Waste Management Plan

(Version 4.0)

October 2023

KENNADY NORTH PROJECT

SOUTH MACKENZIE DISTRICT, NT

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Summary

This Plan describes what is done with any waste generated during construction, operation, and closure of the Kennady North Project.

Revision History

Advanced Exploration Project

- Version 1 of the Kennady North Advanced Exploration Project Waste Management Plan was submitted with the original application for MV2013L2-0005/ MV2013C0023 on December 9, 2013
- Version 1.1 was submitted on February 12, 2014 with revisions in response to initial reviewer comments (before issuance of the permit and licence)
- Version 1.3 was submitted on May 26, 2014 as per requirement Part E, item 3 of MV2013L2-0005 and condition 40 of MV2013C0023
- Version 1.4 was submitted on September 4, 2014 with revisions as recommended after the comment/review process of Version 1.3. Version 1.4 was approved by the MVLWB on September 11, 2014
- Version 2.0 was updated as follows:
    - Some minor wording changes
    - Updated maps of waste facility infrastructure for Bob and Kelvin Camps.
    - Changes to waste volumes to reflect increased camp size.
    - Waste acceptance letter from KBL Environmental.
- Version 3.0 was updated as follows:
    - Additional information in support of KDI's amendment applications to the Mackenzie Valley Land and Water Board for advanced exploration.
- Version 3.1 was updated as follows:
    - Minor wording changes clarifying human waste management in the presence / absence of ice roads (section 3 b iv).

Regional Exploration Project

- Version 1.0 of the Kennady North Regional Exploration Project Waste Management Plan was submitted with the original application for the Type A Land Use Permit and Type B Water Licence in October 2022.
- Version 1.1 was updated to include periodic testing of the secondary containment treatment system, following the issuance of the Water Licence (MV2022L2-007) and Land Use Permit (MV2022C0019).

Kennady North Project

- Version 4.0 (this version) has been updated as follows:
    - Version 3.1 of the Advanced Exploration Project Waste Management Plan has been merged with Version 1.1 of the Regional Exploration Project Waste Management Plan.
    - The overall structure reflects the most recently approved version of the Regional Exploration Project Waste Management Plan. All relevant text and figures have been carried over from the Advanced

Exploration Project Waste Management Plan and updated to reflect current infrastructure and practices as necessary.

- The introduction has been updated to reflect the consolidated Kennady North Project.

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Glossary, Acronyms, and Abbreviations

Term	Meaning
a	annum
AEP	Kennady North Advanced Exploration Project and all of its components
AGL	Aurora Geosciences Ltd.
AN	Ammonium Nitrate
ANFO	Ammonium Nitrate-Fuel Oil
backhaul	Transport off site back to Yellowknife
CCME	Canadian Council of Ministers of Environment
CEPA	Canadian Environmental Protection Act
combustible	A substance that can catch fire and burn.
Company	Kennady Diamonds Inc.
cuttings	Very fine bits of rock that result from cutting drill core either in the ground by drilling or with a core saw.
ECCC	Environment and Climate Change Canada
EPS	Environmental Protection Service
EQC	Effluent Quality Criteria
Foundational Exploration	includes prospecting, bedrock and surficial mapping, geological, geophysical, and geochemical surveys, and diamond drilling, small- and large- reverse circulation drilling, and trenching to delineate kimberlite targets and help determine economic grade (see Section 1.2.1.1)
GKJV	Gahcho Kué Mine Joint Venture
GNWT	Government of Northwest Territories
ha	hectare
hazardous waste	Waste designated under legislation, requiring special handling and management.
KBL	KBL Environmental
KDI	Kennady Diamonds Inc.
Kelvin Camp Expansion	the expansion of the existing Kelvin Camp, as described in Kennady Diamonds - Advanced Exploration Project Description[1]
Kennady North Project	the Kennady North Advanced Exploration Project and the Kennady North Regional Exploration Project and all of their components
km	kilometers
M	meter
mineral waste	Cuttings from drilling, core cutting, and processing
MPVD	Mountain Province Diamonds Inc.
MVLWB	Mackenzie Valley Land and Water Board
non-mineral waste	Construction waste, spent parts and equipment, and domestic waste, all generated through routine exploration and camp operations. May be combustible or non-combustible.
NWT	Northwest Territories

[1] https://registry.mvlwb.ca/Documents/MV2016C0030/MV2016C0030%20MV2013L2-0005%20-%20KDI%20-%20Project%20Description.pdf

OHWM	Ordinary High Water Mark
Plan	Waste Management Plan
Project	Kennady North Project
RainCoast	RainCoast Environmental Services Ltd.
RC	Reverse circulation
REP	Kennady North Regional Exploration Project and all of its components
STP	Sewage Treatment Plant
t	tonne
TDG	Transportation of Dangerous Goods
TGDA	Transportation of Dangerous Goods Act
sump	A person-made or natural depression used to temporarily contain liquids
waste segregation	Separation of different types of waste, based on their makeup and disposal method
WHMIS	Workplace Hazardous Materials Information Systems

1 INTRODUCTION

Kennady Diamonds Inc. (KDI or the Company) is currently exploring for diamondiferous kimberlites in the Kennady North area, located in the Northwest Territories approximately 280 kilometers (km) east-northeast of Yellowknife, immediately adjacent to the Gahcho Kué Mine (Figure 1). KDI's interests in the Kennady North area consist of 99 mineral claims and 30 mineral leases totalling ~113,437 hectares (ha) of land (Figure 2). KDI is a wholly owned subsidiary of Mountain Province Diamonds Inc. (MPVD). MPVD holds a 49% interest in the Gahcho Kué Mine Joint Venture (GKJV) with De Beers Group, who holds 51% interest in the GKJV and is the operating partner.

KDI applies a unified standard of environmental practices across the Kennady North Project (the Project). The Waste Management Plan (the Plan) describes existing and future waste streams and how they are or will be managed for mineral claims and leases, infrastructure, and activities associated with Project activities.

1.1 Corporate Policy

KDI conducts operations within the accepted environmental standards of the mineral exploration industry, is committed to the basic principles of waste management, and prioritises waste management options along the waste management hierarchy: source reduction, reuse, recycling/recovery, treatment, and disposal (MVLWB 2011). Applying these standards and principles to Project waste generation and management, with a focus on reduction and reuse to the greatest extent possible and practicable, reduces the environmental footprint of KDI's operations.

1.1.1 Source Reduction

Source reduction is the elimination or decrease in the volume or toxicity of waste by adopting practical methods such as using alternative materials or processes. This can be achieved by material elimination, inventory control and management, material substitution, process modification and improved housekeeping, maintenance, and training.

1.1.2 Reuse

Reuse is achieved by using a product more than once for the same application or for different purposes. Reusing material such as drilling fluids and construction materials is an industry expectation and can reduce the amount of waste generated.

1.1.3 Recycling

Recycling of products that typically have one use reduces the volume of waste generated at a worksite. Sorting the products so that they can be managed in bulk eliminates the need for additional handling and allows for different products to be managed by efficient recycling processes.

1.1.4 Treatment

Waste treatment is used to reduce the volume, mass, or toxicity of the material that could result from contaminants contained within the waste prior to disposal. There are a number of treatment options including thermal, chemical, biological and physical processing that may be used separately or in combination to produce an effective and efficient reduction in potentially toxic materials.

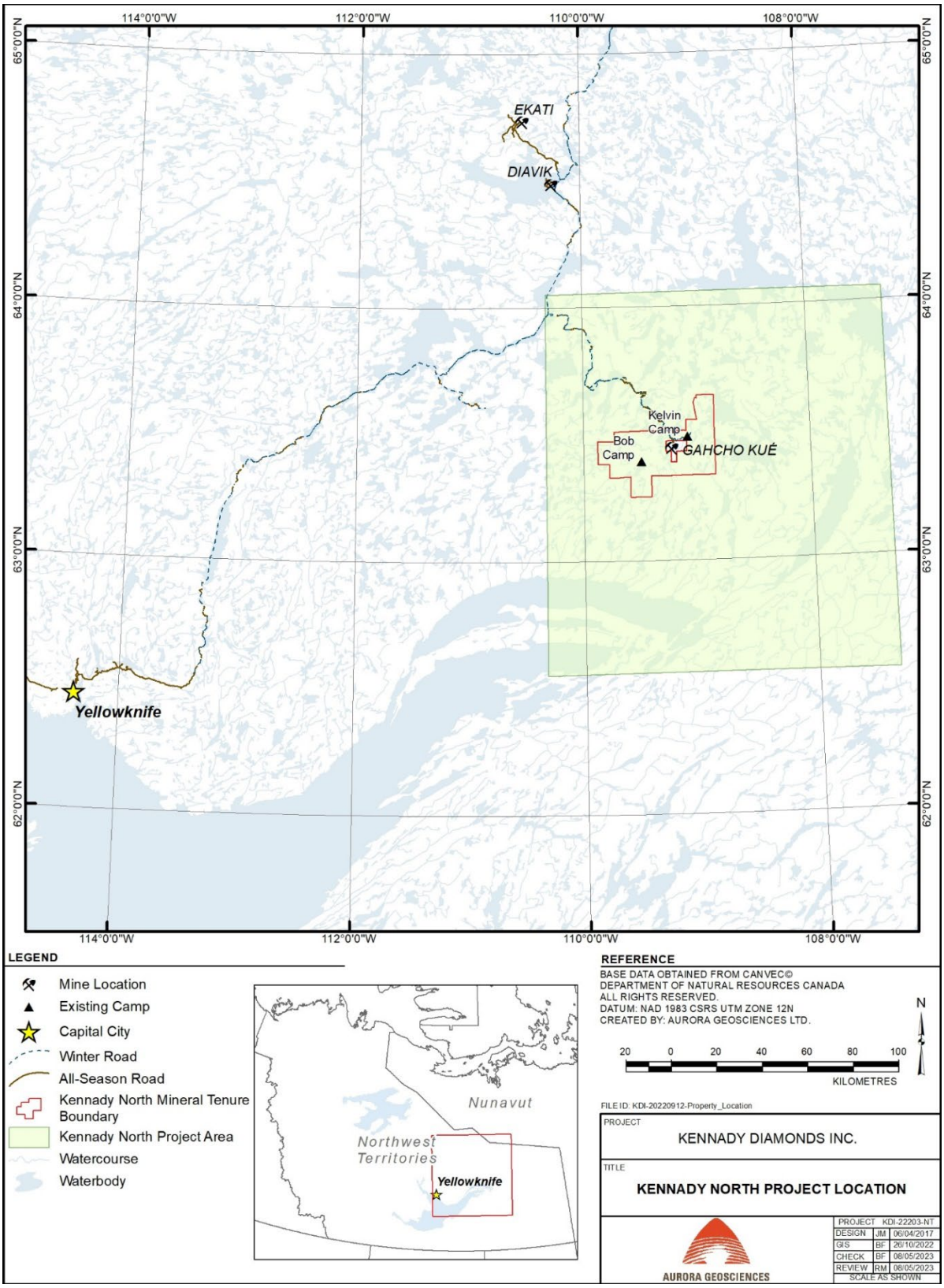


Figure 1: Kennady North Project location

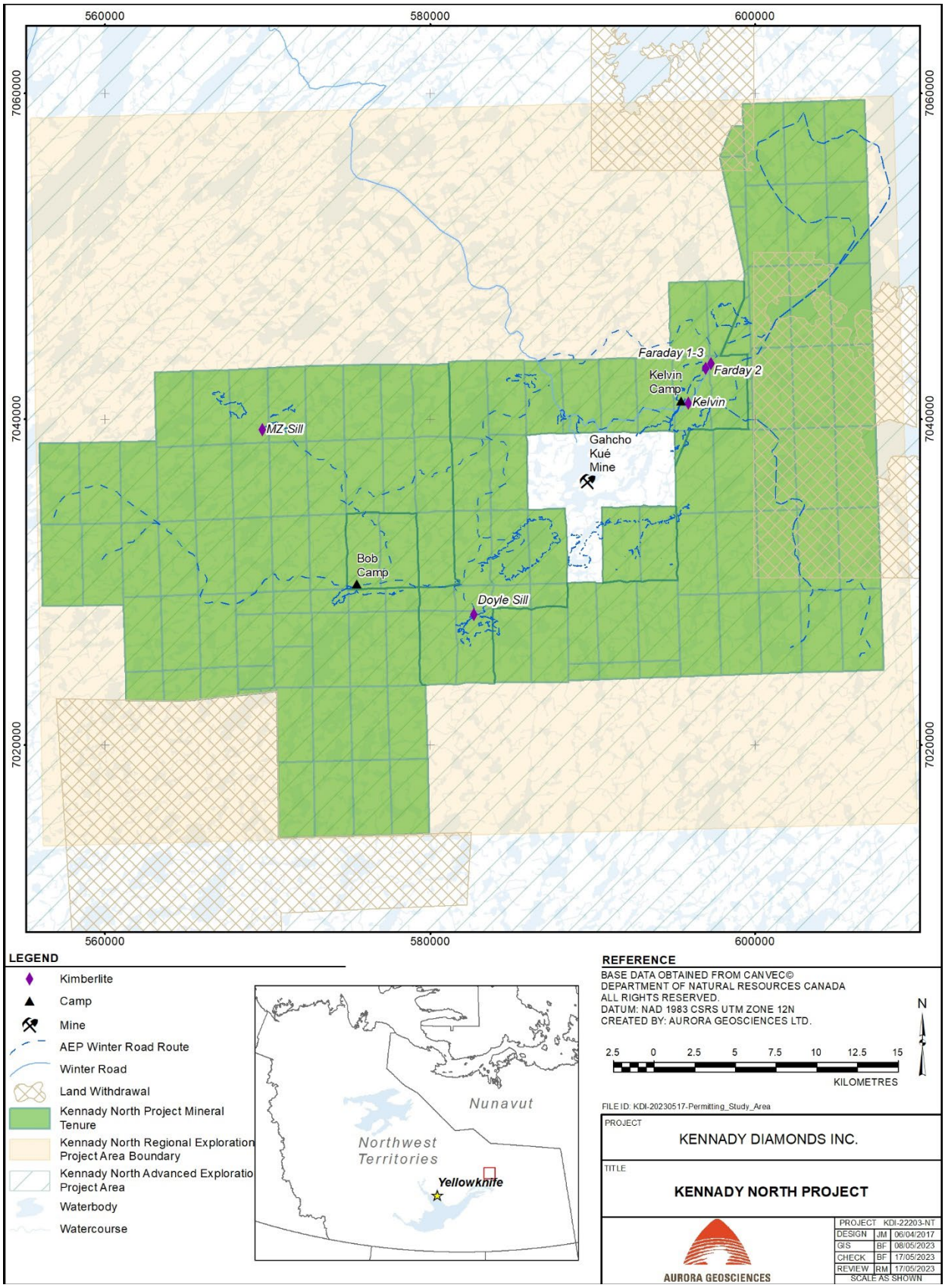


Figure 2: Kennady North Project

1.1.5 Disposal

Disposal of waste is the final option for waste management. When disposing of waste, the type of waste, volume, location, and final containment must be considered. The waste disposal options available to the mineral exploration industry include the use of approved landfills and onsite disposal. The physical and chemical characteristics as well as the regulatory requirements and liability associated with disposal may limit which options are available for waste disposal.

1.2 Project Description

The scope of the Kennady North Project (KNP) includes:

- Construction, operation, maintenance, and Reclamation of exploration camps; and
- Water withdrawal for camp use, drilling, winter road and pad Construction and maintenance, and dust suppression;
- Deposit of treated Sewage and Greywater;
- Mineral exploration including diamond drilling, large diameter diamond drilling, and trenching;
- Deposit of Drill and core Cuttings into Sumps;
- Deposit of Processed Kimberlite and Wastewater into a Sump; and
- Use and storage of explosives;
- Use of equipment, vehicles and machinery;
- Fuel storage and use;
- Quarrying;
- Construction, operation, maintenance, and Reclamation of a sewage treatment facility, quarrying, up to two Declines, all-season site roads, an all-season airstrip, multi-purpose laydown areas, and a Bulk Sample Process Plant.
- Management of Potentially Acid Generating Rock.
- Discharge from Secondary Containment into the Receiving Environment; and
- Progressive Reclamation and associated Closure and Reclamation activities.

1.2.1 Foundational Exploration

Currently, Kennady North Project exploration activities consist of conducting foundational exploration assessment work on claims and mineral leases held by the Company, including prospecting, bedrock and surficial mapping, geological, geophysical, and geochemical surveys, diamond drilling, small- and large- reverse circulation drilling, and trenching to delineate kimberlite targets and to help determine economic grade. Samples are sorted and sent off site for analysis or processing. At its maximum scope, foundational exploration drilling activities may consist of a combination of up to seven (7) drills of any type (i.e., five (5) diamond or small reverse circulation (RC) drills and two (2) large RC drills) in use at any one time.

Exploration activities are conducted from the existing Bob and/or Kelvin camps, which host approximately 50 to 150 people, typically operate up to 10 months of the year, and are accessible by air and seasonal ice road. Winter access occurs either by air from Yellowknife, Bob Camp, or Kelvin Camp, with drill mobilization and demobilization via the existing Tibbitt to Contwoyto Winter Road, the Gahcho Kué spur road, and spur roads to Bob and Kelvin camps. Additional winter trails, including ice bridges and roads, may be used to move heavy- and light-duty vehicles, equipment,

and personnel around the Project site in the winter. Summer access occurs by fixed wing on floats or helicopter from Yellowknife to Bob or Kelvin camps.

A small number of remote fuel caches are in place to support drilling and helicopter activity, with fuel stored in drums or equivalent. Temporary, remote fuel caches may also be established in areas proximal to active drilling areas. Field sampling and drilling sites are progressively reclaimed.

1.2.2 Advanced Exploration

In September 2016, KDI submitted Land Use Permit and Water Licence applications to the MVLWB to obtain authorizations for advanced exploration activities, which focus on obtaining a larger bulk kimberlite sample that can be used to assess the economic value of the mineral reserve (see Kennady Diamonds - Advanced Exploration Project Description[2]). The Advanced Exploration activities that were additionally authorized in 2016 included the following:

- increase in extraction from 1,200 to 5,000 t/a bulk sample;
- construction and operation of an underground decline to access the Kelvin and Faraday kimberlite deposits for bulk sampling;
- construction and operation of a multi-purpose laydown and camp area (approximately 5 ha);
- construction and operation of a pioneer all-season airstrip (approximately 1,650 m by 45 m) to accommodate larger aircraft for workers and resupply;
- construction and operation of limited all-season roads linking the winter road to the laydown, airstrip, declines, dock, and drilling locations at the Faraday and Kelvin deposits;
- construction and operation of a new 140-person mobile camp on the laydown area and consolidation of existing Kelvin Camp modules with this new camp (Kelvin Camp Expansion);
- quarrying and/or the use of cut and fill to obtain material for roads, laydown area and airstrip as necessary;
- increased use of explosives (including mixing and storage) for quarrying and construction of the decline;
- installation and operation of a portable Bulk Sample Processing Plant (< 100 t/day); and
- increase to the size and quantity of various types of equipment (e.g., trucks, loaders, underground equipment) as well as the amount of fuel storage allowed on site to accommodate the proposed activities.

Advanced exploration activities have not yet commenced but will be required to advance mine planning for known kimberlites in the coming years.

1.3 Scope

This Plan applies to all waste generated throughout the Project including current activities associated with Foundational Exploration and planned Advanced Exploration activities authorized under the AEP and the REP.

Further, this Plan is intended to satisfy applicable components of the following project-related documents and authorizations:[3]

[2] https://registry.mvlwb.ca/Documents/MV2016C0030/MV2016C0030%20MV2013L2-0005%20-%20KDI%20-%20Project%20Description.pdf

[3] Not an exhaustive list; other legislation and guidance may apply and be updated from time to time.

- Standard Outline for Management Plans (MVLWB 2021);
- Guidelines for Developing a Waste Management Plan (MVLWB 2011a);
- Guidelines for Hazardous Waste Management (GNWT 2017);
- Guidelines for Industrial Waste Discharges in the NWT (GNWT 2004*);*
- *Mackenzie Valley Resource Management Act*;
- *Mackenzie Valley Land Use Regulations* (1998);
- *Canadian Environmental Protection Act* (1999);
- *Hazardous Products Act* (1985);
- *Interprovincial Movement of Hazardous Waste Regulations* (2002);
- *Environmental Emergency Regulations* (2003);
- *Transportation of Dangerous Goods Act* (1992) and *Regulations* (2012); and
- *Waters Act* (2015).

1.4 Purpose, Goals, and Objectives

The purpose of this Plan is to describe how waste generated by the Project is managed with the ultimate goals of protecting the safety of communities, personnel, and contractors; limiting impacts to the environment; operating in a manner that is aligned with industry best practices and compliant with all relevant Acts, Regulations, and authorizations.

The objectives of this Plan are as follows:

- Ensure employees and contractors are trained to manage waste in a safe and compliant manner; and
- Outline appropriate waste management measures to ensure environmental protection.

The Plan is designed to enable Project personnel to identify, mitigate, and minimize the potential effects of waste on the local environment.

1.5 Location

The Project is located approximately 280 km east-northeast of Yellowknife and is adjacent to the Gahcho Kué Mine (Figure 1 and Figure 2). The site is accessed by ski- or float-equipped fixed-wing aircraft or helicopter either directly from Yellowknife or from KDI's Bob and Kelvin camps. Between February and April, the Project may be accessed via the seasonal Tibbitt to Contwoyto Winter Road, Gahcho Kué Mine spur road, and spur roads to Bob and Kelvin camps.

The nearest supply and logistics center is in Yellowknife.

1.6 Site Description

The Project occurs in the Taiga Shield Ecozone, within the Mackay Upland High Subarctic Ecoregion (Ecosystem Classification Group 2008). This ecoregion is characterized by level to gently rolling terrain with bedrock exposures common throughout. It is in the transition zone between forest and tundra with the Project area occurring just north of the tree line.

Vegetation in the ecoregion is dominated by shrub tundra, which is characterized by a cover of dwarf birch, mountain cranberry, Labrador tea, red bearberry, crowberry, and lichens. Stunted black spruce grows in small clumps in sheltered locales and along lake shores. Small outwash terraces and eskers are common landforms throughout.

Large game wildlife in the region include barren-ground caribou, muskox, grizzly bear, and occasionally moose. Fur-bearing animals include hare, fox, wolf, wolverine, and arctic ground squirrel. Waterfowl and avian species in the region include migratory and upland breeding birds such as grouse, ptarmigan, passerine, shorebirds, raptor, falcon, hawk, eagle, owl, loon, crane, swan, duck, and goose. Fish resources in the area include Lake Trout, Cisco, Round Whitefish, Arctic grayling, Northern Pike, and Burbot.

1.7 Plan Management

The Plan is reviewed annually and updated to ensure compliance with regulations, permits, and relevant legislation and to reflect changes in activities associated with the Project. Revisions will be submitted to the MVLWB for approval. In the event that the scope of the Project changes in a significant way, KDI will re-evaluate the existing Plan, engage with relevant parties to discuss the changes, and revise the Plan as needed.

1.8 Plan Implementation

This Plan is effective upon approval and is valid throughout all phases of the Project.

The Program Manager or designate is responsible for Plan implementation.

A copy of this Plan is maintained at the exploration camp from which Project activities are occurring in a given field season (i.e., Bob or Kelvin camps).

2 ROLES AND RESPONSIBILITIES

The AEP and REP are owned and operated by KDI. Aurora Geosciences Ltd. (AGL) has been contracted by KDI to manage and operate exploration activities since the beginning of exploration in the Kennady North area. RainCoast Environmental Services Ltd. (RainCoast) has been contracted by KDI to lead KDI's environmental, permitting, and engagement activities.

KDI is responsible for activities associated with the Project, including implementation and management of this Plan. KDI's contact information is as follows:

Kennady Diamonds Inc.
161 Bay Street, Suite 2315
P.O. Box 216
Toronto, ON
M5J 2S1
Phone: 416-361-3562
Contact: Matthew MacPhail
Role: Chief Technical and Sustainability Officer
Email: m.macphail@mountainprovince.com

AGL is KDI's exploration Program Manager. In some instances, KDI may delegate its authority for program components to AGL. AGL's contact information is as follows:

Aurora Geosciences Ltd.
3506 McDonald Drive

Yellowknife, NT
X1A 2H1
Phone: 867-920-2729
Contact: Gary Vivian/Chris Hrkac
Role: Program Manager
Email: gary.vivian@aurorageosciences.com , chris.hrkac@aurorageosciences.com

RainCoast Environmental (RainCoast) is KDI's primary technical point of contact for environmental, permitting and engagement matters. RainCoast's contact information is as follows:

RainCoast Environmental Services Ltd.
221 Trincomali Heights
Salt Spring Island, BC
V8K 1M9
Phone:250-538-2306
Contact: Katsky Venter
Role: Environmental Advisor
Email: Katsky.venter@gmail.com

Supervisor, Manager, and Program Manager roles, as outlined below, will be assigned by AGL prior to the commencement of activities associated with the REP.

2.1 Staff, Contractors, Suppliers, and Visitors

All personnel on site, including staff, contractors, suppliers, and visitors, are required to implement this Plan as it pertains to their activities on site. Specifically, these responsibilities include the following:

- Taking all necessary steps to minimize negative effects to water, land, and air in accordance with existing, MVLWB-approved Management Plans;
- Cooperating fully with supervisors and/or KDI management to implement effective waste management programs;
- Only carrying out duties and tasks for which an appropriate level of training has been provided;
- Where there is uncertainty, asking questions and bringing concerns to the attention of Managers and Supervisors when working with products or conducting tasks that may pose potential environmental risks;
- Segregating and disposing of waste in the receptacles provided;
- Ensuring no food waste or open top vessels containing waste are left unattended; and
- Collecting all non-mineral waste generated in the field and returning it to camp for proper disposal.

2.2 Managers and Supervisors

Managers and Supervisors have a responsibility to ensure that staff, contractors, consultants, and visitors have been trained in KDI waste management expectations and procedures, where relevant. Additional Manager and Supervisor responsibilities include the following:

- Maintaining a no blame work environment in implementing mitigation measures and follow-up actions;
- Ensuring site-, task-, and material-specific training is provided to all departments and staff;

- Ensuring there are appropriate and sufficient supplies on site to support compliant waste management;
- Ensuring that facility inspections are routinely conducted;
- Ensuring that secondary containment facilities are adequately maintained;
- Applying a hazardous waste generator number and maintaining related documentation;
- Maintaining records of inspections, personnel training, equipment testing, and maintenance; and
- Conducting corrective action planning and implementation in a timely manner that supports ongoing compliance.

2.3 Program Manager

In addition to the responsibilities listed above, the Program Manager or designate has the following additional responsibilities:

- Overseeing waste handling, transport, sampling, and management;
- Ensuring drill site inspections are conducted following each drill move and that all corrective actions are completed prior to commencing drilling at the next site.

2.4 Drill Contractors

Drill contractors are responsible for ensuring that drill sites are managed in accordance with KDI's waste management expectations and procedures. Additional drill contractor responsibilities include:

- Depositing drill cuttings in an area designated by KDI;
- Dewatering cuttings to the greatest extent possible;
- Ensuring that cuttings do not flow in an uncontrolled manner to the surrounding land through the use of casing pots or other similar devices or methods;
- Recording the location of any drill cuttings disposal areas that may be established;
- Segregating and disposing of waste at the drill site in a manner that is consistent with how waste is managed at the exploration base camps;
- Transporting waste from the drill site to either Kelvin or Bob camps;
- Conducting a drill site inspection on each shift; and
- Ensuring each drill site is cleaned up to the satisfaction of a KDI or AGL inspector following each drill move and prior to completion of their new drill target.

3 IDENTIFICATION OF WASTE TYPES

Waste characterization is used in assessing the appropriate handling, treatment, transportation, and disposal of the waste. Characterization is the assessment of the physical, chemical, and toxicological properties of the waste product. These properties are used to determine the dangers relating to handling, storage, and transportation of the waste on public roads, and to determine the environmental consequences of the waste so that an appropriate disposal option can be determined. This also allows the determination of a hazardous or non-hazardous waste as well as dangerous drilling waste classification. Waste transportation and disposal is regulated by the Government of the Northwest Territories (GNWT), Environment and Climate Change Canada (ECCC), and the MVLWB.

Regulated wastes include any waste material which is specifically regulated as hazardous[4], and dangerous for transport.[5] Drilling wastes (drilling fluids and drill cuttings) disposal and management is conducted under the guidance of the GNWT Lands inspector and the MVLWB.

All waste that may be generated over the life of the Project can be classified into three basic categories from which best management practices can be applied:

- Hazardous or Potentially Hazardous Waste;
- Non-Mineral Waste; and
- Mineral Waste.

Potentially hazardous waste includes incinerator/ash residue; batteries; used oil, fuels, lubricants, greases, oil filters, solvents, and sorbent materials; chemical wastes (liquid or solid); hydrocarbon-contaminated soils; other contaminated soils (e.g., Ammonium Nitrate (AN)- or Ammonium Nitrate-Fuel Oil (ANFO)-contaminated soils); hydrocarbon-contaminated water. Various small quantities of these waste streams are generated through routine drilling and exploration activities, spill response, and precipitation accumulation in secondary containment. KBL Environmental (KBL) has agreed to accept Hazardous and Potentially Hazardous Waste generated through Project activities (Appendix A). On average, there are two flights to Yellowknife per week while camp is operating, which ensures there is minimal storage of hazardous materials on site.

Non-mineral waste may be combustible or non-combustible and includes domestic refuse (e.g., paper, packaging materials, containers), putrescible waste and organic waste (e.g., brush/trees), construction materials (wood, metal, plastic), and sewage. Minimal quantities of these waste streams are generated through routine drilling and exploration activities.

Mineral waste includes cuttings from drilling and core cutting and mineral wastewater from drilling and core cutting. Drill and core cuttings are comprised of rock, water, salt, or non-toxic drill additives. Mineral wastewater is the liquid component of the cuttings associated with drilling and core cutting and is comprised of water and non-toxic drill additives. Various quantities of these materials are generated through routine drilling and exploration activities. Mineral waste also includes processed kimberlite, which consists of liquid and solid waste generated by the portable bulk sample plant. This material is expected to be inert, but this assumption will be confirmed by the results of geochemical analysis prior to commissioning of the processing plant and monitoring of processed kimberlite during plant operation and described in the Rock Management Plan. Assuming a maximum bulk sample rate of 5,000 t/a, approximately 2,000 m^3/a of processed kimberlite will be produced.

A detailed overview of the three waste streams, including a description of the characteristics of each stream, the estimated quantities to be produced in association with the Project, and the potential environmental effects associated with each stream, is provided in Table 1 along with an overview of how each waste stream and type will be managed and how potential environmental effects associated with waste types will be mitigated. Unless otherwise indicated, the estimated quantities of waste are for the entire Project, including Advance Exploration Activities associated with the AEP authorizations.

[4] i.e., in the Canadian Environmental Protection Act (CEPA) or through the various guidelines issued by the Environmental Protection Service (EPS) of Environment and Natural Resources, Government of the Northwest Territories

[5] i.e., in CEPA or the Transportation of Dangerous Goods Act (TDGA)

4 WASTE MANAGEMENT

Waste streams and their management, along with related potential environmental impacts and mitigation measures, are described in Table 1.

Waste generated at remote work sites is either disposed of on site or segregated at the source and backhauled to Bob or Kelvin camp for treatment and disposal. A typical work area set-up for a drill site is illustrated in Figure 6. Backhauled waste is further managed at Bob or Kelvin camps, as described in Table 1.

Where waste is backhauled to Bob Camp, Kelvin Camp, or Yellowknife for treatment or disposal, considerations for preparing materials for off-site disposal include the following:

- Bulking like materials together (avoid co-mingling waste streams);
- Utilizing proper containers suitable for the material and volume being stored;
- Properly labelling storage containers and areas in accordance with the Workplace Hazardous Materials Information System (WHMIS) and *Transportation of Dangerous Goods* (TDG) *Regulations* (2012);
- Staging waste awaiting backhaul in areas with suitable containment;
- Disposing of waste on a regular basis and ensuring excess waste does not accumulate in work areas; and
- Backhauling all waste from remote work sites to Bob or Kelvin Camp at shift change or during drill support.

5 INFRASTRUCTURE REQUIRED FOR WASTE MANAGEMENT

Infrastructure required for Project waste management consists of a combination of on-site storage, treatment, and disposal, incineration, and off-site disposal. Current infrastructure, including the location of waste-related facilities, at Bob and Kelvin camps are shown in Figure 3 and Figure 4, respectively. A conceptual layout for the Kelvin Camp Expansion, which has yet to be constructed, is provided in Figure 5.

Table 1: Waste streams and types, anticipated quantities, management approach, potential environmental effects, and mitigation measures

Waste Stream and Type		Estimated Quantity Generated Annually	Management Approach					Impact Assessment	
			Reduce	Reuse	Recycle/ Recover	Treat	Dispose	Potential Environmental Effects	Mitigation Measures
Hazardous or Potentially Hazardous Waste	incinerator/ash residue batteries used oil, fuels, lubricants, greases, oil filters solvents, and spent sorbent materials chemical wastes (liquid or solid) hydrocarbon-contaminated soils AN- or ANFO-contaminated soils	7 m^3 100 kg 20,000 L 700 L 7,000 L 10 m^3			use waste oil as an energy source.[a]	rake incinerator ash and remove non-burnable items	segregate at source to support efficient off-site management backhaul to Kelvin or Bob camp store in sealed containers in secure storage area at camp backhaul to Yellowknife via fixed-wing aircraft or winter road and expedite to KBL's Hazardous Waste Transfer Station	impairment of air quality and release of greenhouse gases (GHG) due to vehicle emissions associated with backhauling materials impairment of water quality or vegetation, degradation of fish habitat soil contamination wildlife attraction	consolidate waste and coordinate backhaul to reduce traffic ensure adequate containment and cover to prevent precipitation ingress and leachate generation during storage and staging store waste securely to limit wildlife access and leakage remove waste that may attract wildlife from remote worksites at the end of each shift

Waste Stream and Type		Estimated Quantity Generated Annually	Management Approach					Impact Assessment	
			Reduce	Reuse	Recycle/ Recover	Treat	Dispose	Potential Environmental Effects	Mitigation Measures
	hydrocarbon-contaminated water from secondary containment facilities	minimal	cover containment areas to reduce ingress of rain and snow			pass through activated carbon filter and deposit to tundra	pump out into sealed containers backhaul to Kelvin or Bob camp store in sealed containers in secure storage area at camp backhaul to Yellowknife via fixed-wing aircraft or winter road and expedite to KBL's Hazardous Waste Transfer Station	impairment of air quality and release of greenhouse gases (GHG) due to vehicle emissions associated with backhauling materials impairment of water quality or vegetation, degradation of fish habitat soil contamination land destabilization and erosion wildlife attraction	consolidate waste and coordinate backhaul to reduce traffics ensure adequate containment and cover to prevent precipitation ingress and leachate generation during storage and staging routinely inspect secondary containment facilities store waste securely to limit wildlife access and leakage remove waste that may attract wildlife from remote worksites at the end of each shift

Waste Stream and Type		Estimated Quantity Generated Annually	Management Approach					Impact Assessment	
			Reduce	Reuse	Recycle/ Recover	Treat	Dispose	Potential Environmental Effects	Mitigation Measures
Non-Mineral Waste	<u>combustible waste:</u> domestic refuse (paper, cardboard, packaging materials) construction materials (wood) putrescible and organic waste (brush/trees)[b]	15,000 kg 20,000 kg 17,000 kg		reuse and repurpose materials where safe and suitable	segregate at source to support efficient off-site management brush and trees removed during construction will be stockpiled with overburden and may be mulched and used during reclamation activities		backhaul to Kelvin or Bob camp incinerate putrescible and organic waste, incinerate or burn other combustible waste (i.e. untreated wood, cardboard and paper) in burn bin or pad, or backhaul to Yellowknife via fixed-wing aircraft or winter road and transport to a suitable landfill	impairment of air quality and release of greenhouse gases (GHG) due to vehicle emissions associated with backhauling materials wildlife attraction	sort waste to identify reusable or recyclable materials consolidate waste and coordinate backhaul to reduce traffic store waste securely to limit wildlife access and leakage remove food waste and waste that may attract wildlife from remote worksites at the end of each shift incinerate food waste on a daily basis or double-bag with industrial grade garbage bags and store in an enclosed structure lined with plastic and sealed with a removable lid to ensure it can be regularly cleaned and to restrict odors from escaping to prevent the attraction of wildlife

Waste Stream and Type		Estimated Quantity Generated Annually	Management Approach					Impact Assessment	
			Reduce	Reuse	Recycle/ Recover	Treat	Dispose	Potential Environmental Effects	Mitigation Measures
	<u>non-combustible waste:</u> domestic refuse (food containers, packaging materials) construction materials (metal, plastic)	 25,000 kg 15,000 kg	purchase in bulk to reduce packaging, where available	reuse and repurpose containers and scrap where safe and suitable			segregate at source to support efficient off-site management backhaul to Kelvin or Bob camp backhaul to Yellowknife via fixed-wing aircraft or winter road and transport to a suitable landfill	impairment of air quality and release of greenhouse gases (GHG) due to vehicle emissions associated with backhauling materials wildlife attraction	sort waste to identify reusable or recyclable materials consolidate waste and coordinate backhaul to reduce traffic store waste securely to limit wildlife access remove waste that may attract wildlife from remote worksites at the end of each shift double-bag food-contaminated waste with industrial grade garbage bags and store in an enclosed structure lined with plastic and sealed with a removable lid to ensure it can be regularly cleaned and to restrict odors from escaping to prevent the attraction of wildlife

Waste Stream and Type		Estimated Quantity Generated Annually	Management Approach					Impact Assessment	
			Reduce	Reuse	Recycle/ Recover	Treat	Dispose	Potential Environmental Effects	Mitigation Measures
	sewage: black water (from Pacto Toilets)	10,000 kg					place and store black water in sealed storage bins backhaul to Kelvin or Bob camp incinerate in medical grade incinerators designed to handle human waste or backhaul to Yellowknife via fixed-wing aircraft or winter road and transport to a suitable landfill	wildlife attraction impairment of air quality and release of greenhouse gases (GHG) due to vehicle emissions associated with backhauling materials	remove waste whenever remote sites are left unoccupied or more frequently consolidate waste and coordinate backhaul to reduce traffic store waste securely to limit wildlife access
	grey water	250,000 L[c]					collect grey water in a sump[d]	wildlife attraction nutrient enrichment of local waterbodies	in kitchen, use strainer baskets to prevent food material from entering the grey water waste stream ensure sump is located in an area with good infiltration (e.g., coarse-grained, gravelly sand) and located >50 m from the Ordinary High Water Mark (OHWM) of the nearest waterbody, as approved by an Inspector

Waste Stream and Type		Estimated Quantity Generated Annually	Management Approach					Impact Assessment	
			Reduce	Reuse	Recycle/ Recover	Treat	Dispose	Potential Environmental Effects	Mitigation Measures
	sewage treatment plant (STP) effluent	10,000[e]					discharge clean effluent to the land at a location approved by an Inspector	n/a[f]	n/a[f]
	STP solids	10,000 kg[e]					collect STP solids in small batches incinerate or backhaul to Yellowknife via fixed-wing aircraft or winter road and transport to a suitable landfill	n/a	n/a

Waste Stream and Type		Estimated Quantity Generated Annually	Management Approach					Impact Assessment	
			Reduce	Reuse	Recycle/ Recover	Treat	Dispose	Potential Environmental Effects	Mitigation Measures
Mineral Waste	drill and core cuttings (rock, water, salt, non-toxic drill additives	300,000 L					capture with casing pot; discharge to natural depression	impairment of water quality or vegetation, degradation of fish habitat soil contamination land destabilization, erosion, permafrost degradation	capture with casing pot discharge cuttings to a natural depression locate cuttings sumps >100 m away from the OHWM of any watercourse ensure cuttings sumps are of adequate size and stable minimize use of salt to the greatest extent possible use non-toxic drilling additives use mud recovery units during on-ice drilling to minimize the water used and make it easier to manage cutting waste material for eventual disposal in an appropriate land-based sump
	processed kimberlite (fine and coarsely ground kimberlite – approximately 30% solids)	6,000 m^3					place processed kimberlite in the quarry sump	n/a[f]	n/a[f]

Waste Stream and Type		Estimated Quantity Generated Annually	Management Approach					Impact Assessment	
			Reduce	Reuse	Recycle/ Recover	Treat	Dispose	Potential Environmental Effects	Mitigation Measures
	quarry sump water				recirculate water from the quarry sump to the portable bulk sample plant in a closed loop use water from the quarry sump that meets EQC for dust suppression on roads and laydown pads	use an oil-water separator to remove hydrocarbons, if needed	discharge water that meets EQC to land, if necessary	impairment of water quality or vegetation, degradation of fish habitat soil contamination land destabilization, erosion, permafrost degradation	discharge wastewater to a natural depression locate sumps >100 m away from the OHWM of any watercourse

Waste Stream and Type		Estimated Quantity Generated Annually	Management Approach					Impact Assessment	
			Reduce	Reuse	Recycle/ Recover	Treat	Dispose	Potential Environmental Effects	Mitigation Measures
	wastewater from drilling and core cutting (water, non-toxic drill additives)	various	recirculate drill water to reduce freshwater required	reuse drill water where possible reuse core saw water where possible		Use settling tanks and/or flocculants to support reuse where possible	discharge to natural depression	impairment of water quality or vegetation, degradation of fish habitat soil contamination land destabilization, erosion, permafrost degradation	discharge wastewater to a natural depression locate sumps >100 m away from the OHWM of any watercourse ensure sumps are of adequate size and stable minimize use of salt to the greatest extent possible use non-toxic drilling additives use mud recovery units during on-ice drilling to minimize the water used and make it easier to manage cutting waste material for eventual disposal in an appropriate land-based sump

[a] As Project activities progress from Foundational to Advanced Exploration activities, the site will review options to utilize this energy source as a heat source for various site facilities including workshops, the waste management facility, the bulk sample processing plant and others. Prior to waste oil being utilized as a heat source, a properly sized and purpose-built burner designed for the types of waste oil generated on site will be sourced. If segregation of waste oils is required, KDI will ensure that designated containers are available to do so.

[b] Food waste and other putrescible waste may be disposed of in dual chamber, diesel incinerators or backhauled off site.

[c] These amounts will be only half as much once the New Kelvin Camp is operational and the Old Kelvin Camp is closed down; at that time, this waste stream will only come from the Bob Camp.

[d] At the New Kelvin Camp, grey water and sewage will be directed to the Sewage Treatment Plant (STP) for treatment. Clean effluent will be discharged to land at a location to be approved by the GNWT Inspector.

[e] These waste streams will be realized only after the New Kelvin Camp is constructed and the sewage treatment plant is commissioned.

[f] This material is expected to be inert.

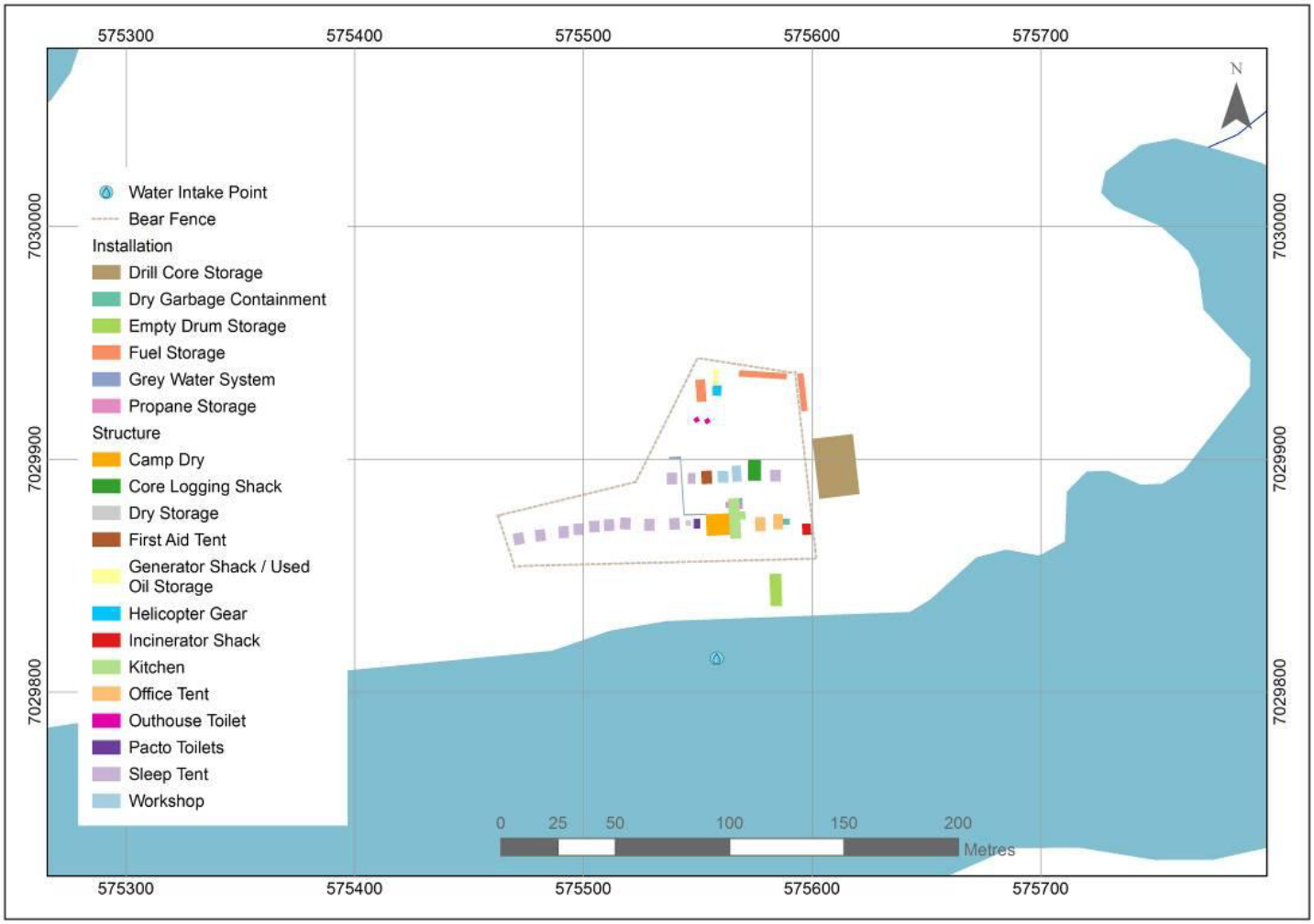


Figure 3: Existing Bob Camp Infrastructure and Site Layout

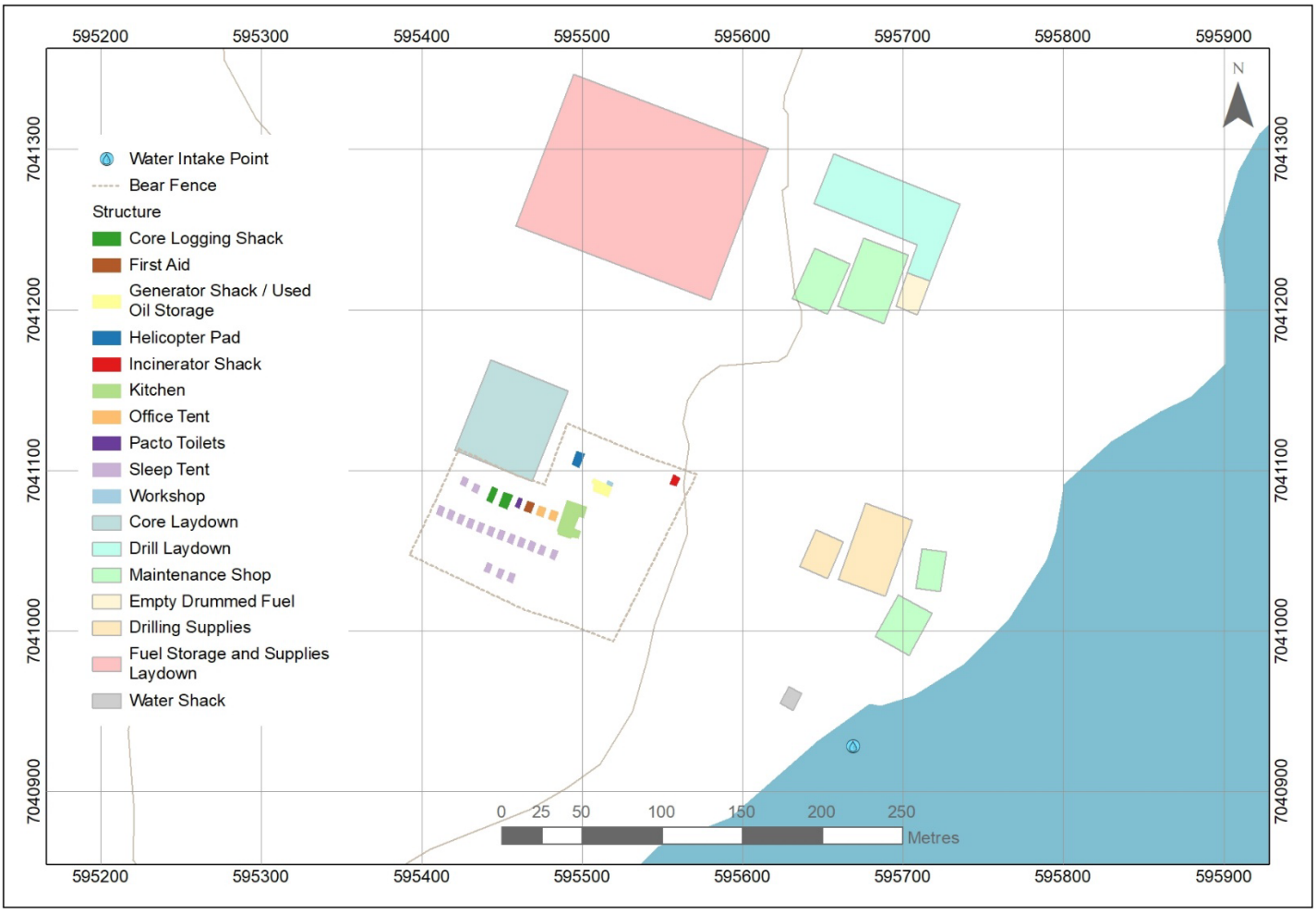


Figure 4: Existing Kelvin Camp Infrastructure and Site Layout

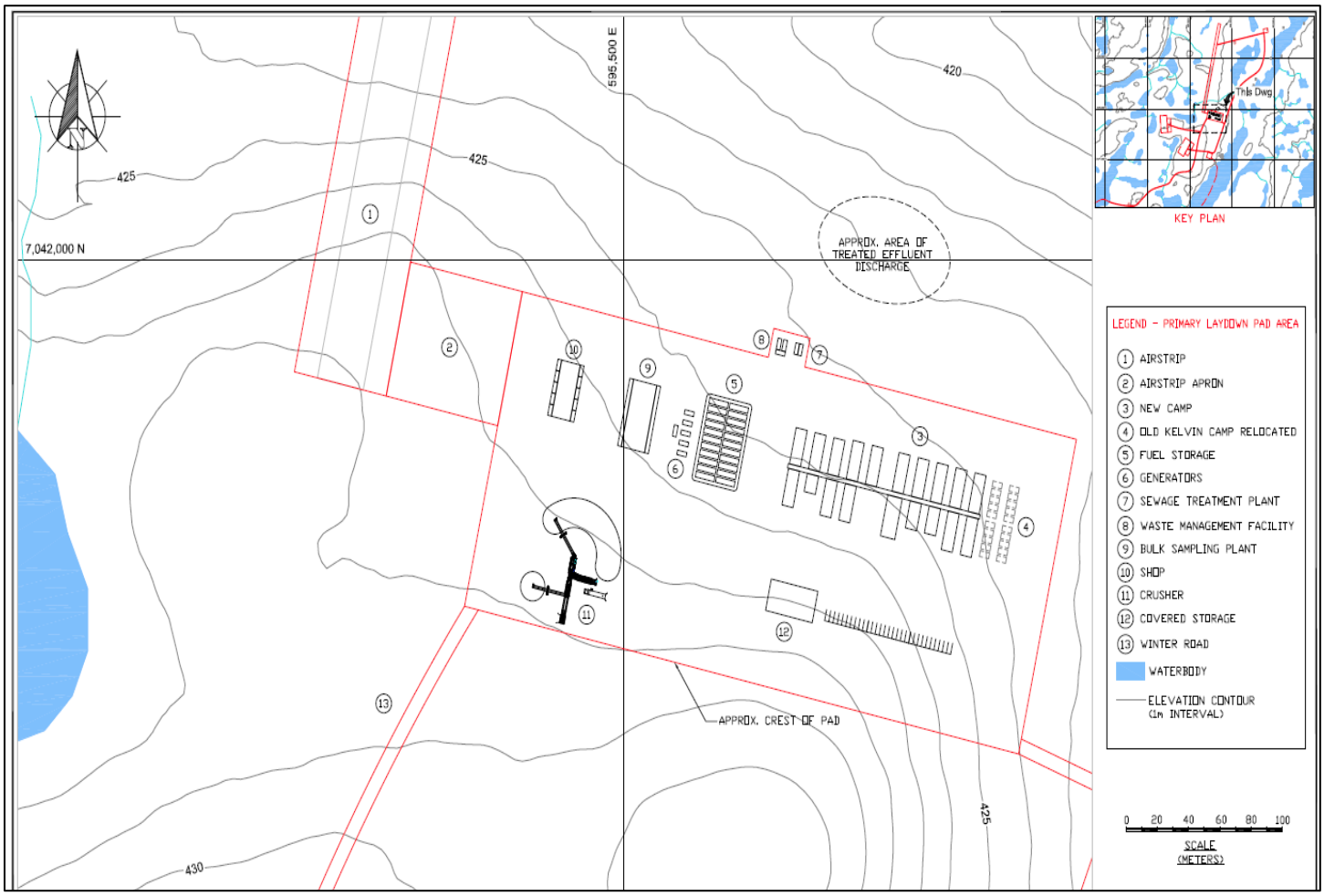


Figure 5: Kelvin Camp Expansion Infrastructure and Site Layout (Approved)

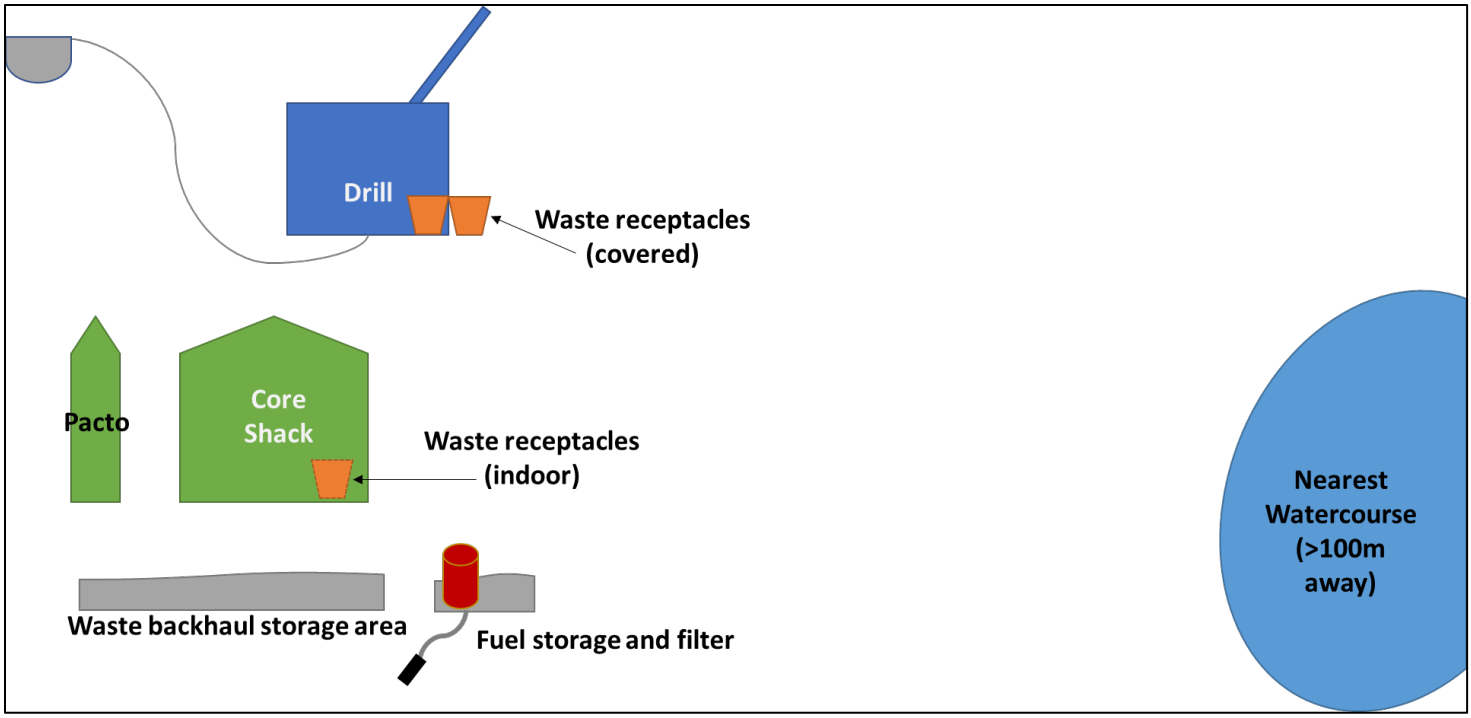


Figure 6: Schematic of a Typical Drill Site Work Area Layout and Related Waste Management Infrastructure

5.1 On-site Storage, Treatment, and Disposal

5.1.1 Food Waste Storage

Consists of an insulated bin with a minimum size of 32" X 64" X 54", lined with 10 mm clear poly. The bin has been designed to ensure that there is no ability for seepage of liquid out of the bin. The bin creates a seal that prevents the escape of odours when closed. The bin is washed as needed to eliminate odours that may attract wildlife.

5.1.2 Non-hazardous, Dry Waste Storage

Consists of sealed sheds. Dry, odourless materials are placed into garbage bags, cardboard boxes or plastic bins for short term storage prior to incineration in a burn bin or removal from camp. The bin is swept and cleaned out weekly.

5.1.3 Hazardous and Potentially Hazardous Waste Storage

At the existing Bob and Kelvin camps, hazardous and potentially hazardous waste is stored in the generator. Once the Kelvin Camp Expansion is constructed, hazardous and potentially hazardous waste will be stored in the designated waste management facility. These designated buildings have shelving and storage for a small quantity of materials awaiting shipment offsite. Materials are stored in sealed drums, lube cubes, or pails with ready access to sorbent pads and spill kits. The building and materials stored there are inspected daily for leakage and potential wildlife attractants. The buildings are cleaned weekly.

5.1.4 Grey Water Sumps

At the existing Bob and Kelvin camps, grey water from the kitchen and dry is passed through a grease trap and collected in a sump. The kitchen uses strainer baskets and a grease trap (Appendix B, Figures B1 and B2) to prevent food material from entering the grey water waste stream. The grey water sump is located > 50 m from the Ordinary High Water Mark (OHWM) of the nearest waterbody. Sumps are located in areas of high potential infiltration (e.g., coarse-grained, gravelly sand) and contains a plywood box that acts as the initial catchment. The sump dimensions are 1 m X 6 m X 10 m for a total volume of 60 m^3 (Appendix B, Figures B3, B4, and B5). This volume is sufficient to handle grey water production from camp. Drains are flushed to keep them odour-free during operation and seasonal closures.

5.1.5 Pacto (or equivalent) Toilets

Pacto toilets (or equivalent) may be set up at remote drill sites and core processing areas with any black water sewage collected for backhaul to Bob or Kelvin camps along with other waste. Pacto toilets (or equivalent) are also used at the existing Bob and Kelvin camps. Black water sewage from Pacto toilets (or equivalent) is incinerated in medical grade incinerators designed to handle human waste or placed in sealed bins for storage and backhauled to Yellowknife via fixed-wing aircraft or winter road and transported to a suitable landfill.

5.1.5.1 Sewage Treatment Plant

A Sewage Treatment Plant (STP) will be installed as part of the Kelvin Camp Expansion to treat sewage from flush toilets as well as grey water. STP options, including a rotating biological contactor or membrane bioreactor type plant, are still being investigated by KDI, however, KDI will choose a technology and plant that will produce treated effluent of sufficient quality to be discharged to land at a location that > 100 m above the OHWM from the nearest waterbody

following approval from an Inspector. This Plan will be updated upon installation of the STP as part of the Kelvin Camp Expansion.

5.1.6 Quarry Sump

Once the portable bulk sample processing plant is commissioned, a 25,000 m^3 quarry sump will be used to supply the portable bulk sample processing plant with water and to store and dispose of processed kimberlite and process water. Precipitation that collects naturally in the quarry sump will be used to commission the portable processing plant initially; during ongoing operations, the plant will be supplied by the process water that remains in the quarry sump after the processed kimberlite settles out. As shown in the diagram in Appendix C bulk sample processing will use water from the quarry sump in a closed loop so that the process water does not need to be discharged.

If necessary, discharge from the sump will occur to a land-based location that will be selected and approved by an Inspector. Sump water may be treated for hydrocarbons using an oil–water separator. Sump water may also be used to water roads for dust suppression if the water quality meets the Effluent Quality Criteria (EQC) set out in the Water Licence.

5.1.7 Drilling Waste Sumps

Drilling Waste is placed in sumps or natural depressions. Disposal locations selected based on the local terrain, proximity to source, distance from nearby watercourses (i.e., > 100 m from the OHWM), and expected capacity needs. Disposal locations are routinely monitored to ensure capacity is sufficient and stable.

5.1.8 Water from Secondary Containment

Water that has accumulated in secondary containment facilities may be discharged through an activated carbon filter such as a Rain Drain[6] or equivalent upon approval from an Inspector (see Section 7). The water treatment system will be subject to annual testing to confirm it is achieving the < 15 mg/L oil and grease.

5.2 Incineration

Currently, an Inciner8 i8-40A dual-chambered, diesel incinerator is available at each of Bob and Kelvin camp. The Kelvin Camp Expansion will include two incinerators, with the second incinerator providing redundancy to minimize the storage of wildlife attractants on site. The primary incinerator at the Kelvin Camp Expansion will be an Ecowaste CA100 dual chamber diesel incinerator. The secondary incinerator at the Kelvin Camp Expansion will be the relocated Inciner8 i8-40A from the existing Kelvin Camp. These incinerators are capable of meeting the Canada-wide Standards for Dioxins and Furans (80 pg I-TEQ/Rm^3 @ 11% O2) and mercury (20 µg/Rm^3 @ 11% O2), meet or exceed all recommended emissions guidelines as outlined by Environment Canada, and have built-in timers to allow for a complete cycle of combustion and cooling. Links to the specifications for these units can be found in Appendix D, along with links to incineration practices and standards.

[6] Manufacturer (SEI Industries) specifications for the Rain Drain activated carbon filter indicates that effluent discharged through a Rain Drain meets Canadian Council of Ministers of the Environment (CCME) *Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products*, being 15 mg/L of free oil and grease (section 3.10.3(1)i; CCME 2003).

Incinerator ash is raked for non-burnable items then packaged in sealed pails for backhaul to Yellowknife and disposal by KBL environmental.

A burn bin or pad may also be used to incinerate paper, cardboard, and untreated wood.

5.3 Off-site Disposal

Hazardous and potentially hazardous waste materials will be transported to KBL's Hazardous Waste Transfer Station in Yellowknife for storage, segregation, and consolidation of approved waste streams for bulk transportation to specialized end receivers. The facilities are designed, engineered, constructed and maintained to prevent environmental impact through the management of industrial waste. KBL has agreed to accept waste from the Project (Appendix A).

The location of KBL's Yellowknife Hazardous Waste Transfer Station is as follows:

17 Cameron Road
Kam Lake Industrial Park
Yellowknife, NT

The address of KBL's Yellowknife office is as follows:

343 Old Airport Road
Yellowknife, NT
X1A 2N8
867-873-5263

6 TRAINING

All personnel at site participate in a site orientation which outlines waste management obligations that must be fulfilled while on site and identifies related personnel roles and responsibilities. Further, all project personnel are trained in WHMIS. Incinerator-specific training is provided to incinerator operators.

7 MONITORING AND INSPECTION

Monitoring of waste management facilities includes routine inspection of waste management facilities. Food waste, Hazardous and Potentially Hazardous waste, and Non-hazardous waste storage areas are inspected daily as are grey water sumps and outflow lines whenever camp is open.

When present, secondary containment facilities are inspected by the Program Manager or designate to ensure there is adequate storage capacity, identify any leaks, and inspect/test accumulated water to determine the appropriate management action as required.

Routine inspections of Drilling Waste sumps occur before, during, and after activities at each drill hole. Drill sites are inspected by the Program Manager or designate to document pre-disturbance conditions, compliant drill site management, and suitable clean-up and stabilization of drill areas. Frequency of drill site inspections varies as the duration the drill may be in a particular location varies with program scope and conditions encountered.

The water treatment system for secondary containment water discharge will be subject to annual testing to confirm it is achieving the < 15 mg/L oil and grease.

Inspection documents identified in the following section are available for the Inspector to review upon request.

8 REPORTING AND DOCUMENTATION

Reporting occurs in accordance with regulatory requirements.

A record of the locations, including coordinates, of waste management infrastructure and all sumps used for the disposal of Drilling Waste is maintained. Documentation related to the inspection of waste management facilities is maintained at Kelvin or Bob Camp, including sump and drill facility inspection records and material inventories.

A record of testing conducted on water from secondary containment facilities described in Section 7 will be maintained at Kelvin or Bob Camp.

When incinerators are in operation, the following information is recorded:

- Training records, including the following:
    - a list of all staff who have been trained to operate the incinerator;
    - the type of training conducted;
    - the training provider;
    - the dates training occurred, including refresher courses;
- equipment maintenance activities;
- operational information, including the following:
    - date of operation;
    - volume of waste input;
    - volume of ash output;
- summarized annual auxiliary fuel usage; and
- a list of all shipments of incinerator residues, by type (if necessary), including the weight and disposal location.

A copy of documents can be made available to an Inspector upon request.

9 REFERENCES

Alberta Government. 2018. Environmental Quality guideline for Alberta Surface Waters Canadian Environmental Protection Act. S.C. 1999, c.33. March 18, 2018.

Environmental Emergency Regulations SOR/2003-307

Hazardous Products Act R.S.C., 1985, C. H-3

Interprovincial Movement of Hazardous Waste Regulations. SOR/2002-301

Mackenzie Valley Land Use Regulations (SOR/98-429)

Mackenzie Valley Resource Management Act (S.C. 1998, c. 25)

Transportation of Dangerous Goods Act. S.C. 1992, c.34

Transportation of Dangerous Goods Regulations. SOR/2012-245

Waters Act. S.N.W.T. 2015, c.3

Alberta Government. 2018. Environmental Quality guideline for Alberta Surface Waters Canadian Environmental Protection Act. S.C. 1999, c.33. March 18, 2018.

Canadian Council of Ministers of the Environment (CCME). 2003. Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products. PN 1246. Winnipeg, MN.

Ecosystem Classification Group. 2008. Ecological Regions of the Northwest Territories - Taiga Shield. Department of Environment and Natural Resources, Government of the Northwest Territories.

GNWT. 2017. Guidelines for Hazardous Waste Management. Environment and Natural Resources, Government of the Northwest Territories, Yellowknife, NT.

GNWT. 2004. Guidelines for Industrial Waste Discharges in the NWT. Environment and Natural Resources, Government of the Northwest Territories, Yellowknife, NT.

Land and Water Boards of the Mackenzie Valley. 2021. Standard Outline for Management Plans.

Mackenzie Valley Land and Water Board (MVLWB). 2011. Guidelines for Developing a Waste Management Plan.

APPENDIX A Waste Acceptance Letter

KBL Environmental LTD.

#17 Cameron Road
P.O. Box 1108
Yellowknife, NT X1A 2N8

P 867.873.5263
F 867.669.5555
kblenvironmental.com

October 20th, 2015

Attention: Garry Vivian
Aurora Geosciences
3506 McDonald Dr.
Yellowknife, NT X1A 2H1

Subject: Kennady North Project c/o Aurora Geosciences – Letter of Waste Acceptance

---

KBL Environmental Ltd. (KBL) owns and holds a regulatory approval to operate an Industrial Waste Transfer Facility located at #17 Cameron Road in Yellowknife, Northwest Territories. The facility is permitted and regulated through the jurisdiction of the Northwest Territories Department of Environmental and Natural Resources under approval number NT00123. Under this approval KBL is an end receiver of hazardous and non-hazardous wastes.

KBL has been contacted to provide services to manage acceptance of waste generated through exploration activities from Kennady Diamonds, Kennady North project in the Northwest Territories care of Aurora Geosciences. More specifically waste material that we may receive at KBL's Yellowknife Industrial Waste Transfer Facility is as follows but not limited to:

- Metal drums
- Tank or barrel sludge and solids
- Batteries
- Gas cylinders
- Hazardous and non-hazardous liquid hydrocarbon or chemical waste
- Leachable and non-leachable soils impacted with: hydrocarbons and/or metals
- PCB Amended Paint (PAP) coated construction waste
- Lead Paint coated metal

If there are any questions regarding content included herein please contact our office as required.

Regards,

Jeffrey Bembridge

Jeffrey Bembridge
KBL Environmental LTD.

1

APPENDIX B Grey Water Management Drawings and Detail

Figure B1: Grease Trap

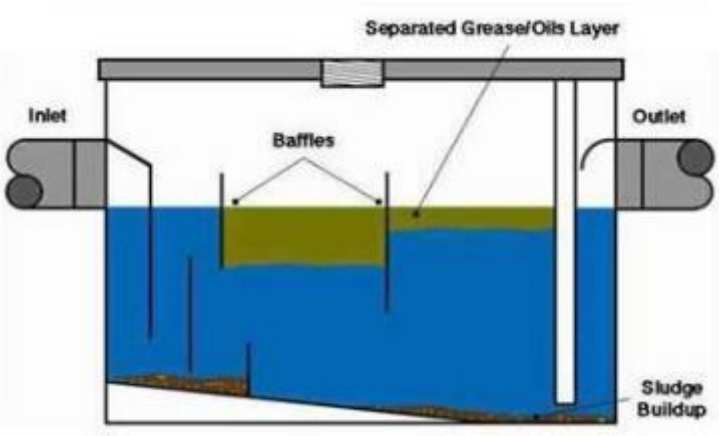


Figure B2: Grease Trap Operation

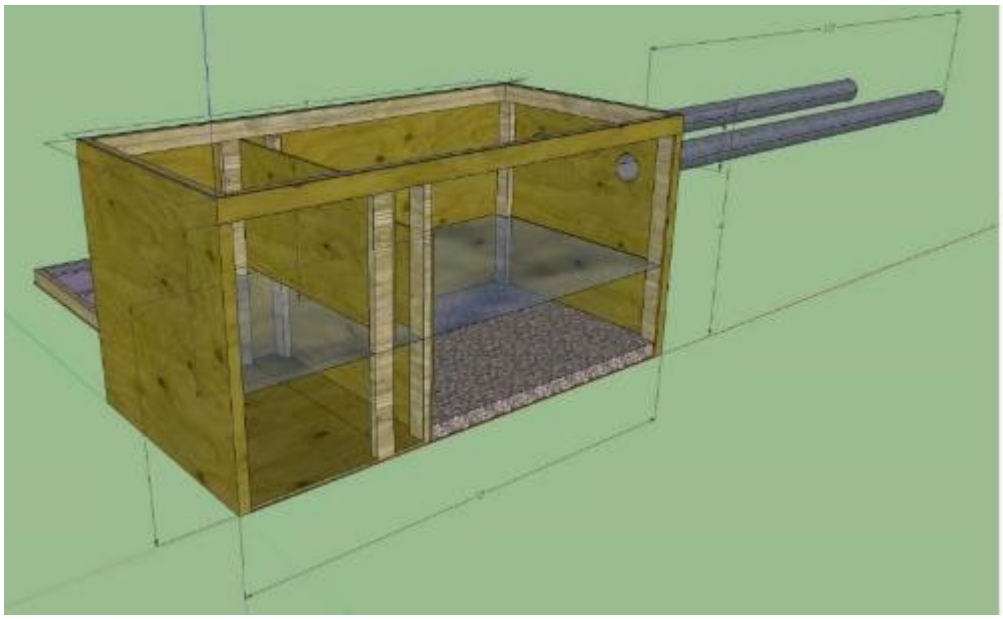


Figure B3: Grey Water Sump Overview

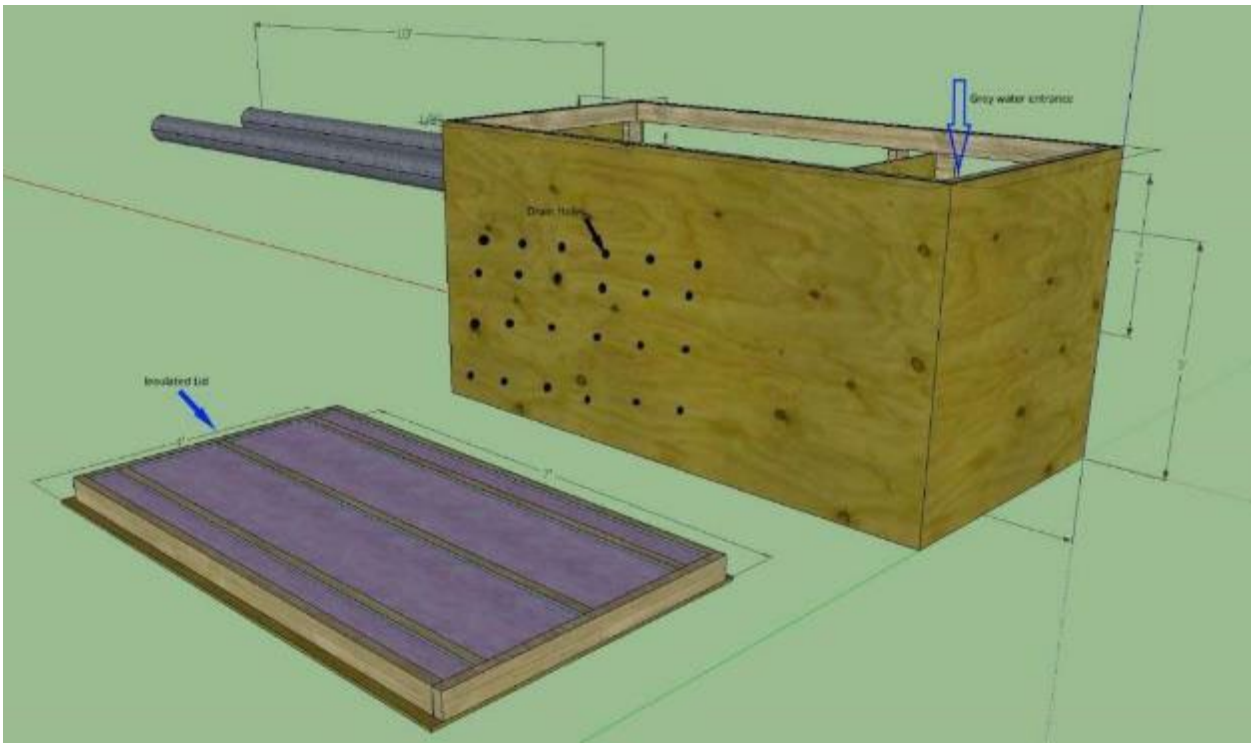


Figure B4: Grey Water Sump Detail View 1

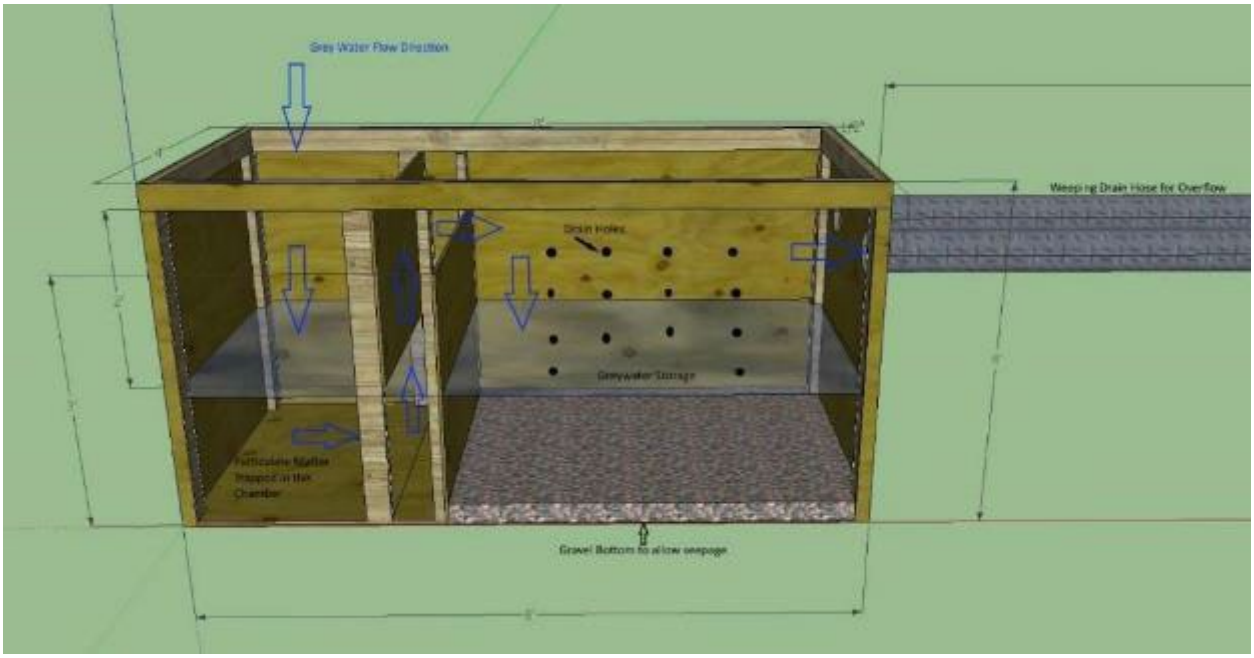
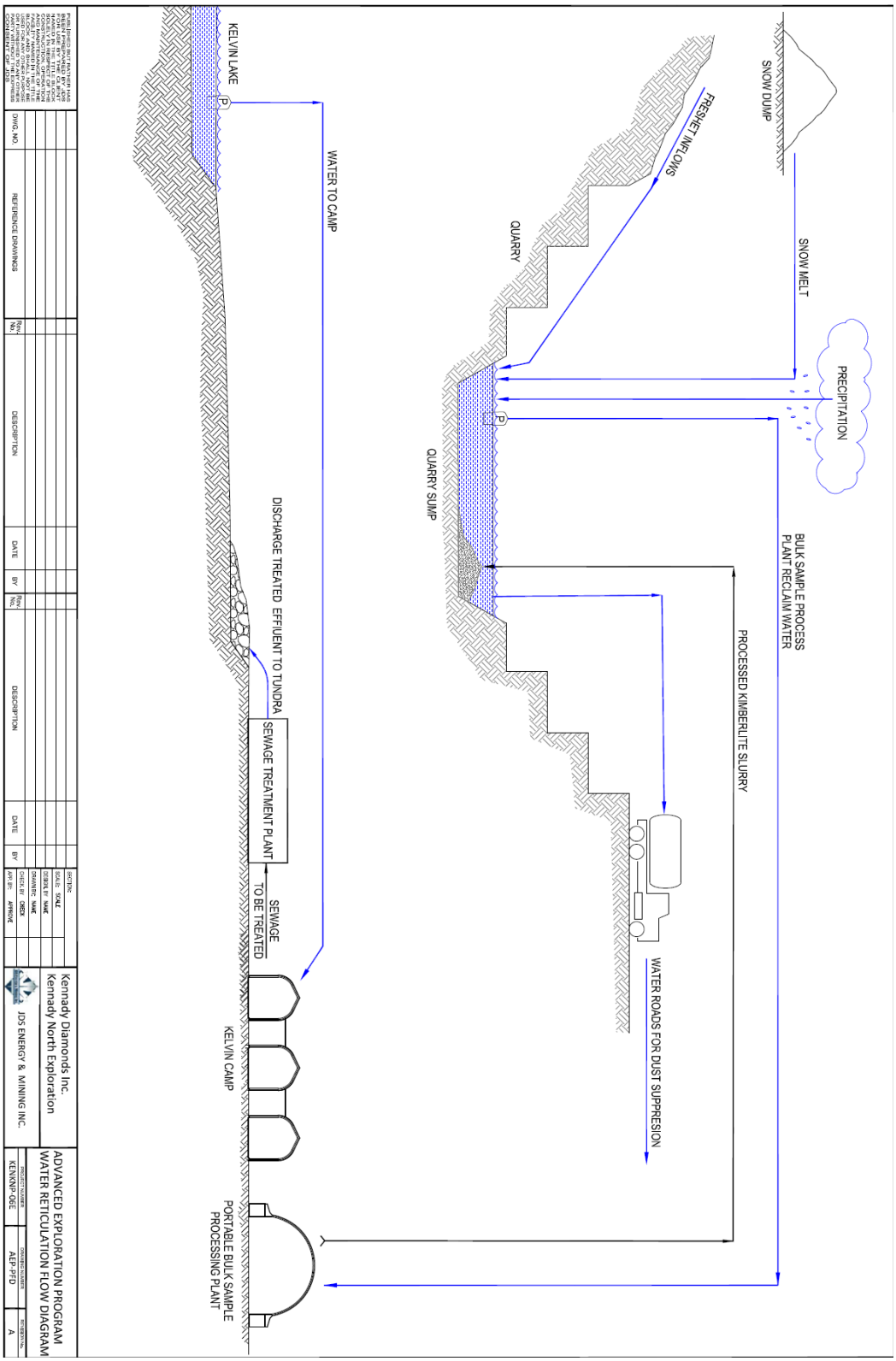


Figure B5: Grey Water Sump Detail View 2

APPENDIX C Water Reticulation Flow Diagram



APPENDIX D Incinerator Manual and Reference Material

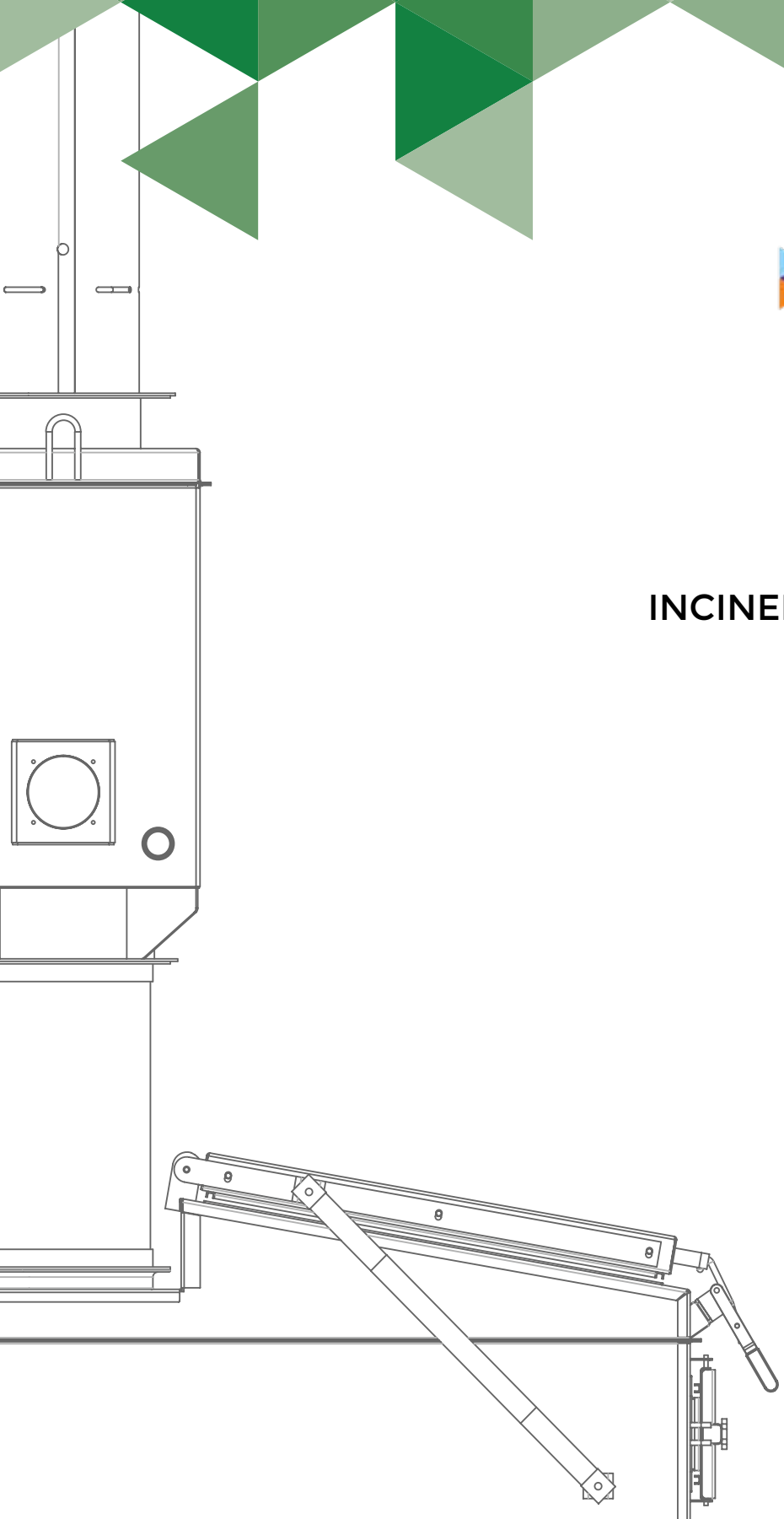
D1: i8-40A Incinerator Specifications

http://www.inciner8.com/incinerator-print.php?ProductID=9&ProductType=3

INCINER8

WWW.INCINER8.COM

INCINER8 I8-40A TECHNICAL DATASHEET



TECHNICAL INTRODUCTION

model: **i8-40A**

Our i8-40A builds upon the success of our i8-20A and is a simple and effective agricultural incinerator from our smaller range. It excels in being a machine that is capable of dealing with a wide range of waste at an affordable price point. It features advanced chamber technology with an afterburner for the re-burn of harmful emissions with a 2 second retention time giving you a complete compact waste solution.

LOAD CAPACITY

Inciner8 uses four main size guides within our comprehensive range to differentiate our models, from S to XL. This allows us to provide you with a machine that perfectly fits your needs and your waste stream.

CORETEX INSULATION

Coretex insulation - Triple insulation Coretex technology uses a combination of high-density insulation board, custom refractory concrete and thick steel to deliver the ultimate incineration insulation.

TOP LOAD

Top loading allows the waste to be dumped in from above making it easy to access for trucks and machinery. It also allows additional extras such as bin tippers and autoloaders to be used within the operation to improve efficiency and incineration times.

CONTAINER CONFIGURE

Certain Incinerators have the capability to be configured into mobile containerised incineration units. This gives them the benefit of being easy to lock up and secure when at a remote site, as well as being easier to move with added benefits of minimal setup and dismantling time.

TRAILER CONFIGURE

Some of our smaller incinerators can be configured onto trailers. These trailers are country-specific and can be tailored to your needs. This allows extreme portability and can be moved to different locations with very minimal setup time, perfect for constantly moving operations.

Designed and manufactured in Britain to ISO 9001 accredited quality assurance standards. Our machines are widely used across a wide range of sectors, in the UK and around the world, including municipal waste management, manufacturing, mining, and hospitality, as well as tackling serious waste management challenges, including controlled drug disposal, humanitarian response and marine waste.

i8-40A FEATURES

- Small footprint and operating costs.
- Rapid, complete and efficient medical waste disposal
- Patented safety handle for easy access to chamber
- High quality refractory lining and insulation
- Easy to use CE2 control panel
- Programmable temperature control for complete combustion
- Secondary chamber* with 2 second retention time
- Fast pre-heat and continual high temperature performance
- Low energy consumption levels

* Our primary and secondary combustion chambers are constructed from superior grade steel and state-of-the-art monolithic concrete refractory with a unique concave design to prevent cold spots and maximize heat retention during the start-up and combustion processes. When the secondary burner is activated a flame curtain is created which ensures the thermal decomposition of smoke and harmful emissions to produce a clean, odourless vapour exiting the chimney stack.

For additional information, or to speak to one of our expert team:

Call
+44 (0) 1704 884020

Email
sales@inciner8.com

INCINER8
www.inciner8.com

TECHNICAL BREAKDOWN

model: **i8-40A**

HT THERMOCOUPLES

Independent control of primary and secondary temperatures via the control panel.

SECONDARY CHAMBER

Retains and re-burns the exhaust gases for minimum of 2 seconds at 850°C.

CHIMNEY STACK

Stainless steel stack for longevity. Fitted with a Velocity Cowl as standard.

PRIMARY CHAMBER

Chamber designed for maximum air flow and circulation which in turn improves efficiency and total burn time.

SAFE USE HANDLES

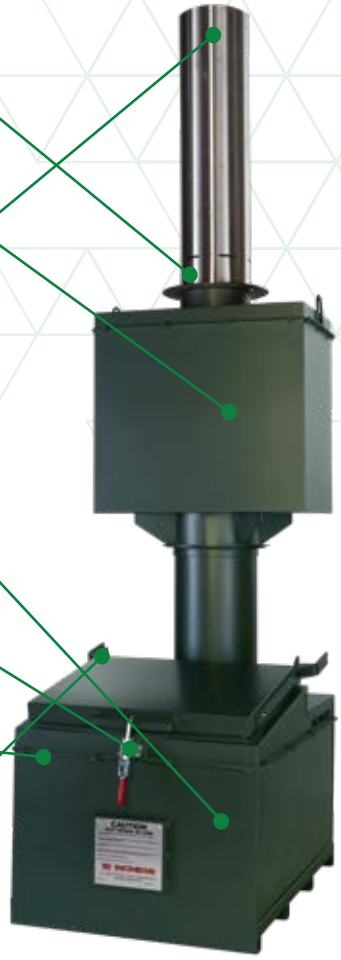
Easy to open and close loading door. Designed to increase operator safety.

COOL TOUCH CLADDING

Steel cladding to reduce risk of infection and increase longevity of system.

LOW NOX BURNERS

These are some of the cleanest, most efficient burners available today. These can be supplied as gas or oil fired.



"Photos are for illustration purposes only. Specification (including paint colours) are subject to change without notice and do not affect the performance of the machine."

HOW INCINERATION WORKS

Incineration is a waste treatment process which utilizes the combustion of organic substances contained within materials to convert waste into ash, heat and flue gas. The ash residue is mostly formed by inorganic constituents of the waste which may take the form of solid lumps or powder.

Heat produced by the incineration process can be fed into a heat exchanger to produce hot water or air which can be used for cleaning or heating purposes. The remaining flue gases are passed through pollution control devices in the form of a secondary combustion chamber or additional filtration (if required) and then expelled to atmosphere.

APPLICATIONS

Our versatile range of medical incinerators are designed for a wide range of waste types. This particular model benefits from a front loading design and very simple operation process. Ideal as a stand-alone machine where limited staff are available to operate.

- All forms of animal by-products
- Soiled animal bedding
- Pet cremation
- Out of date / cross contaminated feeds
- Small slaughterhouse/abattoir waste
- Catteries & kennels
- Hunt & Game waste
- Stable & Stud Farm
- Emergency Outbreaks

For additional information, or to speak to one of our expert team:

Call
+44 (0) 1704 884020

Email
sales@inciner8.com

INCINER8
www.inciner8.com

TECHNICAL SPECIFICATION

model: **i8-40A**

OPERATIONAL SPEC

Combustion Chamber Volume (m^3)	0.36m^3
Burn Rate (Kg p/h)	Up to 40Kg
Fuel Consumption (Ltrs p/hour)	9-11 ltrs
Time To Temp	45-60 mins
Gas retention Time (Seconds)	2 secs
Loading Method	Top Load
Fuel Options	Light Oil or Gas/LPG
Electricity Supply	110v or 230v
Control Panel (IP Rating)	IP54
Heat Recovery	Yes
Auto Ash Removal	No
Auto Loader Compatible	No
Remote Monitoring	No
Ash Residue	3-5%
Recommended Operational Temperature	850°C

PHYSICAL SPEC

Assembled L/W/H (mm)	1600 x 1300 x 4400
Assembled Weight (Kg)	1520kg
Door Size (mm)	560 x 560mm
Thermocouples (Qty)	2
Steel Thickness (mm)	3mm
No. Of Burners	2
Refractory Composition	Coretex
Operating Footprint	19.78m^2
Cool Touch Cladding	Yes
Viewing Portal	No
Tertiary Air Fan	No

*The above figures are guidelines ONLY.

Ecoflam burners are renowned worldwide for providing high efficiency and reliable operation with significant energy savings and feature extreme ease of installation, maintenance and flexible boiler-burner matching. This model is fitted with low NOx burners as standard to ensure a complete and clean burn cycle, this reduces installation time and maintenance.

ECOFLAM BURNER SPECIFICATIONS

PARAMETER (1/2 HR AV)	LIMITS	MEASURED*
Total Dust	30mg/m^3	12mg/m^3
Sulphur Dioxide	200mg/m^3	2.4mg/m^3
Nitrogen Dioxide	400mg/m^3	60mg/m^3
Carbon Monoxide	100mg/m^3	78.3mg/m^3

**The above figures are guidelines ONLY.*

Ecoflam

- MAX 1-12 have electrical frequency 50-60 Hz
- High efficiency fan ventilation system (HPV)
- Low NOx version class 3 with yellow flame
- Designed in compliance with current regulations
- ISO 9001 and VISION 2000 certification
- All burners are fire tested

NB: picture for illustration purposes only

AVERAGE EMISSIONS / EU STANDARDS

All of our secondary combustion chambers are designed to operate at 850 - 1200°C to re-burn waste gases which prevents smoke, odours and harmful emissions. Dioxins and similar gaseous components are destroyed by a combination of homogeneous high temperatures, excess oxygen levels and sufficient gas residence time in the secondary chamber which our incinerators achieve.

Emissions are largely a product of the waste materials therefore care should be taken when selecting the most appropriate method of pollution control to ensure compliance with your local emissions standards, please discuss this with our sales team if you aren't sure.

CALL INCINER8 AND START BUILDING SOLUTIONS TO YOUR WASTE CHALLENGES TODAY!
+44 (0) 1704 884020 OR
EMAIL SALES@INCINER8.COM

D2: Eco Waste Solutions CA100 Incinerator Specifications

ECO WASTE SOLUTIONS

Clean Burning Solutions
Product Spotlight

CA Model

technical description

Two Stage Process: 1st stage (Primary Burner) burns waste and produces inert ash and combustible gases. 2nd stage Afterburner (Secondary Chamber) combusts off-gases to eliminate smoke and minimize contaminants.

Cycle Time: Burn cycle of 2-6 hours per batch depending on waste type and density. Followed by a 1-2 hour cool down. Average total cycle length is 5 hours.

Controls: Integrated control panel with programmable logic control, supervisory control, monitoring, data acquisition and remote diagnostic capability. PC computer workstation optional.

Operating Environment: Inside a building or protected from the weather. Weatherproofing options available.

Other Options: Air Pollution Control System (APCS) - Scrubber, Continuous Emissions Monitoring System (CEMS).

Warranty: 1 year after start-up on defective parts or workmanship.

technical specifications

External Casing/Finish: 1/4" (0.6 cm) mild steel, sandblasted and coated with rust inhibiting and heat resistant paint.

Burners: Electronic auto spark, packaged industrial burners, secondary burners modulate.

Fuel Supply Options: Diesel, Fuel Oil, JP8, Natural Gas, Arctic Diesel, Propane. Auxiliary waste oil burners can be added.

Operating Temperature:

Primary Chamber: 1200°F (650°C) - 1560°F (850°C)

Afterburner: 1832°F (1000°C), with a 2 second retention time.

Power: Typically 3 phase, 120/208 V, 60 Hz. Other power supply options available.

advantages

- Available in 3 standard sizes
- Compact format
- Easily transportable
- Reduces waste volumes by over 90%
- Smokeless and odourless
- Automatic process control
- Low operating and maintenance costs

acceptable waste streams

Community Waste
Camp Waste
Biomedical Waste

capacities

Model		CA-50	CA-100	CA-600
Waste Capacity	Domestic Waste* lbs/batch	200	400	750
	Biomedical Waste** lbs/batch	120	240	450

*Based on typical solid waste densities.
**Based on typical biomedical waste densities.

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D3: Technical Document for Batch Waste Incineration

https://publications.gc.ca/collections/collection_2010/ec/En14-17-1-2010-eng.pdf

D4: Technical Document for Batch Waste Incineration: Executive Summary and Overview of Six-Step Process for Batch Waste Incineration

https://publications.gc.ca/collections/collection_2010/ec/En14-17-2-2010-eng.pdf

D5: Canada-Wide Standard for Dioxins and Furans – Emissions from Waste Incinerators and Coastal Pulp and Paper Boilers

https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/agreements/related-federal-provincial-territorial/standards.html

D6: Canada Wide Standard for Mercury

https://ccme.ca/en/res/cws_mercury_emissions_e.pdf