceeding 0.5% of either the volume of the tank or the volume of product used, whichever is greater.
3. Sign and date the records to attest to their accuracy.

Abnormal Loss or Gain

When inventory reconciliation indicates an abnormal loss or gain which is not explainable by spillage, temperature variations or other known causes, the operator shall assure the immediate investigation and correction of the source of the abnormal loss or gain. At a minimum, the operator shall take as many of the following steps as necessary to confirm an abnormal loss or gain:

1. When an inventory record error is not apparent a recalculation to determine abnormal loss or gain shall be made staring from a point where the records indicate no abnormal loss or gain.
2. A detailed visual inspection of those components of the facility which are readily accessible for evidence of failure shall be performed.
3. The dispensers of the particular oil or petroleum liquid in question shall be checked for proper calibration.
4. A failure determination/tightness test shall be performed on the piping system between the storage tank or container and dispenser(s).
5. A failure determination/tightness test shall be performed on the tank or container.
6. When an abnormal loss or gain is confirmed, the operator shall immediately report the abnormal loss or gain to the HSE Manager

3.14 – Water Use Log Form

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.14	Water Use Log Form	A	January 6, 2012

Baffinland Iron Mines Corporation

Mary River Project

Form No: 00001

WATER USE LOG FORM

INSTRUCTIONS: *Please fill out form weekly. Date and sign as soon as complete and return to Environmental Lead. If additional space needed, attach subsequent log forms to initial log form.*

Notes:

1. A minimum free chlorine residual of 0.2 mg/L should be maintained in the product water at all times.
2. Test free chlorine residual three (3) times a day.
3. Record raw water turbidity once (1) a day
4. Record treated water turbidity three (3) times a day.

BIM PERSONNEL
Name:
ID:
Date:
Site/Location:
Signature:

Date (dd-mm-yyyy)	Time (hr:min, am/pm)	Raw Water Turbidity (NTU)	Product Turbidity (NTU)	Product Free Chlorine (mg/L)	Water Temp. (°C)	Raw Water pH	Daily Fresh Water Use (L)	Observed Weather Temperature (°C) + Conditions (e.g. rain, snow, hail, sunny, windy, cloudy, foggy)

PLEASE NOTE ANY ADDITIONAL COMMENTS AND/OR OBSERVATIONS:

3.15 – Sewage Effluent Log Form

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.15	Sewage Effluent Disposal Log Form	A	January 6, 2012

Baffinland Iron Mines Corporation

Mary River Project

Form No: 00001

SEWAGE EFFLUENT LOG FORM

INSTRUCTIONS: *Please fill out form weekly. Date and sign as soon as complete and return to Environmental Lead. If additional space needed, attach subsequent log forms to initial log form.*

NOTES

TRAINING: Environmental policy requires training of people who generate or handle waste. Training must take place within 90 days of date-of-hire; and annually thereafter. Please see HSE Manager for Training Schedule

CONTAINER LABELING: All hazardous waste containers must have a identification tag at the time waste is first placed into the container. The Hazardous Waste Disposal Label must accurately identify the content of the container. HSE supplies secondary containers and red tags. Call HSE if you need supplies or additional instructions.

SLUDGE STORAGE: To prevent the attraction of wildlife and for safety reasons sludge containers and collection areas must be closed at all times during storage, except when waste is being added, handled or removed.

Emergency Contact: HSE Manager, Tel: TBD

BIM PERSONNEL
Name:
ID:
Date:
Site/Location:
Signature:

Week Ending (dd-mm-yyyy)	Effluent Treated (L)	Sludge Generated (kg)	Strainer Waste (kg)	Effluent Characteristics from Lab Tests						
				NH_3 (mg/L)	NO_3 (mg/L)	TSS (mg/L)	Oil & Grease (mg/L)	Fecal Coliform (CFU/100 mL)	Total Phosphorus (mg/L)	pH

PLEASE NOTE ANY NON-CONFORMANCES WITH SEWAGE WASTE DISPOSAL THAT SHOULD BE REPOTED TO HSE MANAGER IN WRITING, FOR ACTION:

3.16 – Waste Disposal Log Form

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.16	Waste Disposal Log Form	A	January 6, 2012

Mary River Project

Form No: 00001

BIM PERSONNEL
Name:
ID:
Date:
Time:
Signature:

WASTE DISPOSAL LOG FORM

INSTRUCTIONS: *Please fill out form prior to disposal of any waste. Indicate total weight (kg) of waste disposed of at bottom log form. Date and sign as soon as complete and return to Environmental Lead. If additional space needed, attach subsequent log forms to initial log form.*

NOTES

TRAINING: Environmental policy requires training of people who generate or handle waste. Training must take place within 90 days of date-of-hire; and annually thereafter. Please see HSE Manager for Training Schedule

CONTAINER LABELING: All hazardous waste containers must have an identification tag at the time waste is first placed into the container. The Hazardous Waste Disposal Label must accurately identify the content of the container. HSE supplies secondary containers and red tags. Call HSE Manger if you need supplies or additional instructions.

STORAGE: To prevent the attraction of wildlife and for safety reasons waste containers and collection areas must be closed at all times during storage, except when waste is being added, handled or removed.

Emergency Contact: HSE Manager, Tel: TBD

Waste Generation Area	Generation Period	Waste Type	Quantity (kg)	Container/Receptacle Type	Condition (OK, N/A, L, S, R)	Disposal Location (disposal site, approx location in disposal site)

PLEASE NOTE ANY NON-CONFORMANCES WITH WASTE DISPOSAL THAT SHOULD BE REPOTED TO HSE MANAGER IN WRITING, FOR ACTION:

Total Quantity of Waste Disposed: kg

3.17 – Water Treatment Facilities Inspection Form

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
3.17	Water Treatment Facilities Inspection Form	A	January 6, 2012

Mary River Project

Form No: 00001

WATER TREATMENT FACILITY INSPECTION FORM

INSTRUCTIONS: *Please fill out form daily. Date and sign as soon as complete and return to Environmental Lead. If additional space needed, attach subsequent log forms to initial log form. Equipment vendor format operating and maintenance log forms should also be attached.*

BIM PERSONNEL	
Name:	**ID:**
Date:	**Site/Location:**
Signature:	

PLEASE NOTE ANY NON-CONFORMANCES WITH WATER TREATMENT FACILTY THAT SHOULD BE REPOTED TO HSE MANAGER IN WRITING, FOR ACTION:

INSPECTION TYPE (please circle one)	**Daily** (Part A Only)	**Monthly** (Part A & B)	**Annually** (Part A, B & C)

Potable Water Treatment System

The system will be designed for fully automatic operation, and only requires limited supervision and regular maintenance.

Items	Description	Checked
	PART A	
Daily	Alarm check	☐ Yes ☐ No
	Chemical storage level check	☐ Yes ☐ No
	Controller time check	☐ Yes ☐ No
	Pressure Gauge check	☐ Yes ☐ No

PART B		
Monthly	Turbidity analyzer check / calibration	☐ Yes ☐ No
	Residual chlorine / pH analyzer check / calibration	☐ Yes ☐ No
PART C		
Annual	Filter media level check, and refill if required.	☐ Yes ☐ No
	UV lamp replacement	☐ Yes ☐ No
	Calibration of flowmeter	☐ Yes ☐ No

Sewage Treatment System

The system(s) are designed for automatic operation, and only require limited supervision and regular maintenances.

Frequency	Description	Checked
PART A		
Daily	Check inlet valves for proper operation.	☐ Yes ☐ No
	Check all pressure relief valves are not stuck.	☐ Yes ☐ No
	Check submersible pumps for proper operation.	☐ Yes ☐ No
	Check leakage of the system.	☐ Yes ☐ No
	Ensure there are no air locks in the suction of the chemical pumps.	☐ Yes ☐ No
	If chemical pumps are running check the discharge tube for pulsing to verify liquid flow.	☐ Yes ☐ No
	Adequate chemical solution in chemical tank. Mix more chemical as required.	☐ Yes ☐ No
	Alarm check	☐ Yes ☐ No
	Chemical storage level check	☐ Yes ☐ No
	Controller time and pressure gauge check	☐ Yes ☐ No
	Check rotation of RBC, motor and drive for any abnormality.	☐ Yes ☐ No
PART B		
Monthly	Turbidity analyzer check / calibration	☐ Yes ☐ No
	Check lubrication of all gear reducers and bearings	☐ Yes ☐ No
	Ensure all bolts and nuts are tight and secure.	☐ Yes ☐ No
	Tighten all loosed fasteners, fittings, connections and mountings.	☐ Yes ☐ No
	pH analyzer check / calibration	☐ Yes ☐ No
PART C		
Annual	Filter media level check, and refill if required.	☐ Yes ☐ No
	UV lamp replacement	☐ Yes ☐ No
	Clean the chemical injector fittings at the process piping.	☐ Yes ☐ No
	Clean check valves of the chemical pumps at suction and discharge.	☐ Yes ☐ No
	The processor battery lamp of the PLC controller needs to be checked every 6 months. The lithium battery may need to be replaced every 3 years.	☐ Yes ☐ No

Section 4.0 – Landfill Facility Inspection Form

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
4.0	Request for Revision to an Operational Standard	B	August 8, 2007

The Environmental Protection Plan is a living document, and its users are encouraged to suggest changes to the content or wording of Operational Standards to make the document more useful, appropriate to the work being conducted, and user-friendly.

Please submit a copy of this Request for Revision to an Operational Standard to the Baffinland Environmental Superintendent.

Section To Be Revised (or Title of New Operational Standard):
(E.g. Section 2.1 Archaeology)

Nature of Proposed Change:
(E.g. update, addition, new, etc.)

Rationale For Request
(E.g. Environmental Protection, worker safety, etc.)

The Revision (or New Operational Standard):
(Text)