



Bedrock Sampling Management Plan Framework
for the
Confirmation and Exploration Program
Pine Point District, Northwest Territories

Purpose

This document is provided in support of the Mackenzie Valley Land and Water Board (MVLWB) Type A Land Use Permit and Type A Water Licence Application for the Pine Point Mining Limited Confirmation and Exploration Program (CEP). The intent of this document is to describe how this environmental management and monitoring plan relates to the CEP and to list applicable guidelines and standards. It was developed with the available CEP information. This document is not intended for approval but is provided for review purposes and will be further developed and refined as the regulatory process proceeds.

Version History

Pine Point Mining Limited is responsible for the distribution, maintenance, and updating of this document. Changes that do not affect the intent of the document will be made as required (e.g., phone numbers, names of individuals). The table below indicates the version of this document, and a summary of revisions made.

Revision #	Section(s) Revised	Description of Revision	Issue Date
0	-	Version for Type A Water Licence and Type A Land Use Permit Applications	17 November 2020

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Abbreviations

Abbreviation	Definition
ANFO	ammonium nitrate fuel oil
CEP	Confirmation and Exploration Program
NRC	Natural Resources Canada
NWT	Northwest Territories
PPML	Pine Point Mining Limited
Project	Pine Point Project

Units

Units	Definition
%	percent
kg	kilogram
km	kilometre
kPa	kilopascal
m	metre
m ³	cubic metre
mm	millimeter
mm/s	millimeter per second

1.0 Introduction

1.1 Background

Pine Point Mining Limited (PPML) is the sole proponent for the Pine Point Project (Project) and is a wholly owned subsidiary of Osisko Metals Incorporated. The Pine Point District contains approximately 100 known zinc and lead deposits, distributed along three trends, which extend in aggregate along 65 km of strike and 7 km of width. The Project is located on a brownfield site resulting from the historical Pine Point Mine in the Northwest Territories (NWT) within the South Slave Mining District, south of Great Slave Lake, approximately 175 km directly south of Yellowknife, 75 km east of Hay River, and 53 km southwest of Fort Resolution. The closest major transportation hubs are Edmonton, Yellowknife, and Hay River. Access to the Project is presently via all-weather Highways 5 and 6 (Figure 1).

Rock samples are to be collected for comminution (crushing/grinding) and metallurgical testing. The samples will be composed of bedrock material. The areas will be cleared of vegetation and overburden. A pattern of drill holes will be drilled and loaded with explosives. After the sample has been collected, the remaining excavated material will be placed back into the blasted area. Overburden material will be spread over the disturbed area with the organic material placed on top of the overburden material (further details are provided in the CEP Project Description).

1.2 Purpose and Scope

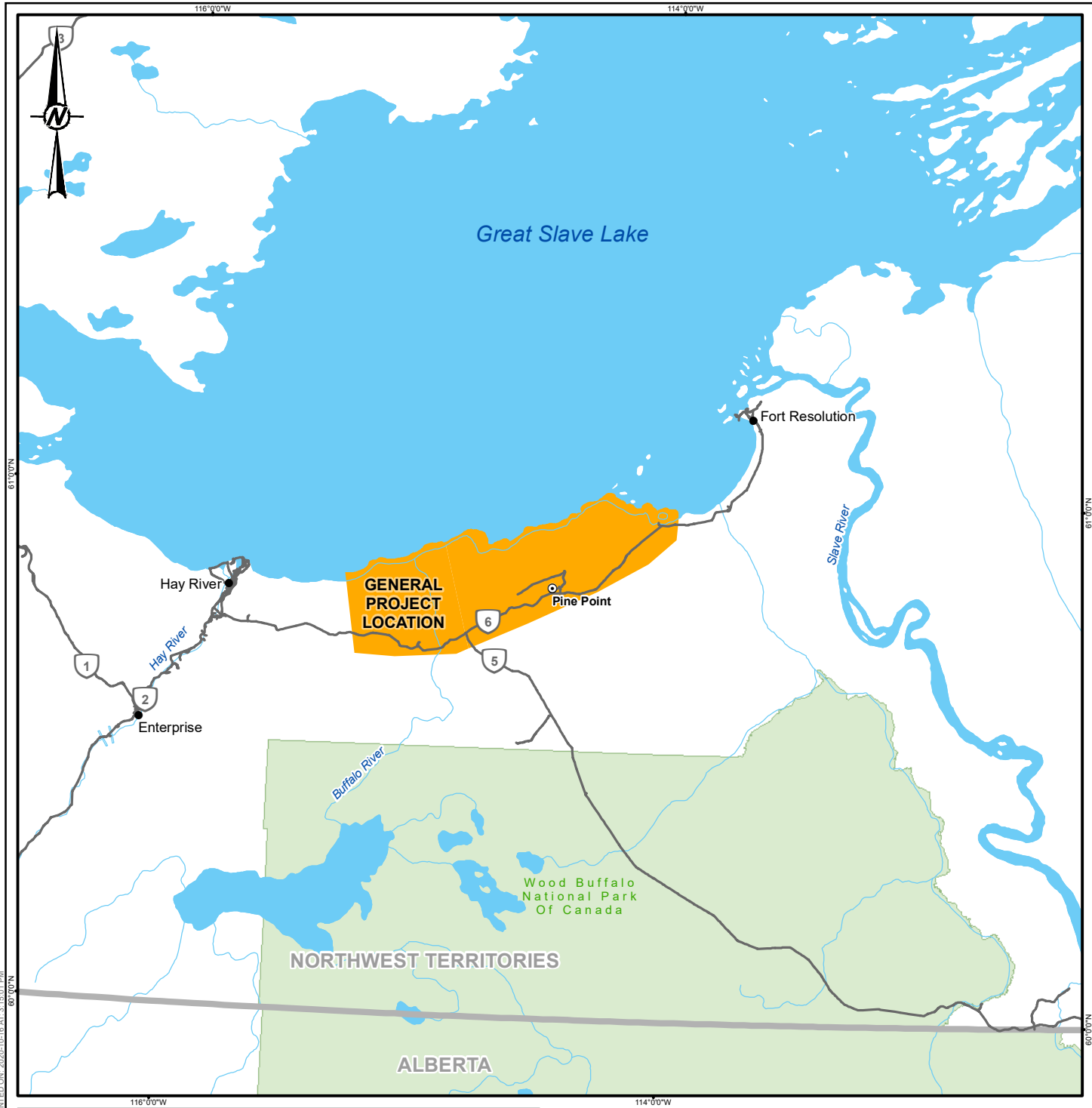
The purpose of this document is to identify safe, secure, and environmentally sound practices for the transportation, handling, storage, and use of explosives and storage of waste rock from bedrock sampling. This document focuses on the Confirmation and Exploration Program (CEP) and will be regularly reviewed and updated in the future, as appropriate.

It is anticipated that the supply and use of explosives and associated products will be contracted to a single licensed contractor, who will be required to meet all the regulatory requirements for the transportation, storage, handling, and use of explosives.

1.3 Site Contact

Primary Pine Point Mining Ltd. Contact:

Andrew Williams
Environmental Manager
Pine Point Mining Limited
1100 Avenue des Canadiens-de-Montréal, Bureau 300
Montréal, QC, H3B 2S2
Tel: 416-209-2056
acwilliams@live.ca



LEGEND

- FORMER PINE POINT TOWN SITE
- POPULATED PLACE
- ALL-SEASON ROAD
- PARK/PROTECTED AREA
- WATERBODY
- GENERAL PROJECT LOCATION



REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
 2. PARKS AND PROTECTED AREAS OBTAINED FROM CONSERVATION AREAS REPORTING AND TRACKING SYSTEM (CARTS), CANADIAN COUNCIL ON ECOLOGICAL AREAS, 2017.
- PROJECTION: ALBERS CONIC EQUAL AREA

CLIENT
PINE POINT MINING LTD.

PROJECT
PINE POINT CONFIRMATION AND EXPLORATION PROGRAM

CONSULTANT



YYYY-MM-DD	2020-10-16
DESIGNED	DC
PREPARED	BW / MM / JE
REVIEWED	DP
APPROVED	DP

TITLE

PROJECT LOCATION

PROJECT NO.	CONTROL	REV.	FIGURE
19125747		0	1

PATH: I:\2019_01\25747\MapInfo\Products\General\WUL-LUP_Enj_19125747_ProjectLocation_Rev0.mxd PRINTED ON: 2020-10-16 AT: 3:15:01 PM 60°0'0"N

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2.0 Blasting and Explosives Management

Blasting to extract bedrock samples may include use of packaged explosive cartridges, ammonium nitrate fuel oil (ANFO) explosive or emulsion explosives, depending on the characteristics of the rock, size and amount of blasting, and the likelihood of blasting residue entering water. All explosives will be stored in a licensed magazine as per National Standard of Canada Quantity-Separation Distances (CAN/BNQ 2910-510/2015; NRC 2015).

2.1 Explosive Management and Safety Program

2.1.1 Security

Explosives are at risk of theft, unexplained loss, possible sabotage, and unauthorized access. To reduce these risks, PPML will have procedures to control access and document the movement of explosives.

The CEP explosives magazine shall comply with the applicable regulatory guidelines. Explosive magazines will be secured with locks. Access keys will only be given to designated responsible employees, and PPML will maintain a list of employees who have a key. Documentation will reconcile incoming and outgoing quantities of explosives. The documentation will also track the authority of employees to remove and receive explosives. Further details on these procedures will be included in subsequent updates of this document as the CEP is initiated.

2.1.2 Contractors

The explosives contractor will have a more detailed operations manual for the transportation, storage, and handling of explosives. The contractor will also be responsible for explosives management including for employee training, hazardous operational analysis, and quality control. PPML management will evaluate contractor performance against the management plan, applicable regulations, and industry best practice.

The contractor will be responsible for the delivery of the explosive products to the site and control of the products on site. The mine contractor will be responsible for completing the following forms for the work to be performed at the mine site:

- Workers' Safety & Compensation Commission Application for an explosive magazine
- Workers' Safety & Compensation Commission Application for Explosives Handling Permit
- Natural Resources Canada (NRC) Form 10 Magazine Licence Application
- Explosives suppliers of bulk products will be responsible for completing the following forms:
 - NRC Form 1 Application for Explosives Manufacture
 - NRC Form 4 Plant, Buildings and Equipment
 - NRC Form 5 Authorized Explosives Manufacture and Storage
 - NRC Form 6 Authorized Operations and Processes
 - NRC Form 7 Distances to Be Maintained Between the Buildings and Process Units of the Site(s) and Other Buildings and Works Outside the Site or Operations

2.1.3 Shipping and Receiving

On arrival at Pine Point, all explosives products will be immediately transported to the secure magazine. Explosives, blasting agents, detonators or security-sensitive dangerous substances stock added to or

removed from the storage area will be accounted for with a stock control system. The control must provide a basic record in handwritten form and in electronic format. The records must contain the name and identifier of the transport company that delivered the explosives.

2.1.4 Magazines

Explosives will be stored in licensed magazines permitted by an Inspector of Explosives (Natural Resources Canada, Explosives Regulatory Division) in accordance with Section 14.03 of the *NWT Mine Health and Safety Regulations*. In addition, PPML will:

- maintain appropriate temperature per manufacturer's specifications
- keep the magazine clean
- use oldest stock first
- not allow flame producing devices in the area of the magazine
- install warning signs that identify the explosives storage area as a fire hazard area

2.1.5 Design of Blasts

When designing the blasts PPML will:

- design to minimize losses of explosives
- plan drill blast patterns to limit time between placement of explosives and detonation
- limit the risk of injuries and damage to property, the environment and wildlife
- plan to avoid any geologic features that may conduct water
- have a contingency plan for wet holes, although conditions are expected to be dry

2.1.6 General Handling of Explosives

- All explosives will be handled according to the manufacturer's specifications.
- Only properly trained and certified employees or contractors will be permitted to handle explosives.
- Personnel responsible for the transporting explosive products to and from site will be licensed for the Transportation of Dangerous Goods.
- Defective explosives will not be used and will be immediately reported to a supervisor.
- Explosives will not be abandoned (use it or store it).
- Unused explosives will be removed, burned, or destroyed according to the manufacturer's specifications.
- Detonators, if not used, will be returned to the detonator magazine, shift box, or shift container.

2.1.7 Inspections and Reporting

Magazines will be inspected daily. All use and transport of explosives will be documented and reported as per the applicable regulations.

2.1.8 Incident Response

An incident investigation will be conducted following any accidents, incidents, and near-misses. Standard investigation and reporting forms will outline the relevant procedures.

In accordance with the NWT *Mine Health and Safety Regulations*, a manager will suspend a blaster from his or her duties and notify the chief inspector when a blaster is unfit, has acted in a careless manner, or has contravened drilling or blasting regulations.

An explosive incident report will be filled in as required. The Form F07-01 Incident Report for Explosives and Restricted Components can also be found at:

[https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/mineralsmetals/pdf/mms-smm/expl-expl/pdf/F07-01_E\(1\).pdf](https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/mineralsmetals/pdf/mms-smm/expl-expl/pdf/F07-01_E(1).pdf)

2.2 Waste Management of Damaged Explosives, and Spills

Clean-up of any spills of explosives products will be done by licensed explosive handlers. The spilled material will be segregated and handled appropriately. Spills will be reported as per the Spill Contingency Plan. Damaged explosives will be destroyed according to the relevant legislation, guidelines and manufacturer's directions, including the Guidelines for Hazardous Waste Management (GNWT-ENR 2017).

2.3 Environment

2.3.1 Blasting

Surface blasting can affect fish or other aquatic organisms only when blasting takes place in or near watercourses. Blasting contractors will be required to adhere to *Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters* (Wright and Hopky 1998). In particular:

- For confined explosives, setback distances from the land-water interface (e.g., the shoreline), or burial depths from fish habitat (e.g., from under the riverbed or lakebed) will ensure that explosive charges meet the 50 kPa overpressure guideline.
- For blasting in or near an active spawning bed during the period of egg incubation, the setback distances will ensure that explosive charges meet the 13 mm/s ground vibration guideline.
- Precautions will be taken to prevent the escape of potentially toxic by-products to any aquatic systems.
- Because of its poor water resistance and the potential for release of ammonia, nitrates, and nitrites to the local surface and ground water, the use of free-flowing ANFO products will not be permitted.

Blasting also has the potential to generate dust that can affect air quality and that can be deposited in the surrounding environment. The primary dust-related effects resulting from the CEP are anticipated to occur within the main development footprint, as this is where most of the dust is expected to settle. Dust effects may occur up to 100 m away, depending, in part, on site conditions and particle size characteristics. PPML or its contractor will employ dust suppression strategies (e.g., water or approved dust suppressant products) on its roads in accordance with Government of the Northwest Territories *Guideline for Dust Suppression* (GNWT 2013). All blast drill rig will be equipped with an appropriate dust suppression system. Winds or air currents dilute and dissipate any gases generated during surface blasting operations.

The Blast Supervisor is responsible to make sure all blasts proceed safely, which includes confirming that there are no people or large mammals in the blast radius. Considering that there is extensive activity at a blast site prior to blasting (heavy equipment, light vehicles, drilling, blast horns), wildlife are very unlikely to be in the vicinity prior to a blast.

3.0 Waste Rock Management

This section addresses the management of all rock that is disturbed, moved, stored, or otherwise affected during the CEP. The bedrock sampling plan requires five samples from sites that are approximately 100 m by 100 m in extent.

3.1 Gravel / Glacial Till

The gravel and glacial till are the native materials located below a thin layer of topsoil and above the bedrock. It is a natural and inert material that poses little environmental risk. During the initial clearing of the sampling locations, removal of vegetation and gravel/glacial till will be handled by bulldozers, scrapers, or graders. In some instances, it may be necessary to use a truck and loader to move larger quantities of material greater distances. Most of the vegetation, gravel, and glacial till will be placed back into the sampling location area that has been disturbed after the sampling has been completed. Any additional gravel / glacial till is piled to the side of the property and saved for later use.

3.2 Bedrock

Five tonne samples of bedrock are required from up to twenty different sampling areas (for a total up to 100 tonnes). This sample will be obtained by passing blasted bedrock material over a sizing screen. This retained fraction will be placed in 1 m³ sample bags to transport off site to the testing facility. It is expected that the total amount of blasted material will need to be 10 to 30 tonnes. The remaining bedrock will be moved back into the sample hole and levelled to restore the natural drainage as best as possible.

4.0 Employee Training

The contents and purpose of this document will be communicated to appropriate employees, contractors, and suppliers through on-site training and regular safety meetings. Employees will be trained in the following areas:

- regulatory and permitting compliance
- safety
- Standard Operating Procedures, including record-keeping
- emergency preparedness and incident reporting

PPML will maintain training records for all employees.

Blasters require a certificate from the Chief Inspector or a provisional blasting certificate from their manager, in accordance with the NWT *Mine Health and Safety Regulations*.

5.0 Reporting

A record of all blasting details including a record of the monitoring results, water overpressure, and ground vibration (if applicable), will be maintained.

The blast details and monitoring results will be made available to the applicable regulatory agencies upon written request. The body of the blast reports will include the following information:

- location, date, and time of the blast
- distance between the blast and the fisheries habitat (and active spanning bed if applicable) (m)
- number of drill holes
- pattern of drill holes
- diameter of holes (mm)
- depth of drilling (m)
- length of collar (or stemming)
- maximum explosive charge weight per delay (kg)
- the recorded value of water overpressure (kPa) and peak vibration velocity (mm/s), if applicable

6.0 References

Acts and Regulations

Mine Health and Safety Regulations. NWT Reg(NU) 125-95 under the Mine Health and Safety Act. Last amended 17 October 2011. Available at <https://www.canlii.org/en/nu/laws/regu/nwt-reg-nu-125-95/latest/nwt-reg-nu-125-95.html>

Literature Cited

GNWT (Government of Northwest Territories). 2013. Guideline for Dust Suppression. Accessed July 2020. Available at <https://www.enr.gov.nt.ca/sites/enr/files/guidelines/dustsupression.pdf>

GNWT-ENR (Environment and Natural Resources). 2017. Guidelines for Hazardous Waste Management. Accessed July 2020. Available at https://www.enr.gov.nt.ca/sites/enr/files/resources/128-hazardous_waste-interactive_web.pdf

NRC (Natural Resources Canada). 2015. Determination of Potential Effects for Explosives. Accessed July 2020. Available at <https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/mineralsmetals/files/pdf/expl-expl/2015-G05-05E-IG.pdf>

Wright DG, Hopky GE. 1998. Guidelines for the use of explosives in or near Canadian. Guidelines for the use of explosives in or near Canadian fisheries waters. Can. Tech. Rep. Fish. Aquat. Sci. 2107: iv + 34p