

Waste Management Plan Geotechnical Assessment – Fort Simpson, NT Air Tanker Base Resurfacing Project



PRESENTED TO
**GOVERNMENT OF THE NORTHWEST TERRITORIES
DEPARTMENT OF INFRASTRUCTURE**

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Review and Approval

The following signatures indicate that the undersigned have read and agreed to the contents of this document, and that they approve and accept its distribution and use.

Description	Authority	Signature	Date
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ACRONYMS & ABBREVIATIONS

Acronyms/Abbreviations	Definition
GNWT-INF	Government of the Northwest Territories, Department of Infrastructure
MVLWB	Mackenzie Valley Land and Water Board
WMP	Waste Management Plan
Tetra Tech	Tetra Tech Canada Inc

LIMITATIONS OF REPORT

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1.0 INTRODUCTION

Tetra Tech has been retained by the Government of the Northwest Territories, Department of Infrastructure (GNWT-INF) to conduct a Geotechnical Assessment for the Fort Simpson Air Tanker Base Resurfacing Project (Appendix A). This Waste Management Plan (WMP) outlines the plan for managing wastes related to the geotechnical drilling program to be undertaken at this site.

This Waste Management Plan (WMP) has been produced in general accordance with the Mackenzie Valley Land and Water Board's (MVLWB 2011) Guidelines for Developing a Waste Management Plan.

The purpose of the WMP is to provide a strategic action plan for effectively managing potential waste management issues that may occur in relation to any component of the Project. All persons involved with the Project should read and be familiar with the WMP.

The objectives of the WMP are to minimize the generation of wastes, employ best practices for the effective handling and disposal of waste, and to comply with applicable legislation, regulations, authorizations, permits and licences for the duration of the Project. The WMP will be posted at each of the Project sites and will be provided to all employees and contractors.

2.0 COMPANY NAME, CONTACT, AND EFFECTIVE DATE

The Government of the Northwest Territories, Department of Infrastructure is the Proponent for this proposed Project. Key contact information for this Project is as follows:

Cesar Concepcion
South Slave Regional Manager, Projects
9706 – 100 Street, P.O. Box 86
Fort Simpson, NT X0E 0N0
Phone: 867-872-8354
Email: cesar_concepcion@gov.nt.ca

The information presented herein is current as of October 2024.

3.0 PROJECT DESCRIPTION

Tetra Tech understands that the apron surface at the Fort Simpson Airport air tanker base needs to be repaired. In order to determine the best options for repairing the apron, a geotechnical investigation is required to determine the soil conditions and potential presence of permafrost beneath the apron. Once the subsurface conditions are known, a report with options for potential repair options along with Class C cost estimates can be provided.

Tetra Tech proposes to use Enviro -Tech Drilling Solutions (Enviro -Tech) out of Yellowknife to complete the drilling program with a track-mounted drilling rig (Appendix B). Four boreholes are planned, two to a depth of 10 m and two to 6 m to determine subsurface conditions beneath the apron. Tetra Tech will meet with airport officials to verify any buried utilities in the drilling area, and to confirm onsite working and communication protocols.

Boreholes will be drilled at the identified locations to the specified depths, or to refusal if encountered. The soils and ground ice encountered will be visually logged at the time of drilling in accordance with ASTM D2488, D4083-89 and the Guide to Field Description of Permafrost for Engineering Purposes (NRC, 1963).

Samples will be collected at 1.5 m intervals, or at changes in stratigraphy, where warranted. A photographic log of the site investigation including photographs of the drill equipment and representative disturbed samples will be taken.

The boreholes will be backfilled with cuttings and/or gravel at completion. Borehole locations and elevations will be recorded with a handheld GPS device. The geotechnical drilling is expected to take place over two days. The details of the site investigation may be modified to suit site conditions.

Before mobilizing to the site, Tetra Tech will develop a project-specific safety plan, in consultation with the drilling contractor so that the safety features and any potential hazards of the equipment being used on the project are included in the Plan. The project will also have a community engagement plan, spill contingency plan and a waste management plan, all of which will be submitted to the MVLWB public registry for review and comment.

4.0 REGULATORY ENVIRONMENT

Specific legislation, regulations and guidelines related to waste management that may have applicability to the Project include:

4.1 Federal

- *Canadian Environmental Protection Act;*
- *Waters Act;*
- Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil;
- *Transportation of Dangerous Goods Act and Regulations;*
- *Work Site Hazardous Materials Information System (WHMIS) Safety Act; and*
- *Territorial Lands Act.*

4.2 Territorial

- Mackenzie Valley Land and Water Board Guidelines for Developing a Waste Management Plan.
- Northwest Territories *Environmental Protection Act;*
- Northwest Territories *Public Health Act;*
- Northwest Territories *Transportation of Dangerous Goods Act;*
- Northwest Territories *Waters Act;* and
- Used Oil and Waste Fuel Management Regulations.

However, it should be noted that very few waste types will be generated by this Project and will be primarily limited to the generation of a small daily amount of domestic garbage (food scraps and associated wrappings/containers), and possibly some residual auger cuttings (gravel/soil) remaining after the drill holes have been backfilled. As a result, most of the legislation identified will have limited applicability to this Project.

5.0 WASTE TYPES AND MANAGEMENT

A material is considered to be a waste when it can no longer be used for its original intended purpose. The types of wastes anticipated to be generated for this small project are mainly limited to:

- Garbage – All daily site garbage generated by the Project personnel will be temporarily bagged and placed in nearby Fort Simpson Airport garbage cans for eventual transfer to the Fort Simpson landfill as part of the community's normal practice. The garbage is anticipated to consist of food scraps and associated packing wastes.
- Residual auger cuttings – Although the current plan is to return all auger cuttings (rock chips/gravel/sand) to the drill holes once completed (as backfill), some residual auger cuttings may be left on the surface after the drill holes have been backfilled. In this event, these inert residual materials will be spread out over the air tanker base apron area.
- Domestic Sewage – The drill crew members will use locally available washroom facilities as needed for the short (2 days) duration of the geotechnical evaluation program.

REFERENCES

- Mackenzie Valley Land and Water Board (MVLWB). 2011. Guidelines for Developing a Waste Management Plan. March 31, 2011.
- NRC (National Research Council). 1963. Guide to a field description of permafrost for engineering purposes. Technical Memorandum (National Research Council of Canada. Division of Building Research); No. DBR-TM-79, 1962-10-26 A. Available online: <https://doi.org/10.4224/40003252>

APPENDIX A

PROJECT LOCATION - GEOTECHNICAL ASSESSMENT FOR THE FORT SIMPSON AIR TANKER BASE RESURFACING PROJECT



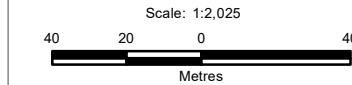
LEGEND

- Project Boundary Corner
- ▭ Project Boundary

NOTES
 Base data source:
 Imagery from Google Earth; Airbus (2023)

Corner	Latitude	Longitude
1	61.762645	-121.232386
2	61.762413	-121.232628
3	61.762743	-121.234076
4	61.763235	-121.233633
5	61.763416	-121.232874

STATUS
 ISSUED FOR REVIEW



PROJECTION
 UTM Zone 10

DATUM
 NAD83

FILE NO.
 YARC03667-01_Fig01_SiteLocation.mxd



**GEOTECHNICAL ASSESSMENT FOR THE
 FORT SIMPSON AIR TANKER BASE
 RESURFACING PROJECT**

Project Location

OFFICE
 TL-VANC

DATE
 October 1, 2024

DWN	CKD	APVD	REV
SL	BB	RH	0

PROJECT NO.
 ENG.YARC03667-01

Figure 1

APPENDIX B

D -50 AUGER BROCHURE



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D-50 DRILL SPECIFICATIONS

Performance ratings are based on engineering specifications, calculations and accepted industry standards. Capacities may vary according to drilling conditions. Diedrich Drill reserves the right to amend these specifications at any time, without notice.

GENERAL	<p>All purpose drill rig for soil and rock explorations using augers, rotary tools, or core drilling tools.</p> <p>Rated from 125 ft.(38m) to 250 ft.(76m) depth with hollow stem or continuous flight augers up to 14"(356mm) hole size.</p> <p>Rated to 1000 linear feet(305m) of core drilling using N series tools.</p>
FRAME AND BASE	The drill frame is a weldment, constructed of heavy wall rectangular steel tubing, with sufficient strength and rigidity for heavy duty use.
POWER UNIT	The basic D-50 Magnum unit is powered by a 4-cylinder diesel or a 4 cylinder turbo charged diesel engine.* Electric starting and engine instruments are standard. *Other engine options are available
CLUTCH AND TRANSMISSION	<p>Clutch - 13 inch(330mm) automotive type. (60HP gas engine uses 11 inch(279mm) clutch)</p> <p>Transmission - Heavy duty helical gear transmission with 4-forward and 1-reverse gears.</p> <p>Optional cathead is driven by a power-take-off providing 1 speed forward and 1 reverse.</p>
RIGHT ANGLE DRIVE	The right angle drive is a heavy-duty gearbox, totally enclosed, and running in oil
ROTARY BOX	The rotary box consists of a 80# triple-stranded roller chain drive, totally enclosed, and running in oil. The quill and spindle are supported on tapered roller bearings. The lower bearings run submerged in oil. The upper bearings are externally greased.
SPECIFICATIONS	<p>Spindle Bore.....3-1/2"(89mm)</p> <p>Spindle Travel.....70"(1778mm)</p> <p>Thrust.....up 22,581 lbs (100kN) @2300psi</p> <p style="padding-left: 150px;">down 14,453 lbs (64kN) @2300psi</p> <p>Max Feed Rate.....up FPM 49 (15m/min)</p> <p style="padding-left: 150px;">up Rapid Retract option FPM 70 (21m/min)</p> <p style="padding-left: 150px;">down FPM 76 (23m/min)</p> <p>Max gross spindle torque*...1st gear</p> <p style="padding-left: 150px;">up to 9,012ft.lbs (12,218Nm)</p> <p>Max spindle speed*.....1st gear, 95 RPM</p>

4th gear, 597 RPM

* varies with engine

HYDRAULIC SYSTEM

On the D-50 unit, oil is supplied by a heavy-duty gear type two-section pump rated at 19 GPM(72 l/min) and 24 GPM(91 l/min) at 2400 RPM. Maximum operating pressure is 2300 PSI(15,513 k Pa). The pump is gear driven from the engine accessory drive or from the front crank shaft.

The hydraulic valves are stock sectional body directional control valves with an integral non-adjustable relief valve. All controls are conveniently located on a single console for ease of operation. An optional regenerative spool can be provided for the main feed valve providing a high speed spindle lift as well as normal operation.

AUGER ADAPTER

A heavy duty universal joint which mounts to the spindle with a single nut is provided for ease in hook-up and adjusting for misalignment. All components are sized to withstand torque and axial loads encountered under most drilling conditions. 1-5/8" (41.3 mm) female hex is standard, other sizes available.

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APPENDIX C

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LIMITATIONS ON USE OF THIS DOCUMENT

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