HOPE BAY PROJECT

HAZARDOUS WASTE MANAGEMENT PLAN

September 2016

PLAIN LANGUAGE SUMMARY

This Plan describes the waste management practices used at the Hope Bay Project to manage hazardous wastes. This Plan ensures that 1) hazardous wastes are collected and seperated from other non-hazardous waste streams, 2) hazardous wastes are stored, packaged and transported to a licenced disposal facility as per applicable regulations, and 3) records are kept of all waste stored and disposed of from the Hope Bay Project.

REVISION RECORD

Date	Section	Summary of Changes	Author	Approver
September 2009	Original	Approved Plan under 2AM-DOH0713, 2BE-HOP0712, 2BB-BOS0712	SRK Consulting	HBML
September 2011	Throughout	General Revision	KBL Environmental	HBML
March 2012	Throughout	General Revision (Approved Plan under 2AM-DOH1323, 2BE-HOP1222, 2BB-BOS1217)	HBML	HBML
September 2016	Throughout	Update to TMAC as current licensee for the Hope Bay region, conversion to TMAC modularized management plan format, changes to reflect Doris Operations phase and the amended Doris Project.	TMAC	TMAC

GLOSSARY AND ACRONYMS

Term	Definition
3R's	Reduce, Reuse and Recycle.
CEPA	Canadian Environmental Protection Agency
Certificate of Disposal	Confirmation of final disposal or recycling of the hazardous waste in a manner outlined in the EIHWHRMR
Dangerous Goods	As defined by the DGR
DGR	Dangerous Good Regulations
EIHWHRMR	Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations
Hazardous Material/Waste	A dangerous good that is no longer used for its original purpose and is intended for recycling, treatment, disposal or storage
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
MSDS	Material Safety Data Sheet
PPE	Personal Protective Equipment
SDS	Safety Data Sheet
TDG	Transportation of Dangerous Goods
the Plan	Hope Bay Hazardous Waste Management Plan
TMAC	TMAC Resources Inc.
WHMIS	Workplace Hazardous Material Information System

TABLE OF CONTENTS

List of Tables

1. INTRODUCTION

This Hope Bay Hazardous Waste Management Plan (the Plan) has been prepared by TMAC Resources Inc. (TMAC) in accordance with the water licences and project permits held by TMAC. This Plan is intended primarily for use by TMAC and its contractors to ensure that best practices with regard to the collection, handling, segregation, storage, transport and disposal of all hazardous wastes are followed in order to minimize risk to the site workforce, surrounding communities and environment, and ensure that the conditions of water licences, project permits and applicable legislation are met.

This Plan is structured in a manner such that one document pertaining to management and disposal of hazardous waste is approved and implemented across all TMAC Hope Bay project sites, while still addressing site- and licence-specific needs. The main document outlines TMAC's approach to hazardous waste management as it pertains to all TMAC Hope Bay developments. Appended modules provide details for each site and associated water licence. In the event of a new water licence, or existing licence amendment, only the specific modules pertaining to that licence and site will need to be revised. This is intended for consistency and efficiency across operations and for compliance management.

1.1. OBJECTIVES

The main objective of this Plan is to ensure hazardous waste is handled in a safe, efficient and environmentally-compliant manner. Consistent with TMAC's intent to be a responsible operator, these objectives are described as follows:

- Compliance with all applicable legislation and regulations pertaining to the management of hazardous waste;
- Compliance with Project Certificate and Water Licence requirements;
- Reduction of public health risk;
- Protection of the personnel handling and transporting hazardous waste;
- Protection of surface and ground water;
- Protection of land;
- Protection of local flora and fauna; and
- Conservation of resources.

The Hazardous Waste Management Plan has been developed to ensure that these factors are built into the TMAC operational approach at Hope Bay. It discusses the importance of waste management and reduction of specific waste streams to ensure these objectives are met.

1.2. RELEVANT LEGISLATION AND GUIDANCE

Table 1.2-1 provides a summary of federal and territorial regulations governing this Plan and associated guidelines.

Table 1.2-1. Regulations and Guidelines Pertinent to the Hazardous Waste Management Plan

Act/Regulation/Code	Year	Governing Body	Relevance
Canadian Environmental Protection Act	1999	Canadian Environmental Protection Agency (CEPA)	• Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (EIHWHRMR)

			• Polychlorinated Biphenyls (PCB) Waste Export Regulations • Interprovincial Movement of Hazardous Waste Regulations
Transportation of Dangerous Goods Act and Regulations	1992	Transport Canada	Requirements around the transportation of dangerous goods (TDG).
International Air Transport Association Dangerous Good Regulations (DGR)		International Air Transport Association (IATA)	Safe transport of dangerous goods by air
International Maritime Dangerous Goods (IMDG) Code	2016 and as revised	International Maritime Organization	Safe transport of dangerous goods or hazardous materials by sea
Nunavut Waters and Nunavut Surface Rights Tribunal Act	2002 and as amended	Nunavut Water Board	Deposit of wastes in Nunavut waters
Canada Explosives Regulations	2013	Natural Resources Canada	Disposal of explosives-contaminated wastes
National Fire Code	2015	Canadian Commission on Building and Fire Codes	Requirements for safe storage of flammable and combustible materials.
Workplace Hazardous Material Information System (WHMIS) Regulations	2015	Health Canada	Hazardous Goods classification and labelling
Guideline	**Year**	**Issued by**	**Relevance**
Environmental Guideline for the General Management of Hazardous Waste	2010	Government of Nunavut – Department of Environment	Describes general requirements for storage, transportation and disposal of hazardous wastes
Environmental Guideline for Industrial Waste Discharges into Municipal Solid Waste and Sewage Treatment Facilities	2011	Government of Nunavut – Department of Environment	Document outlines discharge criteria for process effluent and residuals for disposal into a landfill
Environmental Guideline for Used Oil and Waste Fuel	2012	Government of Nunavut – Department of Environment	Describes proper handling, storage and disposal procedures for used oils and waste fuels
Environmental Guideline for Waste Antifreeze	2011	Government of Nunavut – Department of Environment	Describes proper handling, storage and disposal procedures for waste antifreeze
Environmental Guideline for Waste Batteries	2011	Government of Nunavut – Department of Environment	Describes proper handling, storage and disposal procedures for waste batteries
Environmental Guideline for Waste Solvents	2011	Government of Nunavut – Department of Environment	Describes proper handling, storage and disposal procedures for waste solvents
Environmental Guideline for Biomedical and Pharmaceutical Waste	2014	Government of Nunavut – Department of Environment	Describes proper handling, storage and disposal procedures for biomedical and biohazardous wastes
Environmental Guideline for Mercury-Containing Products and Waste Mercury	2010	Government of Nunavut – Department of Environment	Describes proper handling, storage and disposal procedures for mercury-containing products, including fluorescent lamp tubes

Environmental Guideline for the Burning and Incineration of Solid Waste	2012	Government of Nunavut – Department of Environment	Describes proper handling, storage and disposal of bottom ash generated by process of incineration.
Guideline for the Management of Waste Lead and Lead Paint	2014	Government of Nunavut – Department of Environment	Describes proper containment, removal, storage, transportation and disposal of waste lead and lead paint.

1.3. Related TMAC Documents

The documents listed in Table 1.3-1 are expected to be referenced and utilized in conjunction with the Hazardous Waste Management Plan.

Table 1.3-1. TMAC Documents and Programs Related to the Hazardous Waste Management Plan

Document Title	Relevance
Incinerator Management Plan	Management of incinerator and bottom ash disposal
Domestic Wastewater Treatment Management Plan	Management of treated domestic wastewater effluent residual
Doris North Landfarm Management and Monitoring Plan	Management of light hydrocarbon contaminated water, snow and soil
Non-Hazardous Waste Management Plan/Landfill Management Plan	Describes proper handling, storage and disposal procedures for non-hazardous wastes
Air Quality Management Plan	Management and monitoring of dust and air-borne emissions
Hope Bay Spill Contingency Plan	Spill response procedures to minimize spill effects

1.4. Plan Management and Execution

The Plan is reviewed annually and updated as necessary. Personnel responsible for implementing and updating the Plan are identified in Table 1.4-1.

Table 1.4-1. Roles and Responsibilities

Role	Responsibility
Surface Manager	• Review, update and approve this management plan; • Provide the necessary resources to implement this plan.
Site Services Supervisor	• Review, update and approve this management plan; • Ensure waste management facility has required supplies and resources; • Conduct routine facility and record inspections; • Identify corrective actions as necessary and follow-up to verify actions have been completed;
Environmental Coordinator	• Assist Surface Manager and Site Services Supervisor in review and update of this management plan; • Conduct periodic facility and record keeping audits; • Identify Corrective actions as necessary and forward to the Site Services Supervisor to verify actions have been completed;

Role	Responsibility
Waste Management Personnel	• Implement this management plan; • Participate in review and update of this plan as required; • Ensure all required shipping documents are completed; • Maintain record of all completed shipments and required documentation; • Ensure disposal records are received and filed; • Ensure waste generation and volumes are tracked; • Ensure waste is packaged as per the Transportation of Dangerous Goods (TDG), IATA and IMDG regulations; • Assist all TMAC employees and contractors with obtaining appropriate storage containers and packaging for wastes encountered in each work area; • Implement corrective actions as necessary.
Warehouse Supervisor	• Ensure all required shipping documents are completed.

2. WASTE MANAGEMENT PRINCIPLES

TMAC has adopted the three R's of waste management: Reduce, Reuse and Recycle. The objective of these activities is to divert as much material as possible from becoming waste (hazardous or otherwise) and therefore reduce the total volume of wastes requiring handling, storage, transportation and disposal.

Reduce:

- Purchase only the required amounts of materials and buying in bulk when the opportunity is available.
- Employ inventory control methods in an attempt to ensure that quantities of materials are completely utilized.
- Establish maintenance schedules that are consistent with the equipment manufacturers' suggested replacement.
- Maintain and protect materials to prevent damage and breakage.
- Substitute less hazardous chemicals where practical.
- Select products that provide the maximum "life-of-material".
- Oil/water separators are used onsite to reduce the amount of contaminated water requiring shipment off site.
- Test to ensure items are "spent" (i.e. batteries) prior to removing from service.

Reuse:

- If appropriate, collect and return materials to the system (i.e. equipment, operations, etc.) following maintenance and repair.
- Make use of waste oil burners for facility heating.
- If appropriate, filter and/or use additives to replenish lost properties of material in order to extend its useful life.
- Reuse storage containers where appropriate (e.g. cleaned fuel drums used for the collection of other wastes; oil and lube totes used for waste oil collection).

Recycle:

- Commercial companies will be used to the extent practical to recycle appropriate materials on a fee for service basis.
- Explore waste management options that allow for the recycling of a material or product instead of disposal.

3. WASTE MANAGEMENT AT HOPE BAY

3.1. WASTE MANAGEMENT FACILITY

All wastes are segregated at the source to ensure hazardous waste streams are handled separately from non-hazardous waste streams. Hazardous wastes generated from activities at the Hope Bay project are collected and transported to centralized waste management facilities to be properly packaged and temporarily stored until the waste is prepared for shipment to a designated waste transfer station. When transporting waste on site to the waste management facility, personnel will ensure containers are not leaking and are secured to minimize the potential for spills.

The waste management facilities accommodate the following activities:

- Centralized areas to receive all waste generated onsite and a sorting yard for waste drop off.
- Waste management facilities are equipped with all the appropriate personal protective equipment (PPE) and will be worn by all personnel handling the hazardous waste streams generated onsite.
- The waste management facilities are equipped with emergency response equipment (i.e. spill kit, appropriate type of fire extinguisher etc.).
- Sorting and consolidation of various compatible waste streams to reduce waste volume and disposal costs.
- Classification, re-packaging and labelling as per WHMIS, TDG, IATA and IMDG regulations as applicable.
- Sea can containers and lined containment designated for temporary waste storage, and which can provide secondary containment to prevent spills or leaks from entering the environment.
- Weigh scale for transportation and waste volume tracking.
- Waste tracking, inventory and backhaul information management.
- Waste management facilities have specialized equipment available for handling specific waste streams, including fluorescent bulb crusher, aerosol can puncture system and oil filter crusher.

3.2. STORAGE AND HANDLING

Despite the adoption and implementation of the 3R's of waste management, TMAC will produce hazardous wastes that require appropriate management, storage, transportation and disposal. The transport of hazardous waste requires that TMAC be registered as a Hazardous Waste Generator with the Government of Nunavut, Department of Environment.

Although TMAC does not consider the onsite storage of hazardous waste an acceptable long term waste management solution, there are certain waste streams that cannot be transported on aircraft for backhauls and must be stored for transport during the barge season. For this reason TMAC will be registered as a Hazardous Waste Storage Facility with the Government of Nunavut, Department of Environment.

The waste management facility and the hazardous wastes within the facility are stored according to the following:

- Hazardous waste is stored in its original containers where possible or in appropriately sized containers made of compatible materials (such as steel or plastic containers, UN mega bags, plastic totes etc.) for each specific waste (as identified in the Material Safety Data Sheet (MSDS)/ Safety Data Sheet (SDS)).
- Small quantities of compatible hazardous waste are consolidated into larger containers (such as drums, totes).
- Containers are placed so that each container can be inspected for signs of leaks or deterioration.
- All hazardous wastes are stored in a location that provides safety for site personnel, protection of the environment and prevents damage from weathering and from physical damage.
- All waste containers and packages are properly labeled according to the appropriate Workplace Hazardous Material Information System (WHMIS), MSDS/SDS and/or relevant transport regulations (TDG, IATA, IMDG).
- Incompatible chemical wastes are not packaged or stored together based on the WHMIS and/or the MSDS/SDS for each chemical.
- The container is the primary containment for the majority of all liquid or solid hazardous wastes generated on site. Containers will be placed in secondary containment (e.g. a lined facility or larger container) as necessary.
- If the container is also the package for shipment and it will have the appropriate waste label affixed to it.
- Efforts are made not to contaminate the outside of the container during filling. Containers and packages with visible signs of external contamination will be cleaned, or will not be used in the storage or transport of hazardous wastes.
- Personnel ensure that:
    - Container and package lids are secured tightly at all times and boxes are taped shut.
    - Leaking or deteriorated containers are removed as soon as practical and the contents transferred to a sound container or the container repackaged inside another container if transfer of waste is not possible.
    - Approved containers and packages are used that are structurally capable of withstanding the aggregate weight of all contents within the package.
    - All containers are packaged as per relevant regulations to minimize risk or release during transport.
- A record is maintained of the type and amount of waste in storage.

3.3. Off-Site Shipment

Hope Bay is a remote location and therefore TMAC faces logistical challenges when shipping waste off site for disposal. Waste may be shipped offsite to a registered waste disposal facility utilizing aircraft backhauls throughout the year or backhauled on a sealift barge during the summer months. All hazardous wastes awaiting backhaul are stored onsite in a manner that prevents release to the environment.

All hazardous waste is transported off site for recycling or disposal at licenced facilities, and must be packaged, labelled and transported according to the specific requirements of the following (dependent on mode of transportation):

- Nunavut Environmental Guideline for General Management of Hazardous Waste
- Transportation of Dangerous Goods Regulations
- International Air Transportation Association
- International Maritime Dangerous Goods Regulations
- Interprovincial Movement of Hazardous Wastes Regulations

In addition, specific requirements of the receiving jurisdiction must also be followed.

Personnel who prepare or offer for transport, hazardous waste for disposal must be certified in TDG. Only personnel trained, certified and competent in the regulations for shipment of hazardous waste on an aircraft or barge (IATA/IMDG) can complete designated shipping documents.

Waste transported via aircraft is shipped to Yellowknife or Edmonton and delivered to a licenced Hazardous Waste Receiver or Transfer Facility. Once received, the waste is consolidated and shipped to various end receivers (facilities) for recycling, treatment or disposal depending on the specific waste stream. The Hazardous Waste Reciever provides a “Certificate of Disposal” to TMAC to certify that all waste was handled according to territorial and federal laws.

The Government of Nunavut Department of Sustainable Development, Environmental Protection Service monitors movement of hazardous waste from the generator to final disposal with the use of IATA, IMDG, Project Shipping Manifests, and Federal Interprovincial Movements of Hazardous Waste Manifest forms.

Federal Manifest forms must accompany all hazardous waste in transit regardless of the means of transport, and copies of the forms must be distributed to the waste generator, waste carriers and waste disposal companies as indicated on the carbon copy forms.

3.4. TRAINING

Personnel working in the waste management facility are provided hands on training under direct supervision of qualified staff in the proper handling, packaging, labelling and storage of hazardous wastes generated onsite. This ensures that all personnel are aware of the regulations, safety requirements, Standard Operating Procedures (SOP’s) and personal protective equipment required when handling hazardous waste, packaging wastes and preparing wastes for shipment.

Waste management personnel also receive certified training in the following, as applicable:

- Workplace Hazardous Material Information System (WHMIS)
- Transportation of Dangerous Goods (TDG)
- International Maritime Dangerous Goods (IMDG)
- International Air Transport Association (IATA)

All personnel working at the TMAC Hope Bay site are provided WHMIS training and information regarding proper waste segregation practices during initial site orientation. Containers are set up throughout camp buildings to collect hazardous materials, such as batteries and aerosol cans. Personnel

who conduct tasks that produce hazardous wastes also receive specific training in proper disposal methods required for that waste. Waste management personnel provide guidance and packaging materials to other employees and contractors to ensure that proper sorting and labeling of waste occurs prior to receipt at the waste management facility.

4. HAZARDOUS WASTE STREAMS

The *Transportation of Dangerous Goods* (TDG) Act governs the classification of hazardous materials. Copies of MSDS/SDS sheets are available onsite in areas where these materials are stored.

Hazardous waste streams that are anticipated to be encountered during the Hope Bay Project are identified in Table 4.0-1 below. Details regarding handling, storage and disposal methods are also discussed in this table. TDG, IATA and IMDG packaging, labelling and shipping requirements will be applied to all hazardous waste containers. Product MSDS/SDS sheets will be used to determine these classifications.

Empty product containers or contaminated materials considered hazardous waste will be subject to the same storage and transport requirements as hazardous wastes.

Table 4.0-1. Hazardous Waste Stream, Handling, Storage and Disposal Methods

Hazardous Waste Category	Waste Material	Handling Methods	Storage Area	Disposal Methods
Petroleum, Oils, Lubricants	Waste Fuels (Gasoline, Diesel, Jet A, Jet B)	• Consolidated into steel containers • Re-used as a fuel source where possible	• Steel containers stored within lined containment at Waste Management facility	• Re-use as fuel source where possible • Transported off site to a licensed recycling/disposal facility
	Waste oils, filters, rags, absorbent pads	• Placed in clearly labeled containers • Consolidated into steel or plastic containers, totes or UN mega bags by Waste Management personnel • Drained filters are crushed and placed in steel or plastic containers	• Stored within sea cans or lined containment at Waste Management facility	• Waste oil is used in waste oil burner furnaces onsite • Transported off site to a licensed recycling/disposal facility • Residual material from waste oil burner transported off site to a licensed recycling/disposal facility
	Glycol (Antifreeze)	• Consolidated into steel or plastic containers or totes	• Stored within the lined containment at the Waste Management facility	• Transported off site to a licensed recycling/disposal facility • Empty containers may be reused, disposed of in the site landfill (if emptied fully) or transported off site to a licensed recycling/disposal facility
	Solvents (alcohol or petroleum based)	• Consolidated into steel or plastic containers or totes	• Stored within the lined containment at the Waste Management facility	• Transported off site to a licensed recycling/disposal facility • Empty containers also transported off site to a licensed recycling/disposal facility

Hazardous Waste Category	Waste Material	Handling Methods	Storage Area	Disposal Methods
	Contaminated Soil /gravel /snow / water	• Materials which are not remediated as per the Landfarm Management Plan, will be placed into impermeable containers (e.g. steel or plastic container or UN approved mega bag with impermeable liner)	• Containers may be stored temporarily within sea cans or in lined containment at Waste Management facility	• Materials which do not meet Landfarm discharge criteria will stored onsite to be backfilled underground in the permafrost zone (for soils and gravel/rock), or deposited in the Tailings Impoundment Area (TIA) (water)
Explosives	Pre-Packaged Explosives Containers (Ammonium Nitrate containing products)	• Plastic bag (inner container) placed in UN approved mega bag	• Plastic bags stored within locked sea cans located at the Waste Management facility	• Plastic bags transported off site to a licensed disposal facility or if approved by the Inspector of Mines, backfilled underground with other ammonium nitrate contaminated waste
		• Cardboard box (outer container) burnt in burn pan	• Cardboard stored in burn pan and burnt as soon as practicable	• Disposal of bottom ash from burn pan described below
Chemical Wastes and Chemical Packaging	Consumable Chemicals and Packaging (e.g. Process Plant chemicals, Wastewater Treatment Plant chemicals)	• Compatible waste chemicals consolidated into steel or plastic containers, totes or UN mega bags • Plastic packaging will be consolidated with compatible waste packaging and stored in steel or plastic containers or UN mega bags • Wood, cardboard or paper packaging with no residual chemical burnt in burn pan	• Waste chemicals and plastic packaging stored within sea cans or lined containment at Waste Management facility • Wood, cardboard and paper packaging stored at burn pan and burnt as soon as practicable	• Waste chemicals and plastic packaging transported off site to a licensed recycling/disposal facility • Disposal of bottom ash from burn pan described below
	Lead and waste with residual lead (e.g. Assay lab crucibles)	• Placed into steel or plastic containers	• Stored in seacan containers at Waste Management Facility	• Transported off site to a licensed disposal facility
	Compressed Gas Cylinders	• Hazardous empty gas cylinders are secured	• Stored in seacan containers	• Transported off site to a licensed disposal facility

Hazardous Waste Category	Waste Material	Handling Methods	Storage Area	Disposal Methods
Other Hazardous Materials		upright in wooden crates		
	Batteries	• Stored in labeled disposal bins/boxes at the source; then transferred to UN rated containers	• Stored in UN rated containers located in secondary containment at Waste Management Facility	• Transported off site to a licensed recycling/disposal facility.
	Fluorescent tubes	• Tubes crushed in site fluorescent tube crusher and placed in steel or plastic containers	• Stored in seacan containers at Waste Management Facility	• Transported off site to a licensed recycling/disposal facility.
	Other mercury containing devices (e.g. thermometers, thermostats, switches/relays)	• Placed in sealed metal or plastic containers with suitable absorbent packing material	• Stored in seacan containers at Waste Management Facility	• Transported off site to a licensed recycling/disposal facility.
	Penetrable/ Sharps Biomedical Waste (e.g. needles, syringes, scalpels, razor blades)	• Dedicated puncture proof sharps containers with non-removable lids once closed, marked 'Sharps' located in each camp washroom and in Medic's exam room. Containers collected by Waste Management personnel and consolidated into steel or plastic containers	• Stored at Waste Management Facility	• Transported off site to approved facility for incineration.
	Wastewater Treatment Plant Sludge	• Placed in plastic bags by Wastewater Treatment Plant Operator. Transported from Wastewater Treatment Plant to Waste Management facility	• Sludge from Wastewater Treatment Plant is not stored onsite	• Incinerated onsite or buried in overburden stockpile as soon as practical • Disposal of bottom ash from incinerator described below
	Aerosol cans	• Segregated at source into labelled pails and then consolidated at	• Stored in seacan containers at Waste	• Once punctured, aerosol cans may be considered as non-hazardous waste and

Hazardous Waste Category	Waste Material	Handling Methods	Storage Area	Disposal Methods
		Waste Management facility • Aerosol cans are punctured, contents drained into containers and then crushed. Crushed cans are stored in separate containers or poly-lined mega bags for shipment • Liquid contents collected from crushed cans is consolidated in steel containers • Bear spray, mono and expanding foam products and spray glue cannot be punctured. These cans are segregated from other aerosols for shipment	Management facility	disposed of in the landfill (dependent on original contents of the can) • Aerosol cans that cannot be disposed of in the landfill will be transported off site to a licensed disposal facility • Residual liquid from puncturing the can is transported off site to a licensed recycling/disposal facility
Other Hazardous Materials	Incinerator and Burn Pan Bottom Ash	• Placed in steel containers	• Stored within sea cans or lined containment at Waste Management Facility	• Bottom ash that meets appropriate criteria will be disposed of in landfill • Bottom ash that does not meet appropriate criteria will be transported off site to a licensed disposal facility
Other Hazardous Materials	Electronic waste, Printer cartridges, Toner	• Transported to Waste Management facility and consolidated with other electronic wastes • Printer cartridges and toner stored in steel or plastic containers or UN mega bags • Other electronic waste is stored in wooden crates	• Stored in seacan containers at Waste Management Facility	• Transported off site to a licensed recycling/disposal facility

5. MONITORING AND EVALUATION

5.1. RECORD KEEPING AND REPORTING

TMAC maintains an accurate record of all hazardous waste materials generated on site and all materials transported off site. At minimum, these records include:

- MSDS/SDS sheets for all chemicals handled by personnel to ensure safe handling procedures are followed.
- An inventory of the materials received by, and stored at, the Waste Management facility including:
    - Type and quantity of waste
    - Type of container used to store the waste
    - Location of stored material within the facility.
- An inventory of materials that have been removed from the facility for disposal including:
    - Date of removal
    - Type and quantity of waste removed
- Shipping manifests as required as per the *Interprovincial Movement of Hazardous Waste, TDG, IATA* and *IMDG* regulations.
- "Certificates of Disposal" from the receiver confirming final disposal or recycling of the waste.
- Records of facility inspections and corrective actions implemented.

Information is reported as required under the various regulations, and a summary of waste disposed of is prepared annually. Records are maintained on file at the Waste Management facility for 5 years and are made available to an Inspector upon request.

5.2. INSPECTIONS AND AUDITS

Inspections of the facility and yard are performed routinely to ensure good housekeeping and proper storage is in effect. Waste management personnel ensure all materials stored meet the compliance standards required for storage of hazardous waste on site.

Waste audits are conducted periodically to ensure proper sorting and labelling is conducted by all personnel on site. Waste tracking records are also reviewed to ensure accuracy and complete documentation is maintained.

5.3. MONITORING

Waste Oil and Waste Fuel Sampling

A representative composite sample of waste oil and waste fuel used in waste oil burners on site will be collected annually and submitted for analysis at an accredited laboratory. Samples are compared to the criteria outlined in the Toxicity Characteristic Leaching Procedure (TCLP, USEPA 1992).

Bottom Ash Characterisation

Bottom ash samples from the incinerator and burn pan ash are collected monthly and submitted to an accredited laboratory for analysis. Sample results are compared to the Federal and Provincial Waste Regulations Class II Landfill Disposal criteria and the NWT Schedules III and Schedule IV Standards for Solid Waste for Landfill criteria.

6. REFERENCES

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HAZARDOUS WASTE MANAGEMENT PLAN

MODULE A: DORIS

Sept 2016

CONFORMITY TABLE

Licence/Certificate	Part	Item	Term/Condition	Report Section
2AM-DOH1323	G	10	The Board has approved the Hope Bay Mining Ltd., Hazardous Waste Management Plan, March 2012 (Rev 1.1) for use during Care and Maintenance. The Licensee shall submit to the Board for review, three (3) months prior to Operations, a revised Plan, which shall include a review of all hazardous materials used and hazardous wastes produced at the Project.	This Plan
	G	11	The Licensee shall backhaul and dispose of all hazardous wastes, waste oil and non-combustible waste generated through the course of the operation at a licensed waste disposal site.	3.3
	G	12	The Licensee shall maintain records of all waste backhauled and records of confirmation of proper disposal of backhauled waste. These records shall be made available to an Inspector upon request.	5.1
Project Certificate No. 003		33	MHBL shall ensure that areas used to store fuel or hazardous materials are contained using the safest methods practically available.	3.2

A1. INTRODUCTION

This Module of the Hazardous Waste Management Plan outlines additional requirements specific to the Hope Bay Belt Projects Doris North Mine (Doris Project). The Doris Project includes all surface infrastructure associated with the mineralized zones that can be accessed from the existing Doris Portal, including those zones known as Connector and Central.

The main document of this Plan outlines the mitigation measures applied throughout the Hope Bay Belt, whereas this module focuses on additional considerations specific to the Doris Project.

TMAC holds the following permits related to hazardous waste specific to the Doris Project:

- Doris North Gold Mine Project Certificate No. 003 (issued September 15, 2006); and
- Nunavut Water Board Type A Water Licence No. 2AM-DOH1323 (issued August 16, 2013).

These permits are currently under amendment, and the amendment application has been considered in this Plan revision where appropriate. Should the amended permits prompt significant material changes with respect to the management of hazardous waste, a revised plan will be provided.

A2. WASTE MANAGEMENT FACILITY

Hazardous waste generated during Doris Project activities are collected, managed and disposed of as described in the main document of this Plan. Hazardous waste is consolidated, sorted and stored at the Roberts Bay Waste Management Facility, prior to disposal.

A3. SITE HAZARDOUS WASTES

Hazardous waste produced in support of the Doris Project are managed as described in the main document.

HAZARDOUS WASTE MANAGEMENT PLAN

MODULE B: WINDY

Sept 2016

CONFORMITY TABLE

Licence	Part	Item	Topic	Report Section
2BE-HOP1222	D	6	The Licensee shall backhaul and dispose of all hazardous wastes, waste oil and non-combustible waste generated through the course of the operation at an approved waste disposal site.	This Plan
	D	7	The Licensee shall maintain records of all waste backhauled and records of confirmation of proper disposal of backhauled waste. These records shall be made available to an Inspector upon request.	5.1

B1. INTRODUCTION

This Module of the Hazardous Waste Management Plan outlines additional requirements specific to the Hope Bay Belt Project's Windy Project (Windy Project). The Windy Project includes the exploration activities associated with the Hope Bay Project's regional exploration, as captured under the Water Licence 2BE-HOP1222.

Old Windy Camp was closed for operations in 2008 and is undergoing closure and reclamation. A New Windy Camp is permitted under the current water licence, but has not yet been constructed.

B2. WASTE MANAGEMENT FACILITY

There is no waste management facility located at Windy Camp at this time.

B3. SITE HAZARDOUS WASTES

Waste produced in support of the Regional Exploration surface drilling program or generated during water management and licence compliance activities executed under this licence is managed as part of the Doris Camp waste stream. Any hazardous wastes identified in structural materials during closure and reclamation of Windy facilities (e.g. smoke detector batteries, fluorescent bulbs etc.) or generated during decommissioning of this area will be transported to the Doris Camp and managed as outlined in in the main document of this Plan.

HAZARDOUS WASTE MANAGEMENT PLAN

MODULE C: BOSTON

Sept 2016

CONFORMITY TABLE

Licence	Part	Item	Topic	Report Section
2BB-BOS1217	D	6	The Licensee shall backhaul and dispose of all hazardous wastes, waste oil and non-combustible waste generated through the course of the operation at an approved waste disposal site.	This Plan
	D	7	The Licensee shall maintain records of all waste backhauled and records of confirmation of proper disposal of backhauled waste. These records shall be made available to an Inspector upon request.	5.1

C1. INTRODUCTION

This Module of the Hazardous Waste Management Plan outlines additional requirements specific to the Hope Bay Belt Project's Boston Project (Boston Project). The Boston Project includes bulk sampling under the Type B Water Licence No. 2BB-BOS1217 issued to TMAC by the Nunavut Water Board (NWB).

Boston Camp was closed for operations in 2011 and remains in Care and Maintenance. Waste produced during water management and licence compliance activities is transported to Doris Camp and managed as part of the Doris Camp waste stream as outline in Module A of this plan.

The Hazardous Waste Management Plan has been prepared and is being submitted by TMAC to address the requirement specified in Part G, Item 10 of the 2AM-DOH1323 Water Licence, and also includes the plan for management of hazardous wastes throughout the Hope Bay belt.

C2. WASTE MANAGEMENT FACILITY

There is no waste management facility located at Boston Camp at this time.

B3. SITE HAZARDOUS WASTES

Hazardous waste generated in support of the exploration activities, or generated during water management and licence compliance activities executed under this licence, is managed as part of the Doris Camp waste stream, as outlined in in the main document of this Plan.