

**Public Works and Government
Services Canada**

**Installation of a Generator at
Waskaganish Airport**

PWGSC Ref.: R.111729.600

TC Ref.: 21BW

**TECHNICAL SPECIFICATIONS
Issued for Tender**

Prepared for:
PWGSC

Prepared by:
Consortium MAKAAHIKAN / Stantec

April 21, 2022

O/Ref.: 159400424

Public Works and Government Services Canada
Installation of Generators at Waskaganish Airport
PWGSC Ref.: R.111729.600
TC Ref.: 21BW

TECHNICAL SPECIFICATIONS

SIGN-OFF SHEET

This engineering document is the property of Stantec Consulting Ltd and is protected by law. It is intended for the works that are mentioned. Any reproduction or adaptation, partial or total, is strictly forbidden without having first received a written authorization by Stantec Consulting Ltd.

Prepared by:

Prepared by:

Daniel Dubé, ing.
Electrical

Mehdi Ait Aider, ing.
Airport Engineering

Prepared by:

Marco Rocha, ing.
Airport Engineering

RECORD OF REVISIONS AND ISSUES

Revision No.	Date	Description of the Modification and/or of the Issue
0	2022/04/21	Issued for Tender <i>"This document must not be used for construction purposes"</i>

TABLE OF CONTENTS



SPECIFICATIONS

DIVISION	SECTION	NUMBER OF PAGES
DIVISION 01	01 11 01 General Information Related to Work	4
	01 31 19 Project Meetings	2
	01 32 16.16 Construction Progress Schedule - Critical Path Method (CPM)	10
	01 33 00 Submittal Procedures	5
	01 35 13.13 Special Project Procedures for Airport Facilities	3
	01 35 29.06 Health and Safety Requirements	20
	01 35 43 Environmental Procedures	4
	01 45 00 Quality Control	2
	01 51 00 Temporary Utilities	2
	01 52 00 Construction Facilities	3
	01 56 00 Temporary Barriers and Enclosures	2
	01 61 00 Common Product Requirements	4
	01 73 00 Execution	2
	01 74 00 Cleaning	2
	01 74 19 Waste Management and Disposal	3
	01 77 00 Closeout Procedures	2
	01 78 00 Closeout Submittals	7
	01 79 00 Demonstration and Training	2
	01 91 13 General Commissioning Requirements	7
DIVISION 26	26 05 00 Common Work Results for Electrical	6
	26 05 20 Wire and Box Connectors (0-1,000 V)	2
	26 05 21 Wires and Cable (0-1,000 V)	4
	26 05 28 Grounding – Secondary	3
	26 05 29 Fasteners and Supports	2
	26 05 31 Splitters, Junction, Pull Boxes and Cabinets	2
	26 05 32 Outlet Boxes, Conduit Boxes and Fittings	3
	26 05 34 Conduits, Conduit Fastenings and Conduit Fittings	5
	26 05 43 Installation of Cables in Trenches and in Ducts	2
	26 12 16.01 Dry-Type Transformers up to 900 V Primary	3
	26 24 16.01 Panelboards Breaker Type	3

DIVISION	SECTION	NUMBER OF PAGES
	26 27 26 Wiring Devices	3
	26 28 13.01 Fuses - Low Voltage	2
	26 28 16.02 Moulded Case Circuit Breakers	2
	26 28 20 Ground Fault Circuit Interrupters – Class A	3
	26 28 23 Disconnect Switches – Fuses and Non-Fuses	2
	26 29 10 Motor Starters to 600 V	4
	26 32 13.01 Power Generation Diesel	18
	26 36 23 Automatic Transfer Switches	8

APPENDICES

DN- VIII-3-GF-009 – Glissière flexible avec profilé d’acier à double ondulation sur poteaux d’acier

DN- VIII-3-GSR-048 - Profilé d’acier à double ondulation – bout effilé

Phase II Environmental Site Assessment

DRAWINGS

ELECTRICAL		
PLAN NUMBER	TITLE	REVISION
Q197Q623E001	Drawing List	0
Q197Q623E002	Legend and Equipment List	0
Q197Q623E003	Site Plan and Details	0
Q197Q623E004	Distribution Station Plan and Diagram	0
Q197Q623E005	Existing Diagram - Garage	0
Q197Q623E006	Details	0

STRUCTURAL		
PLAN NUMBER	TITLE	REVISION
Q197Q623S001	General Notes, View Plan & Sections	0
Q197Q623S002	Section and Detail	0

CIVIL		
PLAN NUMBER	TITLE	REVISION
Q197Q648C001	New Distribution Station – View Layout and Section	0

END OF SECTION

DIVISION 01
General Requirements



Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Sections of Division 01 - General Requirements.
- .2 Sections of Division 26 - Electrical.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises replacement of visual aids and other works as indicated, located at Waskaganish airport. Not limited to, works include:
 - .1 Installation of a distribution station in a building, integrating all the necessary equipment to take over from a Hydro-Québec failure.
 - .2 Insertion of the distribution station between the pole of Hydro-Québec's low-voltage distribution and the existing entrance to the garage.
 - .3 Installation of a new electric pole for the rise of the supply conduits. Ensure the passage of the power cables between the new pole and the existing Hydro-Québec electric pole. Ensure the passage of the cables between and the distribution station and between the latter and the connection to the garage by passing the cables inside a concrete block.
 - .4 Installation of a new building to accommodate all the equipment;
 - .5 The relocation of Hydro-Québec's measurement located inside the garage to be integrated into the new electrical entrance located in the new distribution station;
 - .6 Installation of a diesel generator that can support the entire existing load is to be expected;
 - .7 Installation of a fuel reserve that can ensure a range of 48 hours at full charge;
 - .8 Installation of a load bank automatically switching during weekly tests, ensuring a minimum load of 30% of the nominal capacity of the generator;
 - .9 Integration of a co gas and carbon monoxide detection system;
 - .10 Installation of a traffic sign;
 - .11 Implementation of a remote monitoring system;
 - .12 Installation of a semi-rigid slide around the new building;
 - .13 Installation of an anti-rodent fence around the new building
 - .14 Excavation, backfilling and repair of the finished surface;
 - .15 Electrical wiring work;
 - .16 Concreting work;
 - .17 Temporary work required for the completion of the work;
 - .18 Demolition work if applicable;
 - .19 Grounding of installed systems;
 - .20 Commissioning installed equipment;
 - .21 Training of operations and maintenance personnel at the site;
 - .22 The provision of spare equipment;
 - .23 The supply, transport and installation of a container for the storage of materials on site to avoid delivery times during installation.

- .24 The work includes the temporary developments required on the land to complete the structure, such as construction site fence, temporary protections, vehicle access and pedestrian traffic;
- .25 The removal and reinstallation of existing slides in the path of the ductbank;
- .26 All other work indicated in the plans or specified in the specification.

1.3 WORK SEQUENCE

- .1 Construct Work in stages to accommodate Departmental Representative's continued use of premises during construction.
- .2 Co-ordinate Progress Schedule with Departmental Representative.
 - .1 Commissioning.
 - .2 All other Work on drawings and in specifications.
- .3 All work must be completed before September 30, 2022, with the exception of the supply, installation and commissioning of the building and its interior equipment, which must be completed before November 30, 2022.

1.4 CONTRACTOR USE OF PREMISES

- .1 Limit use of premises for Work to allow:
 - .1 Departmental Representative's occupancy.
 - .2 Work by other contractors.
 - .3 Public usage.
- .2 Co-ordinate use of premises under direction of Departmental Representative.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .5 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
- .6 Ensure that operations conditions of existing work at completion are still the same, equal to or better than that which existed before new work started.
- .7 Maintain fire access and provide means to combat fire.

1.5 DEPARTMENTAL REPRESENTATIVE'S OCCUPANCY

- .1 Departmental Representative will occupy premises during entire construction period for execution of normal operations.
- .2 Co-operate with Departmental Representative in scheduling operations to minimize conflict and to facilitate his usage.

1.6 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to building operations, occupants, public, and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

- .2 Use only existing access points and circulations in building for moving workers and material.
 - .1 Accept liability for damage, safety of equipment and overloading of existing equipment.

1.7 EXISTING SERVICES

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to vehicular traffic and site operations.
- .3 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
- .4 Submit schedule for approval by Departmental Representative for any shutdown or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .5 Provide temporary services when directed by Departmental Representative to maintain critical building and tenant services.
- .6 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .7 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .8 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .9 Record locations of maintained, re-routed and abandoned service lines.
- .10 Construct barriers, as required, in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.8 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy of each document as follows:
 - .1 Contract Drawings;
 - .2 Specifications;
 - .3 Addenda;
 - .4 Reviewed Shop Drawings;
 - .5 List of Outstanding Shop Drawings;
 - .6 Change Orders;
 - .7 Other Modifications to Contract;
 - .8 Field Test Reports;
 - .9 Copy of Approved Work Schedule;
 - .10 Health and Safety Plan and Other Safety Related Documents;
 - .11 Other documents as specified.

1.9 RESPONSIBILITIES OF THE GENERAL CONTRACTOR

- .1 The General Contractor will have to ensure good coordination between the subcontractors involved in the installation of the prefabricated shelter. Provide close monitoring between the subcontractor of the prefabricated shelter and the subcontractor in screwed piles. See structural plans S01. Ensure that subcontractors have obtained all plans.
- .2 The General Contractor must plan to mandate a surveyor to position the screwed piles. Once the screw piles are installed, he will have to transmit the final position to the manufacturer of the prefabricated shelter before its manufacture. The site survey must be sent to the owner's representative (see plans for additional information).

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 PRECONSTRUCTION MEETING

- .1 Within 10 days after award of Contract, the Departmental Representative will organize a meeting of parties in Contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative, Contractor, major Subcontractors are to be in attendance.
- .3 Departmental Representative will establish time and location of meeting and notify parties concerned minimum five (5) days before meeting.
- .4 Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance within three (3) days after meeting. Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work, Construction Progress Schedules.
 - .3 Review of the particular conditions of section 01 35 13.13 – Special Procedures for Airport Facilities.
 - .4 Schedule of submission of shop drawings, samples, colour samples. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .5 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
 - .6 Delivery schedule of materials.
 - .7 Site security.
 - .8 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .9 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .10 Monthly progress claims, administrative procedures, photographs, hold backs.
 - .11 Appointment of inspection and testing agencies or firms.
 - .12 Insurances, transcript of policies.

1.2 PROGRESS MEETINGS

- .1 Departmental Representative will establish a calendar for periodic meetings during the work progress.
- .2 Contractor, major Subcontractors involved in Work, and Departmental Representative are to be in attendance.
- .3 Departmental Representative will notify parties minimum five (5) days prior to meetings.
- .4 Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance within three (3) days after meeting.

- .5 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting;
 - .2 Review of Work progress since previous meeting;
 - .3 Field observations, problems, conflicts;
 - .4 Problems which impede construction schedule;
 - .5 Review of off-site fabrication delivery schedules;
 - .6 Corrective measures and procedures to regain projected schedule;
 - .7 Revision to construction schedule;
 - .8 Progress schedule, during succeeding work period;
 - .9 Review submittal schedules: expedite as required;
 - .10 Maintenance of quality standards;
 - .11 Review proposed changes for affect on construction schedule and on completion date;
 - .12 Other business.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

- .1 Activity: Distinct, scheduled portion of work performed during course of a project.
- .2 Activity Duration: Time in calendar units between start and finish of a scheduled activity. See also Duration.
- .3 Assumption: Factor in planning process that is considered true, real, or certain without proof or demonstration.
- .4 Bar Chart (Gantt Chart): Graphic display of schedule-related information.
 - .1 In typical bar chart, schedule activities or Work Breakdown Structure components are listed down left side of chart, dates are shown across the top, and activity durations are shown as date-placed horizontal bars.
- .5 Baseline: Approved version of a work product that can be changed only through formal change control Procedures and is used as a basis for comparison.
- .6 Budget: Approved estimate for a project or Work Breakdown Structure component or schedule activity.
- .7 Cash Flow: Projection of progress payment requests based on cash loaded construction schedule.
- .8 Change Control: Process whereby modifications to documents, deliverables, or baselines associated with a project are identified, documented, approved, or rejected.
- .9 Completion Milestones: They are firstly Interim Certificate.
- .10 Constraint: Scheduled limiting factor that effects execution of a project, program, portfolio, or process.
- .11 Contract: Mutually binding agreement that obligates a seller to provide a specified product or service or result and obligates a buyer to pay for it.
- .12 Control: Comparing actual performance with planned performance, analyzing variance, assessing trends, to effect process improvements, evaluating possible alternatives, and recommending appropriate corrective action as needed.
- .13 Corrective Action: Intentional activity that realigns performance of project work with Project Management Plan.
- .14 Critical Path: Sequence of activities that represents longest path through a project, which determines shortest possible duration.
- .15 Critical Path Activity: Activity on critical path in a project schedule.
- .16 Critical Path Method (CPM): Method used to estimate minimum project duration and determine amount of scheduling flexibility on logical network of paths within schedule model.
- .17 Data Date: Point in time when the status of the project is recorded.
- .18 Decomposition: Technique used for dividing and subdividing project scope and project deliverables into smaller, more manageable parts.

2022-04-21

- .19 Deliverable: Unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project.
- .20 Duration: Total number of work periods (not including holidays or other non-working periods) required to complete a schedule activity or Work Breakdown Structure component.
 - .1 Usually expressed as workdays or work weeks.
- .21 Early Finish Date (EF): In Critical Path Method, earliest possible point in time when uncompleted portions of schedule activity can finish based on schedule network logic, data date, and schedule constraints.
 - .1 Early finish dates can change as Project progresses and changes are made to Project plan.
- .22 Early Start Date (ES): In Critical Path Method, earliest possible point in time when uncompleted portions of a schedule activity can start based on schedule network logic, data date, and schedule constraints.
 - .1 Early start dates can change as Project progresses and changes are made to Project Plan.
- .23 Execute: Directing, managing, performing, and accomplishing project work; providing deliverables and work performance information.
- .24 Finish Date: Point in time associated with a schedule activity's completion.
 - .1 Usually qualified by one of following: Actual, planned, estimated, scheduled, early, late, baseline, target, or current.
- .25 Float: (also known as slack) Amount of time a schedule activity can be delayed without delaying early start date of a successor or violating a schedule constraint.
- .26 Forecast: Estimate or prediction of conditions and events in project future based on information and knowledge available at time of forecast.
 - .1 Information is based on projects past performance and expected future performance, and includes information that could impact project in future, a such as estimate at completion and estimate to complete.
- .27 Gantt Chart: See Bar Chart.
- .28 Impact Analysis: Schedule analysis technique that adds a modeled delay to an accepted construction schedule to determined possible outcome of that delay on project completion.
- .29 Imposed Date: A fixed date imposed on a schedule activity or schedule milestone, usually in form of a "start no earlier than" and "finish no later than" date.
- .30 Lag: Amount of time whereby a successor activity is required to be delayed with respect to a predecessor activity.
- .31 Late Finish Date (LF): In critical path method, latest possible point in time when uncompleted portions of a schedule activity can finish based on schedule network logic, project completion date, and schedule constraints.
- .32 Late Start Date (LS): In critical path method, latest possible point in time when uncompleted portions of a schedule activity can start based on schedule network logic, project completion date, and schedule constraints.
- .33 Lead: Amount of time whereby a successor activity can be advanced with respect to a predecessor activity.

2022-04-21

- .34 Logic Diagram: See Project network diagram.
- .35 Logical Relationship: Dependency between two activities or between an activity and a milestone.
- .36 Master Schedule: Summary-level schedule that identifies major deliverable; work breakdowns structure components, and key schedule milestones.
- .37 Milestone: Significant point or event in a project, program, or portfolio.
- .38 Monitor: Collect project performance data with respect to a plan, procedure performance measures, and report and disseminate performance.
- .39 Network: See Project Schedule Network Diagram.
- .40 Non-Critical Activities: Activities which when delayed, do not affect specified Contract duration.
- .41 Project Control System: Fully computerized system utilizing commercially available software packages.
- .42 Project Management: Application of knowledge, skills, tools, and techniques, to project activities to meet project requirements.
- .43 Project Management Plan: Approved document that describes how project will be executed, monitored, and controlled.
 - .1 Primary uses of Project management plan are to document planning assumptions and decisions, facilitate communication among stakeholders, and document approved scope, cost, and schedule baselines.
 - .2 Project management plan may be summary or detailed.
- .44 Project Management Planning: Development and maintenance of Project Management Plan.
- .45 Project Management Planning, Monitoring and Control System: Overall system operated to enable monitoring of Project Work in relation to established milestones.
- .46 Project Schedule: Planned dates for performing activities and planned dates for meeting milestones.
- .47 Project Schedule Network Diagram: Graphical representation of logical relationships among project schedule activities.
 - .1 Always drawn from left to right to reflect Project chronology.
- .48 Project Scope: Work performed to deliver a product, service, or result with specified features and functions.
- .49 Quantified Days Duration: Working days based on 5-day work week, discounting statutory holidays.
- .50 Risk: Uncertain event or condition that, if it occurs, has positive or negative effect on one or more project objectives.
- .51 Schedule: See Project Schedule.
- .52 Schedule Data: Collection of information for describing and controlling schedule.
- .53 Scope: See Project Scope.
- .54 Start Date: Point in time associated with activity's start, usually qualified by one of following: actual, planned, estimated, scheduled, early, late, target, baseline, or current.

2022-04-21

- .55 Work Breakdown Structure (WBS): Hierarchical decomposition of total scope of work to be carried out by project team to accomplish project objectives and create the required deliverables.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Project Meeting:
 - .1 Meet with Departmental Representative within 15 working days of Award of Contract date, to establish Work requirements and approach to project construction operations.
 - .2 Participate in regular project progress meetings with Departmental Representative specifically intended to discuss update of detailed schedule and contract changes.
- .2 Scheduling:
 - .1 Ensure that planning process is iterative and results in generally top-down processing with more detail being developed as planning progresses, and decisions concerning options and alternatives are made.
 - .2 Ensure project schedule efficiencies through monitoring of project in detail to ensure integrity of Critical Path, by comparing actual completions of individual activities with their scheduled completions, and review progress of activities that has started but are not yet completed.
 - .3 Monitor sufficiently often so that causes of delays can immediately be identified and mitigated.
- .3 Project Monitoring and Reporting:
 - .1 Keep team aware of changes to schedule, and potential consequences as project progresses.
 - .2 Use narrative reports to provide advice on seriousness of challenges and measures to overcome them.
 - .3 Begin narrative reporting with statement on general status of project followed by summarization of delays, potential problems, corrective measures and project status criticality.
- .4 Critical Path Method (CPM) Requirements:
 - .1 Ensure Master Plan and Detail Schedule are practical and remain within specified contract duration.
 - .2 Revise Master Schedule and Detail Schedule deemed impractical by Departmental Representative and resubmit for approval.
 - .3 Change to Contract Duration:
 - .1 Acceptance of Master Schedule and Detail Schedule showing scheduled Contract duration shorter than specified Contract duration does not constitute change to Contract.
 - .2 Duration of Contract may only be changed through bilateral Agreement.
 - .4 Consider Master Schedule and Detail Schedule deemed practical by Departmental Representative, showing Work completed in less than specified Contract duration, to have float.
 - .5 First Milestone on Master Schedule and Detail Schedule will identify start Milestone with an Early Start, ES, constraint date equal to Award of Contract date.
 - .6 Calculate dates for completion of milestones from Plan and Schedule using specified time periods for Contract.

2022-04-21

- .7 Substantial Completion with Late Finish, LF, constraint equal to calculated date.
- .8 Calculations on updates such that if early finish of Interim Certificate falls later than specified Contract duration then float calculation to reflect negative float.
- .9 Delays to non-critical activities with float may not be basis for time extension.
- .10 Do not use float suppression techniques such as software constraints, preferential sequencing, extended activity times, imposed dates other than required by Contract, special lead/lag logic restraints.
- .11 Allow for adverse weather conditions normally anticipated and show in Master Plan and Detail Schedule.
 - .1 Specified Contract duration has been predicated assuming normal amount of adverse weather conditions.
- .12 Provide necessary crews and manpower to meet schedule requirements for performing Work within specified Contract duration.
 - .1 Simultaneous use of multiple crews on multiple fronts on multiple critical paths may be required.
- .13 Arrange participation on and off site of subcontractors and suppliers, as required by Departmental Representative, for purpose of network planning, scheduling, updating and progress monitoring.
 - .1 Approvals by Departmental Representative of original networks and revisions do not relieve Contractor from duties and responsibilities required by Contract.
- .14 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this Contract.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative Project Control System for planning, scheduling, monitoring, and reporting of project progress.
- .3 Submit Project Control System to Departmental Representative for approval.
 - .1 Failure to comply with each required submission, may result in progress payment being withheld in accordance with Federal Government's GC 5 Terms of Payment.
- .4 Include costs for execution, preparation, and reproduction of schedule submittals in bid documents.
- .5 Submit letter ensuring that schedule has been prepared in co-ordination with major sub-contractors.
- .6 Refer to article PROGRESS MONITORING AND REPORTING of this Specification Section for frequency of Project control system submittals.
- .7 Submit impact analysis of schedule for changes that result in extension of contract duration.
 - .1 Include draft schedule update and report as outlined in article PROGRESS MONITORING AND REPORTING.

2022-04-21

- .8 Submit Project planning, monitoring, and control system data as required by Departmental Representative in following form:
 - .1 Electronic files in original scheduling software Microsoft Project containing schedule and cash flow information, labelled with data date, specific update, and person responsible for update;
 - .2 Master Schedule Bar Chart;
 - .3 Construction Detail Schedule Bar Chart;
 - .4 Listing of project activities including milestones and logical connectors, networks (sub-networks) from Project start to end. Sort activities by activity identification number and accompany with descriptions. List early and late start and finish dates together with durations, codes, and float;
 - .5 Criticality report listing activities and milestones with total float used as first sort for ready identification of critical paths through entire project. List early and late starts and finishes dates, together with durations, codes, and float for critical activities;
 - .6 Progress report in early start sequence, listing for each trade, activities due to start, underway, or finished within two (2) months from monthly update date. List activity identification number, description and duration. Provide columns for entry of actual start and finish dates, duration remaining, and remarks concerning action required.

1.4 QUALITY ASSURANCE

- .1 Use experienced personnel, fully qualified in planning and scheduling to provide services from start of construction to Final Certificate, including Commissioning.

1.5 WORK BREAKDOWN STRUCTURE (WBS)

- .1 Prepare construction Work Breakdown Structure (WBS) within 15 working days of Award of Contract date.
 - .1 Develop WBS through at least five (5) levels: Project, stage, element, sub-element, and work package.

1.6 PROJECT MILESTONES

- .1 Mandatory and recommended project milestones form targets for both Master Schedule and Detail Schedule of CPM construction network system.

1.7 MASTER SCHEDULE

- .1 Structure and base CPM construction networks system on WBS coding in order to ensure consistency throughout Project.
- .2 Prepare comprehensive construction Master Schedule (CPM logic diagram) and dependent Cash Flow Projection to confirm validity or alternates of identified milestones.
 - .1 Master Schedule will be used as baseline.
 - .1 Revise baseline as conditions dictate and as required by Departmental Representative.
 - .2 Departmental Representative as Project progresses will review and return revised baseline within five (5) workdays.
- .3 Reconcile revisions to Master Schedule and Cash Flow Projections with previous baseline to provide continuous audit trail.
- .4 Initial and subsequent Master Schedule will include:

2022-04-21

- .1 USB Drive containing schedule and cash flow information, clearly labelled with data date, specific update, and person responsible for update.
- .2 Bar chart identifying coding, activity durations, early/late and start/finish dates, total float, completion as percentile, current status, and budget amounts.
- .3 Network diagram showing coding, activity sequencing (logic), total float, early/late dates, current status, and durations.
- .4 Actual/projected monthly cash flow: Expressed monthly and annually and shown in both graphical and numerical form.

1.8 DETAIL SCHEDULE

- .1 Provide detailed project schedule (CPM logic diagram) within 15 working days of Award of Contract date showing activity sequencing, interdependencies and duration estimates. Include listed activities as follows:
 - .1 Shop drawings;
 - .2 Samples;
 - .3 Approvals;
 - .4 Procurement;
 - .5 Construction;
 - .6 Installation;
 - .7 Site works;
 - .8 Testing;
 - .9 Commissioning and acceptance.
- .2 Detail CPM schedule to cover entire length of Project.
 - .1 Show remaining activities for CPM construction network system up to Final Certificate and develop complete detail as project progresses.
- .3 Relate Detail Schedule activities to basic activities and milestones developed and approved in Master Schedule.
- .4 Clearly show sequence and interdependence of construction activities and indicate:
 - .1 Start and completion of all items of Work, their major components, and interim milestone completion dates.
 - .2 Activities for procurement, delivery, installation and completion of each major piece of equipment, materials and other supplies, including:
 - .1 Time for submittals, resubmittals and review.
 - .2 Time for fabrication and delivery of manufactured products for Work.
 - .3 Interdependence of procurement and construction activities.
 - .3 Include enough detail to assure adequate planning and execution of Work.
- .5 Provide level of detail for project activities such that sequence and interdependency of Contract tasks are demonstrated and allow co-ordination and control of project activities. Show continuous flow from left to right.
- .6 Ensure activities with no float are calculated and clearly indicated on logical CPM construction network system as being, whenever possible, continuous series of activities throughout length of Project to form Critical Path. Increased number of critical activities is seen as indication of increased risk.

2022-04-21

- .7 Insert Change Orders in appropriate and logical location of Detail Schedule. After analysis, clearly state and report to Departmental Representative for review effects created by insertion of new Change Order.
- .8 Maintain updated version of project schedule in accordance with actual project execution conditions.

1.9 REVIEW OF CONSTRUCTION DETAIL SCHEDULE

- .1 Allow minimum five (5) workdays for review by Departmental Representative of proposed construction Detail Schedule, unless otherwise specified.
- .2 Upon receipt of reviewed Detail Schedule make necessary revisions and resubmit to Departmental Representative for review within maximum five (5) workdays, unless otherwise specified.
- .3 Promptly provide additional information to validate practicability of Detail Schedule as required by Departmental Representative.
- .4 Submittal of Detail Schedule indicates that it meets Contract requirements and will be executed generally in sequence.

1.10 COMPLIANCE WITH DETAIL SCHEDULE

- .1 Comply with reviewed Detail Schedule.
- .2 Proceed with significant changes and deviations from scheduled sequence of activities that cause delay, only after receipt of approval by Departmental Representative.
- .3 Identify activities that are behind schedule and causing delay. Provide measures to regain slippage.
 - .1 Corrective measures may include:
 - .1 Increase of personnel with more experience/qualifications on site for effected activities or work package.
 - .2 Increase in equipment and materials.
 - .3 Overtime work and additional work shifts.
 - .4 Submit to Departmental Representative, justification, project schedule data and supporting evidence for approval of extension to Contract completion date or interim milestone date when required. As part of supporting evidence, include:
 - .1 Written submission of proof of delay based on revised activity logic, duration and costs, showing time impact analysis illustrating influence of each change or delay relative to approved Contract schedule.
 - .2 Prepared schedule indicating how change will be incorporated into overall logic diagram. Demonstrate perceived impact based on date of occurrence of change and include status of construction at that time.
 - .3 Other supporting evidence requested by Departmental Representative.
 - .4 Do not assume approval of Contract extension prior to receipt of written approval from Departmental Representative.
- .5 In event of Contract extension, display in Detail Schedule that scheduled float time available for work involved has been used in full without jeopardizing earned float.

2022-04-21

- .1 Departmental Representative will determine and advise Contractor number of allowable days for extension of Contract based on project schedule updates for period in question, and other factual information.
- .2 Construction delays affecting project schedule will not constitute justification for extension of Contract completion date.

1.11 PROGRESS AND REPORTING

- .1 On an ongoing basis, Detail Schedule on job site to show "Progress to Date". Arrange participation on and off site of subcontractors and suppliers, as, and when necessary, for purpose of network planning, scheduling, updating and progress monitoring. Inspect Work with Departmental Representative at least once monthly to establish progress on each current activity shown on applicable networks.
- .2 Update and reissue project Work Breakdown Structure and relevant coding structures as project develops and changes.
- .3 Perform Detail Schedule update monthly with status dated (Data Date) on last working day of month. Update to reflect activities completed to date, activities in progress, logic and duration changes.
- .4 Do not automatically update actual start and finish dates by using default mechanisms found in project management software.
- .5 Submit to Departmental Representative copies of updated Detail Schedule.
- .6 Requirements for monthly progress monitoring and reporting are basis for progress payment request.
- .7 Submit monthly written report based on Detail Schedule, showing Work to date performed, comparing Work progress to planned, and presenting current forecasts. Report summarize progress, defining problem areas and anticipated delays with respect to Work schedule, and critical paths. Explain alternatives for possible schedule recovery to mitigate potential delay. Include in report:
 - .1 Description of progress made.
 - .2 Pending items and status of: Shop drawings, permits, possible time extensions and change orders.
 - .3 Status of Contract completion date and milestones.
 - .4 Current and anticipated problem areas, potential delays, and corrective measures.
 - .5 Review of progress and status of Critical Path activities.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples, and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated, and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in Canada.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross-references to design drawings and specifications.
- .4 Allow tendays for Departmental Representative's review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data, and sample.
 - .5 Other pertinent data.
- .8 Submissions include:
 - .1 Identification of the submitted document according to the discipline: Letter followed by a sequential number, as well as the revision number.
 - .2 Date and revision dates.
 - .3 Project title and number.
 - .4 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .5 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .6 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .9 After Departmental Representative's review, distribute copies.
- .10 Submit one (1) electronic copy of shop drawings for each requirement requested in Specifications and as Departmental Representative may reasonably request.
- .11 Submit electronic one (1) electronic copy of product data sheets or brochures for requirements requested in specifications and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

- .12 Submit one (1) electronic copy of test reports for requirements requested in Specifications and as requested by Departmental Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within three (3) years of date of Contract award for project.
- .13 Submit one (1) electronic copy of certificates for requirements requested in Specifications and as requested by Departmental Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of Project Contract complete with project name.
- .14 Submit one (1) electronic copy of manufacturers instructions for requirements requested in Specifications and as requested by Departmental Representative.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Safety Data Sheets concerning impedances, hazards, and safety precautions.
- .15 Submit one (1) electronic copy of Manufacturer's Field Reports for requirements requested in Specification and as requested by Departmental Representative.
 - .1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .16 Submit one (1) electronic copy of Operation and Maintenance Data for requirements requested in Specifications and as requested by Departmental Representative.
- .17 Delete information not applicable to project.
- .18 Supplement standard information to provide details applicable to project.
- .19 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies transparency will be returned, and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .20 The review of shop drawings by the Departmental Representative is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

- .21 Submit shop drawings signed and sealed by an engineer member of the Order of Engineers of Quebec for the prefabricated shelter. For verification purposes, the shop drawings must incorporate the fastening method. The Contractor must allow 5 working days in his schedule for any return of approval of shop drawings. Wait for the return of approval from the supervisor before issuing the construction (see plans for additional information).
- .22 Submit shop drawings signed and sealed by an engineer member of the Order of Engineers of Quebec for screw piles. See plan estimate for additional information.

1.3 SAMPLES

- .1 Submit for review samples in duplicate triplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to site office Departmental Representative's business address.
- .3 Notify Consultant Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern, or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 MOCK-UPS

- .1 Erect mock-ups in accordance with 01 45 00 - Quality Control.

1.5 PHOTOGRAPHIC DOCUMENTATION

- .1 Submit electronic copy of colour digital photography in .jpg format, high resolution, weekly with progress statement as directed by Departmental Representative.
- .2 Project identification: Name and number of project and date of exposure indicated.
- .3 Number of viewpoints: Minimum five (5) locations. However, the number is related to the state and complexity of completed works. Departmental Representative will determine with the Contractor the number of desired viewpoints.
- .4 Frequency of Photographic Documentation: Daily or as directed by Departmental Representative.
 - .1 Upon completion of framing and services before concealment, of Work, excavation, foundation, as directed by Departmental Representative.

1.6 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

2022-04-21

Part 1 General

1.1 DEFINITIONS

- .1 Restricted Area: Any area within an airport enclosure that is marked as prohibited by a sign or is otherwise controlled by any sign is a restricted area.
- .2 Aircraft Movement Area: The portion of an airport used for the movement of aircraft, including maneuvering areas (runway and taxiway) and apron areas.

1.2 RESPONSIBILITIES OF THE GENERAL CONTRACTOR

- .1 Read the airport and airport safety regulations "Airport Traffic Regulations" and the Construction Exploitation Plan (CEP) specific to this Project so to inform employees and subcontractors.
- .2 The Departmental Representative will provide a copy of the CEP approved by the appropriate authorities.
- .3 The regulations can be found at: <https://www.tc.gc.ca/eng/acts-regulations/menu.htm> under "Government Land Traffic Act".
- .4 Be responsible for personnel, construction vehicles, and subcontractors involved in the Project and required to enter restricted areas.
- .5 Provide the Departmental Representative with a list of responsible personnel, including an escort officer, who, in case of emergency, can be reached after working hours.
- .6 The Contractor must coordinate with the local management of Waskaganish Airport as well as the Representative of the Ministry the phasing of the work.
- .7 The Contractor must schedule the work to be phased in order to carry out the electrical transfer at night, during the closing hours of the Waskaganish airport.
- .8 The Contractor must ensure, in the phasing of the work, to maintain access to emergency services and daily operations at Waskaganish Airport at all times.

1.3 MEASUREMENT FOR PAYMENT

- .1 All expenses incurred in the compliance of the requirements of this section must be included in the Contractor's overhead costs and/or allocated proportionately in the various payment items of the bid.

1.4 SECURITY MEASURES

- .1 Do not interfere with airport operations without the authorization of the Departmental Representative.
- .2 Take any necessary temporary security measures for the transportation of the public, personnel, pedestrians, equipment, and vehicular traffic.
- .3 Place barriers where indicated by Departmental Representative.
- .4 Parking of equipment and storage of materials will only be permitted in the area designated by the Departmental Representative.

2022-04-21

- .5 When excavations are made, they must be barricaded as required by provincial law. Any trench must be sufficiently marked, flagged, and barricaded to provide adequate protection for the public.

1.5 DAILY SECURITY

- .1 No work with an open flame, nor fire and smoking on the deck is permitted, and any contravening of airport regulation regarding this is under the penalty of a fine. This is due to the omnipresence of fuel lines and vapors.
- .2 Ensure at the end of each workday that the barrier is locked and there are no breaches in the airport's perimeter fence.
- .3 The Contractor must provide security for access to the airport enclosure for the entire period of the execution of Work.
- .4 It is forbidden to eat on airport maneuvering areas.

1.6 TRENCHING

- .1 Obtain the written permission of the Departmental Representative before proceeding with trenching work.
- .2 Excavations in airport areas must be backfilled and the backfill material compacted before each period of operation.
- .3 An open trench of a maximum length of 60 m is permitted at a time.
- .4 Excavation work with a test board must begin on the north side of threshold 35.

1.7 PUBLIC SERVICE NETWORKS AT THE AIRPORT

- .1 The Departmental Representative will stake or indicate the approximate location of the airport's underground utilities (cables, pipes, conduits, etc.).
- .2 The Contractor will have to identify the exact location of underground service networks using an exploratory search carried out by hand if necessary.
- .3 Notify the Departmental Representative at least 48 hours in advance of the location of the Work to be done, so to allow time to locate underground utilities.

1.8 DAILY SPECIAL PROCEDURES FOR THE COORDINATION OF WORK

- .1 Arrangement of Equipment:
 - .1 The Contractor must obtain the authorizations required by the competent authorities (Land Holding) to develop safe, including the guarding of its equipment storage site and materials.
- .2 Daily Work Program:
 - .1 The Contractor shall submit daily for approval the detailed work program.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

GENERAL NOTE: In this Section, the term “site” includes all the facilities located at the site where the Work is taking place (construction site, buildings, access, infrastructure, parkings, bays, etc.).

1.1 REFERENCES

- .1 Province of Québec.
 - .1 Loi sur la santé et la sécurité du travail L.R.Q., c. S-2.1 (Act respecting Occupational Health and Safety).
 - .2 Code de sécurité pour les travaux de construction L.R.Q., c. S-2.1, r.4 (Safety Code for the Construction Industry).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative, and the CNESST the site-specific prevention program, as outlined in the article “GENERAL REQUIREMENTS”, at least 10 days prior to the start of Work.
- .3 Departmental Representative will review Contractor’s site-specific prevention program and provide comments to Contractor within TEN (10) days after receipt of the document. Revise plan as appropriate and resubmit to Departmental Representative within five (5) days after receipt of comments from Departmental Representative. Departmental Representative reserves the right not to authorize the start of work on the construction site as long as the content of the prevention program is not satisfactory. The Contractor must then update his prevention program and resubmit it to the Departmental Representative if the scope of work changes or if the working methods of the Contractor differ from his initial plans or for any other applicable new condition.
- .4 Departmental Representative’s review of Contractor’s site-specific prevention program should not be construed as approval of the program and does not reduce the Contractor’s overall responsibility for Construction Health and Safety during the Work.
- .5 Submit copies of Contractor’s authorized representative’s construction site health and safety inspection reports to Departmental Representative, at least once a week.
- .6 Submit to Departmental Representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by Federal or Provincial health and safety inspectors.
- .7 Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard. The investigation report must contain at least the following:
 - .1 Date, time, and place of accident.
 - .2 Name of sub-contractor involved in the accident.
 - .3 Number of persons involved and condition of wounded.
 - .4 Witness identification.
 - .5 Detailed description of tasks performed at the time of the accident.
 - .6 Equipment being used to accomplish the tasks performed at the time of the accident.

- .7 Corrective measures taken immediately after the accident.
- .8 Causes of the accident.
- .9 Preventive measures that have been put in place to prevent a similar accident.
- .8 Submit to Departmental Representative, WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittals. Contractor must also keep one (1) copy of these documents on the construction site.
- .9 Medical Surveillance: Where prescribed by legislation, regulation, or prevention program, submit certification of medical surveillance for construction site personnel prior to commencement of Work, and submit additional certifications for any new construction site personnel to Departmental Representative.
- .10 Submit to Departmental Representative an on-site Emergency Response Plan simultaneously with the prevention program. The Emergency Response plan must contain the elements listed in the article "GENERAL REQUIREMENTS" of this Section.
- .11 Submit to Departmental Representative copies of all training certificates required for the application of the prevention program, in particular (if applicable) for the following:
 - .1 First-aid in workplace and cardiopulmonary resuscitation.
 - .2 Work likely to release asbestos dust (mandatory for all work where asbestos is present).
 - .3 Work in confined spaces (mandatory for all work in confined spaces).
 - .4 Lockout-tagout procedures (mandatory for all work requiring lockout).
 - .5 Safely operating forklift trucks (mandatory for all forklift usage).
 - .6 Safely operating elevating work platforms (mandatory for the use of all elevating platforms).
 - .7 Any other requirement of Regulations or the Safety Program.
- .12 In addition, the certifications of the *Cours de santé et sécurité générale pour les chantiers de construction* (General Health and Safety Training for Construction Sites) must be available on demand on the construction site.
- .13 Engineer's drawings and certificates of compliance: Contractor must submit to the Departmental Representative and to the *Commission des normes, de l'équité, de la santé et de la sécurité du travail* (CNESST) a copy signed and sealed by an engineer of all drawings and certificates of compliance required pursuant to the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety Code for the Construction Industry) or by any other legislation or regulation or by any other clause in the Specifications or in the Contract. The Contractor must also submit a certificate of conformity signed by an engineer once the facility for which these drawings were prepared has been completed and before a person uses the facility. A copy of these documents must always be available on site.

1.3 FILING OF NOTICE OF CONSTRUCTION SITE OPENING

- .1 Notice of construction site opening must be submitted to the CNESST before Work begins. A copy of such notice and acknowledgment of receipt from the CNESST must be submitted to Departmental Representative.
- .2 At the completion of all the work, a notice of construction site closing must be submitted to the CNESST, with a copy to Departmental Representative.

- .3 The Contractor must assume the role of being the Principal Contractor in the limits of the construction site and elsewhere where he must execute work within the framework of this project. The Contractor must recognize the responsibility of being the Principal Contractor of the project and identify himself as such in the notice of the construction site opening he provides to the CNESST.
- .4 The Contractor must always accept to divide and identify the construction site adequately to define time and space throughout the course of the project.

1.4 HAZARD ASSESSMENT

- .1 The Contractor must perform construction site specific safety hazard assessment related to project.

1.5 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- .2 Contractor's representative with decision power must attend any meetings at which construction site safety and health issues are to be discussed.
- .3 If it is anticipated that there will be 25 workers or more on the construction site at any given time, the Contractor must set up a worksite committee and hold meetings as required by the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4) (Safety Code for the Construction Industry). A copy of the minutes of the meetings of the committee must be provided to the Departmental Representative no later than five (5) days after the committee meeting.

1.6 REGULATORY REQUIREMENTS

- .1 Comply with all legislation, regulations, and Standards applicable to the construction site and its related activities.
- .2 Comply with specified standards and regulations to ensure safe operations on a site containing hazardous or toxic materials.
- .3 Always use the most recent version of the standards specified in the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety Code for the Construction Industry), notwithstanding the date indicated in that *Code*.

1.7 COMPLIANCE REQUIREMENTS

- .1 Comply with the *Loi sur la santé et la sécurité du travail* (L.R.Q., c. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4.) (Safety Code for the Construction Industry) in addition to respecting all the requirements of this specification manual.

1.8 RESPONSIBILITIES

- .1 The Contractor must acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the *Loi sur la santé et la sécurité du travail* (L.R.Q., ch. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety Code for the Construction Industry).

- .2 The Contractor must be responsible for health and safety of persons on construction site, safety of property on construction site and for the protection of persons adjacent to construction site and the environment to the extent that they may be affected by conduct of the work.
- .3 No matter the size or location of the construction site, the Contractor must clearly define the limits of the construction site by physical means and respect all specific regulation requirements applicable in this regard. The means chosen to define the limits of the construction site must be submitted to the Departmental Representative.
- .4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific prevention Plan.

1.9 WORK PERFORMED BY EXTERNAL CONTRACTORS

- .1 On this construction site, it is anticipated that some work may be performed by an external contractor that has not been hired by the Contractor.
- .2 The Contractor must take the necessary steps to protect the health and safety of external contractors that have no contractual link with the Contractor but have been mandated by the Departmental Representative to perform certain work. In return, these external contractors are obligated to submit to the authority of the Contractor (Principal Contractor). A subordination agreement must be signed by the Contractor and by each external contractor to this effect and submitted to the Departmental Representative prior to the start of the work of each contractor (see the wording in the article "HEALTH AND SAFETY SUBORDINATION AGREEMENT").

1.10 GENERAL REQUIREMENTS

- .1 Before undertaking the work, prepare a site-specific prevention program based on the hazards identified according to the article "HAZARD ASSESSMENT" and the article "RISKS INHERENT TO THE WORKSITE" in this Section. Apply this program in its totality from the start of the project until demobilization of all personnel from the construction site.
- .2 The prevention program must take into consideration the specific characteristics of the project and cover all the work to be executed on the construction site.
- .3 The safety program must include at least the following:
 - .1 Company safety and health policy.
 - .2 Description of the stages of the work.
 - .3 Total costs, schedule and projected workforce curves.
 - .4 Flow chart of safety and health responsibilities.
 - .5 Physical and material layout of the construction site.
 - .6 Risk assessment for each stage of the work, including preventive measures and the procedures for applying them.
 - .7 Identification of the preventive measures relative to the specific risks inherent to the worksite indicated in the article "RISKS INHERENT TO THE WORKSITE".
 - .8 Identification of preventive measures for health and safety of employees and / or public works site as indicated in the article "SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC".
 - .9 Training requirements.
 - .10 Procedures in case of accident/injury.

- .11 Written commitment from all parties to comply with the safety program.
- .12 Construction site inspection checklist based on the preventive measures.
- .13 Emergency response plan which must contain at least the following:
 - .1 Construction site evacuation procedures.
 - .2 Identification of resources (police, firefighters, ambulance services, etc.).
 - .3 Identification of persons in charge of the construction site.
 - .4 Identification of the first-aid attendants.
 - .5 Communication organizational chart (including the person responsible for the site and the Departmental Representative).
 - .6 Training required for those responsible for applying the plan.
 - .7 Any other information needed, in the light of the construction site's characteristics.
- .14 If available, the Departmental Representative will provide the evacuation procedures to the Contractor who must then coordinate the construction site procedure with that of the site and submit it to the Departmental Representative.
- .4 Departmental Representative may respond in writing, where deficiencies or concerns are noted in the prevention program and may request resubmission with correction of deficiencies or concerns.
- .5 In addition to the prevention program, during the course of the work the Contractor must elaborate and submit to the Departmental Representative specific written procedures for any work having a high risk factor of accident (for example: Demolition procedures, specific installation procedures, hoisting plan, procedures for entering a confined space, procedures for interrupting electric power, etc.) or at the request of the Departmental Representative.
- .6 The Contractor must plan and organize work to eliminate the danger at source or ensure collective protection, thereby minimizing the use of personal protective equipment.
- .7 Equipment, tools, and protective gear which cannot be installed, fitted, or used without compromising the health or safety of workers or the public, must be deemed inadequate for the work to be executed.
- .8 All mechanical equipment (for example, but not limited to: Hoisting devices for persons or materials, excavators, concrete pumps, concrete saws) must be inspected before delivery to the construction site. Before using any mechanical equipment, the Contractor must obtain a certificate of compliance signed by a qualified mechanic dated less than a week prior to the arrival of each piece of equipment on the construction site; the certificate must remain on the construction site and transmitted to the Departmental Representative on demand.
- .9 Ensure all inspections (daily, periodic, annual, etc.) for the hoisting devices for persons or materials required by the current standards are carried out and be able to provide a copy of the inspection certificates to the Departmental Representative on demand.
- .10 The Departmental Representative can always, if he suspects a malfunction or the risk of an accident, order the immediate stop of any item of equipment and require an inspection by a specialist of his choice.
- .11 The Departmental Representative must be consulted for the location of storing gas cylinders and tanks on the construction site.

1.11 RISKS INHERENT TO THE WORKSITE

- .1 In addition to the risks related to the tasks to be carried out, personnel responsible for the execution of the work on the construction site will be exposed to the following risks inherent to the area where the work will be executed.
- .2 At the worksite there may in particular be the presence of the following:
 - .1 Materials containing asbestos.
 - .2 Overhead power lines.
 - .3 Underground services (electric, gas, vapour, water system, etc.).
 - .4 Trees and landscaping to preserve and protect.
 - .5 Barbed wire fences.
- .3 The Contractor must process to a risk assessment of the site to validate this information and see if other risks are present on the site. He must include in his prevention program all risks that have been identified.

1.12 SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC

- .1 Worksite may be occupied by employees and/or the public, even if they do not have access to the Contractor's worksite. The Contractor must consider the following specific requirements for the protection of employees and / or the public:
 - .1 Construct interior and exterior temporary partitions in compliance with regulations.
- .2 These requirements must be included in the Contractor's site-specific safety plan as well as any other measures provided by the Contractor to protect the health and safety of employees and / or the public on the site.

1.13 UNFORESEEN HAZARDS

- .1 Whenever a source of danger not defined in the Specifications or identified in the preliminary construction site inspection arises as a result of or in the course of the work, the Contractor must immediately suspend work, notify the person responsible for health and safety on the construction site, take appropriate temporary measures to protect the workers and the public and notify Departmental Representative, both verbally and in writing. Then the Contractor must do the necessary modifications to the prevention program or apply the security measures required in order to resume work.

1.14 PERSON IN CHARGE OF HEALTH AND SAFETY

- .1 If the construction site meets the requirements of article 2.5.3 of the *Code de la sécurité pour les travaux de construction* (S-2.1, r.4) (Safety Code for the Construction Industry), the Contractor needs to hire a competent person authorized as a safety officer and appoint this person full time from the beginning of the work. This person's tasks must solely be dedicated to the management of health and safety on the construction site. This safety officer must have the following qualifications:
 - .1 Have a safety officer certificate issued by the CNESST since at least one (1) year.
 - .2 Have site-related working experience specific to the activities associated with the present project.
 - .3 Have working knowledge of occupational health and safety regulations in the workplace.

- .4 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter the construction site to perform work.
- .5 Be responsible for implementing, enforcing in detail and monitoring site-specific Contractor's Health and prevention program.
- .6 Always be on construction site during execution of work.
- .7 Inspect the work and ensure compliance with all regulatory requirements and those indicated in the Contract Documents or the site-specific prevention program.
- .8 Keep a daily log of actions taken and submitting a copy to Departmental Representative each week.
- .2 The safety officer's certificate must be submitted to the Departmental Representative before the start of the Work.
- .3 When the hiring of a safety officer is not required or if this person is hired by the Departmental Representative, the Contractor must designate a competent person to supervise and take responsibility for health and safety, no matter the size of the construction site or how many workers are present at the workplace. This person must always be on construction site and be able to take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the construction site and likely to be affected by any of the work. The Contractor must submit the name of this person to the Departmental Representative before the start of work.

1.15 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices, and orders are posted in conspicuous location on construction site in accordance with Acts and Regulations of the Province, and in consultation with Departmental Representative.
- .2 At a minimum, the following information and documents must be posted in a location readily accessible to all workers:
 - .1 Notice of construction site opening.
 - .2 Identification of principal Contractor.
 - .3 Company OSH policy.
 - .4 Site-specific prevention program.
 - .5 Emergency plan.
 - .6 Minutes of worksite committee meetings.
 - .7 Names of worksite committee representatives.
 - .8 Names of the first-aid attendants.
 - .9 Action reports and correction notices issued by the CNESST.

1.16 INSPECTION OF THE CONSTRUCTION SITE AND CORRECTION OF NON-COMPLIANCES

- .1 Inspect the construction site and complete the construction site inspection checklist and submit it to the Departmental Representative in accordance with the article "ACTION AND INFORMATIONAL SUBMITTALS" in this Section.
- .2 Immediately take all necessary measures to correct any situations deemed non-compliant during the inspections mentioned in the previous paragraph or noticed by the Authorities Having Jurisdiction or the Departmental Representative or his agent.
- .3 Submit to Departmental Representative written confirmation of all measures taken to correct the situation in case of non-compliance in matters pertaining to health and safety.

- .4 The Contractor must give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order cessation and resuming of work as and when deemed necessary or desirable in the interests of safety and health. This person should always act so that the safety and health of the public and construction site workers and environmental protection take precedence over cost and scheduling considerations.
- .5 The Departmental Representative or his agent may order cessation of work if the Contractor does not make the corrections needed to conditions deemed non-compliant in matters pertaining to health and safety. Without limiting the scope of the preceding articles, the Departmental Representative may order cessation of work if, in his view, there is any hazard or threat to the safety or health of construction site personnel or the public or to the environment.

1.17 PREVENTION OF VIOLENCE

- .1 Health and safety management of Public Works and Government Services Canada construction sites includes the implementation of measures designed to protect the psychological health of all persons who access the construction site where the work is taking place. Consequently, in addition to physical violence, verbal abuse, intimidation and harassment are not tolerated on the construction site. Any person who demonstrates such actions or behaviors will receive a warning and/or could be expelled from the construction site by the Departmental Representative.

1.18 BLASTING

- .1 Blasting or other use of explosives is not permitted.

1.19 POWDER ACTUATED DEVICE

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.
- .2 Any person using an explosive actuated tool must hold a training certificate and meet all requirements of Section 7 of the *Code de sécurité pour les travaux de construction* (S- 2.1, r. 4). (Safety Code for the Construction Industry).
- .3 Any other explosive-actuated device must be used in accordance with the manufacturer's directions and applicable Standards and Regulations.

1.20 USE OF PUBLIC ROADS

- .1 Where it is necessary to encroach on a public road for operational reasons or to ensure the security of the workers, the occupants or the public (for example: Use of scaffolding, cranes, excavation work, etc.), the Contractor must obtain at his own expense any authorizations and permits required by the competent authority.
- .2 The Contractor must install at his own expense any signage, barricades, or other devices needed to ensure the safety and security of the public and the Contractor's own facilities.

1.21 LOCKOUT-TAGOUT

- .1 For all work on electrically or otherwise energized equipment, the Contractor must draw up and implement a general lockout-tagout procedure and submit it to the Departmental Representative.

- .2 Supervisors and all workers concerned by work requiring lockout-tagout must have received training on lockout-tagout procedures by a recognized organization; Contractor must submit training certificates to the Departmental Representative.
- .3 Before starting the lockout-tagout procedure of a item of equipment on an occupied site, Contractor must coordinate his work with the representative of the site if the interruption of the power sources can have an impact on the operations of the site or on its occupants.
- .4 Contractor must designate a qualified person as responsible for the lockout-tagout and must make sure that that person prepares a lockout-tagout data sheet for each piece of equipment involved. The lockout-tagout data sheet must be submitted to the Departmental Representative at least 48 hours before the beginning of the work. The Departmental Representative will review the data sheet with the representative of the site if the work takes place in an existing building.
- .5 The data sheets for lockout-tagout must contain at least the following information:
 - .1 Description of work to carry out.
 - .2 Identification, description, and location of the circuit and/or equipment to lockout-tagout.
 - .3 Identification of energy sources that feeds the equipment.
 - .4 Identification of each cutout point.
 - .5 Sequence of lockout-tagout and the release of residual energy as well as the sequence of unlocking.
 - .6 List of material needed for the lockout-tagout.
 - .7 Method of verification of zero energy implementation.
 - .8 Name and signature of the person who prepared the data sheet.
- .6 When required by the Departmental Representative, Contractor must record all this information on the site's representative form.
- .7 At the time of lockout-tagout, the person responsible must date the data sheet and ensure that each worker involved in the work on the circuit/equipment to lockout-tagout puts his name on the data sheet and signs it.

1.22 ELECTRICAL WORK

- .1 Contractor must ensure that all electrical work is executed by qualified employees in accordance with the provincial regulation respecting vocational training and qualification.
- .2 Contractor must respect all requirements of Standard CSA Z462 *Workplace Electrical Safety Standard*.
- .3 No repairs or alterations must be carried out on any live equipment, except where complete disconnection of the equipment is not feasible.
- .4 Contractor must respect all requirements prescribed in paragraph "LOCKOUT-TAGOUT" in this Section.
- .5 Contractor must advise in writing the Departmental Representative of all work which cannot be done with de-energized equipment and obtain his authorization. Contractor must demonstrate to the Departmental Representative that it is impossible to do the work with de-energized equipment and provide all the information necessary to request and obtain an energized electrical work permit (indicate working procedures, arc flash hazard analysis, protective perimeter, protective equipment, etc.) before the beginning of the work, excluding for the exceptions indicated in Standard CSA Z462 - Workplace Electrical Safety.

- .6 The energized electrical work permit on must contain at least the following elements:
 - .1 Description of the circuit and equipment and its location.
 - .2 Justification d for having to do the work in an energized condition.
 - .3 Description of safe work practices to apply.
 - .4 Results of the shock hazard analysis.
 - .5 Limit of the protective perimeter against electric shocks.
 - .6 Results of the arc flash hazard analysis.
 - .7 Description of the arc flash protection boundary.
 - .8 Description of the personal protective equipment required.
 - .9 Description of the means to limit access to unqualified persons.
 - .10 Proof that an information session has been carried out.
 - .11 Approval signature of the energized electrical work (by a person in authority or by the Owner).
- .7 If for the operational requirements of the occupants of the site the representative of the site requires that the Contractor performs work in an energized condition, the Contractor must obtain all the information required to request and obtain obtain an energized electrical work permit (indicate working procedures, arc flash hazard analysis, protective perimeter, protective equipment, etc.) and have it signed by the representative of the site assigned by the Departmental Representative before the beginning of Work.

1.23 ASBESTOS EXPOSURE

- .1 The project may involve the manipulation of materials containing asbestos. The wall on which the existing electrical distribution is installed contains small amounts of asbestos. Although it is not required to demolish this wall, the Contractor must take the necessary precautions and carry out works in accordance with regulations and following requirements:
 - .1 Provide a written procedure for the work, identifying the risk level of the work (low, moderate, high), as defined in Section 3.23 of the *Code the sécurité pour les travaux de construction* S-2.1, r- 4, (Safety Code for the Construction Industry). This procedure must consider all the requirements of that Section 3.23.
 - .2 Submit certificates that demonstrate that all workers involved in Work have received training on asbestos hazards and on the procedure required in the preceding paragraph.
 - .3 Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.
 - .4 If the Contractor or the Departmental Representative or his agent discover other materials which are susceptible of containing asbestos, the Contractor must immediately stop the work and advise the Departmental Representative. If more investigation demonstrates that the materials do contain asbestos, the Contractor must comply with the same requirements dictated above.

1.24 FUNGAL CONTAMINATION

- .1 It is not anticipated that Work covered by the present specifications involves the manipulation of materials contaminated by mould; however, if the Contractor or the Departmental Representative or his agent discover materials which are susceptible of being contaminated by mould, the Contractor must immediately stop the work and advise the Departmental Representative. If more investigation demonstrates that the materials do contain mould, the Contractor must comply with the following requirements.
 - .1 Prior to starting any work where workers are likely to be in contact with materials contaminated by mould, the Contractor must:
 - .1 Provide a written procedure for the work which respects all the requirements of the *Code de sécurité pour les travaux de construction* S-2.1, r-4, (Safety Code for the Construction Industry), as well as the requirements indicated in the document "*Mould Guidelines for the Canadian Construction Industry*" published by the Canadian Construction Association (<http://www.cca-acc.com/documents/electronic/cca82/cca82.pdf>).
 - .2 Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.25 EXPOSURE TO SILICA

- .1 Work in wet environment or use tools with the inflow of water in order to reduce dustiness, if not, collect dust at the source and retain it with a high-efficiency filters not to propagate dust in the environment.
- .2 Clean surfaces and tools with water, never with compressed air.
- .3 Sand and pickle surfaces by using an abrasive containing less than 1% of silica (also called amorphous silica).
- .4 Install shields or other containment device to prevent silica dust from migrating toward other workers or the public.
- .5 Wear individual respiratory and ocular protection equipment during all the operations that could generate silica dust in accordance with the requirements of the *Code de sécurité pour les travaux de construction, S-2.1, r.4* (Safety Code for the Construction Industry).
- .6 Wear coveralls to prevent contamination outside the construction site.
- .7 Do not eat, drink, or smoke in a dusty environment.
- .8 Wash the hands and the face before drinking, eating, or smoking.

1.26 EXPOSURE TO ANIMAL'S FECAL DROPPINGS

- .1 Prior to all work where workers are likely to meet materials contaminated by animal's fecal droppings, the Contractor must:
 - .1 Provide a written procedure for the work which respects all the requirements of the *Code de sécurité pour les travaux de construction* S-2.1, r-4, (Safety Code for the Construction Industry), as well as the requirements indicated in the document "*Des fientes de pigeons dans votre lieu de travail: méfiez-vous*" (Pigeon droppings in your workplace: Beware" published by the CNESST (http://www.csst.qc.ca/publications/100/Documents/DC100_1331_1web2.pdf).
 - .2 Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.27 RESPIRATORY PROTECTION

- .1 Contractor must ensure that all workers who must wear a respirator as part of their duties have received training for that purpose as well as fit testing of their respirator, in accordance with CSA Standard Z94.4 - *Selection, Use and Care of Respirators*. Submit the certificates of the fit testings to the Departmental Representative on demand.

1.28 FALL PROTECTION

- .1 Plan and organize work to eliminate the risk of fall at the source or ensure collective protection, thereby minimizing the use of personal protective equipment. When personal fall protection is required, workers must use a safety harness that complies with CSA Standard CAN/CSA Z-259.10 M90. A safety belt must not be used as fall protection.
- .2 Every person using an elevating platform (scissors, telescopic mast, articulated mast, rotative mast, etc.) must have a training regarding this equipment.
- .3 The use of a safety harness is mandatory for all elevating platforms with telescopic, articulate or rotative mast.
- .4 Define the limits of the danger zone around each elevating platform.
- .5 All openings in a floor or roof must be surrounded by a guardrail or provided with a cover fixed to the floor able to withstand the loads to which it could be exposed, regardless of the size of the opening and the height of the fall it represents.
- .6 Everyone who works within two metres from a fall hazard of 3 metres or more must use a safety harness in accordance with the requirements of the regulation, unless there is a guardrail or another device offering an equivalent safety.
- .7 Despite the requirements of the regulation, the Departmental Representative may require the installation of a guardrail or the use of a safety harness for specific situations presenting a risk of fall less than three metres.

1.29 SCAFFOLDINGS

- .1 In addition to the requirements of the *Code de sécurité pour les travaux de construction* (Safety Code for the Construction Industry), the Contractor who uses scaffoldings must respect the following requirements:
 - .1 Foundation:
 - .1 Scaffoldings must be installed on a solid foundation so that it does not slip or rock.
 - .2 Contractors wishing to install scaffoldings on a roof, overhang, canopy, or awning must submit their calculations and loads, as well as drawings signed and sealed by an engineer to the Departmental Representative and obtain his authorization before beginning installation.
 - .2 Assembly, bracing and mooring:
 - .1 All scaffoldings must be assembled, braced, and moored in accordance with the manufacturer's instructions and the provisions of the *Code de sécurité pour les travaux de construction* (Safety Code for the Construction Industry).

- .2 Where a situation requires the removal of part of the scaffoldings (e.g., crosspieces), the Contractor must submit to the Departmental Representative an assembly procedure signed and sealed by an engineer certifying that the scaffolding assembled in that manner will allow the work to be done safely given the loads to which it will be subject.
- .3 For scaffoldings where the span between two supports is greater than three metres, the Contractor must provide the Departmental Representative an assembly plan signed and sealed by an engineer.
- .3 Protection against falls during assembly:
 - .1 Workers exposed to the risk of falling more than 3 metres must always be protected against falls during assembly.
- .4 Platforms:
 - .1 Scaffolding platforms must be designed and installed in accordance with the provisions of the *Code de sécurité pour les travaux de construction* (Safety Code for the Construction Industry).
 - .2 If planks are used, they must be approved and stamped in accordance with Section 3.9.8 of the *Code de sécurité pour les travaux de construction* (Safety Code for the Construction Industry).
 - .3 Scaffoldings of four (4) sections (or 6 metres) high or more must have a full platform covering the entire surface between the putlogs every 3 metres high or fraction thereof, and the components of that platform must not be moved at any time to create an intermediate landing.
- .5 Guardrails:
 - .1 A guardrail must be installed on every landing.
 - .2 Cross braces must not be considered as guardrails.
 - .3 If the platforms are not covering the entire surface between the putlogs, the guardrail must be installed just above the edge of the platform so that there is no empty horizontal space between the platform and the guardrail.
 - .4 Where scaffoldings have four (4) sections (or 6 metres) high or more and full platforms are required, the guardrails must be installed on each landing at the start of work and must remain in place until the work is completed.
- .6 Access:
 - .1 The Contractor must ensure that access to the scaffoldings does not compromise worker safety.
 - .2 Where the platforms of the scaffoldings are comprised of planks, ladders must be installed in such a way that planks extending beyond the platform do not block the way up or down.
 - .3 Notwithstanding the provisions of the *Code de sécurité pour les travaux de construction* (Safety Code for the Construction Industry), stairs must be installed on all scaffoldings that have six or more rows of uprights or is six (6) sections (or 9 metres) high or higher.
- .7 Protection of the public and occupants:
 - .1 When scaffoldings are installed in a zone accessible to the public, the Contractor must take the necessary measures to prevent the public from having access to them and, if applicable, to the work or storage area located in the vicinity of these scaffoldings.

- .2 Contractor must install covered walkways, nets, or other similar devices to protect workers, public, and occupants against falling objects. The means of protection must be approved by the Departmental representative.
- .8 Engineering drawings:
 - .1 In addition to those required by the *Code de sécurité pour les travaux de construction* (Safety Code for the Construction Industry), the Departmental Representative reserves the right to require engineering plans for other types or configurations of scaffoldings.
 - .2 A drawing signed and sealed by an engineer is required for all scaffoldings that will be covered with a canvas, a tarpaulin, or any other material that has wind resistance.
 - .3 A certificate of conformity signed by an engineer is required in all cases where an engineering drawing is required before anybody uses the facility. A copy of these documents must always be available on the construction site.

1.30 EXCAVATION WORK

- .1 In addition to the requirements of the *Code de sécurité pour les travaux de construction* (Safety Code for the Construction Industry), the Contractor who performs the digging of trenches or excavations must respect the following requirements:
 - .1 Fill out the following form and submit it to the Departmental Representative before beginning to excavation work.
 - .2 Therefore, submit to the Departmental Representative, as appropriate, the following documents:
 - .1 Drawings and specifications, signed and sealed by an engineer, of the shoring needed to be installed for the excavation work, or
 - .2 Engineer's advice specifying the wall angles of the trench or excavation.



Excavation guidelines

N° _____ of _____

This directive is provided as an example by the Commission de la santé et de la sécurité du travail (CSST). It contains the main instructions that the employer should give to the person responsible for the work on the site and to the operator of the earth-moving machine.

Company name	
Project name	Project no.
Address of the site	Construction start date

Field survey

Chaining or tapes from _____ to _____ Attached plan Plan no. : _____

Working method to use

While making sure the excavation walls do not pose the risk of landslide

- dig and shore according to the plans and specifications of the engineer ;
- dig and shore using a trench box ;
- dig without shoring as long as one of the following conditions is respected:
 - rock is sound;
 - no worker goes down in the trench or excavation.
 - the walls are dug according to the engineer's advice.

Dimensions of excavation (Dig according to the following profile.)

	Minimum	Maximum
H Depth		
Wb Width at bottom		
Width at top		

Safety measures

Deposit the materials at a distance of at least 1.2 metre (4 feet) from top of walls.
 Do not allowed any vehicle to come closer than 3 metres (10 feet) from top of walls.

- Respect the engineer's plan concerning work in the proximity of an existing facility.
- Follow the location plan to locate the underground infrastructures.
- Install signaling devices prescribed in the traffic plan (barriers, visual references, etc.).
- Assign a flag person or more to control the flow of traffic.
- Respect the procedure prescribes for work near power lines.
- Provide protection devices for the workers, such as concrete crash barriers.

Name	Occupation
Signature	Date
	Telephone no.
Directive submitted	
<input type="checkbox"/> to the responsible of the work on the site	<input type="checkbox"/> to the operator of the earth-moving machine

EXC000002 (01/01/01)

1.31 LIFTING LOADS WITH CRANE OR BOOM TRUCK

- .1 Unless specified otherwise, the Contractor must prepare a hoisting plan and submit it to the Departmental Representative for all lifting operations done with a crane or a boom truck at least five (5) days before these lifting operations begin. The hoisting plan must contain at a minimum the information listed at the end of this article.
- .2 The hoisting plan must be signed and sealed by an engineer for the following lifting operations:
 - .1 Lifting of concrete panels.
 - .2 Lifting mechanical/electrical equipment on a roof or on the floor of a building.
 - .3 Lifting of loads encroaching on the public road.
 - .4 Lifting large dimensions or very heavy loads.
 - .5 All other lifting operation, in accordance with the requirements of the Departmental Representative.
- .3 In addition to the above requirements, the Contractor must plan the hoisting operations in a way as to avoid that the loads pass over the occupied zones on the site. When there is no alternative, the hoisting plan must absolutely be signed and sealed by an engineer and must guarantee the security of the occupants in that zone; the plan must also be approved by the Departmental Representative. The Departmental Representative can, if he deems necessary, require that the work be done at night or on weekends.
- .4 Upon the beginning of the work on the construction site, the Contractor must submit the list of the hoisting plans anticipated for the whole project to the Departmental Representative. That list must be updated as needed if changes occur during the work.
- .5 In addition to the mechanical service inspection certificate, the annual inspection certificate and the crane logbook must be aboard all cranes and boom truck cabs.
- .6 The entire lifting area must be marked off to prevent the entry of non-authorized persons.
- .7 The Contractor must carefully inspect all slings and lifting accessories and make sure that those in poor condition are destroyed and scrapped.
- .8 Compressed-gas cylinders must be lifted with a basket specially designed for this purpose.
- .9 Minimum content of hoisting plan:
 - .1 Sketch indicating at a minimum, the location of the crane, the surrounding facilities, the zone covered by the hoisting operations, the pedestrian's pathways and vehicular routes, the security perimeter, etc.
 - .2 Weight of loads.
 - .3 Dimensions of loads.
 - .4 List of hoisting devices and weight of each.
 - .5 Total weight lifted.
 - .6 Maximum height of obstacles to clear.
 - .7 Height of loads lifting relative to the surface of the roof (in the case of loads to be placed on roofs).
 - .8 Use of guide cables.
 - .9 Type of crane used.
 - .10 Crane capacity.
 - .11 Boom length.

- .12 Boom angle.
- .13 Crane's radius of action.
- .14 Deployment of stabilizers.
- .15 Percentage usage of the crane's capacity.
- .16 Verification confirmation of hoisting equipment.
- .17 Identification of the crane operator and the person responsible for the hoisting operations with date and signatures.

1.32 HOT WORK

- .1 Hot work means any work where a flame is used or a source of ignition may be produced, i.e., riveting, welding, cutting, grinding, burning, heating, etc.
 - .1 Before the beginning of each shift of work and for each sector, the Contractor must obtain a "Hot Work Permit" emitted by the person responsible for the site.
 - .2 A working portable fire extinguisher suitable to the fire risk must be available and easily accessible within a 5 m radius from any flame, spark source or intense heat.
 - .3 The Contractor must appoint an individual to do continuous monitoring of the fire risks for a period of one (1) hour after the end of the shift of hot work. This individual must sign the section for this purpose on the permit and give it to the person in charge of the construction site after the one-hour period.
 - .4 When the hot work is done in areas where there are combustible materials or where the walls, ceilings, or floors are made of or covered with combustible materials, a final inspection of the work area must be scheduled four (4) hours after the work has finished. Unless specified otherwise by the Departmental Representative, the Contractor must assign a person to carry out this monitoring.
- .2 Welding and cutting: In addition to the requirements prescribed in the preceding paragraphs, the Contractor must respect the following requirements:
 - .1 Welding and cutting work must be carried out in accordance with the requirements of the *Code de Sécurité pour les travaux de construction, S-2.1, r.4* (Safety Code for the Construction Industry) and CSA standard W117.2, Safety in Cutting, Welding and Allied Processes.
 - .2 Air extraction system with filters must be used for all welding and cutting work performed inside.
 - .3 Stop all activities producing flammable or combustible gas, vapours, or dust in the vicinity of the welding or cutting work.
 - .4 Store all compressed gas cylinder on a fireproof fabric and make sure that the room is well ventilated.
 - .5 Store all oxygen cylinders more than 6 metres from a flammable gas cylinder (ex: acetylene) or a combustible such as oil or grease, unless the oxygen cylinder is separated from it by a wall made of non-combustible material as mentioned in Article 3.13.4 of the *Code de sécurité pour les travaux de construction, S-2, r. 6* (Safety Code for the Construction Industry).
 - .6 Store the cylinders far from all heat sources.
 - .7 Not to store the cylinders close to the staircases, exits, corridors, and elevators.
 - .8 Do not put acetylene in contact with metals, such as silver, mercury, copper, and alloys of brass having more than 65% copper, to avoid the risk of an explosive reaction.

- .9 Check that welding equipment with electric arc has the necessary tension and are grounded.
- .10 Ensure that the conducting wires of the electric welding equipment are not damaged.
- .11 Place the welding equipment on a flat ground away from the bad weather.
- .12 Install fireproof canvas when the welding work is done in a superposition and where there is the risk of falling sparks.
- .13 Move away or protect the combustible materials which are closer than 15 metres from the welding work.
- .14 Prohibition to weld or cut any closed container.
- .15 Do not perform any cutting, welding, or work with a naked flame on a container, a tank, a pipe, or other container containing a flammable or explosive substance unless:
 - .1 They have been cleaned and air samples indicating that work can be done without danger has been taken, and
 - .2 Provisions to ensure the safety of the workers have been made.

1.33 INTERIOR USE OF INTERNAL COMBUSTION ENGINES

- .1 In addition to respecting article 3.10.17 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety Code for the Construction Industry), the Contractor must also respect the requirements described in the following paragraphs.
- .2 The use of a gas-powered equipment inside a building is prohibited even if the building is provided with openings.
- .3 The use of other equipment powered by an internal combustion engine inside a building must be submitted to the approval of the Departmental Representative.
- .4 For the use of any piece of equipment powered by an internal combustion engine inside a building, even if the building is provided with openings, the Contractor must install a ventilation system able to maintain the concentrations of toxic gases below the regulatory values. The stale air must be exhausted outside the building.
 - .1 Before using equipment powered by an internal combustion engine, the Contractor must plan and write the following:
 - .1 Number of fans to install.
 - .2 Power of the fans.
 - .3 Location of the fans.
 - .4 Dimensions of the openings that will be open during the work.
- .5 During the operation of equipment with internal combustion engine, the Contractor must measure the concentrations of carbon monoxide and nitrogen oxides in the work area and at the breathing area of the workers; the concentration levels measured must be recorded in a register every 30 minutes that must be available for consultation.
- .6 If work is in an occupied building, the Contractor must also measure the concentrations of carbon monoxide and nitrogen oxides in the rooms next to the work area and the concentration levels measured must be recorded in a register every 30 minutes.
- .7 If the carbon monoxide or nitrogen oxides detector alarm goes off during the work, the Contractor must stop the work and take the corrective measures required before resuming the work.

- .8 A portable fire extinguisher must always be available in the work area during the use of equipment with internal combustion engines.
- .9 The equipment must be maintained at a safe distance from all combustible material.
- .10 The storage of fuel for any equipment with internal combustion engine is prohibited inside a building.

1.34 WORK NEAR OVERHEAD POWER LINES

- .1 When there is an overhead power line in the work zone and that the Contractor chooses to apply paragraph b) of article 5.2.2 of the *Code de sécurité pour les travaux de construction* (2.1, r.4) (Safety Code for the Construction Industry), a copy of the agreement with the electrical power company and a copy of the work process, required in Article 5.2.2 b), must be submitted to the Departmental Representative before the beginning of the work in relation to these documents.

1.35 HEALTH AND SAFETY SUBORDINATION AGREEMENT

- .1 Agreement to fill out next page; a completed and signed copy to be submitted to the Departmental Representative.

HEALTH AND SAFETY SUBORDINATION AGREEMENT	
Project: _____ Address: _____	
EXTERNAL CONTRACTOR	
I, hereby, agree to submit to the authority of (name of the Principal Contractor's business) _____, which is the Principal Contractor for the project indicated above during the entire duration of our work on the construction site. Accordingly, I confirm that I have reviewed the Principal Contractor's prevention program, and I agree to:	
<ul style="list-style-type: none">• Inform my employees of the content of the Principal Contractor's prevention program and ensure that its content is complied with at all times;• Apply the prevention program that is specific to the activities that we carry out under this project;• Inform the Principal Contractor of my actions or dealings on the construction site and obtain the Principal Contractor's agreement before the start of work; and• Follow the health and safety directives provided by the representative of the Principal Contractor on the construction site and, depending on requirements, attend training sessions and health and safety meetings organized by the representative of the Principal Contractor.	
Name of Representative:	Name of Business:
Description of work to be done on the construction site:	
Approximate dates of work (start-end): Start:	End:
_____ Signature _____ Date _____	
PRINCIPAL CONTRACTOR	
I hereby agree to allow the business (name of external contractor) _____ to perform the work under this project indicated above and, as Principal Contractor, to take the necessary steps to protect the health and safety of workers on the construction site. Should the Contractor repeatedly refuse or fail to comply with my directives, I agree to inform PWGSC's Departmental Representative of this and to provide documentary evidence of my actions or dealings with the Contractor.	
Name of Representative:	Name of Principal Contractor's Business:
Signature: _____ Date: _____	
Submit a completed and signed copy to Departmental Representative	

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Definitions:
 - .1 Pollution and environmental damage: Presence of chemical, physical, or biological elements or agents that have a detrimental effect on the health and well-being of people, which alter the ecological balances important to humans and which constitute an attack on species that play an important role in the latter or degrade the aesthetic, cultural, or historical characteristics of the environment.
 - .2 Protection of the environment: Prevention/control of pollution and disturbance of habitat and environment during construction.
 - .3 U.S. Environmental Protection Agency (EPA)/Office of Water.
 - .1 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.
 - .2 EPA General Construction Permit (GCP) 2012.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature, and data sheets for FEC and include product characteristics, performance criteria, physical size, finish, and limitations.
 - .2 Submit two (2) copies of WHMIS Safety Data Sheets (SDS) in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative.
- .4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
- .5 Address topics at level of detail commensurate with environmental issue and required construction tasks.
- .6 Include in Environmental Protection Plan:
 - .1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.
 - .2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.
 - .3 Names and qualifications of persons responsible for training site personnel.
 - .4 Descriptions of environmental protection personnel training program.
 - .5 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations, and EPA 832/R-92-005, Chapter 3.

- .6 Drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials, including methods to control runoff and to contain materials on site.
- .7 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.
 - .1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.
- .8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.
 - .1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
- .9 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- .10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
- .11 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on Project site.
- .12 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
- .13 Wastewater Management Plan identifying methods and procedures for management and discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.
- .14 Historical, archaeological, cultural resources biological resources, and wetlands plan.
- .15 Pesticide treatment plan to be included and updated, as required.

1.3 FIRES

- .1 Fires and burning of rubbish onsite are not permitted.

1.4 DRAINAGE

- .1 Develop and submit erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations, EPA 832/R-92-005, Chapter 3 US EPA General Construction Permit.
- .2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sediment control plan.
- .3 Provide temporary drainage and pumping required to keep excavations and site free from water.
- .4 Ensure pumped water into waterways, sewer, or drainage systems is free of suspended materials.

- .5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.5 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
 - .1 Provide temporary enclosures where indicated directed by Departmental Representative.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.6 NON-COMPLIANCE

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection Plan.
- .2 Contractor: After receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
 - .1 Act only after receipt of written approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Bury rubbish and waste materials onsite where directed after receipt of written approval from Departmental Representative.
- .3 Ensure public waterways, storm, and sanitary sewers remain free of waste and volatile materials disposal.
- .4 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 00 - Cleaning.

- .5 Waste Management: Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 INSPECTION

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative will pay cost of examination and replacement.

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .2 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

1.3 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.4 PROCEDURES

- .1 Notify appropriate Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.5 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.6 REPORTS

- .1 Submit an electronic copy of test and inspection reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested manufacturer or fabricator of material being inspected or tested.

1.7 FACTORY TESTS

- .1 Submit certificates of factory tests that are prescribed in the various sections of the Specifications, within a maximum of one (1) week from the date of the tests.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities controls to execute work expeditiously.
- .2 Remove from site all such work after use.

1.2 DEWATERING

- .1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

1.3 WATER SUPPLY

- .1 Arrange for connection with appropriate utility company and pay costs for installation, maintenance, and removal.

1.4 HEATING AND VENTILATION

- .1 Provide temporary heating required during construction period, including attendance, maintenance, and fuel.
- .2 Provide temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress of Work.
 - .2 Protect Work and products against dampness and cold.
 - .3 Prevent moisture condensation on surfaces.
 - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .3 Maintain temperatures of minimum 10°C in areas where construction is in progress.
- .4 Ventilating:
 - .1 Prevent accumulations of dust, fumes, mists, vapours, or gases in areas occupied during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
 - .4 Ventilate storage spaces containing hazardous or volatile materials.
 - .5 Ventilate temporary sanitary facilities.
 - .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .5 Permanent heating system of building to be used when available. Be responsible for damage to heating system if use is permitted.
- .6 Pay costs for maintaining temporary heat, when using permanent heating system.

- .7 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable Codes and Standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .8 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.5 POWER AND LIGHT

- .1 Supply of electricity and lighting to perform the Work is Contractor's responsibility. Contractor must make a connection request to the utility company.
- .2 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance, and removal, including necessary equipment (e.g.: Breakers, conduits, cables, etc.).
- .3 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.

1.6 COMMUNICATION FACILITIES

- .1 Provide and pay for temporary telephone, fax, data hook up, lines, and equipment necessary for own use and use of Departmental Representative.

1.7 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction governing Codes, Regulations, and Bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on Site.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
 - .2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
- .2 CSA Group (CSA).
 - .1 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA-0121-M1978 (R2003), Douglas Fir Plywood.
 - .3 CAN/CSA-S269.2-M1987 (R2003), Access Scaffolding for Construction Purposes.
 - .4 CAN/CSA-Z321-96 (R2001), Signs and Symbols for the Occupational Environment.
- .3 U.S. Environmental Protection Agency (EPA)/Office of Water.
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.2 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Identify areas which must be gravelled to prevent tracking of mud.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide construction facilities in order to execute work expeditiously.
- .5 Remove from site all such work after use.

1.3 SCAFFOLDING

- .1 Scaffolding: In accordance with CAN/CSA-S269.2.
- .2 Provide and maintain ladders, platforms, ramps, swing staging, scaffolding, and temporary stairs.

1.4 HOISTING

- .1 Provide, operate and maintain hoists cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists cranes to be operated by qualified operator.

1.5 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.

- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.6 CONSTRUCTION PARKING

- .1 Parking will be permitted on site provided it does not disrupt performance of Work.
- .2 Provide and maintain adequate access to project site.
- .3 Clean airport runways and taxi areas where used by Contractor's equipment. Contractor is responsible for cleaning taxiway, apron, and runway before each aircraft movement.

1.7 SECURITY

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

1.8 OFFICES

- .1 Provide office of sufficient size to accommodate site meetings and furnished with drawing laydown table.
- .2 Provide a ventilated, heated, lit office of sufficient size dedicated to the Departmental Representative.
- .3 Provide marked and fully stocked first-aid case in a readily available location.
- .4 Maintain in clean condition.

1.9 EQUIPMENT, TOOL, AND MATERIAL STORAGE

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment, and material.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.10 SANITARY FACILITIES

- .1 Existing sanitary facilities can be used.

1.11 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Provide access and temporary relocated roads to maintain traffic, as necessary.
- .2 Maintain and protect traffic on affected roads during construction period, except as otherwise specifically directed by Departmental Representative.
- .3 Provide measures for protection and diversion of traffic, including provision of watchpersons and flagpersons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs.
- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: Responsible for repair of damage to roads caused by construction operations.

- .7 Construct access and haul roads necessary.
- .8 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .9 Dust Control: Adequate to always ensure safe operation.
- .10 Location, grade, width, and alignment of construction and hauling roads: Subject to approval by Departmental Representative.
- .11 Lighting: To assure full and clear visibility for full width of haul road and work areas during night work operations.
- .12 Provide snow removal during period of Work.
- .13 Remove, upon completion of Work, haul roads designated by Departmental Representative.

1.12 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material not in construction facilities.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian General Standards Board (CGSB).
 - .1 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
 - .2 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
- .2 CSA Group (CSA).
 - .1 CSA-O121-M1978 (R2003), Douglas Fir Plywood.

1.2 INSTALLATION AND REMOVAL

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

1.3 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations.
- .2 Provide as required by governing authorities.

1.4 PUBLIC TRAFFIC FLOW

- .1 Provide and maintain competent signal flag operators.

1.5 FIRE ROUTES

- .1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.6 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

1.7 PROTECTION OF BUILDING FINISHES

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Departmental Representative locations and installation schedule three (3) days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Reference Standard may be provided in each Section.
- .2 Comply with these Reference Standards, in whole or in part, as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor Design-Builder in event of non-conformance.

1.2 QUALITY

- .1 Products, materials, equipment, and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, provide evidence as to type, source, and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of Work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve the Contractor from his responsibility, but simply a precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in Specifications, maintain uniformity of manufacture throughout building.
- .6 Permanent labels, trademarks, and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 STORAGE, HANDLING, AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration, and soiling, and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, on flat, solid supports, and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense, to satisfaction of Departmental Representative.
- .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.

1.6 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in Specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.8 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves, and accessories.

1.9 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.10 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Departmental Representative of conflicting installation. Install as directed.

1.11 FASTENINGS - GENERAL

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.12 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.13 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

1.14 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and pedestrian and vehicular traffic and/or building occupants.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by Authority Having Jurisdiction. Stake and record location of capped service.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: In accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Owner or separate contractor.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of Owner or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.
- .4 Submit a daily report on the progress of the work including representative photos of the work in progress. These reports must be produced each working day and submitted to the Departmental Representative.

1.2 MATERIALS

- .1 Material/equipment required for identical installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.3 PREPARATION WORK

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION OF WORK

- .1 Execute cutting, fitting, and patching, including excavation and fill, to complete Work.

- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Remove samples of installed Work for testing.
- .6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 Using construction joint fire stops and building perimeter fire stops to protect gaps at fire separations and between fire separations and other construction assemblies.
- .12 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling reuse in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than those caused by Departmental Representative or other Contractors. Protect materials and other components from movement caused by wind so as not to present risk to aircrafts.
- .2 Remove waste materials from site daily after each work shift or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .3 Make arrangements with and obtain permits from Authorities Having Jurisdiction for disposal of waste and debris.
- .4 Provide, onsite, containers for collection of waste materials and debris.
- .5 Provide and use marked separate bins for recycling. Refer to Section 01 74 19 - Waste Management and Disposal.
- .6 Dispose of waste materials and debris off site at designated dumping areas on Crown properties.
- .7 Clean interior areas prior to start of finishing work and maintain areas free of dust and other contaminants during finishing operations.
- .8 Store volatile waste in covered metal containers and remove from premises at end of each working day.
- .9 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.2 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery, and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery, and equipment.
- .4 Remove waste products and debris other than including that caused by Owner or other contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials onsite, unless approved by Departmental Representative.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

- .7 Remove stains, spots, marks, dust, and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
- .8 Clean lighting reflectors, lenses, and other lighting surfaces.
- .9 Vacuum clean and dust building interiors, behind grilles, louvres, and screens.
- .10 Wax, seal, shampoo, or prepare floor finishes, as recommended by manufacturer.
- .11 Inspect finishes, fitments, and equipment and ensure specified workmanship and operation.
- .12 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .13 Remove dirt and other disfiguration from exterior surfaces.
- .14 Clean and sweep roofs, gutters, areaways, and sunken wells.
- .15 Sweep and wash clean paved areas.
- .16 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- .17 Clean roofs, downspouts, and drainage systems.
- .18 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
- .19 Remove snow and ice from access to building.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

- .1 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants, or similar materials.
- .2 Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling operations, repair, and demolition.
- .3 Hazardous: Exhibiting the characteristics of hazardous substances including properties such as ignitability, corrosiveness, toxicity or reactivity.
- .4 Non-hazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.
- .5 Non-toxic: Not poisonous to humans either immediately or after a long period of exposure.
- .6 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- .7 Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- .8 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form; recycling does not include burning, incinerating, or thermally destroying waste.
- .9 Return: To give back reusable items or unused products to vendors for credit.
- .10 Reuse: To reuse a construction waste material in some manner on the project site.
- .11 Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- .12 Sediment: Soil and other debris that has been eroded and transported by storm or well production run off water.
- .13 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- .14 Toxic: Poisonous to humans either immediately or after a long period of exposure.
- .15 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- .16 Volatile Organic Compounds (VOCs): Chemical compounds common in and emitted by many building products over time through outgassing:
 - .1 Solvents in paints and other coatings.
 - .2 Wood preservatives; strippers and household cleaners.
 - .3 Adhesives in particleboard, fiberboard, and some plywood; and foam insulation.
 - .4 When released, VOCs can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.
- .17 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination: Coordinate waste management requirements with all Divisions of the Work for the project and ensure that requirements of the Construction Waste Management Plan are followed.
- .2 Preconstruction Meeting: Arrange a pre-construction meeting in accordance with Section 01 31 19 - Project Meetings before starting any Work of the Contract attended by the Departmental Representative, the Contractor, and Subcontractors, to discuss the Construction Waste Management Plan and to develop mutual understanding of the requirements for a consistent policy towards waste reduction and recycling.

1.3 QUALITY ASSURANCE

- .1 Resources for Development of Construction Waste Management Report (CWM Report): The following sources may be useful in developing the Draft Construction Waste Management Plan:
 - .1 Recycling Haulers and Markets: Investigate local haulers and markets for recyclable materials and incorporate into CWM Plan.
 - .2 Waste-to-Energy Systems: Investigate local waste-to-energy incentives where systems for diverting materials from landfill for reuse or recycling are not available.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Storage Requirements: Implement a recycling/reuse program that includes separate collection of waste materials as appropriate to the project waste and the available recycling and reuse programs in the project area.
- .2 Handling Requirements: Clean materials that are contaminated before placing in collection containers and ensure that waste destined for landfill does not get mixed in with recycled materials:
 - .1 Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.
 - .2 Arrange for collection by or delivery to the appropriate recycling or reuse facility.
- .3 Hazardous Waste and Hazardous Materials: Handle in accordance with applicable Regulations.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 (CWM PLAN) IMPLEMENTATION

- .1 Manager: Contractor is responsible for designating an onsite party or parties responsible for instructing workers and overseeing and documenting results of the CWM Plan for the project.

- .2 Distribution: Distribute copies of the CWM Plan to the job site foreman, each Subcontractor, the Departmental Representative, and other site personnel, as required, to maintain CWM Plan.
- .3 Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, composting and return methods being used for the Project to Subcontractor's at appropriate stages of the Project.
- .4 Separation Facilities: Lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, composting, and return:
 - .1 Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.
 - .2 Hazardous wastes shall be separated, stored, and disposed of in accordance with local Regulations.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Environmental Protection Act (CEPA).
 - .1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor: Conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative's inspection.
 - .2 Departmental Representative 's Inspection:
 - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: Submit written certificates that tasks have been performed as follows:
 - .1 Work: Completed and inspected for compliance with Contract Documents.
 - .2 Defects: Corrected and deficiencies completed.
 - .3 Equipment and systems: Tested, balanced adjusted, and fully operational.
 - .4 Certificates required by Utility companies submitted.
 - .5 Operation of systems: Demonstrated to Owner's personnel.
 - .6 Commissioning of mechanical systems: Completed in accordance with Section 01 91 13 - General commissioning requirements and one (1) copie of final Commissioning Report submitted to Departmental Representative.
 - .7 Aboveground Underground storage tank inspection documentation, registration, forms, decommissioning, and removal in accordance with CEPA SOR/2008-197.
 - .8 Work: Complete and ready for final inspection.
- .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Departmental Representative and Contractor.
 - .2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.

1.3 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools, and equipment.
- .2 Waste Management: Separate waste materials for recycling reuse in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Environmental Protection Act (CEPA).
 - .1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-warranty Meeting:
 - .1 Convene meeting one week prior to contract completion with Departmental Representative, in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify Project requirements.
 - .2 Review warranty requirements manufacturer's installation instructions.
 - .2 Departmental Representative to establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
 - .3 Provide name, telephone number, and address of company authorized for construction warranty work action.
 - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, one (1) final paper copies and one (1) electronic copy of final Operating and Maintenance (O&M) Manuals in French and English.
- .3 Provide spare parts, maintenance materials, and special tools of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source, and quality of products supplied.
- .5 The Contractor must include one (1) printed copy in addition to one (1) electronic copy for each document to be submitted.

1.4 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: Vinyl, hard covered, 3 "D" ring, loose leaf, 219 x 279 mm, with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings.
 - .1 Identify contents of each binder on spine.
- .4 Cover: Identify each binder with type or printed title "Project Record Documents"; list title of project and identify subject matter of contents.

- .5 Arrange content by process flow, systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: Manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.
 - .1 Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files, in dwg format, on CD.

1.5 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for Each Volume: Provide title of project.
 - .1 Date of submission; names.
 - .2 Addresses, name, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses, and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: Mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: As required to supplement product data.
 - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
- .6 Training: Refer to Section 01 79 00 - Demonstration and Training.
- .7 Generator set warranty certificate.

1.6 AS -BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative, one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, exploitation sheets, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
 - .9 Generator warranty certificate.

- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry, and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.7 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of black line opaque drawings.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: Mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 Referenced Standards to related shop drawings and modifications.
- .5 Specifications: Mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: Maintain field test records, inspection certifications, manufacturer's certifications, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

1.8 EQUIPMENT AND SYSTEMS

- .1 For each item of equipment and each system include description of unit or system, and component parts.
 - .1 Give function, normal operation characteristics, and limiting conditions.

- .2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel Board Circuit Directories: Provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences.
 - .1 Include regulation, control, stopping, shutdown, and emergency instructions.
 - .2 Include summer, winter, and any special operating instructions.
 - .3 Instructions presented must meet the requirements of CSA Z 463-18 Standard.
- .5 Maintenance Requirements: Include routine procedures and guide for troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions, in compliance with CSA Z463-18 Standard.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified in Sections 01 45 00 - Quality Control and 01 91 13 - General Commissioning Requirements.
- .15 Aboveground storage tank inspection documentation, registration, forms, decommissioning, and removal in accordance with CEPA SOR/2008-197.
- .16 Additional Requirements: As specified in individual Specification.

1.9 MATERIALS AND FINISHES

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
 - .1 Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and weather-exposed products: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional Requirements: As specified in individual Specification.

1.10 MAINTENANCE MATERIALS

- .1 Spare Parts:
 - .1 Provide spare parts, in quantities specified in individual Specification.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to location as directed site; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .2 Extra Stock Materials:
 - .1 Provide maintenance and extra materials, in quantities specified in individual Specification.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to location as directed site; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .3 Special Tools:
 - .1 Provide special tools, in quantities specified in individual Specification.
 - .2 Provide items with tags identifying their associated function and equipment.
 - .3 Deliver to site location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.

1.11 DELIVERY, STORAGE, AND HANDLING

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paint and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Departmental Representative.

1.12 WARRANTIES AND BONDS

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit Warranty Management Plan, 30 days before planned pre-warranty conference, to Departmental Representative approval.
- .3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.

- .4 Provide plan in narrative form and contain enough detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.
- .6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
 - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
 - .2 List of subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible designated by each one.
 - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten (10) days after completion of applicable item of work.
 - .4 Verify that documents are in proper form, contain full information, and are notarized.
 - .5 Co-execute submittals when required.
 - .6 Retain warranties and bonds until time specified for submittal.
- .7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .8 Conduct joint 9-month warranty inspection, measured from time of acceptance, with Departmental Representative.
- .9 Include information contained in Warranty Management Plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers, or suppliers involved.
 - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include roofs, motors, pumps, HVAC balancing, transformers, sprinkler systems, lightning protection systems, alarm systems, commissioned systems fire protection.
 - .3 Provide list for each warranted equipment, item, feature of construction or system, indicating:
 - .1 Name of item.
 - .2 Model and serial numbers.
 - .3 Location.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses, and telephone numbers of sources of spare parts.
 - .6 Warranties and terms of warranty: Include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - .7 Cross-reference to warranty certificates as applicable.
 - .8 Starting point and duration of warranty period.
 - .9 Summary of maintenance procedures required to continue warranty in force.
 - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.

- .11 Organization, names and phone numbers of persons to call for warranty service.
- .12 Typical response time and repair time expected for various warranted equipment.
- .4 Contractor's plans for attendance at 4- and 9-month post-construction warranty inspections.
- .5 Procedure and status of tagging of equipment covered by extended warranties.
- .6 Post copies of instructions near selected items of equipment where operation is critical for warranty and/or safety reasons.
- .10 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .11 Written verification to follow oral instructions.
 - .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.13 WARRANTY TAGS

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water-resistant tag approved by Departmental Representative.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
 - .1 Type of product/material.
 - .2 Model number.
 - .3 Serial number.
 - .4 Contract number.
 - .5 Warranty period.
 - .6 Inspector's signature.
 - .7 Contractor's signature.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Demonstrate scheduled operation and maintenance of equipment and systems to Departmental Representative two (2) weeks prior to date of substantial performance final inspection interim completion.
- .2 Departmental Representative: Provide list of personnel to receive instructions, and coordinate their attendance at agreed-upon times.
- .3 Preparation Work:
 - .1 Verify conditions for demonstration and instructions comply with requirements.
 - .2 Verify designated personnel are present.
 - .3 Ensure equipment has been inspected and put into operation.
 - .4 Ensure testing, adjusting, and balancing has been performed in accordance with Section 01 91 13 - General Commissioning Requirements, and equipment and systems are fully operational.
- .4 Demonstration and Instructions:
 - .1 Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, and maintenance of each item of equipment at agreed upon scheduled times, at the equipment designated location.
 - .2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
 - .3 Review in detail contents of manual to explain aspects of operation and maintenance.
 - .4 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.
- .5 Time Allocated for Instructions: Ensure amount of time required for instruction of each item of equipment or system in accordance with, but not limited to, Section 26 05 00 Electrical - Common Work Results for Electrical.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures and in accordance with section 01 78 00 Closeout Submittals.
- .2 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Departmental Representative's approval.
- .3 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
- .4 Give time and date of each demonstration, with list of persons present.
- .5 Provide copies of completed Operation and Maintenance Manuals for use in demonstrations and instructions.

1.3 QUALITY ASSURANCE

- .1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:
 - .1 Instruct Departmental Representative's personnel.
 - .2 Provide written report that demonstration and instructions have been completed.

1.4 GENERAL NOTE

- .1 The fuel tank must be filled to its rated capacity following the tests on the generator on site.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 GENERAL

- .1 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved. Objectives:
 - .1 Verify installed equipment, systems, and integrated systems operate in accordance with Contract Documents and Design Criteria and Intent.
 - .2 Ensure appropriate documentation is compiled into the BMM.
 - .3 Effectively train O&M staff.
- .2 Contractor assists in Cx process, operating equipment and systems, troubleshooting, and making adjustments as required.
 - .1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively with each other as intended in accordance with Contract Documents and Design Criteria.
 - .2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.
- .3 Design Criteria: As per Client's requirements or determined by designer. To meet Project functional and operational requirements.

1.2 COMMISSIONING OVERVIEW

- .1 Cx to be a line item of Contractor's cost breakdown.
- .2 Cx activities supplement field quality and testing procedures described in relevant technical sections.
- .3 Cx is conducted in concert with activities performed during stage of project delivery. Cx identifies issues in Planning and Design stages which are addressed during Construction and Cx stages to ensure the built facility is constructed and proven to operate satisfactorily under weather, environmental and occupancy conditions to meet functional and operational requirements. Cx activities includes transfer of critical knowledge to facility operational personnel.
- .4 Departmental Representative will issue Interim Acceptance Certificate when:
 - .1 Completed Cx documentation has been received, reviewed for suitability and approved by Departmental Representative.
 - .2 Equipment, components, and systems have been commissioned.
 - .3 O&M training has been completed.

1.3 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS

- .1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, correct deficiencies, re-verify equipment and components within the unfunctional system, including related systems as deemed required by Departmental Representative, to ensure effective performance.

- .2 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by Contractor. Above costs to be in form of progress payment reductions or hold-back assessments.

1.4 PRE-CX REVIEW

- .1 Before Construction:
 - .1 Review Contract Documents, confirm by writing to Departmental Representative.
 - .1 Adequacy of provisions for Cx.
 - .2 Aspects of design and installation pertinent to success of Cx.
- .2 During Construction:
 - .1 Co-ordinate provision, location, and installation of provisions for Cx.
- .3 Before start of Cx:
 - .1 Have completed and up-to-dated Cx Plan.
 - .2 Ensure installation of related components, equipment, sub-systems, systems are completed.
 - .3 Fully understand Cx requirements and procedures.
 - .4 Have Cx documentation shelf ready.
 - .5 Understand completely Design Criteria and Intent and special features.
 - .6 Submit complete start-up documentation to Departmental Representative.
 - .7 Have Cx schedules up-to-date.
 - .8 Ensure systems have been cleaned thoroughly.
 - .9 Ensure "As-Built" system schematics are available.
- .4 Inform Departmental Representative in writing of discrepancies and deficiencies on finished works.

1.5 CONFLICTS

- .1 Report conflicts between requirements of this section and other sections to Departmental Representative before start-up and obtain clarification.
- .2 Failure to report conflict and obtain clarification will result in application of most stringent requirement.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: In accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit no later than four (4) weeks after award of Contract:
 - .1 Name of Contractor's Cx agent.
 - .2 Draft Cx documentation.
 - .3 Preliminary Cx schedule.
 - .2 Request in writing to Departmental Representative for changes to submittals and obtain written approval at least eight (8) weeks prior to start of Cx.
 - .3 Submit proposed Cx procedures to Departmental Representative where not specified and obtain written approval at least eight (8) weeks prior to start of Cx.
 - .4 Provide additional documentation relating to Cx process required by Departmental Representative.

1.7 COMMISSIONING DOCUMENTATION

- .1 Departmental Representative to review and approve Cx documentation.
- .2 Provide completed and approved Cx documentation to Departmental Representative.

1.8 COMMISSIONING SCHEDULE

- .1 Provide detailed Cx schedule as part of construction schedule in accordance with Section 01 32 16.16 - Construction Progress Schedule - Critical Path Method (CPM).
- .2 Provide adequate time for Cx activities prescribed in Technical Sections and Commissioning Sections including:
 - .1 Approval of Cx reports.
 - .2 Verification of reported results.
 - .3 Repairs, retesting, re-commissioning, re-verification.
 - .4 Training.

1.9 STARTING AND TESTING

- .1 Contractor assumes liabilities and costs for inspections. Including disassembly and re-assembly after approval, starting, testing and adjusting, including supply of testing equipment.

1.10 WITNESSING OF STARTING AND TESTING

- .1 Provide 14 days notice prior to commencement.
- .2 Departmental Representative to witness of start-up and testing.
- .3 Contractor's Cx Agent to be present at tests performed and documented by sub-trades, suppliers, and equipment manufacturers.

1.11 MANUFACTURERS' INVOLVEMENT

- .1 Factory Testing: Manufacturer to:
 - .1 Coordinate time and location of testing.
 - .2 Provide testing documentation for approval by Departmental Representative.
 - .3 Arrange for Departmental Representative to witness tests.
 - .4 Obtain written approval of test results and documentation from Departmental Representative before delivery to site.
- .2 Obtain manufacturers installation, start-up, and operations instructions prior to start-up of components, equipment, and systems and review with Departmental Representative.
 - .1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.
 - .2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.
- .3 Integrity of warranties:
 - .1 Use manufacturer's trained start-up personnel where specified elsewhere in other divisions or required to maintain integrity of warranty.
 - .2 Verify with manufacturer that testing as specified will not void warranties.

- .4 Qualifications of manufacturer's personnel:
 - .1 Experienced in design, installation and operation of equipment and systems.
 - .2 Ability to interpret test results accurately.
 - .3 To report results in clear, concise, logical manner.

1.12 PROCEDURES

- .1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting start-up, testing, and Cx.
- .2 Conduct start-up and testing in following distinct phases:
 - .1 Included in delivery and installation:
 - .1 Verification of conformity to specification, approved shop drawings and completion of PI report forms.
 - .2 Visual inspection of quality of installation.
 - .2 Start-up: Follow accepted start-up procedures.
 - .3 Operational testing: Document equipment performance.
 - .4 System PV: Include repetition of tests after correcting deficiencies.
 - .5 Post-substantial performance verification: To include fine-tuning.
- .3 Correct deficiencies and obtain approval from Departmental Representative after distinct phases have been completed and before commencing next phase.
- .4 Document require tests on approved PV forms.
- .5 Failure to follow accepted start-up procedures will result in re-evaluation of equipment by an independent testing agency selected by Departmental Representative. If results reveal that equipment start-up was not in accordance with requirements, and resulted in damage to equipment, implement following:
 - .1 Less important equipment/system: Implement corrective measures approved by the Departmental Representative;
 - .2 Important equipment/systems: If the reassessment shows that the damages causes are minor, implement corrective measures approved by the Departmental Representative.
 - .3 If the reassessment shows the existence of major damages, the Departmental Representative will refuse the equipment/system.
 - .1 Equipment/system refused: To be removed from site and replaced by a new one.
 - .2 Resubmit new equipment/system to prescribed Cx procedures.

1.13 START-UP DOCUMENTATION

- .1 Assemble start-up documentation and submit to Departmental Representative for approval before commencement of commissioning.
- .2 Start-up documentation to include:
 - .1 Factory and on-site test certificates for specified equipment.
 - .2 Pre-start-up inspection reports.
 - .3 Signed installation/start-up check lists.
 - .4 Start-up reports.

- .5 Step-by-step description of complete start-up procedures, to permit Departmental Representative to repeat start-up at any time.

1.14 OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS

- .1 After start-up, operate and maintain equipment and systems as directed by equipment/system manufacturer.
- .2 With assistance of manufacturer, develop written maintenance program and submit to Departmental Representative for approval before implementation.
- .3 Operate and maintain systems for length of time required for commissioning to be completed.
- .4 After completion of commissioning, operate and maintain systems until issuance of certificate of interim acceptance.

1.15 TEST RESULTS

- .1 If start-up, testing and/or PV produce unacceptable results, repair, replace or repeat specified starting and/or PV procedures until acceptable results are achieved.
- .2 Provide manpower and materials, assume costs for re-commissioning.

1.16 START OF COMMISSIONING

- .1 Notify Departmental Representative at least 21 days prior to start of Cx.
- .2 Start Cx after elements of building affecting start-up and performance verification of systems have been completed.

1.17 INSTRUMENTS/EQUIPMENT REQUIRED FOR COMMISSIONING

- .1 Submit to Departmental Representative for review and approval:
 - .1 Complete list of instruments proposed to be used.
 - .2 Listed data including, serial number, current calibration certificate, calibration date, calibration expiry date, and calibration accuracy.
- .2 Provide the following equipment, as required:
 - .1 2-way radios;
 - .2 Equipment as required to complete work.

1.18 COMMISSIONING PERFORMANCE VERIFICATION

- .1 Carry out Cx:
 - .1 Under accepted simulated actual operating conditions, over entire operating range, in all modes.
 - .2 On independent systems and interacting systems.
- .2 Cx procedures to be repeatable and reported results are to be verifiable.
- .3 Follow equipment manufacturer's operating instructions.

1.19 WITNESSING COMMISSIONING

- .1 Departmental Representative to witness activities and verify results.

1.20 AUTHORITIES HAVING JURISDICTION

- .1 Where specified start-up, testing or commissioning procedures duplicate verification requirements of Authority Having Jurisdiction, arrange for authority to witness procedures to avoid duplication of tests and to facilitate expedient acceptance of facility.
- .2 Obtain certificates of approval, acceptance and compliance with rules and regulation of Authority Having Jurisdiction.
- .3 Provide copies to Departmental Representative within five (5) days of test and with Cx report.

1.21 DEFICIENCIES, FAULTS, DEFECTS

- .1 Correct deficiencies found during start-up and Cx to satisfaction of Departmental Representative.
- .2 Report problems, faults, or defects affecting Cx to Departmental Representative in writing. Stop Cx until problems are rectified. Proceed with written approval from Departmental Representative.

1.22 COMPLETION OF COMMISSIONING

- .1 Upon completion of Cx leave systems in normal operating mode.
- .2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion.
- .3 Cx to be considered complete when contract Cx deliverables have been submitted and accepted by Departmental Representative.

1.23 ACTIVITIES UPON COMPLETION OF COMMISSIONING

- .1 When changes are made to baseline components or system settings established during Cx process, provide updated Cx form for affected item.

1.24 TRAINING

- .1 In accordance with Section 01 79 00 - Demonstration and Training.

1.25 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS

- .1 Supply, deliver, and document maintenance materials, spare parts, and special tools, as specified in Contract.

1.26 OWNER'S PERFORMANCE TESTING

- .1 Performance testing of equipment or system by Departmental Representative will not relieve Contractor from compliance with specified start-up and testing procedures.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

DIVISION 26

Electrical



Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA)/CSA International.
 - .1 CAN/CSA-C22.3, No. 1, Aerial Networks.
 - .2 CSA C22.1-15, Canadian Electrical Code, Part I (24th Edition), Safety Standard for Electrical Installations.
 - .3 CSA C22.10, Construction Code of Québec, Chapter V - Electricity, 2018.
 - .4 CAN3-C235, Recommended Voltages for AC Networks from 0 to 50,000 V.
- .2 Electrical and Electronic Equipment Manufacturers Association of Canada (EEMAC).
 - .1 EEMAC 2Y-1, Light Gray Color for Indoor Switch Gear.
- .3 Health Canada - Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets.
- .4 Service d'électricité en basse tension Norme E.21-10 d'Hydro-Québec.

1.2 DESIGN REQUIREMENTS

- .1 Operating voltages shall comply with CAN3-C235 Standard.
- .2 Motors, electric heaters, and command/control/regulation and distribution devices shall operate satisfactorily at the frequency of 60 Hz and within the limits set out in the above-mentioned Standard.
 - .1 Materials shall be able to operate without damage under the extreme conditions defined in this Standard.
- .3 Language of Operation and Display: Provide for the purpose of identification and display of indicator plates in English and French for control devices.

1.3 SUBMITTALS

- .1 Submit the documents and samples required in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Workshop Drawings.
 - .1 Drawings shall bear the seal and signature of a qualified engineer recognized or qualified to practice in Canada.
 - .2 Submit drawings and data sheets in soft copy (.pdf) to the Departmental Representative.
 - .3 If changes are required, inform the Departmental Representative before they are made.
- .3 Quality Control: In accordance with Section 01 45 00 - Quality Control.
 - .1 Provide CSA-certified equipment and materials.
 - .2 In cases where CSA-certified equipment and materials cannot be obtained, submit the proposed equipment to the Departmental Representative for approval, prior to delivery to the site.

- .3 Submit test results of installed electrical systems and instruments.
- .4 Permits and rights: In accordance with the terms and conditions of the Agreement.
- .5 Once the work is completed, submit a load balancing report in accordance with the LOAD BALANCING article of PART 3.
- .6 Once the work has been completed, submit to the Department Representative the acceptance certificate issued by the competent authority.

1.4 QUALITY ASSURANCE

- .1 Quality Assurance: According to Section 01 45 00 - Quality Control.
- .2 Qualifications: The electrical work shall be performed by certified, qualified electricians, a master electrician or an electrical contractor licensed by the Province in which the work will be performed.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Equipment Delivery Schedule: Provide a delivery schedule to the Departmental Representative within three (3) weeks of Contract award.
- .2 Management and disposal of construction/demolition waste: In accordance with Section 01 74 19 - Waste Management and Disposal.

1.6 INSTALLATION START-UP

- .1 Instruct operating personnel on the operation and maintenance methods of the facility, its equipment, and components.
- .2 Retain and pay for the services of an engineer seconded from the manufacturer's plant to supervise the installation start-up, to verify, adjust, balance, and calibrate the various elements, and to instruct operating personnel on the door control system.
- .3 Provide these services for a 4-hour period, including a necessary visit to start up the equipment and ensure that operating personnel are familiar with all aspects of its maintenance and operation.

Part 2 Products

2.1 MATERIALS/EQUIPMENT

- .1 Provide materials and equipment in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Equipment shall be CSA certified. In cases where CSA-certified materials and equipment cannot be obtained, submit the replacement materials and equipment to the inspection authorities prior to delivering them to the site, in accordance with the SUBMITTALS article of PART 1.
- .3 Command/control panels and component assemblies shall be factory-assembled.

2.2 ELECTRIC MOTORS, EQUIPMENT, AND COMMAND/CONTROLS

- .1 Verify installation and coordination responsibilities for engines, equipment, and command/control, as indicated.

2.3 WARNING SIGNS

- .1 Warning Signs: Dimensions of 175 mm x 250 mm.

2.4 WIRING TERMINATIONS

- .1 Ensure lugs, terminals, screws used for termination of wiring are suitable for copper conductors.

2.5 IDENTIFICATION OF THE MATERIAL

- .1 To designate electrical equipment, use indicator plates meeting the following requirements:
 - .1 Indicator plates: Lamicoid plastic engraving plates 3 mm thick, with white face finished mast and black core, mechanically fixed by means of rivets, with inscriptions in letters correctly aligned, engraved to the core of the plate. The plates shall be fixed with aluminum rivets when exposed to the weather. "P-TOUCH" type tapes are not accepted, except for 120-V outlets and light switches.
 - .2 Nameplates to indicate name of equipment powered and source of power.
 - .3 The identification plates of the disconnects, before and after the Hydro-Québec metering cabinet, as well as the HQ metering cabinet, will be with white lettering with a black background. For other electrical equipment, the plates will be with lettering white on red background.
- .2 Size complying with following indications:

SIZE OF IDENTIFICATION PLATES

Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	12 mm high letters

- .3 Markings on indicator plates shall be approved by the Departmental Representative prior to manufacture.
- .4 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.
- .5 Disconnects, Starters, and Contactors: Indicate equipment being controlled and voltage.
- .6 Terminal Cabinets and Pull Boxes: Indicate system and voltage.
- .7 Transformers: Indicate capacity, primary and secondary voltages.

2.6 WIRING IDENTIFICATION

- .1 Both ends of the phase conductors of each feeder and branch circuit shall be permanently and indelibly marked with a numbered or colored plastic tape.
- .2 Keep phase order and color code for the entire installation.
- .3 The color code shall comply with CSA C22.1 Standard.

- .4 Use communication cables formed of conductors with uniform color tracking throughout the network.

2.7 IDENTIFICATION OF CONDUITS AND CABLES

- .1 Color code conduits, boxes, and metallic sheathed cables.
- .2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15-m intervals.
- .3 The bands of the basic colors shall be 25 mm wide and those of the additional colors 20 mm wide.

	Basic Color	Complementary Color
Up to 250 V	Yellow	---
Up to 600 V	Yellow	Green
Up to 5 kV	Yellow	Blue
Up to 15 kV	Yellow	Red
Telephone	Green	---
Other	Green	Blue
Communication Networks	---	---
Klaxon	Red	---
Emergency Communication	Red	Blue
Other	Red	Yellow
Security Systems	---	---

2.8 FINISH

- .1 The surfaces of metal casings shall be finished in the workshop and coated with an anti-rust primer, inside and out, and with at least two (2) coats of finishing enamel paint.
 - .1 Electrical equipment to be installed outdoors shall be painted in "Machine Green".
 - .2 Cabinets of switching and dispensing devices installed indoors shall be painted light grey according to EEMAC 2Y-1.

Part 3 Execution

3.1 INSTALLATION

- .1 Complete the entire installation in accordance with CSA C22.10 Standard.
- .2 Carry out the installation in accordance with Hydro-Québec E.21-10 Standard -Low Voltage Electricity Services.
- .3 Unless otherwise specified, install overhead and underground systems in accordance with CSA C22.3 No. 1 Standard.

3.2 LABELS, INDICATOR PLATES AND NAMEPLATES

- .1 Ensure that CSA labels, indicator plates, and nameplates are visible and legible once the equipment is installed.

3.3 INSTALLATION OF CONDUITS AND CABLES

- .1 Install conduit and sleeves before concrete pouring.
 - .1 Sleeves through concrete: 40-Series steel pipe of diameter allowing the free passage of the conduit and exceeding the concrete surface by 50 mm on each side.
- .2 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.
- .3 Install cables, conduits, and fittings embedded or plastered over, close to building structure so furring can be kept to minimum.

3.4 LOCATION OF OUTLETS

- .1 Locate outlets in accordance with Section 26 05 32 - Outlet Boxes, Conduit Boxes and Fittings.
- .2 Do not install outlets back-to-back in wall; allow minimum 150 mm horizontal clearance between boxes.
- .3 Change location of outlets at no extra cost or credit, providing distance does not exceed 3,000 mm, and information is given before installation.
- .4 Locate light switches on latch side of doors.
 - .1 Locate disconnect devices in mechanical and elevator machine rooms on latch side of floor.

3.5 MOUNTING HEIGHTS

- .1 Unless otherwise specified or required, measure the mounting height of the equipment from the surface of the coated floor to the axis of the equipment.
- .2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.
- .3 Unless otherwise specified, install the equipment at the height indicated below:
 - .1 Light switches: 1,200 mm.
 - .2 Wall outlets:
 - .1 In mechanical installation rooms: 1,200 mm.
 - .3 Distribution signs: As required by the Code or as indicated.

3.6 COORDINATION OF PROTECTIVE DEVICES AND ELECTRICAL ARCS

- .1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.
- .2 When handing over workshop drawings, provide the coordination study of the main protective devices.
- .3 The entire installation shall comply with section 2-306 "Protection Against Electric Shock and Arcing" of the Canadian Electrical Code, 24th Edition, 2018.

3.7 FIELD QUALITY CONTROL

- .1 Load Balancing.
 - .1 Measure the phase current of the distribution panels under normal loads (lighting) at the time of acceptance of the work. adjust branch circuit connections as required to obtain best balance of current between phases and record changes.
 - .2 Measure phase voltages at loads and adjust transformer taps to within 2% of rated voltage of equipment.
 - .3 Once the actions have been completed, submit the load balancing report prescribed in the SUBMITTALS section of PART 1. This report shall indicate the currents under normal loads recorded on the phases and neutrals of the distribution panels, dry transformers, and motor control centers. Specify the time and date at which each load was measured, as well as the voltage of the circuit at the time of measurements.
- .2 Perform tests of the following in accordance with Section 01 45 00 - Quality Control:
 - .1 Electricity generation and distribution network, including phase, voltage and grounding control, and load balancing;
 - .2 Circuits originating from branch distribution panels;
 - .3 Lighting and its control;
 - .4 Motors, heaters, and associated control equipment including sequenced operation of systems, where applicable;
 - .5 Fire alarm system and communication network;
 - .6 Isolation resistance measurement:
 - .1 Measure, using a 500-V megohmmeter, the isolation value of circuits, distribution cables and equipment with a nominal voltage of not more than 350 V.
 - .2 Measure, using a 1,000-V megohmmeter, the isolation value of circuits, arteries, and equipment with a nominal voltage between 350 V and 600 V.
 - .3 Check the ground resistance value before powering on.
- .3 Conduct the tests in the presence of the Departmental Representative.
- .4 Provide the measuring devices, indicators, equipment, and personnel required for the performance of the tests during the performance of the work and upon completion of the work.

3.8 CLEANING

- .1 Clean and retouch painted surfaces in the workshop that have been scratched or damaged during shipping and installation; use a paint of the same type and color as the original paint.
- .2 Clean exposed, non-galvanized hooks, supports, fasteners, and other fasteners and apply a primer to protect them from rust.

3.9 NEW POLE FOR CONNECTION OF THE NEW DISTRIBUTION SUBSTATION

- .1 The new pole for the supply of the new distribution station shall comply with the manufacturing and installation requirements of Hydro-Québec E.21-10 Standard.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA)/CSA International:
 - .1 CAN/CSA-C22.2, No. 18, Output Boxes, Duct Boxes, Fittings and Accessories.
 - .2 CSA C22.2, No. 65, Wire Connectors.
- .2 Electrical and Electronic Equipment Manufacturers Association of Canada (AMEEEEC):
 - .1 AMEEEC 1 Y-2 Standard, Connectors for Crossing Terminals and Aluminum Adapters (Nominal intensity 1,200 A).
- .3 National Electrical Manufacturers Association (NEMA).

1.2 WASTE MANAGEMENT AND DISPOSAL

- .1 Sort and recycle waste in accordance with Section 01 74 19 - Waste Management and Disposal.
- .2 Remove all packaging materials from the site and transport them to appropriate recycling facilities.
- .3 Place all paper, plastic, polystyrene, and corrugated fiber packaging materials in appropriate, on-site dumpsters for recycling in accordance with the Waste Management Plan.
- .4 Route unused metal wiring to a metal recycling facility approved by the Departmental Representative.

Part 2 Products

2.1 HARDWARE

- .1 Pressure connectors for cables: With copper current-carrying elements and of a gauge suitable for copper conductors, as required.
- .2 Splicing connectors for lighting fixtures: With copper current-carrying elements, of a size suitable for copper conductors of gauge 10 AWG or less.
- .3 Connectors for Crossing Terminals: Compliant with AMEEEC 1 Y-2 and relevant NEMA Standards, consisting of the following:
 - .1 Connector body and stud clamp for copper twisted conductors;
 - .2 Clamping flange for copper twisted conductors;
 - .3 Clamping flange for steel core aluminum twisted conductor (ACSR);
 - .4 Clamping flange bolts;
 - .5 Bolts for copper conductors or bars;
 - .6 Size suitable for conductors and bars as indicated.
- .4 Clamping flanges or connectors for reinforced cables, aluminum sheathed cables, mineral insulated cables, flexible conduits, or non-metallic sheathed cables, as required.
- .5 Waterproof connectors for TECK cables.

Part 3 Execution

3.1 INSTALLATION

- .1 Install the connectors according to the manufacturer's recommendations for the connections on bars.
- .2 Carefully strip the ends of the conductors of the insulating material and, as appropriate:
 - .1 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CAN/CSA-C22.2 No. 65.
 - .2 Install the connectors for lighting fixtures and tighten them. Re-position the insulating cap.
 - .3 Install the connectors for crossing terminals in accordance with AMEIEEC 1 Y-2 and the relevant NEMA Standards.
 - .4 The Contractor will have to demonstrate that each screw has been tightened to the torque recommended by the manufacturer.

END OF SECTION

2022-04-21

Part 1 General

1.1 REFERENCE STANDARDS

- .1 CSA C22.2, No. 0.3, Test Methods for Electrical Wires and Cables.
- .2 National Building Code 2015.

1.2 WORKSHOP DRAWINGS AND DATA SHEETS

- .1 Submit workshop drawings and data sheets in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Perform dielectric tests in accordance with Section 26 05 00 - Common Work Results for Electrical.

1.3 TRANSPORTATION, STORAGE, AND HANDLING

- .1 Packaging Waste Management: Recover packaging waste for reuse and take back pallets, crates, quilting, and other packaging materials by their manufacturer, in accordance with current Standards and general requirements.

Part 2 Products

2.1 BUILDING WIRES

- .1 In accordance with CSA C22.2 No. 0.3, when cables are required to have a PVC outer jacket, the PVC jacket shall pass the vertical fire-resistance test according to the class of the building determined by the National Building Code 2015 and the location where the cables will be installed.
- .2 Conductors: Stranded when of gauge 10 AWG and more. Minimum size 12 AWG.
- .3 Conductors: Copper, of size according to the indications, under chemically crosslinked thermosetting polyethylene insulation and having a nominal dielectric index of RW90 XLPE or RWU90 XLPE.
- .4 Use isolated cabling at:
 - .1 300 V for loads up to 240 V.
 - .2 600 V for loads over 240 V up to 480 V.
 - .3 1,000 V for loads over 480 V up to 600 V.
- .5 A GREEN insulated conductor of minimum gauge 12 AWG is required in any conduit other than threaded galvanized rigid steel for mass continuity (see Section 26 05 34 - Conduits, Fasteners and Fittings).

2.2 TECK 90 CABLE

- .1 Cables: In accordance with Section 26 05 00 - Common Work Results for Electrical.
 - .1 Grounding conductor: Copper.
 - .2 Feed conductors: Copper and caliber as indicated.

2022-04-21

- .3 Teck cables will have cross-linked polyethylene (XLPE) insulation. They will be insulated at 600 V for use up to 300 V and will be insulated at 1,000 V for use up to 600 V. They will be equipped with a polyvinyl chloride sheath and metal armor with aluminum strip.
- .4 Teck cables for control and communication purposes not exceeding 300 V will be insulated at 600 V and will be equipped with metal armor with galvanized steel strip. The conductors will be made of copper of minimum caliber 12 or higher considering the loads, voltage drops, and the number of conductors per cable.
- .5 All Teck cables will be type 90 with polyvinyl chloride (PVC) outer casing. They will comply with CAN/CSA-C22.2, Nos. 131 and 174 for hazardous locations (HL) and against flame spread (FT-4).
- .6 Fasteners:
 - .1 One-hole and steel flanges for exposed cables of 50 mm or less. Two-hole and steel mounting flanges for cables over 50 mm.
 - .2 U-shaped brackets for groups of two or more cables and placed at a maximum distance of 1.5 m.
 - .3 Threaded suspension rods: 6 mm in diameter and for "U" supports.
- .7 Connectors:
 - .1 Approved waterproof or explosion-proof models suitable for TECK cables.

Part 3 Execution

3.1 FIELD QUALITY CONTROL

- .1 Conduct the tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Perform tests using method appropriate to site conditions and to approval of the Departmental Representative and the competent local authorities.
- .3 Test before energizing the electrical installation.

3.2 CABLE INSTALLATION - GENERAL

- .1 Carry out the terminations of the cables in accordance with Section 26 05 20 - Connectors for Cables and Boxes (0 – 1,000 V).
- .2 Use a colour code for cables in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .3 Attach power route cables to distribution centers, draw boxes, and terminations.
- .4 Route downhill or vertical loops the wiring hidden in the walls to facilitate further work. It is forbidden to route wiring from bottom to top as well as horizontally into the walls.
- .5 The control wiring shall be identified by collars with numbering corresponding to the legend of the workshop drawings.
- .6 Use only two-wire circuits for bypasses to the sockets and with overvoltage suppression for permanently connected electronic and computer equipment. Common neutral circuits are prohibited.

2022-04-21

3.3 INSTALLATION OF BUILDING WIRES

- .1 Unless otherwise specified, all wires shall be under conduit.
- .2 Use the types of conduits or piping according to the requirements of the respective sections.

3.4 INSTALLATION OF TECK CABLES 90 (0 - 1,000 V)

- .1 Install cables as indicated; by securing them securely by means of staples, flanges, or calipers in suspension.
- .2 When there are two (2) cables on the same route, group them on the "U" profiles.
- .3 Terminate the end of the cables in accordance with Section 26 05 20 - Connectors for Cables and Boxes (0 – 1,000 V).

3.5 INSTALLATION OF ARMOURED CABLES

- .1 In the ceiling space and drywall, the Contractor may use AC-90 armored cables between the luminaires in such a way that the length of cable used between two (2) luminaires or between the junction box and a luminaire does not exceed 3,000 mm.
- .2 In ceiling space and drywall, the Contractor may use AC-90 armored cables between sockets of the same circuits in such a way that the length of cable used between two (2) sockets or between the junction box and one socket does not exceed 6,000 mm.
- .3 Make groups of up to maximum three (3) cables wherever possible. Support every 1.5 m. The cables shall follow the structural lines of the building. No horizontal cables in the partitions will be accepted.
- .4 The use of AC-90 armored cables in a visible manner on the surface is prohibited.
- .5 Terminate the end of the cables in accordance with section 26 05 20 - Connectors for Cables and Boxes (0 – 1,000 V).

3.6 INSTALLATION OF CONTROL CABLES

- .1 Lay the control cables in ducts as indicated.
- .2 Connect the metal armor of the control cables to the grounding network.

3.7 INSTALLATION OF CABLES/WIRES WITH FIRE RESISTANCE

- .1 Group cables and/or conduits wherever possible by securing them securely by means of suspension calipers. The supports will be at intervals of 1 m.
- .2 Lay the cables and/or conduits in such a way as not to reduce the free height of the room and using as little space as possible.
- .3 Conceal cables and/or conduits, except those laid in mechanical and electrical rooms, and in unfinished premises.
- .4 At the end of the cables, insert the bare end of the conductors into thermoplastic sleeves.
- .5 Place sleeves at the entrance and exit of cables embedded in poured concrete or masonry structures.
- .6 Unless otherwise specified, it is forbidden to make springs on cables. If required, carry them out in dry and accessible places.

2022-04-21

- .7 Identify cables every 3 m and on both sides when they pass through a wall or floor by means of an indicator tape with the words "120 V cable", "600 V cable" or other, as appropriate.
- .8 Complete the installation with the termination assemblies (manufactured in the factory) and connect in accordance with the manufacturer's requirements and recommendations.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA)/CSA International.
 - .1 Grounding equipment according to CSA C22.2, No. 41.

1.2 WASTE MANAGEMENT AND DISPOSAL

- .1 Sort and recycle waste in accordance with Section 01 74 19 - Waste Management and Disposal.
- .2 Remove all packaging materials from the site and transport them to appropriate recycling facilities.
- .3 Place all paper, plastic, polystyrene, and corrugated fibre packaging materials in appropriate, on-site dumpsters for recycling in accordance with the Waste Management Plan.
- .4 Route unused metal elements to a metal recycling facility proposed by the Contractor, but approved by the Departmental Representative.
- .5 Fold the strapping metal strips, flatten them, and place them in designated areas for recycling.

Part 2 Products

2.1 HARDWARE

- .1 Grounding Collars: Of suitable size to connect conductors to a groundwater pipe of good electrical conductivity.
- .2 Electrodes embedded in concrete: bare copper conductor, twisted, tinned, annealed, enlarged according to the indications and at least 6 m long.
- .3 Electrode Rods: Copper steel 19 mm in diameter by 3 m in length (minimum of three (3) per site).
- .4 Electrode Plates: Copper, with an area of 0.2 m² and at least 1.6 mm thick.
- .5 Earthen Conductors: Bare copper, tinned as indicated, stranded, annealed, and of the indicated size.
- .6 Green insulated earth conductors, type RWU 90 when in soil or wet places, type RW 90 in other places, and gauge indicated.
- .7 Earthen bus bars: Copper, dimensions as indicated, with insulating supports, fasteners, and connectors.
- .8 Non-corroding accessories necessary for the grounding system of type, dimensions, and materials as indicated, including:
 - .1 Grounding and bonding terminal tips.
 - .2 Protective flanges.
 - .3 Bolted connectors.

- .4 Jumpers, braidings, flash brackets.
- .5 Wire clamp connectors.
- .6 Compression connectors.
- .9 Connection box (access) branded "SYNERTECH" or equivalent approved.

2.2 MANUFACTURERS

- .1 Acceptable Products: Thomas & Betts; Burndy or equivalent.

Part 3 Execution

3.1 INSTALLATION - GENERAL

- .1 Install complete, permanent, and continuous grounding systems for networks, circuits, and apparatus, including electrode rods (minimum of three (3) per site), conductors, connectors, and necessary accessories, as specified and in such a way as to meet the requirements of the Departmental Representative and the competent local authorities.
- .2 Install connectors according to the manufacturer's instructions.
- .3 Protect open grounding conductors from damage.
- .4 It is indicated that approved compression fittings should be used for underground connections as well as for connections to good conductivity groundwater pipes and electrodes and structural elements.
- .5 Use mechanical connectors to make connections to devices with grounding terminals.
- .6 Welded joints are permitted on ground rods installed in access boxes.
- .7 Place a connecting wire on the flexible ducts, secure it carefully on the outside of the duct and connect each end to a grounding tip, seamless terminal, wire clamp or screw with Belleville washer.
- .8 Lay flexible connecting braids at the joints of shielded bars when binding is not provided by the equipment itself.
- .9 Arrange the grounding conductors in radial shape and route all connections directly to a single grounding common point on the street side of the water pipe. Avoid loop connections.
- .10 Connect one end of the metal armor of the single-wire cables to the power source box and lay a non-metallic plate at the other end.
- .11 Ground secondary distribution boxes.

3.2 GROUNDING OF THE NETWORK AND CIRCUITS

- .1 Make the grounding connections of the network and circuits to the neutral of the 120/240 V network, as indicated.

3.3 GROUNDING OF THE APPARATUS

- .1 Make the prescribed grounding connections for all equipment, including: Turnouts, transformers, switchgear, piping, motor frames, motor control centers, motor starters, control panels, steel frames, generators, alternators, distribution panels, outdoor lighting networks, etc.

3.4 GROUNDING BUSBARS

- .1 Mount the copper bus bars on insulated supports attached to the wall of the electrical installation room.
- .2 Connect the electrical equipment to the earthing busbar using individual conductors of bare copper, stranded, and enlarged as indicated.

3.5 FIELD QUALITY CONTROL

- .1 Test in accordance with the requirements of Section 26 05 00 - Common Work Results for Electrical.
- .2 Verify the continuity and resilience of the grounding system using methods appropriate to local conditions and approved by the Departmental Representative and the relevant local authorities.
- .3 Test before energizing the electrical installation.
- .4 During testing, disconnect the grounding indicator if necessary.

END OF SECTION

Part 1 General

1.1 WASTE MANAGEMENT AND DISPOSAL

- .1 Sort and recycle waste in accordance with Section 01 74 19 – Waste Management and Disposal.
- .2 Remove all packaging materials from the site and transport them to appropriate recycling facilities.
- .3 Place all paper, plastic, polystyrene, and corrugated fiber packaging materials in appropriate, on-site dumpsters for recycling in accordance with the Waste Management Plan.
- .4 Route unused metal elements to a metal recycling facility proposed by the Contractor but approved by the Departmental Representative.
- .5 Fold the strapping metal strips, flatten them, and place them in designated areas for recycling.

Part 2 Products

2.1 SUPPORTS AND ACCESSORIES

- .1 “U”-shaped supports, made of hot-dip galvanized steel, of minimum dimensions of 41 mm x 41 mm, of minimum thickness 2.5 mm, laid on the surface, suspended or embedded in the ceilings and walls of poured concrete.
- .2 Installation accessories, such as threaded rods, bolts, washers, nuts, spring nuts, etc., of plated steel, chromium, or zinc.
- .3 Galvanizing product meeting CAN/CSA-G164.
- .4 Fasteners used outdoors and in damp places shall be made of stainless steel.

Part 3 Execution

3.1 INSTALLATION

- .1 For fasteners and supports, see Section 01 61 00 - Common Product Requirements.
- .2 Secure equipment to hollow or solid masonry, ceramic and plaster surfaces using lead anchors or nylon dowels.
- .3 Secure equipment to poured concrete surfaces using expansion anchors.
- .4 Secure equipment to hollow masonry walls or suspended ceilings using fin bolts.
- .5 Support conduits or cables with staples, spring bolts, and cable clamps designed as accessories for “U”-shaped profiles.
- .6 Fasteners for securing cables or conduits exposed to the frame or construction elements of the building:
 - .1 Flanges with one (1) steel hole to secure on the surface conduits and cables of 50 mm diameter or less.

- .2 Flanges with two (2) steel holes to fix conduits and cables more than 50 mm in diameter.
- .3 Clamping flanges for attaching conduits to exposed steel structural elements.
- .7 Suspended Media Systems:
 - .1 Support each cable or conduit by means of threaded rods of a minimum diameter of 6 mm and spring staples.
 - .2 Support at least two (2) cables or conduits on "U"-shaped profiles supported by threaded suspension rods of minimum diameter 6 mm when it is not practical to attach them directly to the frame of the building.
- .8 To surface two or more conduits, use "U" profiles placed at 1 m of distance.
- .9 Install consoles, frames, hooks, clamping flanges, and other types of metal supports where indicated and where necessary to support conduits and cables.
- .10 Provide suitable support for conduits and cables laid vertically to the equipment when there is no wall support.
- .11 Do not use tie wire or perforated strip to support or secure pipes and cables.
- .12 Do not use as support for conduit or cable, supports, and equipment installed for other trades, unless written permission from the Departmental Representative.
- .13 Install fasteners and brackets according to the needs of each type of equipment, conduit, and cable, and according to the manufacturer's recommendations.
- .14 Cover all scratched, altered, or cut surfaces of galvanized parts with a galvanizing product.

END OF SECTION

2022-04-21

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA)/CSA International.
 - .1 CSA C22.1, Canadian Electrical Code, Part I, current Edition.
 - .2 CSA C22.2, No. 40.
 - .3 CSA C22.2, No. 76 - Allocation Boxes.

1.2 SUBMITTALS

- .1 Submit the required documents and samples in accordance with Sections 01 33 00 – Submittal Procedures and 26 05 00 - Common Work Results for Electrical.
- .2 Data Sheets: Submit the required data sheets as well as the manufacturer's specifications and documentation for the products concerned. These sheets shall indicate the characteristics of products, performance criteria, dimensions, limits, and finish.
- .3 Submit the required workshop drawings in accordance with section 26 05 00 - Common Work Results for Electrical.

1.3 TRANSPORTATION, STORAGE, AND HANDLING

- .1 Waste Management and Disposal: Sorting waste for reuse/recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 SPLITTERS

- .1 Construction: Metal sheet boxes with welded angles, with a hinged lid, shaped and lockable in the closed position.
- .2 Terminations: The mains and branch terminals as well as the connection bars shall correspond to the size and number of input and output conductors connected to them, as indicated.
- .3 Reserve Terminals: Provide at least three (3) reserve terminals for each series of lings in the distribution boxes with a rated intensity of less than 400 A.

2.2 JUNCTION AND PULL BOXES

- .1 Steel boxes, welded, with flat and screwed lids for projecting mounting.
- .2 Lids having a rim of at least 25 mm, adaptable to flushing and junction boxes mounted outcrop.
- .3 The covers of boxes of 150 mm x 150 mm and more shall be hinged.

2.3 CABINETS

- .1 Steel sheet type "E" cabinets, for projecting mounting, with folded and overlapping edged sides, fitted with a hinged door, a handle, a lock, and a latch.

2.4 FITTINGS

- .1 Insulated metal sleeves and connectors with insulated nylon grooves for 8-AWG gauge and above.
- .2 Pressure pellets to prevent debris from entering the knockouts.
- .3 Access fittings for conduits up to 35 mm in diameter and pull boxes for larger conduits.
- .4 Double counter nuts and insulated metal sleeves on sheet metal boxes.

Part 3 Execution

3.1 SPLITTER INSTALLATION

- .1 Install the distribution boxes according to the indications and mount them with aplomb, alignment, and square with the building walls.
- .2 Unless otherwise specified, the allocation boxes shall be if required to accommodate the arrangement of the secondary equipment.

3.2 JUNCTION, PULL BOXES AND CABINETS INSTALLATION

- .1 Place the pull boxes in hidden, but easily accessible places.
- .2 Install the cabinets so that the top is not more than 2 m above the finished floor.
- .3 Place terminal plates in "T" type cabinets as directed.
- .4 Only the main junction and pull boxes are indicated. Install enough pull boxes so that the conduits placed between each box are no more than 30 m long or four (4) 90° elbows.
- .5 Provide screw terminal plates in junction boxes containing more than four (4) joints.

3.3 IDENTIFICATION LABELS

- .1 Provide and install equipment identification labels in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Install format 2 labels indicating the name of the network, the permissible current, the voltage, and the number of phases.

END OF SECTION

2022-04-21

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA)/CSA International.
 - .1 CSA C22.1, Canadian Electrical Code, Part I, Last Edition.
 - .2 CSA C22.2, No. 18 - Outlets Boxes, Bypass Boxes and Accessories.

1.2 SUBMITTALS

- .1 Submit the required documents and samples in accordance with Sections 01 33 00 - Submittal Procedures and 26 05 00 - Common Work Results for Electrical.
- .2 Submit samples of floor boxes in accordance with Section 01 33 00 - Submittal Procedures and Section 26 05 00 - Common Work Results for Electrical.

1.3 TRANSPORTATION, STORAGE, AND HANDLING

- .1 Transport, store, and handle materials and equipment in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Waste Management and Disposal: Sorting waste for reuse/reuse/recycling in accordance with section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 OUTLET AND CONDUIT BOXES - GENERAL

- .1 Boxes of dimensions in accordance with the Canadian Electrical Code, 23rd Edition, 2015.
- .2 Outlet boxes of 102 mm or more side (as required) for special devices.
- .3 Grouped boxes when multiple threading devices are installed in the same location.
- .4 Blank cover plates for boxes without wiring devices.
- .5 347 V outlet boxes for 347 V switching devices.
- .6 Boxes combined with partitions when the outlets of more than one network are grouped there.

2.2 STEEL-SHEET OUTLET BOXES

- .1 Electrolysis galvanized steel boxes for mounting single or multiple devices in outcrop, of minimum dimensions of 76 mm x 50 mm x 38 mm or as indicated. Outlet boxes of 102 mm side when more than one conduit enters on the same side, with extension frames and plastering frames as needed.
- .2 Junction boxes of at least 102 mm x 54 mm x 48 mm for connection to surface mounted EMT tubes.
- .3 Square outlet boxes of 102 mm side or octagonal for lighting fixture outlets.
- .4 Square exit boxes of 102 mm side with extension frames and plastering frames for wiring devices mounted flush in walls with plaster finish or ceramic tiles.

2.3 BOXES FOR MOUNTING IN MASONRY

- .1 Electrolysis galvanized steel outlet boxes, simple or grouped and for outcropping in masonry walls of exposed blocks.

2.4 BOXES FOR MOUNTING IN CONCRETE

- .1 Electrolysis galvanized steel outlet boxes for outcrop mounting, embedded in concrete, with matching extension frames and plastering frames as needed.

2.5 JUNCTION BOXES (FOR CONDUITS)

- .1 Boxes of the "FS" or "FD" type, molded in aluminum, with factory-tapped openings and mounting brackets for surface mounting of switches and receptacles.

2.6 OUTLET BOXES FOR NON-METALLIC SHEATH CABLES

- .1 Electrolysis galvanized steel boxes, removable, which can be grouped by screwing, of at least 76 mm x 50 mm x 63 mm, with two double flanges for cables with a non-metallic sheath.

2.7 ACCESSORIES (GENERAL)

- .1 Insulated metal sleeves and connectors with insulated nylon grooves for gauge No. 8 AWG and above.
- .2 Pressure pellets to prevent debris from entering knockouts.
- .3 Access fittings for conduits up to 35 mm in diameter and pull boxes for larger conduits.
- .4 Double counter nuts and insulated metal sleeves on metal sheet metal boxes.

2.8 CONNECTION FITTINGS

- .1 Base of the "mains voltage" type consisting of a two-piece housing in stainless steel or molded aluminum, with brushed or satin finish for a single or double power outlet, or two (2) double power outlets. Bottom plate with two breakable caps for centered or off-center installation. Extension element of 12 mm x 102 mm, as indicated.
- .2 Base of the "low voltage" type consisting of a two-piece housing in stainless steel or cast aluminum, with brushed or satin finish for one (1) or two (2) telephone dialers.

Part 3 Execution

3.1 INSTALLATION

- .1 Secure the boxes so that they are supported independently of the ducts connected to them.
- .2 Fill boxes with paper, sponges, foam, or other similar material to prevent debris from entering during construction. Remove these materials once the work is complete.
- .3 In the case of outcrop exit boxes with the finished wall, use plastering frames to allow the edges of the wall cladding to be made 6 mm or less from the opening.
- .4 The openings in the boxes shall be of the dimensions corresponding to those of the connections of ducts, mineral insulated cables, and reinforced cables. It is forbidden to use reduction washers.

2022-04-21

- .5 Vacuum the inside of the exit boxes before installing the small equipment.
- .6 Identify outlet boxes based on network type and circuit numbers.

END OF SECTION

2022-04-21

Part 1 General

1.1 LOCATION OF CONDUITS

- .1 Not all conduits are shown in the drawings. Those listed are represented in schematic form.

1.2 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA)/CSA International:
 - .1 CAN/CSA-C22.2, No. 18, Output Boxes, Conduit Boxes, Fittings and Accessories, National Standard of Canada.
 - .2 CSA C22.2, No. 45, Rigid Metal Conduits.
 - .3 CSA C22.2, No. 56, Flexible Metal Conduits and Liquid-Tight Flexible Metal Conduits.
 - .4 CSA C22.2, No. 83, Electrical Metal Tubes.
 - .5 CSA C22.2, No. 211.2, Rigid Unplasticized Polyvinyl Chloride Conduits.
 - .6 CAN/CSA-C22.2, No. 227.3, Non-Metallic Mechanical Protective Tubes (NMMT), National Standard of Canada.
- .2 Canadian Electrical Code, 23rd Edition, 2015, as amended by Quebec.

1.3 SUBMITTALS

- .1 Submit the required documents and samples in accordance with Sections 01 33 00 – Submittal Procedures and 26 05 00 - Common Work Results for Electrical.
- .2 Data sheets: Submit the required data sheets as well as the manufacturer's specifications and documentation for the products concerned.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Sorting waste for reuse/recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
- .2 Place substances that meet the definition of toxic or hazardous waste in designated containers.
- .3 Ensure that empty containers are sealed, stored properly, and out of the reach of children for disposal.

Part 2 Products

2.1 CONDUITS

- .1 Threaded Galvanized Steel Rigid Conduits: To CSA C22.2, No. 45 Standard.
- .2 Conduits coated with an epoxy coating: Compliant with CSA C22.2, No. 45, with zinc coating and anticorrosive finish coating based on epoxy resins, both indoors and outdoors.
- .3 Metal Electric Tubes (EMT): Fitted with leakproof fittings of the indicated size and complying with CSA C22.2, No. 83.

2022-04-21

- .4 Rigid PVC conduits of the indicated size: Comply with CSA C22.2, No. 211.2 Standard.
- .5 Flexible and leakproof metal conduits of the indicated size: Complying with CSA C22.2, No. 56 Standard.
- .6 Flexible PVC Conduits: Compliant with CAN/CSA-C22.2, No. 227.3 Standard.

2.2 CONDUIT FASTENERS

- .1 Steel straps for attaching to one (1) steel hole to secure apparent conduits with a diameter of 50 mm or less.
- .2 Steel straps with two (2) steel holes to secure conduits with a nominal diameter greater than 50 mm.
- .3 When installed outdoors and in damp places, fasteners shall be made of stainless steel.
- .4 Beam calipers to secure the conduits to the apparent steel structures.
- .5 "U"-shaped profiles to support three (3) conduits and more, arranged at a maximum distance of 2 m.
- .6 Threaded rods of at least 6 mm diameter to support the suspended profiles.
- .7 The quantities and dimensions mentioned above for the various fasteners are a minimum.

2.3 CONDUIT FITTINGS - GENERAL

- .1 Fittings: Complying with CAN/CSA C22.2, No. 18 and specially manufactured for prescribed conduits. Coating: Same as used for conduits.
- .2 Prefabricated "L" fittings, to be placed where 90° elbows are required on conduits 25 mm in diameter or more.
- .3 Pressure screw seals are prohibited when watertight fittings and couplings for metal electrical tubes are required.
- .4 Ring for conduits in boxes when required by the Canadian Electrical Code, 23rd Edition, 2015, with Quebec modifications, metal type only and insulated nylon.

2.4 EXPANSION FITTINGS

- .1 Provide the necessary expansion fittings for all conduits:
 - .1 Embedded in concrete and through expansion joints of the building.
 - .2 Apparent and subject to significant temperature variations.
 - .3 Whose race exceeds the limit allowed by manufacturers.
- .2 Weather-resistant expansion fittings able to withstand a linear expansion of 200 mm and ensure the continuity of mass of the network.
- .3 Watertight expansion fittings, capable of supporting linear expansion and 19-mm deformation in all directions and ensuring the continuity of mass of the network.
- .4 Weather-resistant expansion fittings and allowing linear expansion of conduits at the entrance of the enclosures.

2.5 FISH CORD

- .1 6-mm polypropylene pull rope.

2022-04-21

2.6 MASSES CONTINUITY

- .1 In all conduits, an insulated conductor GREEN of minimum size 12 AWG shall be installed.

2.7 CONDUIT EXPOSED TO SUNLIGHT

- .1 Fully enclosed non-metallic piping exposed directly to the sunlight shall be specifically approved for this purpose and marked accordingly.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Comply with the manufacturer's written requirements, recommendations, and specifications, including any available technical bulletin, instructions for handling, storing, and installing products, and indications in data sheets.

3.2 INSTALLATION

- .1 Install the exposed conduits so as not to decrease the free height of the room and using as little space as possible.
- .2 Conceal conduits, except those placed in mechanical and electrical installation rooms and in unfinished rooms.
- .3 **Use metal electrical tubes (EMTs) with sealed fittings for electrical and mechanical control chambers as well as for all technical rooms.**
- .4 Use rigid PVC conduits for underground or concrete-embedded installations.
- .5 Use threaded galvanized steel rigid conduits in explosion-proof classified areas, tunnels, and wetlands.
- .6 Use epoxy-coated conduits for corrosive or saline installations.
- .7 Use, over a maximum length of 3 m, flexible metal conduits in the case of connections of motors, transformers, and equipment capable of vibrating and situated in dry spaces, connections of incandescent appliances, recessed and without a pre-threaded output box, connections of projecting or recessed fluorescent lighting equipment, works or elements in removable metal partitions.
- .8 Use flexible, liquid-tight metal conduits for connections to motors or equipment that are capable of vibrating or transformers located in damp, wet, or corrosive spaces.
- .9 Install explosion-proof sealants on conduits installed in hazardous locations. Fill them with epoxy paste.
- .10 Bend the conduits cold. Replace conduits that have decreased by more than 1/10th of the original diameter due to crushing or deformation.
- .11 Mechanically bend steel tubes with a diameter of more than 21 mm.
- .12 Use conduits of at least 21 mm for lighting and supply circuits.
- .13 The thread of the rigid conduits carried out on the site shall be of sufficient length to allow tight and watertight joints to be made.
- .14 Install fish cord in empty conduits.

2022-04-21

- .15 If the conduits were clogged, remove and replace the clogged part of the conduit. It is forbidden to use liquids to unclog them.
- .16 Dry conduits out before installing wire.

3.3 APPARENT CONDUITS

- .1 Unless otherwise indicated by an explicit note to the drawings, install conduits parallel to or perpendicular to the building's siting lines.
- .2 Behind the infrared or gas radiators, install the conduits leaving a clearance of 1.5 m.
- .3 Pass conduits into the wing of steel framing elements, if applicable.
- .4 Where possible, group the conduits on suspended or applied "U" profiles.
- .5 Unless otherwise specified, conduits shall not pass through the structural elements.
- .6 In the case of conduits placed parallel to steam or hot water pipes, provide lateral clearance of at least 75 mm and vertical clearance of at least 25 mm between the conduits and intersecting pipes.
- .7 Install expansion joints on PVC conduits when installed in places with temperatures of 10° and above. There shall be an expansion joint for each length of 7.5 m and a maximum of 15 m between each of them.

3.4 CONCEALED CONDUITS

- .1 Install the conduits parallel to or perpendicular to the building's layout lines.
- .2 Do not install horizontal runs in masonry walls.
- .3 It is forbidden to drown conduits in concrete screeds.
- .4 In drywall, no horizontal conduits will be accepted. Only vertical conduits will be tolerated.

3.5 CONDUITS EMBEDDED IN CAST-IN-PLACE CONCRETE STRUCTURES

- .1 Do not place any conduit in concrete structures unless otherwise specified in the drawings and specification.
- .2 Install the conduits in the central third of the slab considering the arrangement of the steel reinforcement bars.
- .3 Protect conduits at their outlet from a concrete structure.
- .4 Install sleeves where conduits pass through a slab or wall.
- .5 Before placing the water-repellent membrane on a concrete structure, install oversized sleeves where the conduits shall pass through it.
- .6 Put a sealant (cold applied) between the sleeves and conduits.
- .7 The thickness of the slabs in which conduits are embedded shall correspond to at least four (4) times the diameter of the conduits.
- .8 In the walls, completely embed the conduits under a layer of concrete with a thickness of at least 25 mm on either side.
- .9 Arrange the conduits in the slabs in such a way as to minimize crossings.
- .10 It is forbidden to drown aluminum conduits in concrete structures.

2022-04-21

3.6 UNDERGROUND CONDUITS

- .1 Install sloping conduits to ensure drainage.
- .2 Water-repellent the joints by applying a thick layer of bituminous paint.
- .3 Install conduits 1 m from the surface or as indicated.
- .4 Underground conduits shall be rigid PVC of at least 41 mm in diameter.
- .5 Underground conduits should be surrounded by a layer of fine sand of 150 mm, unless otherwise specified.

3.7 CONDUIT THROUGH A FIRE PARTITION

- .1 Caulk all spaces between the fire partition and the conduit. The fire resistance shall thus equal that of the surface crossed. The manufacturer of the product used shall inspect the work and issue a certificate stating that the facilities so inspected comply with its recommendations and meet the ULC's requirements for fire-resistance characteristics.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 31 23 33.01 - Excavating, Trenching and Backfilling.

Part 2 Products

2.1 CABLE PROTECTION (TRENCH WORK ONLY)

- .1 Plastic prevention and identification tape marked "High Voltage Hazard".

Part 3 Execution

3.1 CABLES BURIED DIRECTLY IN THE GROUND

- .1 Once the base sand layer is in place, lay the cables at least 75 mm from the trench walls. Do not pull or drag cables along the trench.
- .2 To compensate for the effects of thermal contraction and slight ground movements, make deviations of 150 mm in the cables every 60 m of the course, while respecting the minimum values prescribed for spacings and radii of curvature.
- .3 Underground cable splices are not acceptable.
- .4 The radius of curvature of cables with rubber, plastic, or lead sheaths shall not be less than 8 times the diameter of the cable and, in the case of metal-armored cables, 12 times the diameter or according to the manufacturer's instructions.
- .5 Maintain a minimum spacing of 75 mm between cables of different circuits. Maintain a minimum horizontal spacing of 300 mm between high and low voltage cables. At high- and low-voltage cable crossings, maintain a minimum vertical spacing of 300 mm, with low-voltage cables passing over. At low voltage cable crossings, maintain a minimum vertical spacing of 75 mm, and 150 mm at high-voltage cable crossings.
- .6 Once the protective sand layer is in place, lay the prevention and identification tape as indicated to cover the cable along its entire route.

3.2 CABLE INSTALLATION IN DUCTS

- .1 Lay the cables in the ducts as indicated.
- .2 It is forbidden to pull spliced cables into the ducts.
- .3 Install multiple cables in duct simultaneously.
- .4 Use CSA approved lubricants of type compatible with cable jacket to reduce pulling tension
- .5 To make it easier to match color-coded multiconducting control cables, always unroll them in the same direction during installation.
- .6 Before pulling the cables into the conduits and until they are permanently connected, seal the ends of the lead-sheathed cables with wiping solder and those of the other cables with a water-repellent sealing tape.

2022-04-21

- .7 After installation of cables, seal duct ends with duct sealing compound.

3.3 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Perform tests using qualified personnel and provide the necessary instruments and equipment.
- .3 For three-phase circuits, check and establish an order of A-B-C phases from left to right, from bottom to top and from front to back and keep it for the entire installation, except for the apparatus installed mirrored and electrically linked.
- .4 Locate and identify individually conductors of each power supply circuit.
- .5 Check the continuity of all supply circuits, ensure that they are free of short circuits and grounding leaks and that the resistance between the ground and each circuit is not less than 50 megohms.
- .6 Pre-acceptance Tests:
 - .1 After laying the cables, but before splicing and connection, measure the isolation resistance of each phase conductor, with a megohmmeter of 1,000 V. After each splice and/or connection has been performed, check the strength of the insulation to ensure that the cable network is ready for the acceptance test.
- .7 Acceptance Tests:
 - .1 Ensure that terminations and accessory equipment are disconnected.
 - .2 Ground shields, ground wires, metallic armor, and conductors not under test.
 - .3 Dielectric tests (high voltage):
 - .1 Do the high voltage dielectric tests, from the original factory test voltage, in accordance with the manufacturer's recommendations.
 - .4 Leakage current tests:
 - .1 Increase the voltage in steps from 0 to the maximum value prescribed by the manufacturer for the type of cable tested.
 - .2 Maintain the maximum voltage for the duration prescribed by the manufacturer.
 - .3 Note the value of the leakage current at each rung.
- .8 Provide the Departmental Representative with a list of test results indicating the location of each test point, the circuit tested, and the result of each test.
- .9 Remove and completely replace any cable length that does not meet the test criteria.

END OF SECTION

2022-04-21

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 - Common Work Results for Electrical.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA).
 - .1 CSA C22.1-F15, Code canadien de l'électricité, Première partie (23^e édition), Normes de sécurité relatives aux installations électriques.
 - .2 CAN/CSA-C22.2 No.47-M90(R2007), Air-Cooled Transformers (Dry Type).
 - .3 CAN/CSA-C802.2-06, Minimum Efficiency Values for Dry Type Transformers.
 - .4 CSA C9-02(R2007), Dry-Type Transformers.
- .2 Electrical and Electronic Manufacturer's Association of Canada (association des manufacturiers électriques et d'électroniques du Canada) (EEMAC)
 - .1 EEMAC GL1-3-1988, Transformer and Reactor Bushings (traversées des transformateurs et des réacteurs).
- .3 Institute of Electrical and Electronics Engineers (institut des ingénieurs électriques et électroniques) (IEEE)
 - .1 IEEE C57.110, IEEE Pratique recommandée par l'IEEE pour établir la capacité des transformateurs immergés et de type sec et de distribution lors de l'approvisionnement de courants de charges non sinusoïdaux.
- .4 National Electrical Manufacturers Association (NEMA).
- .5 National Research Council Canada (NRC).
 - .1 National Energy Code of Canada for Buildings 2015.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature, and data sheets for dry type transformers, and include product characteristics, performance criteria, physical size, finish, and limitations.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Submit operation and maintenance data for dry-type transformers for incorporation into manual.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

2022-04-21

- .3 Storage and Handling Requirements:
 - .1 Store materials indoors, off ground, and in accordance with manufacturer's recommendations in clean, dry, and well-ventilated area.
 - .2 Store and protect dry type transformers from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: In accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 DESIGN DESCRIPTION

- .1 All the required transformers must come from a unique manufacturer.
- .2 General characteristics:
 - .1 Single or one-phase according to indications.
 - .2 Power: According to indications
 - .3 Primary and secondary voltages: According to indications, 60 Hz.
 - .4 Three-phase transformer with three primary coils (triangle) and three secondary coils (star).
 - .5 Four (4) tension taps: $\pm 2\frac{1}{2}\%$, $\pm 5\%$.
 - .6 Insulation: Class "H" and temperature delta of 220°C.
 - .7 Temperature rise of 150°C.
 - .8 Rating according to CSA C802.2.
 - .9 Basic Impulse Level (BIL): Standard.
 - .10 Hipot: Standard.
 - .11 Average sound level: Standard.
 - .12 Impedance at 170°C: Standard.
 - .13 Enclosure: NEMA 1, removable metal front panel, sprinkler proof.
 - .14 Mounting: Wall or floor.
 - .15 Finish: In accordance with Section 26 05 00 - Common Work Results for Electrical.
 - .16 Copper windings.
 - .17 K-Rated as indicated.
 - .18 Voltage Regulation to be 4 % or better.
 - .19 Antivibration supports such as Novibra or accepted equivalent.

2.2 EQUIPMENT IDENTIFICATION

- .1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Label size 7 to indicate the primary and secondary voltage as well as the power.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for dry type transformers installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Mount dry type transformers up to 75 kVA on wall, or as indicated.
- .2 Mount dry type transformers above or equal to 75 kVA on floor.
- .3 Ensure adequate clearance around transformer for ventilation.
- .4 Install transformers in level upright position.
- .5 Remove shipping supports only after transformer is installed and just before putting into service.
- .6 Loosen isolation pad bolts until no compression is visible.
- .7 Make primary and secondary connections in accordance with wiring diagram.
- .8 Energize transformers after installation is complete.
- .9 Make conduit entry into bottom $\frac{1}{3}$ of transformer enclosure.
- .10 Install the vibration insulators at the base between the supports and the concrete base.
- .11 Comply with applicable seismic measures.

3.3 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment, in accordance with Section 01 74 00 - Cleaning.

3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by dry-type transformers installation.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 - Common Work Results for Electrical.
- .2 Section 26 28 16.02 - Moulded Case Circuit Breakers.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA).
 - .1 CSA C22.2 No.29-11, Panelboards and Enclosed Panelboards.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature, and data sheets for panelboards, and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec.
 - .2 Include on drawings:
 - .1 Electrical detail of panel, branch breaker type, quantity, ampacity, and enclosure dimension.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Submit operation and maintenance (O&M) data for panelboards for incorporation into O&M Manual.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors, and in accordance with manufacturer's recommendations in clean, dry, and well-ventilated area.
 - .2 Store and protect panelboard from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: Remove for reuse in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 PANELBOARDS

- .1 Panelboards: To CSA C22.2 No.29 and product of one manufacturer.
 - .1 Install circuit breakers in panelboards before shipment.
 - .2 In addition to CSA requirements manufacturer's nameplate shall show fault current that panel including breakers has been built to withstand.
- .2 250 and 600-V panelboards: Bus and breakers rated for 14 kA (symmetrical) minimally for the 600 V panelboards and 10 kA (symmetrical) minimally for the 250-V panelboards, unless noted otherwise.
- .3 Sequence phase bussing with odd numbered breakers on left and even on right, with each breaker identified by permanent number identification as to circuit number and phase.
- .4 Panelboards: Mains, number of circuits, and number and size of branch circuit breakers as indicated.
- .5 Minimum of two flush locks for each panelboard.
- .6 Two keys for each panelboard and key panelboards alike.
- .7 Neutral of same ampere rating of mains.
- .8 Mains: Suitable for bolt-on breakers.
- .9 Trim with concealed front bolts and hinges.
- .10 Trim and door finish, grey color baked enamel, type to be "door-in-door" to ease maintenance.
- .11 Ground bus.
- .12 Where the word "Espace" (Space) is used to denominate a circuit, no breaker should be installed. The word "Libre" (Vacant) is used to denominate a circuit, the Contractor should supply and install a breaker.
- .13 Dimensions shall be as indicated on the drawings to ensure installation without the use of "Steel Section" walls.

2.2 BREAKERS

- .1 Breakers: To Section 26 28 16.02 - Moulded Case Circuit Breakers.
- .2 Breakers with thermal and magnetic tripping in panelboards, except as indicated otherwise.
- .3 Main Breaker: Separately mounted on top or bottom of panel to suit cable entry. When mounted vertically, down position should open breaker. The main breaker will be separate from the other breakers in the panel and identified.
- .4 Lock-on devices for fire alarm, life safety lighting, door supervision, intercom, stairway lighting, and exit lighting circuits.
 - .1 Additional locking devices: Ten for each circuit breaker rating, to be provided to the Departmental Representative.

2.3 EQUIPMENT IDENTIFICATION

- .1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results for Electrical.

- .2 Nameplate for each panelboard, size 4 engraved as indicated.
- .3 Complete circuit directory with typewritten legend showing location and load of each circuit, mounted in plastic envelope at inside of panel door.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for panelboards installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Locate panelboards as indicated and mount securely, plumb, true, and square, to adjoining surfaces.
- .2 Install surface mounted panelboards. Where practical, group panelboards on common backboard. Unless otherwise specified, panels should not be mounted on steel channel structures. The installation should be performed as shown.
- .3 Mount panelboards to height specified in Section 26 05 00 - Common Work Results for Electrical or as indicated.
- .4 Connect loads to circuits.
- .5 Connect neutral conductors to common neutral bus with respective neutral identified.

3.3 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment, in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: Separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by panelboard installations.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 - Common Work Results for Electrical.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA).
 - .1 CSA C22.2 No.42-10, General Use Receptacles, Attachment Plugs and Similar Devices.
 - .2 CAN/CSA C22.2 No.42.1-F00(R2009), Cover Plates for Flush-Mounted Wiring Devices (Bi-national Standard, with UL 514D).
 - .3 CSA C22.2 No.55-FM1986(R2008), Special Use Switches.
 - .4 CSA C22.2 No.111-10, General-Use Snap Switches (Bi-national Standard, with UL 20).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature, and data sheets for wiring devices, and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec.
 - .1 Indicate on drawings:
 - .1 The details surrounding the integration in the architectural elements.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Submit operation and maintenance (O&M) data for wiring devices for incorporation into O&M Manual.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect wiring devices from nicks, scratches, and blemishes.

- .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: Remove for reuse in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 RECEPTACLES

- .1 Duplex receptacles of type commercial/robust grade specified "Industrial", CSA type 5-15 R, 125 V, 15 A, "U" ground, with following features:
 - .1 Ivory urea moulded housing;
 - .2 Suitable for No. 10 AWG for back and side wiring;
 - .3 Break-off links for use as split receptacles;
 - .4 Eight back wired entrances, four side wiring screws;
 - .5 Triple wipe contacts and rivetted grounding contacts.
- .2 Single outlet receptacles for maintenance, specified "Industrial" quality allowing 15 and 20 A inputs, type CSA 5-20R, 125 V, 20 A.
- .3 Other outlets designed for allowable tension and ampacity: According to indications on drawings.
- .4 Receptacles of one manufacturer throughout project.

2.2 COVER PLATES

- .1 Stainless steel utility box cover for wiring devices installed in surface-mounted utility boxes.
- .2 All the cover plates shall originate from a single and same manufacturer.
- .3 Stainless steel cover plates shall be installed according to the specifications for the secured areas, mounted in built-in pull boxes.
- .4 Cast cover plates for wiring devices mounted in surface-mounted "FS" or "FD" type conduit boxes.
- .5 Weatherproof during use, double lift spring-loaded cast aluminum cover plates, complete with gaskets for outdoor-rated duplex receptacles as indicated.
- .6 All installations shall be provided by a single manufacturer.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for wiring devices installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Receptacles:
 - .1 Install receptacles in gang type outlet box when more than one receptacle is required in one location.
 - .2 Mount receptacles at height in accordance with Section 26 05 00 - Common Work Results for Electrical.
 - .3 Where split receptacle has one portion switched, mount vertically and switch upper portion.
 - .4 Install GFI type receptacles as indicated.
- .2 Cover Plates:
 - .1 Install suitable common cover plates where wiring devices are grouped.
 - .2 Do not use cover plates meant for flush outlet boxes on surface-mounted boxes.

3.3 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment, in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Protect stainless-steel cover plate finish with paper or plastic film until painting and other work is finished.
- .3 Repair damage to adjacent materials caused by wiring device installation.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 - Common Work Results for Electrical.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA).
 - .1 CSA C22.2 No.106-05(R2010), HRC-Miscellaneous Fuses.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide fuse performance data characteristics for each fuse type and size above 200 A. The supplied characteristics should also include the average fusion time at a given current.
- .3 Shop Drawings:
 - .1 Provide shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Ship fuses in original containers.
- .2 Do not ship fuses installed in switchboard.
- .3 Store fuses in original containers in storage cabinet.
- .4 Waste Management and Disposal:
 - .1 Separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.

1.5 EXTRA MATERIALS

- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Three spare fuses of each type and size installed above 600 A.
- .3 Six spare fuses of each type and size installed up to and including 600 A.

Part 2 Products

2.1 FUSES - GENERAL

- .1 Fuse type references L1, L2, J1, R1, etc., have been adopted for use in this specification.
- .2 Fuses: Product of one manufacturer.

2.2 FUSE TYPES

- .1 Class L fuses, 200kA interruption capacity.
 - .1 Type L1, time delay, capable of carrying 500% of its rated current for 10 s minimum.
 - .2 Type L2, fast acting.
- .2 Class J fuses, 200 kA interruption capacity.
 - .1 Type J1, time delay, capable of carrying 500% of its rated current for 10 s minimum.

2.3 FUSE STORAGE CABINET

- .1 Fuse storage cabinet, manufactured from 2.0 mm thick aluminum, 750 mm high, 600 mm wide, 300 mm deep, hinged, lockable front access door finished in accordance with Section 26 05 00 - Common Work Results for Electrical.

Part 3 Execution

3.1 INSTALLATION

- .1 Install fuses in mounting devices immediately before energizing circuit.
- .2 Ensure correct fuses fitted to physically matched mounting devices.
- .3 Ensure correct fuses fitted to assigned electrical circuit.
- .4 Install spare fuses in fuse storage cabinet.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA)/CSA International.
 - .1 CSA-C22.2 Number 5, Molded Circuit Breakers and Circuit Breaker Envelope (trinational standard with UL 489, and NMX-J-266-ANCE).

1.2 WORKSHOP DRAWINGS AND DATA SHEETS

- .1 Submit workshop drawings and data sheets in accordance with Sections 26 05 00 - Common Work Results for Electrical and 01 33 00 - Submittal Procedures.
- .2 Include feature curves based on time-current constants, for circuit breakers with a permissible current of 100 A and above, or with a cut-off power of 22,000 A symmetrical effective and above, at the network voltage.
- .3 Provide all available data regarding short-circuit current breaking capacity values and maximum I_{2t} values allowed for all circuit breakers.
- .4 Provide the certificate of manufacture and authenticity of the circuit breaker.

1.3 AUTHENTICATION

- .1 Before proceeding with any installation of circuit breakers either in a new or existing installation, the Electrical Contractor shall submit in three (3) copies a certificate of authenticity written in French of the manufacturer duly signed by the factory and the local representative of the said manufacturer, certifying that all the circuit breakers come from it, that they are new and that they meet the Standards and Regulations in force. These certificates shall be submitted to the Departmental Representative for acceptance.
- .2 A delay in the production of the authentication certificate will not justify an extension of the contract or any additional compensation.
- .3 Any manufacturing, assembly or installation work shall begin only after the acceptance of the authentication certificate by the Departmental Representative. Failing to comply with this requirement, the Departmental Representative and/or the user customer reserve the right to mandate the manufacturer registered on the circuit breakers to authenticate all new circuit breakers provided for in the Contract, at the expense of the Electrician Contractor.
- .4 In general, the authentication certificate shall contain:
 - .1 The name and contact information of the manufacturer and the person responsible for authentication. The person in charge shall date and sign the certificate.
 - .2 The name and contact details of the authorized distributor as well as the person of the distributor responsible for the account of the Contractor.
 - .3 The name and contact information of the Contractor and the person responsible for the project.
 - .4 The name and address of the building where the circuit breakers will be installed:
 - .1 The title of the project (title on the quote or drawings).
 - .2 The reference number of the user client.
 - .3 The list of circuit breakers in table form when required.

Part 2 Products

2.1 GENERAL REQUIREMENTS

- .1 Circuit breakers in molded, bolted with busbars, of the quick-closing and abruptly breaking type, with manual and automatic actuation, with compensation for an ambient temperature of 40°C.
- .2 Common-trip breakers: With single handle for multi-pole applications.
- .3 Circuit breakers with instantaneous magnetic triggers, designed to act only when the current value reaches the setting value.
- .4 Circuit breakers with interchangeable triggers, as indicated.

2.2 THERMOMAGNETIC CIRCUIT BREAKERS (MODEL A)

- .1 Automatic molded housing circuit breakers, actuated by thermal and magnetic triggers providing time protection inversely proportional to overload and instant protection in the event of a short-circuit.

2.3 OPTIONAL DEVICES

- .1 Include the following, as indicated:
 - .1 Auxiliary switch.
 - .2 "On-Off" locking device.
 - .3 Handle mechanism.

2.4 MANUFACTURERS

- .1 Acceptable Products: Schneider Electric, QOB, or Eaton and Siemens equivalent.

Part 3 Execution

3.1 INSTALLATION

- .1 Install circuit breakers as directed.
- .2 The order in which the circuit breakers are to be mounted in the panels shall respect that shown in the drawings.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 - Common Work Results for Electrical.
- .2 Section 26 24 16.01 - Panelboards Breaker Type.
- .3 Section 26 28 16.02 - Moulded Case Circuit Breakers.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA).
 - .1 CAN/CSA C22.2 No.144-M91(R2006), Ground Fault Circuit Interrupters.
- .2 National Electrical Manufacturers Association (NEMA).
 - .1 NEMA PG 2.2-1999(R2009), Application Guide for Ground Fault Protection Devices for Equipment.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature, and data sheets for ground fault circuit interrupters, and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec.
- .4 Test and Evaluation Reports: Submit test report for field testing of ground fault equipment to Departmental Representative and certificate that system as installed meets criteria specified.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Submit operation and maintenance (O&M) data for ground fault circuit interrupters for incorporation into O&M Manual.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

- .2 Store and protect ground fault circuit interrupters from nicks, scratches, and blemishes.
- .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: Remove for reuse in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

- .1 Equipment and components for ground fault circuit interrupters (GFCI): To CAN/CSA C22.2 No.144.
- .2 Components comprising ground fault protective system to be of same manufacturer.

2.2 BREAKER TYPE GROUND FAULT INTERRUPTER

- .1 Two-pole ground fault circuit interrupter for 15 A or 20 A, 120 V, single-phase, with testing and reset devices, as indicated.
 - .1 Transition device to detect ground faults, Class A.

2.3 GROUND FAULT PROTECTOR UNIT

- .1 Self-contained with 15 A or 20 A, 120 V circuit interrupter and duplex or single receptacle complete with:
 - .1 Solid state ground sensing device.
 - .2 Facility for testing and reset.
 - .3 CSA Enclosure 1, flush mounted with stainless steel face plate.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for ground fault circuit interrupters installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Do not ground neutral on load side of ground fault relay.
- .2 Pass phase conductors, including neutral, through zero sequence transformers.
- .3 Connect supply and load wiring to equipment in accordance with manufacturer's recommendations.

3.3 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical and co-ordinate with Section 01 45 00 - Quality Control, if required.
- .2 Arrange for field testing of ground fault equipment by the Contractor before commissioning service.
- .3 Demonstrate simulated ground fault tests.

3.4 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: Separate waste material in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 - Common Work Results for Electrical.
- .2 Section 26 18 41 - Interlock Systems.
- .3 Section 26 28 13.01 - Fuses - Low Voltage.

1.2 REFERENCE STANDARDS

- .1 CSA Group.
 - .1 CAN/CSA-C22.2 No.4-04(R2009), Enclosed and Dead-Front Switches (Tri-National Standard, with ANCE NMX-J-162-2004 and UL 98).
 - .2 CSA C22.2 No.39-13, Fuseholder Assemblies.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature, and data sheets for disconnect switches - fused and non-fused, and include product characteristics, performance criteria, physical size, finish, and limitations.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect disconnect switches - fused and non-fused from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: Remove for reuse in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 DISCONNECT SWITCHES

- .1 Fused, and without fuse disconnect switch in NEMA 1 enclosure for interior use and NEMA 3R for exterior use.
- .2 Capacity as indicated on drawings.
- .3 Provision for padlocking in open position by three (3) locks.

- .4 Mechanically interlocked door to prevent opening when handle in "ON" (closed) position.
- .5 Fuses: Size as indicated, in accordance with Section 26 28 13.01 - Fuses - Low Voltage.
- .6 Fuseholders: To CSA C22.2 No.39, relocatable and suitable without adaptors, for type and size of fuse indicated.
- .7 Quick-make, quick-break action.
- .8 "ON-OFF" switch position indication on switch enclosure cover.
- .9 Construction to allow intensive use.
- .10 The switches installed on circuits for variable frequency drives and motors, as well as switches for elevator motors, shall be equipped with an electrical lock with a N.O. and N.F. contact allowing to open the command circuit before the switch contacts open.

2.2 EQUIPMENT IDENTIFICATION

- .1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Indicate name of load controlled on size 4 nameplate as well as the type and rating of the fuse.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for disconnect switches - fused and non-fused installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Install disconnect switches complete with fuses if applicable.

3.3 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: Separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 - Common Work Results for Electrical.
- .2 Section 26 29 03 - Control Devices.

1.2 REFERENCE STANDARDS

- .1 CSA/CSA International.
 - .1 CSA C22.2 No. 60947-4-1 - Low-Voltage Switchgear and Control Gear.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature, specifications, and data sheets, and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Shop Drawings:
 - .1 Provide shop drawings: In accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec.
 - .2 Provide shop drawings for each type of starter to indicate:
 - .1 Mounting method and dimensions.
 - .2 Starter size and type.
 - .3 Layout and components.
 - .4 Enclosure types.
 - .5 Wiring diagram.
 - .6 Interconnection diagrams.
 - .7 The bill of materials.

1.4 CLOSEOUT SUBMITTALS

- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Submit operation and maintenance data for each type and style of motor starter for incorporation into maintenance manual.
- .3 Extra Materials:
 - .1 Provide listed spare parts for each different size and type of starter.
 - .1 Three (3) contacts, stationary.
 - .2 Three (3) contacts, movable.
 - .3 One (1) contact, auxiliary.
 - .4 One (1) control transformer.

- .5 One (1) operating coil.
- .6 Two (2) fuses.
- .7 10% indicating lamp bulbs used.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.
- .3 Packaging Waste Management: Remove for reuse in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

- .1 Starters: To CSA C22.2 No. 60947-4-1.
 - .1 Half-power starters are not accepted.
 - .2 Obtain the motor's current from its identification plate to choose the ampacity of the overload heater.

2.2 MANUAL MOTOR STARTERS

- .1 Three or single-phase manual motor starters of size, NEMA type, rating, and enclosure type as indicated, with components as follows:
 - .1 Switching mechanism, quick-make, and break;
 - .2 One (1) overload heater, manual reset, trip indicating handle.
- .2 Accessories:
 - .1 Toggle switch: Standard labelled as indicated.
 - .2 Indicating light: LED type and colour as indicated.
 - .3 Locking tab to permit padlocking in "ON" or "OFF" position.

2.3 FULL VOLTAGE MAGNETIC STARTERS

- .1 Magnetic and combination magnetic starters of size, NEMA type, rating, and enclosure type as indicated with components as follows:
 - .1 Contactor solenoid operated, rapid action type;
 - .2 Motor overload protective device in each phase, manually reset from outside enclosure;
 - .3 Circuit terminals for command and electrical supply circuits;
 - .4 Wiring and schematic diagram inside starter enclosure in visible location;
 - .5 Identify each wire and terminal for external connections, within starter, with permanent number marking identical to diagram.

- .2 Combination type starters to include fused or not fused disconnect switch with operating lever on outside of enclosure to control and provision for:
 - .1 Locking in "OFF" position with up to three (3) padlocks.
 - .2 Independent locking of enclosure door.
 - .3 Provision for preventing switching to "ON" position while enclosure door open.
- .3 Accessories:
 - .1 Selector switches: Heavy duty, "MAN-ARRÊT-AUTO".
 - .2 Push button: "MARCHE/ARRÊT".
 - .3 Indicating lights: Green LED to indicate functioning and red LED to indicate emergency operation.
 - .4 2-N/O and 2-N/C spare auxiliary contacts, unless otherwise indicated.

2.4 CONTROL TRANSFORMER

- .1 Single phase, dry type, control transformer with primary voltage as indicated and 120 V secondary, complete with secondary fuse, installed in with starter as indicated.
- .2 Size control transformer for control circuit load plus 20% spare capacity.

2.5 FINISHES

- .1 Apply finishes to enclosure in accordance with Section 26 05 00 - Common Work Results for Electrical.

2.6 EQUIPMENT IDENTIFICATION

- .1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Manual starter designation label, white plate, black letters, size 1, engraved as indicated.

Part 3 Execution

3.1 INSTALLATION

- .1 Install starters and control devices in accordance with manufacturer's instructions. Complete the wiring for power and command circuits according to indications.
- .2 Install and wire, starters and controls as indicated.
- .3 Ensure correct fuses installed.
- .4 When the motor is not in plane of sight of the manual starter or the disconnect switch preceding the magnetic starter or the contactor, supply and install a disconnect switch within 1,500 mm from the motor.
- .5 Confirm motor nameplate and adjust overload device to suit.

3.2 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical and manufacturer's instructions.
- .2 Operate switches and contactors to verify correct functioning.

- .3 Perform starting and stopping sequences of contactors and relays.
- .4 Check that sequence controls, interlocking with other separate related starters, equipment, control devices, operate as indicated.

3.3 CLEANING

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools, and equipment.
- .2 Waste Management: Separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 - Common Work Results for Electrical.
- .2 Section 26 28 16.02 - Moulded Case Circuit Breakers.
- .3 Section 26 36 23 - Automatic Transfer Switches.

1.2 REFERENCE STANDARDS

- .1 American Petroleum Institute (API).
 - .1 API Std. 650-2007(A2008), Welded Steel Tanks for Oil Storage, 11th Edition.
- .2 Canadian Environmental Protection Act (CEPA).
 - .1 CCME PN 1326-2008, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems for Petroleum Products and Allied Petroleum Products.
- .3 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-3.6-2000, Amend. 2, Regular Sulphur Diesel Fuel.
- .4 CSA Group (CSA).
 - .1 CSA-B139-09, Installation Code for Oil Burning Equipment.
 - .2 CSA C22.2 No. 100-04 (R2013), Motor and Generators.
 - .3 CSA 282-09, Emergency Electrical Power Supply for Buildings.
 - .4 CSA Z299.3, Quality Assurance Program.
- .5 International Organization for Standardization (ISO).
 - .1 ISO 3046-1-2002, Reciprocating Internal Combustion Engines - Performance - Part 1: Declarations of Power, Fuel and Lubricating Oil Consumptions, and Test Methods - Additional Requirements for Engines for General Use.
- .6 National Electrical Manufacturers Association (NEMA).
 - .1 NEMA MG 1-2006(R2007), Motors and Generators.
- .7 Underwriters Laboratories of Canada (ULC).
 - .1 CAN/ULC-S601-07, Standard for Shop Fabricated Steel Aboveground Horizontal Tanks for Flammable and Combustible Liquids.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature, specifications, and data sheets for power generators, and include product characteristics, performance criteria, physical size, finish, and limitations.

- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec, and include:
 - .1 Engine: Make and model, with performance curves.
 - .2 Alternator: Make and model.
 - .3 Voltage regulator: Make, model, and type.
 - .4 Battery: Make, type, and capacity.
 - .5 Battery charger: Make, type, and model.
 - .6 Alternator control panel: Make and type of meters and controls.
 - .7 Governor type and model.
 - .8 Cooling air requirements in m³/s.
 - .9 British Standard or DIN rating of engine.
 - .10 Flow diagrams for:
 - .1 Diesel fuel.
 - .2 Cooling air.
 - .11 Dimensioned drawing showing complete generating set mounted on steel base, including vibration isolators, exhaust system, drip trays, and total weight.
 - .12 Continuous full load output of set at 0.8 PF lagging.
 - .13 Description of set operation including:
 - .1 Automatic starting and transfer to load and back to normal power, including time in seconds from start of cranking until unit reaches rated voltage and frequency.
 - .2 Manual starting.
 - .3 Automatic shutdown and alarm on:
 - .1 Overcranking.
 - .2 Overspeed.
 - .3 High engine temp.
 - .4 Low lube oil pressure.
 - .5 Short-circuit.
 - .6 Alternator over voltage.
 - .7 Lube oil high temperature.
 - .8 Over temperature on alternator.
 - .4 Manual remote emergency stop.

1.4 CLOSEOUT SUBMITTALS

- .1 Provide operation and maintenance (O&M) data for diesel generator for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
- .2 Include in O&M Manual instructions for unit supplied and not general description of units manufactured by supplier, and:
 - .1 Operation and maintenance instructions for engine, alternator, control panel, automatic transfer switch, manual bypass switch, battery charger, battery, fuel system, engine room ventilation system, exhaust system and accessories, to permit effective operation, maintenance, and repair.

- .2 Technical data:
 - .1 Illustrated parts lists with parts catalogue numbers.
 - .2 Schematic diagram of electrical controls.
 - .3 Flow diagrams for:
 - .1 Fuel system.
 - .2 Lubricating oil.
 - .3 Cooling system.
 - .4 Certified copy of factory test results.
 - .5 An EPA certificate for diesel motors.
 - .6 Maintenance and overhaul instructions as well as schedules.
 - .7 Precise details for adjustment and setting of time delay relays or sensing controls which require onsite adjustment.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Packaging Waste Management: Remove for reuse in accordance with Section 01 74 19 - Waste Management and Disposal.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Include:
 - .1 Two (2) fuel filter replacement for each filter elements.
 - .2 Two (2) lube oil filter replacement elements.
 - .3 Two (2) air cleaner filter elements.
 - .4 Two (2) sets of fuses for each fuse of the control panel.
 - .5 Special tools for unit servicing.

1.7 WARRANTY

- .1 Generator System Warranty.
 - .1 The manufacturer of the generator system shall warrant the unit against defects in workmanship and materials for a period of five (5) years or 8,000 hours parts and labor on site after initial commissioning.

Part 2 Products

2.1 SYSTEM DESCRIPTION

- .1 System Description.
 - .1 The generator system is used as an emergency electrical “Stand-By” power supply for the entire building. It shall meet all the CAN/CSA C282-09 requirements.
 - .1 Generating system consists of, but is not limited to:
 - .1 Diesel engine.
 - .2 Alternator.
 - .3 Circuit breakers, as indicated on drawings.
 - .4 Command panel for the generator.
 - .5 Starter system.
 - .6 Fuel supply system.
 - .7 Battery and battery charger.
 - .8 Exhaust system with silencer.
 - .9 Steel mounting base.
 - .10 Remote signaling panel indicating generator troubles, generator alarms and low fuel.
 - .11 A circuit breaker for the load bank and a circuit breaker for the main power supply.
 - .12 A tank under the floor of the shelter.
 - .13 Tank level measurement with real time display screen with high level and low-level alarm.
 - .14 Mechanical measurement with probe integrated into the tank.
 - .15 Tank filling shall include an anti-spill and capture system.
 - .16 A soundproof shelter in which the generator and the Hydro-Québec electrical entrance will be installed.
 - .2 System designed to operate as emergency power source for entire building in case of a power loss.
 - .3 The entire generator set, including vibration isolators, shall be seismic certified according to IBC (International Building Code). A nameplate certifying the seismic resistance of the assembly shall be installed by the manufacturer on the generating set.

2.2 SOUNDPROOFING “WALK-IN” ENCLOSURE

- .1 Design and construction of noise enclosure to be provided by generator distributor providing single source responsibility.
- .2 The acoustic screen will be constructed to achieve a full load noise level of 75 dBA (logarithmic average) eight (8) points around the acoustic screen, at a 7-m distance of measured from the exterior of the acoustic screen.
- .3 Supply and install certified seismic noise enclosure.
- .4 Assembly:
 - .1 The enclosure shall have a clearance of at least 1 m between the generator and the walls or the equipment installed on the walls on all sides. The clearances shown on the drawings shall also be respected.

- .2 The entire sound barrier is made of 16-gauge steel.
 - .3 The acoustic screen is equipped with the number of doors shown on the drawings.
 - .4 The base of the shelter will be structural, allowing the manipulation of the shelter with the generator and all the equipment previously installed in the shelter. There will be eight (8) lifting brackets. These will also serve as ground anchors. The floor will be made of 1/8-in. non-slip steel plates treated with a coat of primer and finish. There will be two (2) openings for electrical wiring in the floor
 - .5 The walls and the roof of the shelter will be made of 14 Ga satin plates. These plates will be bent, and a reinforcement will be added in the center. Insulation shall be 6-inch thick rock wool of the non-absorbent, flame retardant, vermin proof, and fire resistant type with a melting point of 2,150°F. The wool will be covered with sheets of Mylar to surround and protect the insulation. Everything will be closed with a perforated galvanized sheet (22 Ga).
 - .6 Insulation shall be covered with perforated galvanized sheets.
 - .7 The air intake shall be vertical or horizontal on the alternator side of the enclosure. It will include isolated motorized dampers, wired for fail-safe operation (dampers open as soon as there is a fault and remain open if the generator set is running). The air intake should include bird proof wire mesh. The air intake with filter shall be of robust construction filter easily replaceable.
 - .8 The air exhaust shall be vertical and covered with bird proof wire mesh. The air outlet shall have insulated motorized shutters. A recirculation damper shall also be provided and interconnected with the exhaust air damper with a thermostat to ensure a temperature of 20°C inside the enclosure during generator set operation. The air outlet with filter shall be of robust construction and filter easily replaceable.
 - .9 A thermostat-controlled recirculation system will be installed to modulate the temperature inside the shelter. A ventilation duct will be installed at the outlet of the recirculation damper. This flap will expel its air into the fresh air inlet to prevent the recirculation of hot air in the radiator. A recirculation flap expelling the air directly to the radiator will be refused. The air outlet with filter shall be of robust construction and filter easily replaceable. The thermostat shall control the inlet, outlet, and recirculation of air.
 - .10 A second room shall be available for the installation of the electrical input and automatic inverter(s). This room will be separated from the generator section by a wall and will have its own door.
 - .11 For the generator section, there will be two (2) 36 in. x 84 in. steel industrial doors. One of the doors will be equipped with a panic bar. For the other door, install latches at the top and bottom of the door. Each door will have a chain with a retaining cylinder. Provide an adequate weather stripping meeting the climatic conditions of the site.
 - .12 For the electrical entrance section, there will be one (1) simple steel industrial type door equipped with a panic bar. The door will be fitted with a chain with a retaining cylinder. The door shall allow the replacement of electrical equipment if required.
 - .13 The exterior of the shelter shall be coated with an epoxy primer and urethane paint or baked paint. The color of the shelter will be grey.
- .5 Painting:
- .1 Paint to be applied during fabrication and be gray in color.
 - .2 A high-quality epoxy primer and paint shall be used.
 - .3 For interior walls and ceiling, the color shall be white.

- .6 Electrical equipment inside enclosure:
 - .1 One (1) step-down transformer with secondary of 120 V/208 V or 120/240 V depending on the site.
 - .2 Disconnectors as shown on the drawings.
 - .3 Capacity and voltage distribution panels indicated on the drawings.
 - .4 Enough motorized dampers for air intake.
 - .5 Enough motorized dampers for exhaust air.
 - .6 Enough motorized dampers for recirculation.
 - .7 Thermostat capable of controlling exhaust and recirculation dampers. The thermostat shall control the inlet, outlet/recirculation of air.
 - .8 LED lighting system with protective grilles.
 - .9 5-kW unit heaters, as specified in the drawings, to ensure a temperature of 10°C inside the enclosure when the generator is not running.
 - .10 Battery-powered emergency lighting, for a minimum duration of four (4) hours to carry out diagnostic work.
 - .11 15-A electrical outlets, as shown on the drawings.
 - .12 Exit indicators, as shown on the drawings.
 - .13 All equipment shall be factory wired. Type EMT conduits shall be installed on the surface.
 - .14 The shelter shall include strong enough support points to allow the replacement of generator parts and mechanical work.

2.3 DIESEL ENGINE

- .1 Diesel Engine: To ISO 3046-1.
- .2 Four-stroke, electronic injection turbo charged, synchronous speed 1,800 rpm.
- .3 Meets EPA Tier 3 emission level.
- .4 Capacity:
 - .1 Rated continuous power in kW at rated speed, after adjustment for system losses in auxiliary equipment necessary for engine operation; to be calculated as follows:
Rated continuous output = Generator kW divided by Generator efficiency at full load.
 - .1 Account for following site conditions:
 - .1 Altitude: 300 m;
 - .2 Ambient temperature: 40°C;
 - .3 Relative humidity: 100%.
 - .2 Engine overload capability 110% of continuous output for one (1) hour within 12-hour period of continuous operation.
 - .3 The required capacity is indicated on the drawings.
- .5 Cooling System:
 - .1 Liquid cooled: Heavy-duty industrial radiator mounted on generating set base with engine driven pusher type fan to direct air through radiator from engine side, with ethylene glycol anti-freeze non-sludging above -46°C.

- .2 To maintain manufacturer's recommended engine temperature range at 10% continuous overload in ambient temperature of 40°C.
- .3 Motor-driven circulation pump.
- .6 Fuel: To CAN/CGSB-3.6, Type A, Arctic Grade 2.
- .7 Supplying System:
 - .1 Electronically controlled, mechanically driven unit injector system.
 - .2 Quickly replaceable without any calibration.
 - .3 Mechanical fuel transfer pump.
 - .4 Primary fuel filter with water separator.
 - .5 Secondary filters.
 - .6 Air filter.
 - .7 Manual priming pump.
 - .8 Fuel cooler integrated into main radiator.
 - .9 Rack solenoid energized when engine is running.
- .8 Governor: Mechanical-hydraulic with:
 - .1 Electronic governor with $\pm 0.33\%$ regulation (no load to full load).
- .10 Lubrication System:
 - .1 Pressure lubricated by engine driven pump.
 - .2 Lube oil filter: Replaceable, full flow type, removable without disconnecting piping.
 - .3 Lube oil cooler.
 - .4 Closed circuit oil vapor recovery system.
 - .5 Engine sump drain valve.
 - .6 Oil level gauge.
- .11 Alarm System: Position of the selector on the left-hand side on any other position other than "AUTO".
- .12 Starting System:
 - .1 Two (2) 12-V or 24-VDC starters.
 - .2 Start limiter to provide three (3) start periods of 10 s duration, each separated by 5 s of rest.
 - .3 Two (2) heavy duty, low maintenance, lead acid batteries, 12 or 24 V, with sufficient capacity to crank engine for 1 min at 0°C without using more than 25% of amp-hr capacity time.
 - .4 Engine driven 45-A charging alternator.
 - .5 Battery charger: Constant voltage, solid state, two stage from trickle charge at standby to boost charge after use.
 - .1 Regulation: $\pm 1\%$ output for $\pm 10\%$ input variation.
 - .2 Automatic boost for 6 hours every 30 days.
 - .3 Equipped with DC voltmeter, DC ammeter and "On-Off" switch.
 - .4 Minimum charger capacity: 10 A.

- .13 Guards to protect personnel from hot and moving parts.
 - .1 Locate guards so that normal daily maintenance inspections can be undertaken without their removal.
- .14 Industrial type air filter, with visual clogging indicator.
- .15 Lifting eyes.
- .16 Drip tray.

2.4 ALTERNATOR

- .1 Alternator: To NEMA MG1.
- .2 Rating: 600/347 V, 3-phase, kVA, kW, 0.8 PF or 120/240 V depending on site, kVA, as indicated on drawings, and kW, as indicated on drawings.
- .3 Features:
 - .1 Apparent power: As indicated on the drawings.
 - .2 Active power: As indicated on the drawings.
 - .3 Frequency: 60Hz.
 - .4 Number of poles: 4.
 - .5 Speed: 1,800 rpm.
 - .6 Overspeed capability: 125%.
 - .7 Voltage: 347/600 V 3 phases or 120/240 V 1 phase.
 - .8 Number of wires: 3 phases 4 wires or 1 phase 3 wires.
 - .9 Insulation class: H.
 - .10 Temperature rise: 125/40°C.
 - .11 Starting capacity: As indicated on the drawing.
 - .12 Subtransient reactance: 12.5% or less.
- .4 Output at 40°C ambient:
 - .1 100% full load continuously.
 - .2 110% full load for 1 hour.
 - .3 150% full load for 1 minute.
- .5 Revolving field, brushless, single bearing.
- .6 Drip proof.
- .7 Damper windings.
- .8 Synchronous type.
- .9 Voltage regulation, digital type, with readings on three phases, variation factor of $\pm 0.5\%$ at constant regime, at a 40°C temperature.
- .10 Dynamically balanced rotor permanently aligned to engine by flexible disc coupling.
- .11 Exciter: Permanent magnet.
- .12 Alternator: Capable of sustaining 300% rated current for period not less than 10 s permitting selective tripping of down line protective devices when short circuit occurs.

2.5 CONTROL PANEL

- .1 Microprocessor type, completely enclosed, installed on the generator and vibration proof, including thermal protection against the alternator's overload, with Modbus outlet, two (2) programmable inputs for relay attribution, five programmable outputs for relay attribution, starter buttons, automatic stopping mode, lamp tests, silent rearming, history log of faults, and alarms. It shall have a display with two (2) lines indicating, among other indications the following:
 - .1 Present active fault;
 - .2 Total functioning hours;
 - .3 Total functioning hours under charge;
 - .4 Number of starts;
 - .5 Frequency;
 - .6 Cooling liquid temperature;
 - .7 Fuel level in the reservoir;
 - .8 Oil pressure;
 - .9 Accumulator tension;
 - .10 Total VA;
 - .11 Total kW;
 - .12 Percentage of power output by the system;
 - .13 L-L and L-N tension on all phases;
 - .14 L1, L2, and L3 currents;
 - .15 Last event history.
- .2 Button for motor start-up;
- .3 Button for motor stop;
- .4 Button for re-arming;
- .5 Silencing button;
- .6 Pilot lamp test button;
- .7 Emergency stop button;
- .8 Automatic stop and alarm on the following:
 - .1 Prolonged motor launching refusal;
 - .2 Excessive motor pace;
 - .3 Cooling liquid high temperature;
 - .4 Low pressure in the motor lubrication oil;
 - .5 Short-circuit or low current intensity;
 - .6 Low cooling liquid level.
 - .7 Overvoltage or undervoltage. Indicator lamp.
- .9 Alarms and status to be sent to a remote alarm panel to be supplied and installed in airport garages:
 - .1 Generator in operation.
 - .2 Common defects.
 - .3 Low battery voltage.

- .4 Start switch in "Off" or "Manual" position (not in automatic start mode).
- .5 Low fuel level, main and/or secondary tank.
- .10 Communication:
 - .1 MODBUS TCP/IP data link, to be connected to the remote alarm panel to be installed in airport garages.
- .11 Control panel in an AMEEC 12 enclosure mounted on the generator system. Coordinate the position of the panels according to the layouts supplied on drawings.
- .12 Circuit breakers for Waskaganish generator:
 - .1 All circuit breakers are "3 pole", 600 V, molded case type.
 - .2 Essential load circuit breaker:
 - .1 200 A.
 - .2 100% capacity.
 - .3 Thermal-magnetic tripping.
 - .4 Open position contact connected to the control panel.
 - .3 Load bank circuit breaker:
 - .1 125 A.
 - .2 100% capacity.
 - .3 Thermal-magnetic tripping.
 - .4 Shunt release connected to the position contact of the automatic changeover, powered by the DC of the generating set.
- .13 The panel shall include a main circuit breaker with a capacity at 100% of the rated current and a circuit breaker for the supply of a continuous duty load bank rated at 30% of the full power of the generator.
- .14 Strobe lights, one red and one yellow (amber) shall be installed externally on the building. When the yellow (amber) strobe is on, this indicates that a possible fault is coming. This includes low fuel, generator overheating, building overheating, phase loss, or transfer switch problem. When the red strobe is on, this indicates a fault on the generator, transfer switch, or other problem that is preventing power to the load.

2.6 CONTROLS

- .1 Engine start button.
- .2 Selector Switch: "Off-Auto-Manual".
- .3 Engine's emergency-stop button and provision for remote emergency stop button.
- .4 Generators can communicate their states and alarms by MODBUS TCP/IP communication protocol to the emergency network management system.
- .5 Generators can be controlled remotely to start or stop using the MODBUS TCP/IP communication protocol.

2.7 MOTOR HEATER

- .1 Engine to be supplied with convection block heater. An alarm contact shall be provided in case of low motor temperature. This contact is linked to the common generator alarms.
 - .1 Thermostatically controlled coolant heater connected to drive side of automatic transfer switch.

- .2 Capacity to be determined based on generator capacity at 208 V or 240 V to maintain engine temperature at 43°C.
- .3 Switch and fuse in heating circuit, mounted in engine alternator control cabinet.
- .4 Circulation pump to maintain uniform coolant temperature.
- .5 Inlet and outlet isolation valves, allowing replacement of the block heater without draining the cooling circuit.

2.8 EXHAUST SYSTEM

- .1 Engine exhaust pipes to be dry type.
- .2 One (1) "Y" shaped flexible section shall be provided.
- .3 Steel muffler of critical type, diameter of at least 18 in.
- .4 Installed inside the shelter, with adequate attenuation to achieve the required sound level, including a flexible stainless steel, piping, rigid supports, and a drain.
- .5 The painted steel muffler, with attenuation required to achieve the required acoustic performance.
- .6 The exhaust outlet will be upwards and will be equipped with a valve.

2.9 STEEL MOUNTING BASE

- .1 Complete generator set mounted on a structural steel base of sufficient strength and rigidity to protect all stresses or strains during shipment, installation and under operating conditions on a flat surface appropriate.
- .2 Assembly equipped with vibration isolators.
 - .1 Spring-loaded isolators with adjustable and adjustable side shock absorbers for leveling.
 - .2 Seismic restrained type.
 - .3 Minimum deflection: 3 in.

2.10 COMPLIANCE LABEL

- .1 The generator shall be equipped with a permanent tag, as prescribed in article 6.1.1.4 of CSA C282-09 Standard. The load indicated on the label shall be the maximal calculated load. If the maximal calculated load is not supplied, the nominal generator load shall be its maximal load.

2.11 DIMENSIONS

- .1 The dimensions of the generators shall comply with the dimensions and indications on the plan. The dimensions shall respect the required clearances and the applicable Codes. The electrical and/or mechanical arrangements indicated on the drawings shall be respected.

2.12 MATERIAL DESIGNATION

- .1 Supply and install indication plates, in accordance Section 26 05 00 - Common Work Results for Electrical.
- .2 The nameplates shall be riveted to the equipment.

- .3 Control Panel.
 - .1 Indicator plates, "5 format" for the control commands, including the alternator's breaks and the program selectors.
 - .2 Indicator plates, "3 format" for the indicators, alarms, pilot lights, and the necessary control commands.

2.13 SOURCE QUALITY CONTROL

- .1 Factory test generator set, including engine, alternator, control panels, remote panels, transfer switch and accessories in presence of Departmental Representative. Tests should be performed with the generator in the shelter with a dummy load. Carry out a test on the ventilation of the shelter. All alarms should be tested.
- .2 Notify Departmental Representative two (2) weeks prior to factory test.
- .3 Test Procedure:
 - .1 Prepare blank forms and check sheet with spaces to record data and at top of first sheet record:
 - .1 Date.
 - .2 Generator set: Serial No.
 - .3 Engine: Make, model, and serial No.
 - .4 Alternator: Make, model, and serial No.
 - .5 Voltage regulator: Make and model.
 - .6 Rating of generator set: kW, kVA, V, A, r/min, Hz.
 - .2 Mark check sheet and record data on forms in duplicate as test proceeds.
 - .3 Departmental Representative's signature on completed forms to indicate concurrence in results of test.
- .4 Tests:
 - .1 With 100% rated load, operate set for 23 hours, taking readings at 30-minute intervals, and record following:
 - .1 Time of reading;
 - .2 Running time;
 - .3 Ambient temp in °C;
 - .4 Lube oil pressure in kPA;
 - .5 Lube oil temp in °C;
 - .6 Engine coolant temp in °C;
 - .7 Exhaust stack temp in °C;
 - .8 Alternator voltage: Phases 1, 2, 3;
 - .9 Alternator current: Phases 1, 2, 3;
 - .10 Power in kW;
 - .11 Frequency in Hz;
 - .12 Power Factor;
 - .13 Battery charger current in amps;
 - .14 Battery voltage;
 - .15 Alternator cooling air outlet temp, °C.

- .2 At end of 23-hour run increase load to 110% rated value and take readings every 15 minutes for 1 hour.
- .3 After completion of 24-hour run, demonstrate following shutdown devices and alarms:
 - .1 Overcranking;
 - .2 Overspeed;
 - .3 High engine temp;
 - .4 Low lube oil pressure;
 - .5 Short-circuit;
 - .6 Alternator over voltage;
 - .7 Low battery voltage, or no battery charge;
 - .8 Manual remote emergency stop;
 - .9 High alternator temperature.
- .4 Next install continuous strip chart recorders to record frequency and voltage variations during load switching procedures. Each load change delayed until steady state conditions exist. Switching increments to include:
 - .1 No load to full load to no load.
 - .2 No load to 70% load to no load.
 - .3 No load to 20% load to no load.
 - .4 20% load to 40% load to no load.
 - .5 40% load to 60% load to no load.
 - .6 60% load to 80% load to no load.
- .5 Demonstrate:
 - .1 Automatic starting of set and automatic transfer of load on failure of normal power.
 - .2 Automatic shutdown of engine on resumption of normal power.
 - .3 That battery charger reverts to high-rate charge after cranking.
- .6 Demonstrate low oil pressure and high engine temperature shutdown devices operation without subjecting engine to these excesses.
- .7 The fuel tanks shall be delivered full at the end of the tests on site.

2.14 FUEL TANK

- .1 Fuel tank in the base of the power distribution station, double-walled, 48-hour capacity, built and certified to ULC-S601. Any UL tank will be refused.
- .2 Tank design should be designed to use maximum fuel before low fuel shutdown.
- .3 Sealed level gauge easily visible from fill.
- .4 Fill pipe rising 150 mm above tank.
- .5 Spill-proof enclosure to CSA/ULC-S663 or ULC/ORD-C58.19.
- .6 Spill protection device to CAN/ULC-S661.
- .7 Provide a fuel leak detection system. Leak detection probes shall be installed between the walls of the double-walled tank.

- .8 Alarms:
 - .1 Leak detection probe connected to generator set control panel.
 - .2 Metering system connected to unit control panel. Program the control for a low-level alarm at approximately 30% and a critical low-level alarm causing the diesel engine to shut down. Fill pipe rising 150 mm above tank.

2.15 MEASUREMENT

- .1 Provide a real-time electronic display metering system. The system shall include high and low fuel level alarms.
- .2 At filling station, provide audible and visual high and low fuel level alarm.
- .3 Provide mechanical level system with fuel level indication.

2.16 LOAD BANK

- .1 General:
 - .1 A load bank shall be included with the supply of the generator set.
 - .2 The load bank will be designed for continuous operation at full load and requires no cooling period.
- .2 Capacity:
 - .1 Resistive type, power factor 1.0.
 - .2 100 kW at 600 V / 3 phases, for continuous use.
 - .3 Two (2) increments of 50 kW.
- .3 Venting:
 - .1 The heating elements are mounted in line with the air flow of the diesel engine radiator fan.
 - .2 The selection of heating elements is made according to the air flow of this fan and the heat emitted by the radiator.
 - .3 The structure supporting the heating elements is made of galvanized steel and comes with a 2½ in. (63mm) flange allowing attachment to the radiator or the ventilation duct.
 - .4 The dimensions of the heating elements with their support are adapted to match the generator. The installation is carried out at the supplier of the generating set.
- .4 Control Panel:
 - .1 The panel will operate at 120 VAC / 1 Ph / 60 Hz.
 - .2 A control transformer supplying the panel with 120 VAC / 1 Ph / 60 Hz will be equipped with primary and secondary protective fuses.
 - .3 A load manager will automatically adjust the load level to a minimum of 100 kW, based on fluctuating building load. It uses the load bank as an additional load to maintain a minimum load. When starting the generator, the control waits 1 minute before applying half of its capacity. After two (2) minutes, the control adds the 2nd half capacity. A separately supplied transformer will provide the building load reading. The control shall be provided to stop the load bank when the generator set falls into cooling mode.
 - .4 Emergency stop button.
 - .5 Main "On/Off" switch.

- .6 Load master "On/Off" switch.
- .7 Individual switches for each load block.
- .8 Indicators: Power present, overheat, and load shedding.
- .9 Automatic load shedding function: Closing a remote contact activates automatic load shedding of the entire load bank.
- .10 Normally open and normally closed Form "C" dry contact will activate for remote indication of overheating or load shedding.
- .11 Activation of the emergency stop button deactivates the entire load bank.
- .12 Each resistor block supply circuit is protected by fast-acting fuses with an interrupting capacity of 200 kA.
- .13 Over-temperature switch monitors outlet air temperature. Loads cannot be reconnected if the switch detects the fault.
- .5 Resistors:
 - .1 The resistors are held in place by stainless-steel brackets.
 - .2 The electrical insulators are made of ceramic resistant to high temperatures, for intensive use.
 - .3 The replacement of resistors is minimized by a conservative design.
- .6 Connections:
 - .1 All connections, including input bars, external control power supply, remote operation controls, instrumentation, and alternator connection interface, are installed in the connection / relay compartment.
 - .2 The connections with the appropriate wiring between the control and the resistors, and between the control and the output of the alternator are made at the factory.

Part 3 Execution

3.1 INSTALLATION

- .1 Locate generating unit and install as indicated.
- .2 Complete wiring and interconnections, as indicated.
- .3 Start generating set and test to ensure correct performance of components.

3.2 FACTORY QUALITY TEST

- .1 The following two (2) participants are to attend and witness the factory quality testing of the generator system. A notice of 15 working days is required before the date of the tests:
 - .1 Design Engineer.
 - .2 Departmental Representative.

3.3 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Notify Departmental Representative 15 working days in advance of test date.

- .3 Provide fuel for testing and leave full tanks on acceptance.
 - .1 The Contractor is responsible of the initial start-up and supply a report to the Client. The report shall outline all the deficiencies.
 - .2 The motor, being in cold start-up conditions and while the emergency load is at its nominal value, in automatic mode. Process to the following tests:
 - .1 A simulated power outage by opening all the switches or breakers that ensure the building's normal electrical supply. The generator shall start automatically. The test load shall be the on that is usually/normally served by the emergency power supply;
 - .2 The test shall proceed for an hour, then the normal building power shall be brought back. The load shall be transferred correctly, and the generator shall stop automatically;
 - .3 The following data shall be observed and noted:
 - .1 Start-up delay;
 - .2 Cranking time (until the motor is operating);
 - .3 Time required to attain cruising motor speed;
 - .4 Required time for each life and safety switch to transfer to emergency position;
 - .5 Required time to obtain a stable functioning, all the transfer switches have transferred to emergency position;
 - .6 The delay to ensure all loads required connection have been connected – the emergency power after the life and safety devices;
 - .7 The voltage, frequency and start-up current and during each observed fluctuation in the load, and during the maximal calculated site load;
 - .8 The motor's oil pressure, the water temperature and all the other significant motor temperatures as well as the charge rate of the batteries, a minute after start-up, at 5-minute intervals for the first 15 minutes and for each 15 minutes afterwards;
 - .9 The transfer delay to normal supply for each transfer switch;
 - .10 The cooling delay for the motor in stop position.
- .3 Demonstrate the following operations:
 - .1 Unit start and shutdown on "Manual" control;
 - .2 From automatic passage of the battery charger to its maximal loading regime after the start-up of the generator system;
 - .3 The good functioning of the stopping devices if an oil pressure drop or a motor overheat should occur, without exposing the motor to these conditions;
 - .4 Simulate all the alarms and confirmations – ensure they appear on the control panel;
 - .5 Confirmation that the common fault relay sets off correctly for each listed alarm.

- .4 Submit the generator group to a 4-hour maximal site calculated load charge – as specified on the generator’s identification plate.
 - .1 The test load shall come from an auxiliary load bank with a PF of 0.8. A unit PF is allowable for the tests on site on the generator provided that the tests at the nominal load and nominal PF were conducted by the generator’s manufacturer before delivery or before the alternator was tested at the nominal PF in the alternator manufacturer’s facilities. A factory result report will be supplied with the alternator.
- .5 Test the cranking cycle, the motor shall be prevented from operating, then place the function selector to “manual start-up” mode and verify that three test cycles are conducted, each of the cycles lasting 10 seconds, with 5-second pauses between each, repeat the cycle one more time and verify the voltage at the battery terminals that shall be at least equal to 80% of its nominal voltage.
- .6 Once the test period is completed, verify the battery’s voltage, to ensure the charger has brought its maximal load back.
- .7 Verify the adequate functioning of the “shut” breaker dedicated for the load bank.
- .8 Conduct new readings of the sound level around the building, with a sound meter and record the results in report form.
- .9 Verify the interlocking of the load breakers and the load bank breakers.

3.4 CLEANING

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools, and equipment. In accordance with Section 01 74 00 - Cleaning.
- .2 Divert unused batteries from landfill to an approved battery recycling facility.
- .3 Divert unused lubricating oil materials from landfill to an approved oil recycling facility.
- .4 Divert unused antifreeze from landfill to an approved antifreeze recycling facility.
- .5 Waste Management: Separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.

3.5 MAINTENANCE - CLEARANCES

- .1 Provide clearance around systems, equipment, and components for observation of operation, inspection, servicing, maintenance and as recommended by manufacturer and CSA-B139.
- .2 Provide a maintenance program suitable for unskilled personnel. In the maintenance program to be provided, indicate the interventions requiring specialized personnel.
- .3 Provide a filling procedure on a sign affixed to the wall of the shelter. The sign shall be designed and adapted to the Waskaganish airport site. The sign shall be bilingual.
- .4 Provide the accessories required to limit damage if a spill occurs during the filling of the tank.
- .5 The vents and the filling will be taken outside the shelter in accordance with article 4.3.1 of the CSA B139.1.1-15 Standard.
- .6 The filler will be provided with a "Diesel only" identification.

3.6 TRAINING

- .1 A basic training session shall be provided to maintenance personnel and given by the supplier manufacturer. The training shall be given at the end of the work so that the operating personnel can refer to it as needed. Record the training for future reference. Provide an on-site training session of a minimum of four (4) hours. Provide the course outline prior to the training session for approval. Supply and all the support material required for the course: projector, paper documentation, CD or USB key, and course plan.
- .2 The training shall present more particularly, but not limited to, the points to be checked in the event of a breakdown, the maintenance and the operation of the transfer switches, the generator, and the shelter of the generator.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 - Common Work Results for Electrical.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA).
 - .1 CSA C22.2 No.5-09, Moulded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures (Tri-national Standard with UL 489, NMX-J-266-ANCE-2010).
 - .2 CSA C22.2 No.178.1-2007, Automatic Transfer Switches.
 - .3 CAN/CSA C60044-1-07, Instrument Transformers.
- .2 National Electrical Manufacturers Association (NEMA).
 - .1 NEMA ICS 2-1996(R2009), Controllers, Contactors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC, Part 8: Disconnect Devices for Use in Industrial Control Equipment.
- .3 Underwriters Laboratories (ULC).
 - .1 UL 1008 – Transfer Switch Equipment.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature, and data sheets for transfer switches, and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec.
 - .1 Indicate on drawings:
 - .1 Make, model, and type.
 - .2 Single line diagram showing controls and relays.
 - .3 Description of equipment operation including:
 - .1 Automatic starting and transfer to standby unit and back to normal power.
 - .2 Test control.
 - .3 Bypass control.
 - .4 Manual control.
 - .5 Automatic shutdown.
 - .4 Description of contacts available in normal and emergency operation.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Submit operation and maintenance data for transfer switches for incorporation into manual.
- .3 Detailed instructions to permit effective operation, maintenance, and repair.
- .4 Technical Data:
 - .1 Schematic diagram of components, controls, and relays.
 - .2 Illustrated parts lists with parts catalogue numbers.
 - .3 Certified copy of factory test results.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect transfer switches from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: Remove in accordance with Section 01 74 19 - Waste Management and Disposal.

1.6 SHORT CIRCUIT STUDY

- .1 Supply a short-circuit study including the coordination of the upstream protection devices, to ensure that a fault on the network is cleared by the protection device before the automatic transfer switch opens. The study shall be signed by an engineer registered and licensed in the Province of Quebec.

1.7 WARRANTY

- .1 Guarantee of automatic and manual load switching equipment.
 - .1 The manufacturer of the automatic charging equipment shall guarantee the unit against all defects in workmanship and materials for a period of five (5) years or 8,000 hours on site after initial commissioning.

Part 2 Products

2.1 SYSTEM DESCRIPTION

- .1 Description of system.
 - .1 Automatic load switchgear for the following services depending on the installation site:
 - .1 Emergency network dedicated to the entire generator shelter.
 - .2 Garage power supply network.

- .3 Terminal power supply network.
- .2 Automatic load switchgear designed for the following purposes:
 - .1 Check "normal" power supply voltage on all phases;
 - .2 Cause the emergency generator to start in the event of a failure of the normal power supply or in the event of an abnormal voltage below the adjustable, pre-established limits, on any phase, for an adjustable time;
 - .3 Switch the load circuit from normal supply to emergency supply when the operation of the generator set reaches the adjustable, pre-established limits corresponding to the nominal frequency and voltage;
 - .4 Switch the load circuit to normal supply when the restoration of the latter is confirmed by the detection, on all phases, of a voltage higher than the pre-established adjustable limit, for an adjustable time;
 - .5 Then cause the emergency generator to stop after it has run off-load, to cool down, for a period determined by an adjustable timer relay.
 - .6 Allowing bypassing of switchgear to de-energize the automatic load switchgear cabinet for maintenance purposes.
 - .7 Provide status contacts as indicated.

2.2 MATERIALS

- .1 Instrument Transformers: To CAN/CSA C60044-1.
- .2 Contactors: To NEMA ICS2.

2.3 CONTACTOR TYPE TRANSFER EQUIPMENT

- .1 Contact Type Transfer Equipment: To CSA C22.2 No.178.1.
- .2 Two 3-pole contactors mounted on common frame, in double throw arrangement, mechanically and electrically interlocked, with CSA enclosure, solenoid operated.
 - .1 The switch shall be locked and shall not be affected by temporary outages, in such a way that the contact pressure is maintained to a constant value and that the contact temperature elevation is reduced to the minimum, for maximal reliability and a life cycle optimisation.
- .3 Rated voltage: 347/600 V, 3 phase, or 120/240 V, 1 phase, 60 Hz, rated current as indicated, three (3) wires, neutral continuous at 347/600 V. Three (3) wires at 120 /240 V.
- .4 Main Contacts: Silver surfaced, protected by arc disruption means.
 - .1 The opening capacity and contact interruption: Respectively, 20 times and 6 times their capacity.
- .5 Switch and relay contacts, coils, spring, and control elements accessible for inspection and maintenance from front of panel without removal of switch panel or disconnection of drive linkages and power conductors.
- .6 Auxiliary Contact: Silver plated, to initiate emergency generator start-up on failure of normal power.
- .7 Fault Withstand Rating: 35 kA symmetrical, for three-cycles, that can attain a peak value of 50 kA.
- .8 Lever to operate switch manually when switch is isolated.
- .9 Neutral overlapping bar, with a rating to match the nominal current of the phase bars.

- .10 Overlapping neutral contacts on contactor type transfer equipment.
- .11 Sprinkler-proof enclosure.

2.4 ISOLATING DERIVATION SWITCH

- .1 Each automatic transfer device will have a two-way derivation isolation switch that will ensure a manual transfer of the load to each source and allow the isolation of the automatic transfer switch of each source and load. All the principal contacts shall be triggered manually.
- .2 Electrical interconnections on a silver surface copper bar.
- .3 Separated handles for the insulation and derivation to give a clear distinction between both functions. The handles shall be shut permanently and can be operated without opening the cabinet's door.
- .4 The derivation supplying this load shall be ensured without interruption of the charging supply ("Make-Before-Break"). The derivation handle shall possess three operation modes: "Derivation to Normal", "Automatic" and "Derivation to Emergency". The functioning speed if the derivation contacts shall be the same as the associated transfer switch and be independent of the speed at which the manual handle is maneuvered. In "Automatic" mode, the derivation contacts shall be turned off to protect them from fault currents to which they can be subjected to.
- .5 The isolating handle shall be provided with three functioning modes: "Closed", "Test" and "Open". The "Test" mode shall allow tests on the emergency supply grid, comprising the automatic transfer switches, with no interruption of the charging supply. The "Open" mode shall allow the complete isolation of the automatic transfer switch of all supply and charging cables. In "Open" mode, it shall be possible to completely remove the automatic transfer switch for inspection or maintenance according to the Code requirements, without removing the power conductors and without requiring use of tools.
- .6 When the isolation switch is in "Test" or "Open" mode, the derivation switch shall operate like a manual transfer switch.

2.5 CONTROLS

- .1 The unit will be controlled via a microprocessor controller.
 - .1 The sensing, timing, and control functions of the controller shall be provided by an integrated microprocessor. It will include an integrated keyboard and a four-line LCD display. It shall be possible to perform all monitoring and control functions with the enclosure door closed.
 - .2 Status level to display real-time automatic transfer switch status information - voltage, frequency, phase sequence, normal and emergency voltage imbalance. It shall provide diagnostics regarding the active sequence of operation and the position of the transfer switch.
- .2 Selector Switch - 4-position "Test", "Auto", "Manual", "Engine start".
 - .1 Test position - Normal power failure simulated. Engine starts and transfer takes place. Return switch to "Auto" to stop engine.
 - .2 Auto position - Normal operation of transfer switch on failure of normal power; retransfers on return of normal voltage and shuts down engine.
 - .3 Manual position - Transfer switch may be operated by manual handle but transfer switch will not operate automatically and engine will not start.

- .4 Engine start position - Engine starts but unit will not transfer unless normal power supply fails. Switch shall be returned to "Auto" to stop engine.
- .3 Control Transformers: Dry type with 120 V secondary to isolate control circuits from:
 - .1 Normal power supply.
 - .2 Emergency power supply.
- .4 Relays: Continuous duty, industrial control type, with wiping action contacts rated 10 A minimum:
 - .1 Voltage sensing: 3-phase for normal power and on one phase only for emergency, solid state type, adjustable drop out and pick up, close differential, 2 V minimum undervoltage protection.
 - .2 Time delay: Normal power to standby, adjustable solid state, 0 to 60 s.
 - .3 Time delay on engine starting to override momentary power outages or dips, adjustable solid state, 0 to 60 s delay.
 - .4 Time delay on retransfer from standby to normal power, adjustable 5 to 180 s.
 - .5 Time delay for engine cool-off to permit standby set to run unloaded after retransfer to normal power, adjustable solid state, 20 s intervals to 10 minutes.
 - .6 Time delay during transfer to stop transfer action in neutral position to prevent fast transfer, adjustable, 5 s intervals to 180 s.
 - .7 Frequency sensing, to prevent transfer from normal power supply until frequency of standby unit reaches pre-set adjustable values.
 - .8 Neutral position delay: Allow time for motors to delay between live sources, adjustable, 0 to 5 s.
- .5 Solid state electronic in-phase monitor.
- .6 Dry N.O. dry contact entry for "Shunt trip" (return to normal source).

2.6 ACCESSORIES

- .1 Ensure pilot lights indicate power availability normal and standby, switch position, green for normal, red for standby, mounted on panel.
- .2 Plant Exerciser: 168-hour timer to start standby unit once each week for selected interval but does not transfer load from normal supply. Timer adjustable 0-168 hours in 15-minute intervals. The test system shall be programmed for a one (1) hour weekly test under load.
- .3 Auxiliary relay to provide:
 - .1 Four contacts indicating the transfer switch position.
 - .2 Two contacts indicating the derivation position.
- .4 Instruments:
 - .1 Digital true RMS, indicating type 2% accuracy, flush panel mounting:
 - .1 Voltmeter: AC.
 - .2 Ammeter: AC.
 - .3 Frequency meter.
- .5 Potential transformers - Dry type for indoor use:
 - .1 Ratio: 600 to 120.
 - .2 Rating: 600 V or 240 V, 60 Hz, 10 kV choc resistance.

- .3 Accuracy rating: 1%.
- .6 Current transformers - Dry type for indoor use:
 - .1 Ratio: 100 to 5, or 300 to 5 according to the switch capacity.
 - .2 Rating: 600 V, 60 Hz, 10 kV choc resistance.
 - .3 Accuracy rating: 1 %.
 - .4 Positive action automatic short-circuiting device in secondary terminals.
- .7 Manual by-pass and isolator: To emergency and normal supply.

2.7 EQUIPMENT IDENTIFICATION

- .1 Supply and install signage plates in accordance with Section 26 05 00 - Common Work Results for Electrical..
- .2 Control Panel:
 - .1 For selector switch and manual switch: Size 4 nameplates.
 - .2 For meters, indicating lights, minor controls: Size 2 nameplates.

2.8 SOURCE QUALITY CONTROL

- .1 Complete equipment, including transfer mechanism, controls, relays, and accessories factory assembled and tested in presence of Departmental Representative.
- .2 Notify Departmental Representative 2 weeks minimum in advance of date of factory test.
- .3 Tests:
 - .1 Operate equipment both mechanically and electrically to ensure proper performance.
 - .2 Check selector switch, in modes of operation Test, Auto, Manual, Engine Start and record results.
 - .3 Check voltage sensing and time delay relay settings.
 - .4 Check:
 - .1 Automatic starting and transfer of load on failure of normal power.
 - .2 Retransfer of load when normal power supply resumed.
 - .3 Automatic shutdown.
 - .4 In-phase monitor operation.
 - .5 Successful transmittal of various statuses to Building Management System and as indicated.

2.9 DIMENSIONS

- .1 The dimensions of the automatic transfer switch assemblies and individual compartments shall be as per dimensions of the automatic transfer switches and indications on plan. Dimensions other than those allowing the electrical and/or mechanical room layouts indicated will not be approved during the shop drawing approval process.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for transfer switches installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.
 - .4 Check requirements for adjusting switching times.

3.2 INSTALLATION

- .1 Locate, install, and connect transfer equipment as indicated.
- .2 Connect emergency power generator panel relays and verify adequate function for ensuring starting and stopping operations groups, as planned.
- .3 Check relays and solid-state monitors; adjust as required to ensure correct operation.
- .4 Check requirements for setting switching delays.

3.3 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Energize transfer equipment from normal power supply.
- .3 Set selector switch in "Test" position to ensure proper standby start, running, transfer, retransfer. Return selector switch to "Auto" position to ensure standby shuts down.
- .4 Set selector switch in "Manual" position and check to ensure proper performance.
- .5 Set selector switch in "Engine start" position and check to ensure proper performance. Return switch to "Auto" to stop engine.
- .6 Set selector switch in "Auto" position and open normal power supply disconnect. Standby should start, come up to rated voltage and frequency, and then load should transfer to standby. Allow to operate for 10 minutes, then close main power supply disconnect. Load should transfer back to normal power supply and standby should shutdown.
- .7 Repeat tests completely twice in a row, at one-hour intervals. At each test, the selector shall be successively placed at each position.

3.4 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 TRAINING

- .1 A basic training session shall be provided to maintenance personnel and given by the load switch manufacturer. Provide an on-site training session of at least 4 hours. Provide the course outline prior to the training session for approval. Supply and all the support material required for the course: Projector, paper documentation, CD or USB key, and course plan.

END OF SECTION

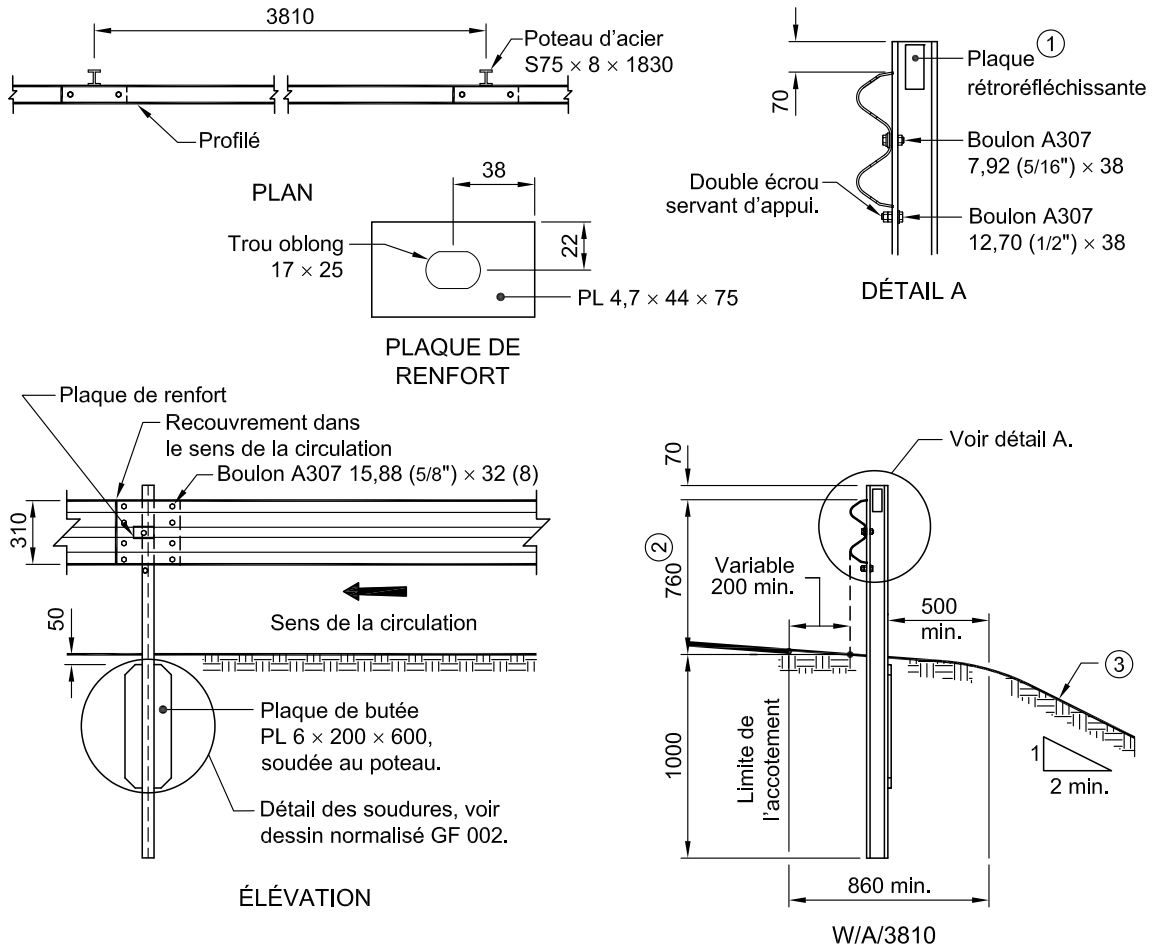
APPENDICES





GLISSIÈRE FLEXIBLE
AVEC PROFILÉ D'ACIER
À DOUBLE ONDULATION
SUR POTEAUX D'ACIER

NORME



- ① Sur tous les poteaux, on pose une plaque rétroréfléchissante de 50 x 100 mm (pellicule autoadhésive). La pellicule est de couleur blanche à droite de la route et jaune à gauche.
- ② En présence d'une bordure, la hauteur fonctionnelle de la glissière doit être mesurée conformément à la figure 3.4-2.
- ③ Pente de 1V:2H ou plus douce. Dans le cas d'une pente plus abrupte, les poteaux doivent être placés de manière à ce que la distance entre la face avant de l'élément de glissement et le bord du talus soit égale ou supérieure à la déformation dynamique de la glissière.

Notes :

- l'usage de cette glissière est limité aux routes où la vitesse affichée est inférieure ou égale à 70 km/h;
- la norme ASTM A36/A36M est acceptable en remplacement de la norme CSA G40.20/G40.21 (Tome VII, norme 6101);
- le traitement des extrémités doit être effectué conformément aux dessins normalisés GF 010 à GF 012;
- toutes les pièces métalliques doivent être galvanisées;
- le détail des boulons est indiqué dans le dessin normalisé GSR 050;
- les cotes sont en millimètres.

MATÉRIAUX — NORMES APPLICABLES

Aciers de construction, type W,
limite élastique minimale 260 MPa Tome VII, norme 6101
Boulons, tiges d'ancrage,
écrous et rondelles Tome VII, norme 6201

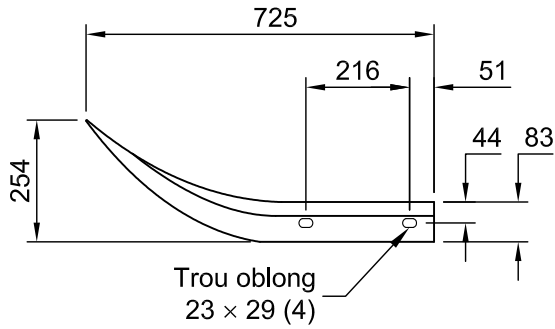
Éléments de glissement Tome VII, norme 6301
Galvanisation ASTM A123/A123M
Pellicules rétroréfléchissantes, type XI Tome VII, norme 14101

Tome VIII
Chapitre 3
Numéro GSR 048
Date 2014 09 30

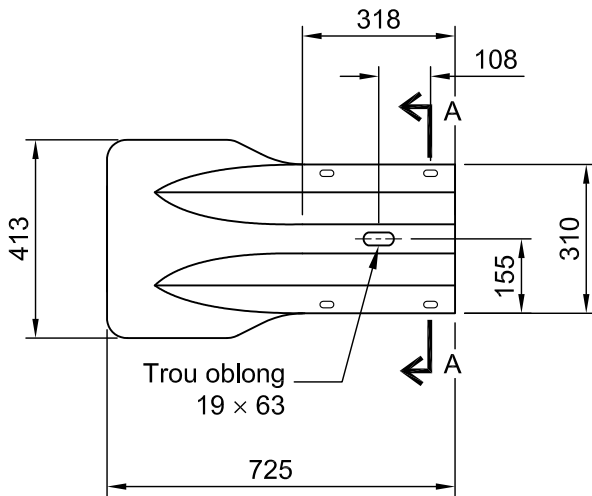
DESSIN NORMALISÉ

**PROFILÉ D'ACIER À
DOUBLE ONDULATION –
BOUT EFFILÉ**

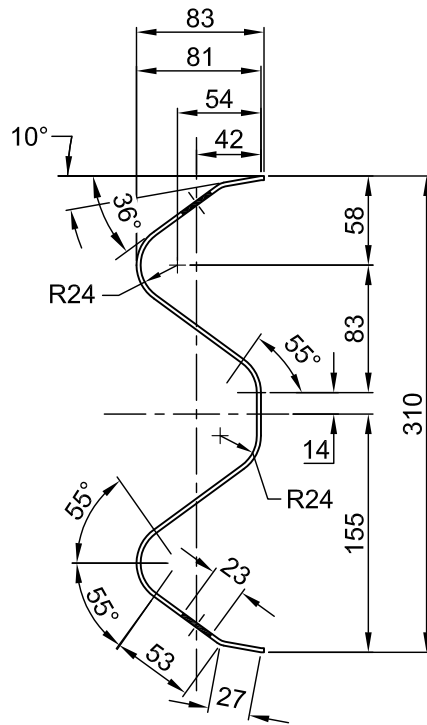
NORME



PLAN



ÉLEVATION



COUPE A-A

Notes :

- l'épaisseur de l'acier du profilé, avant galvanisation, est de 2,65 mm;
- la galvanisation de la pièce doit être faite après le pliage, la coupe et le perçage;
- les tolérances de fabrication sont de ± 6 mm pour les dimensions et de ± 3 mm pour le positionnement des trous;
- les cotes sont en millimètres.

MATÉRIAUX — NORMES APPLICABLES

Éléments de glissement

Tome VII, norme 6301 | Galvanisation

ASTM A123/A123M



Englobe

Soils Materials Environment

Public Services and Procurement Canada

**Waskaganish Cree Airport
Waskaganish (Quebec)**

Phase II Environmental Site Assessment

Final report

February 2019

O/Ref.: 129-P-0014860-0-00-100-02-HG-R-0001-00

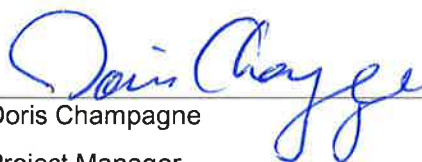
Public Services and Procurement Canada

Waskaganish Cree Airport Waskaganish (Quebec)

Phase II Environmental Site Assessment

Final report | 129-P-0014860-0-00-100-02-HG-R-0001-00

Prepared by:



Doris Champagne
Project Manager

Approved by:



Christine Gervais, Eng.
Project Manager

RÉSUMÉ

La firme Englobe Corp. (Englobe) a été mandatée par Services publics et approvisionnement Canada (SPAC), pour le bénéfice de Transports Canada (TC), afin de réaliser une caractérisation environnementale de site (CES) Phase II à l'aéroport cri de Waskaganish situé à Waskaganish (Québec). La présente étude est réalisée dans le cadre d'un projet d'acquisition de données pour dresser le portrait environnemental de certaines propriétés de TC et les travaux de terrain ont été réalisés afin de cibler les préoccupations environnementales identifiées lors de l'évaluation environnementale de site (EES) Phase I réalisée par Englobe en octobre 2017, soit :

- 1) De l'eau souterraine présentant une contamination excédant les recommandations du Conseil canadien des ministres de l'environnement (CCME) pour la protection de la vie aquatique en naphthalène et en toluène. Le puits d'observation contaminé a été démantelé lors de travaux d'excavation en 2004-2005. Les puits d'observation existants F-2 et F-4, localisés à l'intérieur du garage, et les nouveaux puits d'observation WK-MW-18-1 et WK-MW-18-2 ont été échantillonnés. Des concentrations en naphthalène et en toluène ont été détectées dans l'eau souterraine sans toutefois dépasser les critères applicables.
- 2) La présence de sols de surface contaminés « > C » par les hydrocarbures pétroliers (HP) C₁₀-C₅₀ à l'emplacement d'un baril de 205 l d'huiles usées, dans la zone clôturée et dédiée à la réserve de gravier, du côté de la clôture est. Deux sondages de surface (WK-MA-18-1 et WK-MA-18-2) ont été réalisés dans ce secteur et ils n'ont pas révélé la présence de contamination excédant les critères applicables.
- 3) La présence de sols contaminés par le toluène dont les concentrations excèdent les recommandations du CCME pour un usage commercial/industriel devant la porte de garage, au coin nord-est. Deux tranchées d'exploration (WK-TP-18-1 et WK-TP-18-2) ont été réalisées dans ce secteur et elles n'ont pas révélé la présence de contamination excédant les critères applicables.
- 4) La présence antérieure de deux réservoirs hors sol de mazout en façade sud du garage et au centre de la façade est de l'ancienne aérogare. Deux tranchées d'exploration ont été réalisées au sud du garage (WK-TP-18-3 et WK-TP-18-6) et une tranchée d'exploration a été réalisée à l'est de l'ancienne aérogare (WK-TP-18-7). Les sols de la tranchée d'exploration WK-TP-18-6, entre 1,00 m et 2,15 m, présentent une contamination par l'éthylbenzène et les hydrocarbures pétroliers F2 supérieure aux Recommandations canadiennes pour la qualité des sols (RCQS) pour une utilisation industrielle et pour les sols à grains grossiers. L'identification de produits pétroliers (IPP) correspond à un hydrocarbure dans la région de l'huile à chauffage. Le volume de sols contaminés est estimé à 35 m³.

- 5) L'occurrence d'un déversement accidentel d'environ 4 450 l de mazout à partir du réservoir attenant au garage d'entretien mécanique. Plusieurs séquences de travaux de caractérisation et de réhabilitation ont eu lieu, mais certaines zones n'ont pas été délimitées et des sols contaminés seraient potentiellement toujours en place. Un forage a été réalisé à l'intérieur du garage (WK-F-18-1) et l'eau souterraine a été échantillonnée à partir des puits d'observation existants F-2 et F-4, localisés dans le garage. Les sols et l'eau souterraine ne présentent pas de contamination excédant les critères applicables. Le volume associé à la contamination résiduelle le long de la paroi est du garage et potentiellement sous ce dernier, présente entre 0,00 m et 2,60 m de profondeur, est estimé à 44 m³.
- 6) La présence de sols (tourbe) contaminés par le toluène excédant le critère « B » du ministère du Développement durable, de l'Environnement et des Parcs (MDDEP) au sud de l'ancienne aérogare. Un puits d'observation (WK-MW-18-1) et 2 tranchées d'exploration (WK-TP-18-4 et WK-TP-18-5) ont été réalisés afin de traiter cette préoccupation. Les sols et l'eau souterraine ne présentent pas de contamination excédant les critères applicables.
- 7) De l'eau souterraine contaminée par des hydrocarbures aromatiques polycycliques (HAP) en concentrations excédant les recommandations du CCME pour la protection de la vie aquatique et les critères « pour fins de consommation » du MDDEP et en hydrocarbures aromatiques monocycliques (HAM) en concentrations excédant les recommandations du CCME pour la protection des collectivités. Les puits d'observation existants F-2 et F-4, localisés à l'intérieur du garage, et les nouveaux puits d'observation WK-MW-18-1 et WK-MW-18-2 ont été échantillonnés. Des concentrations en naphthalène ont été détectées dans l'eau souterraine sans toutefois dépasser les critères applicables.
- 8) La présence de sols contaminés à l'endroit d'un sondage existant (F8), localisé au coin sud-est de la grande section intérieure du garage. Un forage a été réalisé à l'intérieur du garage (WK-F-18-1) et l'eau souterraine a été échantillonnée à partir des puits d'observation existants F-2 et F-4, localisés dans le garage. Les sols et l'eau souterraine ne présentent pas de contamination excédant les critères applicables. Conséquemment, sur la base des résultats obtenus lors des études antérieures, le volume de sols contaminés associé au sondage F-8 est estimé à 45 m³.
- 9) La présence de sols contaminés « > C » en HP C₁₀-C₅₀ et en HAP dans le secteur de la nouvelle aérogare. L'information disponible ne permettant pas de localiser précisément cette préoccupation, aucuns travaux de caractérisation n'ont été réalisés.
- 10) La présence antérieure d'un réservoir souterrain d'huiles usées en façade sud du garage, lequel a été retiré en 2011. La fosse a quant à elle été partiellement caractérisée en omettant les paramètres chimiques des HAP et des métaux. Aucun échantillon de fond n'a été prélevé ni analysé. Deux tranchées d'exploration ont été réalisées au sud du garage (WK-TP-18-3 et WK-TP-18-6); les résultats sont présentés au point présenté 4 ci-haut.

- 11) La présence de sols contaminés par les HP C₁₀-C₅₀ dans la plage « B-C » des critères du ministère du Développement durable, de l'Environnement, de la Faune et des Parcs (MDDEFP) dans deux sondages réalisés en 2013 dans le secteur du réservoir hors sol de mazout de l'ancienne aérogare. Le réservoir a été démantelé à cette époque, mais aucune information ne documente une potentielle excavation des sols. Le démantèlement n'incluait que le réservoir, la tuyauterie, la dalle de béton et la clôture. Une tranchée d'exploration a été réalisée à l'est de l'ancienne aérogare (WK-TP-18-7) et elle n'a pas révélé la présence de contamination excédant les critères applicables.
- 12) L'occurrence d'un déversement d'un baril de carburant d'avion en 2015 au nord du secteur de la pompe de ravitaillement. Deux sondages de surface (WK-MA-18-3 et WK-MA-18-4) ont été réalisés dans ce secteur et ils n'ont pas révélé la présence de contamination excédant les critères applicables.
- 13) La présence d'un caniveau, d'un puisard et d'un séparateur eau/huile, tous interreliés par des conduites souterraines dans le garage. Un forage a été réalisé à l'intérieur du garage (WK-F-18-2) et il n'a pas révélé la présence de contamination excédant les critères applicables.
- 14) La présence d'un îlot des pompes au nord-ouest du garage. Une tranchée d'exploration (WK-TP-18-8) a été réalisée dans ce secteur et elle n'a pas révélé la présence de contamination excédant les critères applicables.
- 15) La présence d'une aire de ravitaillement des avions à l'est du tablier. Deux sondages de surface (WK-MA-18-5 et WK-MA-18-6) ont été réalisés dans ce secteur et ils n'ont pas révélé la présence de contamination excédant les critères applicables.
- 16) La présence de deux barils de diesel à l'ouest de l'îlot des pompes, sur le sol gravelé. Deux sondages de surface (WK-MA-18-7 et WK-MA-18-8) ont été réalisés dans ce secteur et ils n'ont pas révélé la présence de contamination excédant les critères applicables.
- 17) La présence de quatorze barils de carburant d'avion vides entreposés au sud-ouest du garage, sur des palettes de bois posées sur le gravier. Deux sondages de surface (WK-MA-18-9 et WK-MA-18-10) ont été réalisés dans ce secteur et ils n'ont pas révélé la présence de contamination excédant les critères applicables.
- 18) La présence de taches au sol en façade nord de l'ancienne aérogare. Deux sondages de surface (WK-MA-18-11 et WK-MA-18-12) ont été réalisés dans ce secteur et ils n'ont pas révélé la présence de contamination excédant les critères applicables.
- 19) La présence d'une station de déglçage d'Air Creebec avec réservoirs de glycol. Une tranchée d'exploration (WK-TP-18-9) a été réalisée dans ce secteur et elle n'a pas révélé la présence de contamination excédant les critères applicables.

- 20) La présence antérieure d'un réservoir mobile de carburant et d'une ancienne station de déglacage d'Air Creebec avec réservoirs de glycol. Deux sondages de surface (WK-MA-18-13 et WK-MA-18-14) ont été réalisés dans ce secteur et ils n'ont pas révélé la présence de contamination excédant les critères applicables.
- 21) La présence antérieure d'une conduite souterraine reliant le réservoir hors sol de diesel à la pompe de carburant. Un puits d'observation (WK-MW-18-2) a été aménagé dans ce secteur. Les sols et l'eau souterraine n'ont pas révélé la présence de contamination excédant les critères applicables.
- 22) L'occurrence antérieure de fuites du distributeur de carburant. Un sondage de surface (WK-MA-18-15) a été réalisé dans ce secteur et il n'a pas révélé la présence de contamination excédant les critères applicables.
- 23) La présence temporaire (quelques mois) de l'aire de ravitaillement des avions au nord du garage. Un puits d'observation (WK-MW-18-2) a été aménagé dans ce secteur. Les sols et l'eau souterraine n'ont pas révélé la présence de contamination excédant les critères applicables.

Bien qu'aucune préoccupation environnementale liée à la qualité de l'eau de surface n'a été soulevée lors de l'EES Phase I, trois échantillons d'eau de surface (Point A à Point C) ont été prélevés dans les fossés de drainage du site afin d'acquies de l'information concernant sa qualité. L'eau de surface n'est pas contaminée en regard des *Recommandations canadiennes pour la qualité de l'eau* (RCQE) du CCME en vue de la protection de la vie aquatique ni en regard des critères de qualité de l'eau de surface établis par le ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC) pour la prévention de la contamination des organismes aquatiques et de la vie aquatique (effet aigu et effet chronique).

Étant donné la localisation des sols contaminés qui sont adjacents aux fondations ou sous le garage et l'absence de contamination dans l'eau souterraine, Englobe ne recommande pas, pour l'instant, de travaux de réhabilitation environnementale dans ces secteurs. En effet, des travaux de réhabilitation par excavation/disposition ne garantiraient pas l'atteinte des objectifs de réhabilitation. Les méthodes de réhabilitation in situ ne sont pas économiquement avantageuses compte tenu du faible volume de sols contaminés. Englobe recommande donc de procéder au suivi de la qualité de l'eau souterraine dans ces secteurs afin de s'assurer que la contamination ne migre pas vers l'extérieur des limites de propriété. Également, advenant la démolition du bâtiment, les sols contaminés devraient être gérés en fonction de leur niveau de contamination.

SUMMARY

Englobe Corp. (Englobe) has been mandated by Public Services and Procurement Canada (PSPC), on behalf of Transport Canada (TC), to perform a Phase II Environmental Site Characterization at Waskaganish Cree Airport in Waskaganish (Quebec). The current investigation has been performed as part of a data acquisition project to provide an environmental portrait of certain TC's properties, and the field works have been performed in order to address the following environmental concerns identified in the Phase I Environmental Site Assessment (ESA) carried out by Englobe in October 2017:

- 1) Groundwater showing naphthalene and toluene contamination exceeding the Canadian Council of Ministers of the Environment (CCME)'s recommendations with regards to the protection of aquatic life. The contaminated monitoring well was dismantled in 2004-2005 during excavation works. Existing monitoring wells F-2 and F-4, located inside the garage, and new monitoring wells WK-MW-18-1 and WK-MW-18-2 have been sampled. Naphthalene and toluene concentrations have been detected in groundwater but they did not exceed the applicable criteria.
- 2) Presence of surface soils contaminated "> C" with petroleum hydrocarbons (PHC) C₁₀-C₅₀ at the location of a 205 l waste oil barrel, in the fenced area used for the gravel reserve on the eastern fence side. Two (2) surface soundings (WK-MA-18-1 and WK-MA-18-2) have been performed in the sector and they did not reveal the presence of contamination exceeding the applicable criteria.
- 3) Presence of soils contaminated with toluene which concentrations exceed the CCME's recommendations for a commercial/industrial use in front of the garage door, in the northeastern corner. Two (2) test pits (WK-TP-18-1 and WK-TP-18-2) have been performed in the sector and they did not reveal the presence of contamination exceeding the applicable criteria.
- 4) Former presence of two (2) aboveground fuel oil tanks on the southern side of the garage and in the central part of the eastern side of the former terminal airport. Two (2) test pits have been performed to the south of the garage (WK-TP-18-3 and WK-TP-18-6) and one (1) test pit has been performed to the east of the former airport terminal (WK-TP-18-7). The soils of the test pit WK-TP-18-6, between 1.00 m and 2.15 m, have shown contamination with ethylbenzene and PHC F2 exceeding the *Canadian Soils Quality Guidelines* (CSQG) for an industrial use and coarse-grained soils. The identification of petroleum products matches a hydrocarbon in the region of fuel oil. A volume of 35 m³ of contaminated soils has been estimated.

- 5) An accidental spill event of about 4,450 l of fuel oil from the tank beside the mechanical maintenance garage. Several sequences of characterization and remediation works have been performed, but certain areas have not been delineated, and contaminated soils would potentially remain in place. One (1) borehole has been performed inside the garage (WK-F-18-1), and the groundwater has been sampled from the existing monitoring wells F-2 and F-4 located in the garage. Soils and groundwater have not shown contamination exceeding the applicable criteria. The volume associated to the residual contamination along the eastern wall of the garage and potentially underneath the latter, at depths ranging between 0.00 m and 2.60 m, has been estimated at 44 m³.
- 6) Presence of soils (peat) contaminated with toluene exceeding the “B” criteria of the Ministry of Sustainable Development, Environment and Parks (*ministère du Développement durable, de l’Environnement et des Parcs* (MDDEP)) to the south of the former terminal airport. One (1) monitoring well (WK-MW-18-1) and two (2) test pits (WK-TP-18-4 and WK-TP-18-5) have been performed to address that concern. Soils and groundwater have not shown contamination exceeding the applicable criteria.
- 7) Groundwater contaminated with polycyclic aromatic hydrocarbons (PAHs) exceeding the CCME’s recommendations with regards to the protection of aquatic life and the MDDEP’s “for consumption purposes” (*pour fins de consommation*) criteria, and groundwater contaminated with monocyclic aromatic hydrocarbons (MAHs) concentrations exceeding the CCME’s recommendations for the protection of communities. Existing monitoring wells F-2 and F-4, located inside the garage, and the new monitoring wells WK-MW-18-1 and WK-MW-18-2 have been sampled. Naphthalene concentrations have been detected in groundwater but they did not exceed the applicable criteria.
- 8) Presence of contaminated soils at the location of an existing sounding (F8) located at the southeastern corner of the garage’s large inner section. A borehole has been performed inside the garage (WK-F-18-1) and groundwater has been sampled from the existing monitoring wells F-2 and F-4 located in the garage. Soils and groundwater have not shown contamination exceeding the applicable criteria. Thus, according to the results obtained in previous investigations, a volume of 45 m³ of contaminated soils associated to the sounding F-8 has been estimated.
- 9) Presence of soils contaminated “> C” with PHC C₁₀-C₅₀ and PAHs in the area of the new terminal airport. Since the available information did not contribute to locate that concern, no characterization works have been carried out.
- 10) Former presence of one (1) underground waste oil tank on the southern side of the garage, which was removed in 2011. Regarding the trap, it has been partially characterized, excluding some parameters of the PAHs and metals. No bottom sample has been collected nor submitted to analysis. Two (2) test pits have been performed to the south of the garage (WK-TP-18-3 and WK-TP-18-6); results are described in item 4 above.

- 11) Presence of soils contaminated with PHC C₁₀-C₅₀ in the “B-C” range of the Ministry of the Sustainable Development, Environment, Fauna and Parks (*ministère du Développement durable, de l'Environnement, de la Faune et des Parcs* (MDDEFP)) in two (2) soundings performed in 2013 in the area of the aboveground fuel oil tank of the former terminal airport. The tank was dismantled at that time, but no information is documenting a potential excavation of soils. The dismantlement has only included the tank, piping, concrete slab and fence. One (1) test pit has been performed to the east of the former terminal airport (WK-TP-18-7) and it did not show contamination exceeding the applicable criteria.
- 12) A fuel aviation barrel spill occurred in 2015 to the north of the refueling pump area. Two (2) surface soundings (WK-MA-18-3 and WK-MA-18-4) have been performed in the sector and they did not show contamination exceeding the applicable criteria.
- 13) Presence of a gutter, sump and water/oil separator, all connected to underground piping in the garage. One (1) borehole has been performed inside the garage (WK-F-18-2) and it did not show contamination exceeding the applicable criteria.
- 14) Presence of a pump island to the northwest of the garage. One (1) test pit (WK-TP-18-8) has been performed in the sector and it did not show contamination exceeding the applicable criteria.
- 15) Presence of an aircraft refueling area to the east of the apron. Two (2) surface soundings (WK-MA-18-5 and WK-MA-18-6) have been performed in the sector and they did not show contamination exceeding the applicable criteria.
- 16) Presence of two (2) diesel barrels to the west of the pump island, on graveled ground. Two (2) surface soundings (WK-MA-18-7 and WK-MA-18-8) have been performed in the sector and they did not show contamination exceeding the applicable criteria.
- 17) Presence of fourteen (14) empty aviation fuel barrels stored to the southwest of the garage, on wooden pallets laid on gravel. Two (2) surface soundings (WK-MA-18-9 and WK-MA-18-10) have been performed in the sector and they did not show contamination exceeding the applicable criteria.
- 18) Presence of stains on the ground on the northern side of the former terminal airport. Two (2) surface soundings (WK-MA-18-11 and WK-MA-18-12) have been performed in the sector and they did not show contamination exceeding the applicable criteria.
- 19) Presence of an Air Creebec deicing bay with glycol tanks. One (1) test pit (WK-TP-18-9) has been performed in the sector and it did not show contamination exceeding the applicable criteria.
- 20) Former presence of a mobile fuel tank and former Air Creebec deicing bay with glycol tanks. Two (2) surface soundings (WK-MA-18-13 and WK-MA-18-14) have been performed in the sector and they did not show contamination exceeding the applicable criteria.

- 21) Former presence of piping connecting the aboveground diesel tank to the fuel pump. One (1) monitoring well (WK-MW-18-2) has been installed in the sector. Soils and groundwater have not shown contamination exceeding the applicable criteria.
- 22) Former leaks from the fuel dispensing system. One (1) surface sounding (WK-MA-18-15) has been performed in the sector and it did not show contamination exceeding the applicable criteria.
- 23) Temporary presence (a few months) of the aircraft refueling area to the north of the garage. One (1) monitoring well (WK-MW-18-2) has been installed in the sector. Soils and groundwater have not shown contamination exceeding the applicable criteria.

Even if no environmental concern associated to the surface water quality has been raised in the Phase I ESA, three (3) surface water samples (Point A to Point C) have been collected in the drainage ditches to acquire data on its quality. Surface water is not contaminated with regards to the CCME's Canadian Water Quality Guidelines (CWQG) for the protection of aquatic life nor the Ministry of Environment and Fight against Climate Change (*ministère de l'Environnement et de la Lutte contre les changements climatiques* (MELCC)'s surface water quality criteria with regards to prevention of contamination of aquatic organisms and aquatic life (acute effect and chronic effect).

Given the location of the contaminated soils that are adjacent to the foundations or underneath the garage as well as the absence of contamination in groundwater, Englobe does not recommend, for the moment, to proceed to environmental remediation works in those sectors. Remediation works via excavation/disposition would not ensure that remediation objectives would be reached. In situ remediation methods are not cost-effective due to the small volume of contaminated soils. Englobe recommends to proceed to a groundwater quality monitoring in those sectors to ensure that contamination does not migrate toward the property's outer limits. Finally, in the event where the building is dismantled, the contaminated soils should be managed according to their level of contamination.

TABLE OF CONTENT

1	INTRODUCTION	1
1.1	Mandate	1
1.2	Objectives	1
1.3	Scope and Limitations	2
2	IDENTIFICATION OF INVESTIGATED SITE	3
2.1	Description of Current Site	3
2.2	Previous Studies	3
3	WORK PROGRAM	6
3.1	Fieldwork	6
3.2	Location of Infrastructure	9
3.3	Methodology	9
3.3.1	<i>Exploratory Methods</i>	9
3.3.1.1	Boreholes	9
3.3.1.2	Monitoring Wells	9
3.3.1.3	Test Pits	10
3.3.2	<i>Sampling</i>	10
3.3.2.1	Soil Sampling	10
3.3.2.2	Groundwater Sampling	11
3.3.2.3	Surface Water Sampling	12
3.3.3	<i>Field Tests and Measurements</i>	12
3.3.3.1	Piezometric Survey	12
3.3.3.2	Permeability Test	12
3.4	Analyses and Tests in Laboratory	13
3.4.1	<i>Physicochemical Analyses</i>	13
3.4.1.1	Soil Samples	13
3.4.1.2	Groundwater Samples	13
3.4.1.3	Surface Water Samples	13
3.5	QUALITY ASSURANCE AND CONTROL PROGRAM	14
4	FIELD CHARACTERISTICS	15
4.1	Stratigraphic Context	15
4.2	Hydrographic Context	15
4.3	Hydrogeological Context	15
4.3.1	<i>Hydrostratigraphic Units</i>	15
4.3.2	<i>Piezometry</i>	15
4.3.3	<i>Permeability Test</i>	16

5 ENVIRONMENTAL IMPACT STATEMENT	17
5.1 Used Interpretation Criteria	17
5.1.1 Soils	17
5.1.2 Groundwater.....	18
5.1.3 Surface Water.....	18
5.2 Analytical Results.....	19
5.2.1 Soils	19
5.2.1.1 Interpretation.....	22
5.2.2 Groundwater.....	22
5.2.2.1 Interpretation.....	23
5.2.3 Surface Water.....	23
5.2.3.1 Interpretation.....	24
5.3 quality Control Program	24
5.3.1 Soil Duplicate.....	24
5.3.2 Groundwater Duplicate.....	24
5.3.3 Surface Water Duplicate.....	24
5.3.4 Interpretation.....	25
6 DISCUSSION OF RESULTS	26
6.1 Evaluation of Volumes of impacted Soils.....	26
6.2 Evaluation of Impacts Related to Groundwater	26
6.2.1 Proven or Apprehended Impacts.....	26
6.2.2 Potential Impacts (thresholds).....	27
7 CONCLUSIONS AND RECOMMENDATIONS	29
8 REFERENCES	30
 TABLES	
Table A:Summary of performed works.....	6
Table B: Groundwater levels.....	16
Table C: Permeability test results.....	16
Table D: Selected CCME's exposure pathways.....	17
Table E: Environmental situation with regards to concerns (soils).....	19
Table F: Environmental Situation with regards to Concerns (groundwater)	22

Figures

- Figure 1: Location of the Site
Figure 2: Localization Plan of the Environmental Concerns and Sondings
Figure 3: Soils Analytical Results with regards to CCME
Figure 4: Soils Analytical Results with regards to MELCC
Figure 5: Water Analytical Results

Tables

- Table 1: Soil Samples Analytical Results Summary
Table 2: Groundwater Samples Analytical Results Summary
Table 3: Surface Water Analytical Results Summary

Appendices

- Appendix 1: Scope and Limitations
Appendix 2: Promark-Telecon Reports
Appendix 3: Boreholes Logs
Appendix 4: Procedures for the collection, transportation and storage of samples
Appendix 5: Chemical Analyses Certificate
Appendix 6: Permeability Tests

Property and Confidentiality

“This report can only be used for the purposes stated therein. Any use of the report must take into consideration the object and scope of the mandate by virtue of which the report was prepared, as well as the limitations and conditions specified therein and the state of scientific knowledge at the time the report was prepared. Englobe Corp. provides no warranty and makes no representations other than those expressly contained in the report.

This document is the work product of Englobe Corp. Any reproduction, distribution or adaptation, partial or total, is strictly forbidden without the prior written authorization of Englobe and its Client. For greater certainty, use of any and all extracts from the report is strictly forbidden without the written authorization of Englobe and its Client, given that the report must be read and considered in its entirety.

No information contained in this report can be used by any third party without the prior written authorization of Englobe and its Client. Englobe Corp. disclaims any responsibility or liability for any unauthorized reproduction, distribution, adaptation or use of the report.

If tests have been carried out, the results of these tests are valid only for the sample described in this report.

Englobe’s subcontractors who have carried out on-site or laboratory work are duly assessed according to the purchase procedure of our quality system. For further information, please contact your project manager.”

REGISTRY OF REVISIONS AND ISSUES		
Revision No.	Date	Description of the modification and/or issue
0A	2018-11-08	Preliminary report
00	2019-02-14	Final report
00	2019-03-18	Translated final report

COMMON ABBREVIATIONS

AMDL:	Analytical method detection limit
BQMA:	<i>Banque de données sur la qualité du milieu aquatique</i>
BTEX:	Benzene, toluene, ethylbenzene and total xylenes
CAHs:	Chlorinated aliphatic hydrocarbons
CCME:	Canadian Council of Ministers of the Environment
CEAEQ:	<i>Centre d'expertise en analyse environnementale du Québec</i>
EDC:	Water consumption quality criteria (<i>Critère de qualité « Eau de consommation »</i>) of the MDDELCC's Intervention Guide
EQA:	Government of Québec's Environment Quality Act
HDPE:	High-density polyethylene
Intervention Guide:	Intervention Guide – Protection of soils and rehabilitation of contaminated sites of the MDDELCC
MAHs:	Monocyclic aromatic hydrocarbons
MELCC:	Ministry of Environment and Fight against Climate Change (<i>Ministère de l'Environnement et de la Lutte contre les changements climatiques</i>)
PAHs:	Polycyclic aromatic hydrocarbons
PCBs:	Polychlorinated biphenyls
Phase I ESA:	Phase I Environmental Site Assessment
Phase II ESA:	Phase II Environmental Site Assessment
PHC C₁₀-C₅₀:	Petroleum hydrocarbons C ₁₀ -C ₅₀
PPI:	Petroleum product identification
PSRCS:	Protection of soils and rehabilitation of contaminated sites
PVC:	Polyvinyl chloride
REIMR:	Regulation respecting the landfilling and incineration of residual materials (<i>Règlement sur l'enfouissement et l'incinération de matières résiduelles du gouvernement du Québec</i>)
RES:	Resurgence into surface water quality criteria (<i>Critère de qualité « Résurgence dans l'eau de surface »</i>) of the MELCC's Intervention Guide)

RESC:	Regulation respecting the burial of contaminated soils (<i>Règlement sur l'enfouissement des sols contaminés du gouvernement du Québec</i>)
RMD:	Regulation respecting hazardous materials (<i>Règlement sur les matières dangereuses du gouvernement du Québec</i>)
RPRT:	Land Protection and Rehabilitation Regulation (<i>Règlement sur la protection et la réhabilitation des terrains du gouvernement du Québec</i>)
RSCTSC:	Regulation respecting contaminated soil storage and contaminated soil transfer stations (<i>Règlement sur le stockage et les centres de transfert de sols contaminés du gouvernement du Québec</i>)
SIH:	Hydrogeological information system (<i>Système d'information hydrogéologique du MELCC</i>)
VOCs:	Volatil organic compounds

1 INTRODUCTION

The firm Englobe Corp. (Englobe) has been mandated by Public Services and Procurement Canada (PSPC), on behalf of Transport Canada (TC), to perform a Phase II Environmental Site Assessment (ESA) at the location of a federal property, i.e.: the Waskaganish Cree Airport located in Waskaganish (Quebec). As shown in Figure 1, the investigated site is located on Chief Isiah Road, to the south of the Village of Waskaganish. The current investigation has been performed as part of a data acquisition project to provide an environmental portrait of certain TC's properties.

This report includes the objectives, a description of the site, a summary of the previous studies, a description of performed works and used methodologies, physical features that are inherent to the site, results as well as conclusion and associated recommendations.

1.1 MANDATE

The terms governing the current mandate are based on statements contained in a proposal prepared on September 27, 2017, by Englobe (O/Ref.: 2017-P129-0355), and approved on October 10, 2017, by Mr. Sébastien Caron, a PSPC representative, and on the characterization program issued to PSPC on March 27, 2018.

1.2 OBJECTIVES

This study aims to provide an environmental profile of the site by considering the recommendations of the Canadian Council of the Ministers of the Environment (CCME) and Intervention Guide – Protection of soils and rehabilitation of contaminated sites (Intervention Guide) (*Guide d'intervention – Protection des sols et réhabilitation des terrains contaminés*) of the Ministry of Environment and Fight against Climate Change (*ministère de l'Environnement et de la Lutte contre les changements climatiques* (MELCC, 2016)).

The specific objectives considered in this study are the following:

- ▶ verify the quality of soil on the investigated land with regards to concerns identified during the Phase I ESA performed in October 2017, using environmental surveys;
- ▶ verify the quality of groundwater on the site, including the presence or absence of free-phase hydrocarbons, using monitoring wells;
- ▶ assess hydrogeological conditions on the investigated land;
- ▶ integrate existing information on the environmental quality of the investigated site obtained from previous studies;
- ▶ identify potential receptors of groundwater and risk of contaminants migration toward these receptors or adjacent properties;

- ▶ define the extent of the environmental issue in the area (s) identified as affected by evaluating the volume of affected soils and by adding a cost projection associated to further required decontamination so the contamination level meets the defined recommendations and criteria for a commercial/industrial site;
- ▶ classify the site according to the National Classification System for Contaminated Sites (NCSCS).

1.3 SCOPE AND LIMITATIONS

Respecting particular conditions expressed elsewhere within this report, the characterization works carried out within the scope of this mandate are subject to the scope and limitations described in Appendix 1.

2 IDENTIFICATION OF INVESTIGATED SITE

Address:	Chief Isiah Road, Waskaganish (Quebec)
Geographic Coordinates:	-78.5316 W., 51.4748 N. (NAD 83)
Lot and cadastre:	Category 1A lands (Cree lands)
Surface area:	0.58 km ²
Current owner:	Waskaganish's Band Council (land) and Transport Canada (infrastructure)
Occupant(s):	Transport Canada and Air Creebec
Current use:	Public and federal
Current activities:	Airport (terminal and garage)

2.1 DESCRIPTION OF CURRENT SITE

The investigated site is located in the Village of Waskaganish. More specifically, it is located on Chief Isiah Road, to the south of the Village of Waskaganish. To facilitate reading of the report, the access road to the airport and the runway are considered as eastern/western axis. The location of the investigated site in its regional context is shown in Figure 1.

2.2 PREVIOUS STUDIES

According to the information obtained within the scope of the current mandate, the investigated site has been the subject of previous studies, which are summarized in the 2018 Phase I ESA report (Englobe, 2018). The interpretation of available information collected as part of the Phase I ESA has identified certain environmental concerns likely to affect the investigated land:

Englobe Corp., 2018. Travaux publics et Services gouvernementaux Canada – Aéroport cri de Waskaganish, Waskaganish (Québec) – Évaluation environnementale de site phase I, 129-P-00104860-0-00-100-SG-R-0003-00

- 1) Groundwater showing naphtalene and toluene contamination exceeding the CCME's recommendation for the protection of aquatic life. The contaminated monitoring well was dismantled during excavation works in 2004-2005;
- 2) Presence of surface soils contaminated "> C" with petroleum hydrocarbons (PHC) C₁₀-C₅₀ at the location of a 205 L waste oil barrel in the fenced area used as reserve for gravel, in the area of the eastern fence;
- 3) Presence of soils contaminated with toluene exceeding the CCME's recommendation for a commercial/industrial use in front of the garage door, at its northeastern corner;
- 4) Former presence of two (2) underground heating oil tanks on the southern side of the garage and in the center of the eastern side of the former airport terminal;

- 5) One (1) accidental spill event of approximately 4,450 l of heating oil from the tank beside the mechanical maintenance garage. Several sequences of characterization and remediation works have occurred, but some areas have not been delineated, and contaminated soils would still potentially remain in place;
- 6) Presence of soils (peat) contaminated with toluene exceeding “B” criteria of the Ministry of Sustainable Development, Environment and Parks (ministère du Développement durable, de l'Environnement et des Parcs (MDDEP)) to the south of the former airport terminal. It should be mentioned that in order to better understand information related to the levels of contamination from previous reports and their summary in the current report, the former names of the Ministry of the Environment and Fight against Climate Changes (ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC)) have been used;
- 7) Groundwater contaminated with polycyclic aromatic hydrocarbons (PAHs) with concentrations exceeding the CCME's recommendations for the protection of aquatic life and the MDDEP's criteria “for consumption purposes” and with monocyclic aromatic hydrocarbons (MAHs) with concentrations exceeding the CCME's recommendations for the protection of communities;
- 8) Presence of soils contaminated with PHC at the location of an existing survey (F8) located at the southeastern corner of the large inner section of the garage;
- 9) Presence of soils contaminated “> C” with PHC C₁₀-C₅₀ and PAHs in the area of the new airport terminal (precise location is impossible);
- 10) Former presence of an underground waste oil tank in the southern side of the garage, which was removed in 2011. The ditch has been partially characterized, but the chemical parameters of the PAHs and metals have been omitted. No bottom sample has been collected nor analyzed;
- 11) Presence of soils contaminated with PHC C₁₀-C₅₀ in the “B-C” range of the Ministry of Sustainable Development, Environment, Fauna and Parks (ministère du Développement durable, de l'Environnement, de la Faune et des Parcs (MDDEFP))'s criteria in two (2) soundings in the area of the aboveground heating oil tank of the former airport terminal. This tank was dismantled at that time, but there is no information on the excavation of soils. The dismantlement has only included the tank, its piping, concrete slab and the fence surrounding it;
- 12) One spill event of an aviation fuel barrel in 2015 to the north of the sector of the refueling pump;
- 13) Presence of a gutter, a sump and a water/oil separator all connected to underground piping in the garage;
- 14) Presence of a pump island to the northwest of the garage;
- 15) Presence of an aircraft refueling zone to the east of the traffic area;

- 16) Presence of two (2) diesel barrels to the west of the pump island, on gravel ground;
- 17) Presence of fourteen (14) empty aviation fuel barrels stored to the southwest of the garage, on wooden pallets, on gravel;
- 18) Presence of stains on the ground, on the northern side of the former airport terminal;
- 19) Presence of an Air Creebec deicing bay with glycol tanks;
- 20) Former presence of a mobile fuel tank and a former Air Creebec deicing bay with glycol tanks.

Englobe Corp., 2018. Travaux publics et Services gouvernementaux Canada – Aéroport cri de Waskaganish, Waskaganish (Québec) – Réponse d'Environnement et Changement climatique Canada, 129-P-00104860-0-00-100-SG-L-0003-00

- 21) Former presence of underground piping connecting the aboveground diesel tank to the fuel pump;
- 22) Former spill events from the fuel dispenser;
- 23) Temporary presence (few months) of the aircraft refueling zone to the north of the garage.

3 WORK PROGRAM

The fieldwork program has been defined by Englobe to reach the various specific objectives

3.1 FIELDWORK

Fieldwork performed within the scope of this study was conducted from June 26 to June 29, 2018, by Englobe’s technical personnel. The fieldwork included the following:

- ▶ Twenty-eight (28) surveys, including four (4) boreholes, nine (9) test pits and fifteen (15) manual surveys;
- ▶ installing two (2) monitoring wells;
- ▶ continuous soil sampling in the various surveys;
- ▶ measuring levels of liquids (groundwater and apparent thicknesses of hydrocarbons) in monitoring wells installed on the site, and, if necessary, at the location of former wells present in the investigated sector;
- ▶ developing, purging and sampling of the groundwater in certain monitoring wells and former operational wells;
- ▶ sampling surface water from the ditches located in the periphery of the facilities;
- ▶ collecting samples of the petroleum products observed in the wells;
- ▶ conducting rising head permeability test in the newly installed monitoring wells to evaluate the hydraulic conductivity of the considered hydrostratigraphic units.

A summary of the works performed with regards to the various environmental concerns identified during the Phase I ESA is shown in the following table:

Table A: Summary of performed works

No.	Environmental Concern	Proposed Works	Performed Woks
1	Groundwater showing naphtalene and toluene contamination exceeding the CCME’s recommendation for the protection of aquatic life.	Sampling of five (5) existing monitoring wells (WK-MW-01-1 to -5)	The existing monitoring wells located outside the buildings have not been found due to the presence of compacted backfilling materials above the top of the wells at ground surface. Groundwater sampling from the monitoring wells F-2, F-4, WK-MW-18-1 and WK-MW-18-2.
2	Presence of contaminated surface soils at the location of a 205 L waste oil barrel, in the fenced area used as reserve for gravel, in the area of the eastern fence.	Two (2) surface surveys	Two (2) surface surveys (WK-MA-18-1 and WK-MA-18-2)

No.	Environmental Concern	Proposed Works	Performed Woks
3	Soils contaminated with toluene exceeding the CCME's recommendation for a commercial/industrial use in front of the garage door, at its northeastern corner.	Two (2) test pits	Two (2) test pits (WK-TP-18-1 and WK-TP-18-2)
4, 10 and 11	Former presence of two (2) underground heating oil tanks, former presence of an underground waste oil tank on the southern side of the garage and presence of soils contaminated with PHC C ₁₀ -C ₅₀ in the "B-C" range.	Three (3) test pits	Three (3) test pits (WK-TP-18-3, WK-TP-18-6 and -7). The test pit WK-TP-18-3 was initially cancelled due to its proximity with the test pit WK-TP-18-6. However one (1) test pit has been added (WK-TP-18-3) due to evidence of contamination with PHC in the test pit WK-TP-18-6.
5 and 8	A spill event of approximately 4,450 l of heating oil from the tank beside the mechanical maintenance garage and presence of soils contaminated at the location of a survey located at the southeastern corner of the large inner section of the garage.	One (1) inner borehole Sampling of groundwater from four (4) existing monitoring wells (F-2, F-4, F-9, WK-MW-01-5)	One (1) inner borehole (WK-F-18-1) Sampling of groundwater from the monitoring wells F-2 and F-4. The monitoring wells F-9 and WK-MW-01-5 have not been found.
6	Soil (peat) contaminated with toluene	One (1) monitoring well Two (2) test pits	One (1) monitoring well (WK-MW-18-1) Two (2) test pits (WK-TP-18-4 and WK-TP-18-5).
7	Groundwater contaminated with PAHs concentrations exceeding the CCME's recommendations for the protection of aquatic life and the MDDEP's "for consumption purposes" criteria and with MAHs concentrations exceeding the CCME's recommendations for the protection of communities	Sampling of existing monitoring wells F-2, F-4, F-9 and the new monitoring well WK-MW-18-1	Sampling of groundwater from the monitoring wells F-2, F-4 and WK-MW-18-1. The monitoring well F-9 has not been found.
9	Presence of soils contaminated "> C" with PHC C ₁₀ -C ₅₀ and PAHs in the area of the new airport terminal.	No investigation has been recommended since it is not possible to precisely locate that concern with data currently available.	
12	Spill of an aviation fuel barrel in 2015 to the north of the sector of the refueling pump.	Two (2) surface surveys	Two (2) surface surveys WK-MA-18-3 and WK-MA-18-4)
13	Presence of a gutter, a sump and a water/oil separator all connected to underground piping in the garage.	One (1) inner borehole	One (1) inner borehole. (WK-F-18-2)

14	Pump island and former presence of underground piping connecting the aboveground diesel tank to the fuel pump.	One (1) test pit	One (1) test pit (WK-TP-18-8)
15	Aircraft refueling zone.	Two (2) surface surveys	Two (2) surface surveys (WK-MA-18-5 and WK-MA-18-6)
16	Diesel barrels to the west of the pump island, on the ground.	Two (2) surface surveys	Two (2) surface surveys (WK-MA-18-7 and WK-MA-18-8)
17	Empty aviation fuel barrels stored to the southwest of the garage, on wooden pallets.	Two (2) surface surveys	Two (2) surface surveys (WK-MA-18-9 and WK-MA-18-10)
18	Stains on the ground.	Two (2) surface surveys	Two (2) surface surveys (WK-MA-18-11 and WK-MA-18-12)
19	Presence of a deicing bay with glycol tanks.	One (1) test pit	One (1) test pit (WK-TP-18-9)
20	Former presence of a mobile fuel tank and a former deicing bay.	Two (2) surface surveys	Two (2) surface surveys (WK-MA-18-13 and WK-MA-18-14)
21	Former presence of underground piping connecting the aboveground diesel tank to the fuel pump.	One (1) monitoring well	One (1) monitoring well (WK-MW-18-2)
22	Spill from the fuel dispenser.	One (1) surface survey	One (1) surface survey (WK-MA-18-15)
23	Temporary presence (few months) of the aircraft refueling zone to the north of the garage.	One (1) monitoring well	One (1) monitoring well (WK-MW-18-2)
	<p>Sampling of surface water.</p> <p>Even if the Phase I ESA did not mention any environmental concern related to the surface water quality, the surface water sampling in the drainage ditches was planned as part of the characterization program in order to acquire data on its quality.</p>	Three (3) samples	Three (3) samples (point A to point C)

Surveys have been positioned in order to ensure an adequate coverage of the site according to the environmental concerns identified during the Phase I ESA. The sampling strategy used as part of this investigation was systematic, as defined in the *Guide de caractérisation des terrains* of the Ministry of the Environment (ministère de l'Environnement (MENV)) published in 2003. The location of the surveys and environmental concerns is illustrated in Figure 2.

3.2 LOCATION OF INFRASTRUCTURE

Prior to performing the surveys, the location of underground public and private services (electricity, gas, telephone, aqueduct, sewers, etc.) has been conducted using plans submitted by the client prior to performing works. Finally, Promark-Telecon was mandated on June 22, 2018, to locate private underground infrastructure. These activities have also led to the identification of possible preferential pathways for contaminant migration, where appropriate. Data obtained from Promark-Telecon activities are included in Appendix 2.

3.3 METHODOLOGY

3.3.1 Exploratory Methods

3.3.1.1 Boreholes

Prior to perform surveys WK-F-18-1 and WK-F-18-2 inside the building, the concrete slab at the location of both boreholes has been drilled with a drilling machine to have access to underlying soils. Following soil sampling, drill holes have been plugged with cement concrete.

Works consisted in carrying out four (4) boreholes identified WK-F-18-1 and WK-F-18-2, and WK-MW-18-1 and WK-MW-18-2. They were carried out using a Geoprobe type drill rig owned by Technofor, under the constant supervision of Englobe's technical personnel. The boreholes have reached 4.2 m deep.

3.3.1.2 Monitoring Wells

Boreholes WK-MW-18-1 and WK-MW-18-2 have been installed into monitoring wells in order to intercept the surface of the groundwater body. Monitoring wells 3.6 m deep are equipped with a 50.8 mm diameter PVC well screen, with slot openings of 0.25 mm and a length of 1.5 m. The annular space between the PVC casing and the borehole walls has been filled with a silica sand up to the well screen level, followed by a bentonite slug and silica sand. The silica sand used as gravel packing has been filled with 60 cm above the top of the well screen, i.e. up to the bentonite slug. The monitoring wells have been completed with a 15 cm diameter protective aluminium box at ground level.

Details of the monitoring wells installation are shown in the borehole logs included in Appendix 3.

3.3.1.3 Test Pits

Work consisted in performing nine (9) test pits identified WK-TP-18-1 to WK-TP-18-9. Surveys have reached depths ranging from 2.00 m to 2.70 m. They were performed on June 26 and 27, 2018, by the Waskaganish First Nation using a Caterpillar backhoe, model 430E IT, under the constant supervision of Englobe's technical personnel. Following the sampling, test pits have been backfilled with excavated material placed in the order it was removed, in successive layers. Materials have been compacted with the backhoe bucket as they were put back into the excavations. The surface surveys have also been performed by the Waskaganish First Nation using a Caterpillar backhoe, model 430E IT, under the constant supervision of Englobe's technical personnel in order to ensure reaching the targeted depth in a timely manner. All manual surveys reached the targeted depth of 0.30 m.

The location of surveys has been performed by chaining, from the building and current infrastructure and using a portable Global Positioning System (GPS).

3.3.2 Sampling

Samples collecting, transportation and preservation procedures have been performed based on the methodologies prescribed in the CCME's *Guidance manual for environmental site characterization in support of environmental and human health risk assessment* and the MDDEP's *Guides d'échantillonnage à des fins d'analyses environnementales*. Prior to each collecting sequence, the sampling instruments (trowel, split sampling spoon or other) that may have come into contact with the samples have been cleaned according to the recommendations of the various reference guidance manuals. The collecting, transportation and preservation procedures are presented in Appendix 4.

3.3.2.1 Soil Sampling

Given the investigation methods involving the drilling of boreholes and that works have been performed in a context of characterization, grab sample type have been collected in order to avoid any dilution of potential contamination. No composite samples have been formed during the soil environmental characterization.

Soil sampling in boreholes has been performed on a continuous basis using transparent high density polyethylene (HDPE) liners in order to define the stratigraphy of the intercepted overburden deposits. The sampler has been driven into soil using pressure. During the sampling, the upper and lower parts (approximately 5 cm) have been discarded to ensure the samples were representative of the depth interval.

The collection of samples during the excavation of test pits has been performed on a continuous basis using a stainless steel trowel on one of the walls of the test pit or in the bucket of the backhoe. The sampling has been performed according to the encountered stratigraphy and organoleptic observations over a 0.5 m-thick maximum sampling interval (without stratigraphic units overlap).

During the collection of samples intended for PHC F1 or MAHs analysis, the syringe has been driven immediately after penetrating into the liner at a specific location. Following the sampling collection, samples have been placed into a vial containing methanol prepared beforehand by the laboratory. Then the rest of the soil remaining in the sampler has been placed in a container intended for the analysis of non-volatile compounds.

The collected samples have been described in order to identify the nature and type of soil. The sample depth intervals in surveys are provided in the surveys logs included in Appendix 3.

3.3.2.2 *Groundwater Sampling*

The new monitoring wells have been developed in order to retrieve fine particles introduced during the drilling operations, and thus restore the formation's natural hydraulic conductivity, as well as to get less turbid water samples. The monitoring wells were equipped with a 12 mm diameter polyethylene tubing fitted with a Waterra™ check valve mechanically activated, taking into account the requirements of the MDDEP's *Guide d'échantillonnage à des fins d'analyses environnementales*. The development has been carried out by activating the pumping system (dedicated tubing) equipped with a development ring, acting as a piston, starting at the top of the well screen, and gradually moving downward to its base. The development ring combined to the check valve result in an alternate surging into the well screen sending fine particles of the gravel packing toward the exterior of the well and/or at the bottom of the latter. When the entire length of the well screen has been swept, the development ring is being removed to extract the particle surplus by activating the pumping system near the base of the well screen.

Prior to the groundwater sampling, the monitoring wells have been purged using the low flow and drawdown method described in the MDDEP's *Guide d'échantillonnage à des fins d'analyses environnementales*. Each monitoring well has been equipped with a dedicated HDPE tubing. A peristaltic pump has been installed, and started with a flexible dedicated tubing connected to the HDPE tubing. Groundwater depth has been continuously measured to guarantee a low water table drawdown. The physicochemical settings (pH, temperature, conductivity, oxidation-reduction potential, and dissolved oxygen) have been measured at regular time intervals using a YSI multi-parameters probe equipped with a tight flow cell to minimize the contact between groundwater and air. Purging has been carried out until the water table drawdown and water physicochemical conditions were stable. Then samples have been collected with the same equipment as for purging. Samples have been recovered in glass containers previously prepared by the laboratory and kept cool until they were submitted to the laboratory.

3.3.2.3 *Surface Water Sampling*

The surface water collections carried out in peripheral ditches were supposed to be carried out at stations equipped with a PVC casing 1.5 m long, installed in a survey performed in the ditch with manual auger down to 0.55 m deep. However the type of substrate present in the ditch did not allow such an installation. Thus surface water samples have been collected according to the various methodologies prescribed in the MDDEP's *Guides d'échantillonnage à des fins d'analyses environnementales* and the CCME's *Guidance manual for environmental site characterization in support of environmental and human health risk assessment*.

Samples have been collected in the middle of the ditch, 30 cm under surface water, directly into analysis bottles (direct immersion technique), except for bottles containing preservatives. When depth was below 30 cm, samples have been collected half-height in the water column. The collection of grab samples was conducted one bottle at a time by submerging the bottle under surface water. The latter was kept vertically until there were no remaining air bubbles in the bottle. At the same time, the bottle plug was reversed upward to remove air, and screwed to the bottle under water.

Bottles containing preservatives have been filled up by transfilling them with a single-use bottle containing no preservatives while ensuring that they do not overflow.

This activity has allowed to keep the quantity of preservative placed in the bottles for analysis purposes by the laboratory. It should be mentioned that a new transfilling bottle has been used at every station to fill up the ones containing preservatives in order not to generate crossed contamination between the sampling stations.

During sampling, field personnel was equipped with nitrile gloves to prevent contamination of bottles while handling them. All the samplings have been made facing the current.

3.3.3 **Field Tests and Measurements**

3.3.3.1 *Piezometric Survey*

A survey of the groundwater level has been carried out in the monitoring wells with an interface probe that is measuring water depth, as well as detecting and measuring, when appropriate, the apparent thickness of free phase hydrocarbons. Two (2) existing monitoring wells installed during previous studies have been included in the piezometric survey conducted on June 28, 2018.

3.3.3.2 *Permeability Test*

Two (2) permeability tests have been conducted in the monitoring wells WE-MW-18-1 and WE-MW-18-2 to evaluate the hydraulic conductivity of the considered hydrostratigraphic unit. The rising head permeability tests conducted in the wells have been interpreted using the Bouwer-Rice technique (1976) that was developed to interpret the unconfined or confined water table.

3.4 ANALYSES AND TESTS IN LABORATORY

3.4.1 Physicochemical Analyses

The analytical program has been established according to the suspected contaminants on the basis of environmental risks identified within the Phase I ESA, and mentioned in Section 2.2.

3.4.1.1 Soil Samples

The soil samples collected during the current mandate have been submitted to analysis of the following parameters:

- ▶ PHC C₁₀-C₅₀ (47 samples and 1 duplicate);
- ▶ total extractable metals (Cd, Cr, Cu, Ni, Pb and Zn) (3 samples);
- ▶ PAHs (21 samples);
- ▶ MAHs (22 samples, 1 duplicate and 1 field blank);
- ▶ ethylene glycol (4 samples);
- ▶ PHC F1 (24 samples);
- ▶ PHC F2 to F4 (26 samples and 1 duplicate).

3.4.1.2 Groundwater Samples

The groundwater samples collected during the current mandate have been submitted to analysis of the following parameters:

- ▶ PHC C₁₀-C₅₀ (3 samples and 1 duplicate);
- ▶ PHC F1-F4 (3 samples and 1 duplicate);
- ▶ PAHs (4 samples and 1 duplicate);
- ▶ MAHs (4 samples, 1 duplicate and 1 trip blank).

3.4.1.3 Surface Water Samples

The surface water samples collected during the current mandate have been submitted to analysis of the following parameters:

- ▶ PHC C₁₀-C₅₀ (3 samples and 1 duplicate);
- ▶ PAHs (3 samples and 1 duplicate);
- ▶ MAHs (3 samples and 1 duplicate);
- ▶ dissolved metals (Cd, Cr, Cu, Ni, Pb, Zn) (3 samples and 1 duplicate).

The chemical analyses performed within the mandate have been sent to Maxxam Analytics Inc. (Maxxam) laboratory, duly accredited by the MELCC, for the purpose of analysis of the targeted parameters under the Accreditation Program for Analytical Laboratories (*Programme d'accréditation des laboratoires d'analyse* (PALA)) (Section 118.6 of the EQA). The reported analytical methods and detection limits (RDL) of the equipment used by the laboratory are presented in the chemical analyses certificates attached to Appendix 5.

3.5 QUALITY ASSURANCE AND CONTROL PROGRAM

Englobe applies a quality assurance and control program to all its projects. It includes a kick-off meeting, the preparation of a fieldwork program and the application of standardized sampling procedures, all established to ensure the required flexibility to the requirements of every project and the required level of quality.

Moreover samples have been collected and submitted to analysis of field duplicates for quality assurance and control. It should be reminded that one (1) field duplicate is composed of two (2) sub-samples from one homogenized sample, grab or composite. A total of four (4) field duplicates (two (2) soils, one (1) groundwater and one (1) surface water) have been submitted to analysis in laboratory. Finally one (1) field blank (soils) and one (1) trip blank (water) have also been carried out.

The laboratory also applies a quality assurance and control program on all analytical procedures. The quality assurance program includes a series of procedures aimed to verify the proper functioning of the various steps to get chemical analysis results. As for the quality control program, it applies to a set of intra-laboratory activities and verifications. The control program defines all the essential steps of the analytical process applied to a specific sample from its reception and storage to the validation of results. The program also provides up to five (5) types of quality control for analytical procedure that comprise: analytical method blanks, duplicates, fortified samples, reference materials and surrogates.

Englobe has consulted the laboratory quality control to ensure that potential anomalies have been reported and that comments provided match scenarios that are not affecting the quality of the provided results.

4 FIELD CHARACTERISTICS

4.1 STRATIGRAPHIC CONTEXT

The nature and certain other properties of the materials forming the different stratigraphic units have been visually defined during the works. The surveys logs, included in Appendix 3, include a detailed description of the encountered materials. The following paragraphs present a summary of the stratigraphic context. In the summary, the “depth” is measured from ground surface level on surveys locations.

In general, the site stratigraphy consists of a fill unit composed of sand to a gravel sand encountered at the surface down to depths ranging from 2.0 m to 2.5 m. This layer rests on a layer ranging from a silty sand to a clayey silt. The bedrock has not been reached in the carried out surveys.

Organoleptic evidence of the presence of hydrocarbons has been noticed in the soil of the test pit WK-TP-18-6 at depths ranging from 1.0 m to 2.5 m. It should also be mentioned that a black waterproof tarp has been observed in this survey. It is possible that it had been installed during previous remediation works.

Aucun plan d'eau de surface n'a été observé sur le site à l'étude ou aux limites de la propriété. Toutefois, selon les cartes topographiques disponibles et les observations faites dans le secteur environnant, un cours d'eau, soit la rivière Rupert, est situé à 1,2 km au nord-est du site à l'étude. Ajoutons que des fossés de drainage ceignent le site.

4.2 HYDROGRAPHIC CONTEXT

No surface water bodies have been observed on the investigated site or at the property limits. However, according to the available topographical maps and observations made in the surrounding area, *Rivière Rupert* is located 1.2 km to the northeast of the investigated site. Finally, no drainage ditches are surrounding the site.

4.3 HYDROGEOLOGICAL CONTEXT

4.3.1 Hydrostratigraphic Units

Based on the stratigraphic data collected during the surveys, groundwater would be located at the interface between the backfill materials and the more water resistant clayey silt unit.

No visual or olfactory properties indicating the presence of contamination have been observed in the groundwater sampled in the monitoring wells.

4.3.2 Piezometry

A piezometric survey has been carried out on July 6, 2018. The groundwater levels of the wells have been intercepted to depths mentioned in the table below. No apparent free phase hydrocarbons has been detected during this survey.

Table B: Groundwater levels

Monitoring well	Depth (m)
F-2	1.75
F-4	1.50
WK-MW-18-1	1.36
WK-MW-18-2	1.57

The piezometry of the site has not been set out with these data since the monitoring wells F2 and F4 that had been drilled during previous studies were levelled using an unknown arbitrary benchmark. Thus their elevation could not be linked to the absolute elevation of the monitoring wells installed during the current study. In order to set out the piezometry, the elevation of both monitoring wells could be measured with a GPS, using the same reference geoid than the monitoring wells drilled by Englobe (CGVD2013), or the elevation of all the wells could be measured using the same arbitrary benchmark.

4.3.3 Permeability Test

Permeability tests were conducted on June 27, 2018, on wells WK-MW-18-1 and WK-MW-18-2. Measurements are included in Appendix 6. Results of these tests are shown in the table hereafter.

Table C: Permeability test results

Well	Test no. 1	Test no. 2
WK-MW-18-1	2.1×10^{-6} m/s	2.2×10^{-6} m/s
WK-MW-18-2	2.8×10^{-6} m/s	1.8×10^{-6} m/s

5 ENVIRONMENTAL IMPACT STATEMENT

5.1 USED INTERPRETATION CRITERIA

Under the Government of Canada's *Policy on Management of Real Property*, the interpretation of obtained results has been made according to the recommendations submitted by the CCME with regards to the management of contaminated sites.

The various exposure pathways and main potential receptors present in the vicinity (1 km radius) have been considered to define the applicable recommendations.

Considering the zoning of the site and land use (commercial/industrial), the exposure pathways included in the table hereafter have been used:

Table D: Selected CCME's exposure pathways

Human health	Ingestion of soil	Given the presence of individuals on the site and the fact that the latter is not entirely covered with a surface layer limiting soil exposure.
	Dermal contact	Given the presence of individuals on the site and the fact that the latter is not entirely covered with a surface layer limiting soil exposure or that these soils could be excavated.
	Inhalation of soil	Given the presence of individuals on the site.
	Off-site migration	Applicable in every cases (surface soils 0.0–1.5 m).
Environment	Inhalation of indoor air	When a building is present on the site.
	Contact with soil	Applicable in every cases (surface soils 0.0–1.5 m).
	Off-site migration	Applicable in every cases (surface soils 0.0–1.5 m).
	Nutrient and energy cycling	Applicable in every cases.
	Management limits	Applicable in every cases to soils >3 m deep.

5.1.1 Soils

- ▶ The applicable recommendations are the CCME's *Canadian Soil Quality Guidelines* (CSQG) for an industrial land use and the *Canada-wide Standard for Petroleum Hydrocarbons* (PHC) (Canada-wide Standard). These values have been considered to define the quality of soils on the site since the Waskaganish Airport is a federal property. It should be added that these recommendations for surface soils have been considered as valid in every cases since deeper soils (>1.5 m) may be excavated, and become accessible as a consequence.
- ▶ Specifically for PAHs, the used recommendations aim for the protection of the environmental health. To ensure the protection of the environment and human health (carcinogenic effects), Benzo[a]pyrene Total Potency Equivalent (B[a]P TPE) has also been calculated.

- ▶ Should contaminated soils be disposed of outside of the territory in the context of environmental rehabilitation works, the generic criteria of the MELCC's Intervention Guide and limit values of Appendix I of the *Règlement sur l'enfouissement de sols contaminés* (RESC) should be used. In the absence of CSQG for certain parameters, the generic criterion "C" has been used to define the quality of soils on the site.

5.1.2 Groundwater

- ▶ The *Federal Interim Groundwater Quality Guidelines* (FIGQS) for a land with a commercial/industrial vocation, for the protection of soil organisms (direct contact) and freshwater life of Environment and Climate Change Canada (ECCC) have been used. With regards to the protection of freshwater life, this exposure pathways may be excluded if there is no risk that the contamination reaches fresh water surface bodies up to concentrations exceeding the recommendations for water quality. In this regard, for most of the contaminants, including metals and PHC, if there is no surface water body in a 500 m radius, it is less likely that contaminants will reach water surface. Most of the PHC plumes extend to a distance less than 500 m, and their transport is generally limited by biodegradation. Even though metals are not biodegradable, required transport times to travel 500 m are very long. Moreover, in the case where the protection freshwater life exposure pathway cannot be excluded, the first level generic recommendations that imply a minimum lateral separation of 10 m between the measurement point and the surface water body can be adjusted. In the case where the distance of separation would be less than 10 m, the surface water criteria should be used. Finally, it should be mentioned that the use of the FIGQS does not aim to reach concentrations of contaminants below the natural background concentrations via corrective measures.
- ▶ Since it is a dynamic support, a portion of the apprehended receptors is located beyond the property limits, in provincial territory. As a consequence, the RES criteria of the Intervention Guide has been used to ensure applicable criteria are met at the property limits.

5.1.3 Surface Water

- ▶ The CCME has defined the *Canadian Water Quality Guidelines* (CWQG) with regards to the protection of aquatic life. The recommendations against acute toxicity and chronic toxicity to protect aquatic life (fresh water) have been used.
- ▶ Since water surface is also a dynamic support, a portion of the apprehended receptors is located beyond property limits, in provincial territory. Thus MELCC's applicable standards have also been used. Like the CCME, the MELCC has also defined several surface water quality criteria with regards to their intended land use. The MELCC's criteria are summarized in the table below:

Type of Criteria	Application Site
Prevention of water and aquatic organisms contamination (<i>Prévention de la contamination de l'eau et des organismes aquatiques</i>)	At drinking water intakes
Prevention of aquatic organisms contamination (<i>Prévention de la contamination des organismes aquatiques</i>)	At all fresh water, brackish water and salt water
Aquatic life (<i>Vie aquatique</i>)	At fresh surface water (for fresh water aquatic life criteria) At all fresh water, brackish water and salt water (for organoleptic criteria with regards to organisms flesh)
Piscivorous land animals (<i>Faune terrestre piscivore</i>)	At all fresh water, brackish water and salt water
Recreational activities (<i>Activités récréatives</i>)	At the specific location of the use of fresh water, brackish water and salt water

The criteria considered as part of this mandate are associated to the prevention of the contamination of aquatic organisms and aquatic life (acute toxicity and chronic effect).

5.2 ANALYTICAL RESULTS

5.2.1 Soils

The results of chemical analyses conducted on soils samples collected from surveys are presented in Table 1, included at the end of the text, and schematically in Figures 3 and 4, also included at the end of the text. Key elements being drawn upon examining this data are the following:

Table E: Environmental situation with regards to concerns (soils)

No.	Concern	Performed Woks	Environmental Situation/Comment
2	Surface soils contaminated at the location of a 205 L waste oil barrel in the fenced area used as reserve for gravel, in the area of the eastern fence.	Two (2) surface surveys (WK-MA-18-1 and WK-MA-18-2)	A PHC C ₁₀ -C ₅₀ concentration has been measured in sample WK-MA-18-1 between 0.15 and 0.30 m deep. The IPP corresponds to a hydrocarbon in the region of oil.
3	Soils contaminated with toluene exceeding the CCME's recommendation for a commercial/industrial use in front of the garage door, at its northeastern corner.	Two (2) test pits (WK-TP-18-1 and WK-TP-18-2)	Samples submitted to analysis for PHC F1 have shown concentrations below the laboratory reported detection limit (RDL).
4, 10 and 11	Former presence of two (2) underground heating oil tanks, former presence of an underground waste oil tank on the southern side of the garage and presence of soils	Three (3) test pits (WK-TP-18-3, WK-TP-18-6 and -7). The test pit WK-TP-18-3 has initially been cancelled due to its proximity with the test pit WK-TP-18-6. Finally, it has been moved due to evidence of	Soils from the test pit WK-TP-18-6 between 1.00 m and 2.15 m have shown a contamination with ethylbenzene and PHC F2 above the CSQG for an industrial use for coarse grain soils. PHC C ₁₀ -C ₅₀ , for which there is no CSQG have shown concentrations

No.	Concern	Performed Woks	Environmental Situation/Comment
5 and 8	contaminated with PHC C ₁₀ -C ₅₀ in the B-C range.	contamination with PHC observed in the test pit WK-TP-18-6.	ranging from "<A" to "B-C", according to the MELCC's generic criteria. Xylenes and PHC F1 and F3 have also been detected. The IPP corresponds to a hydrocarbon in the region of heating fuel.
	A spill event of approximately 4,450 l of heating oil from the tank beside the mechanical maintenance garage and presence of soils contaminated with PHC at the location of a survey located at the southeastern corner of the large inner section of the garage.	One (1) inner borehole (WK-F-18-1)	Samples submitted to analysis have shown concentrations below the laboratory reported detection limit (RDL) for all parameters.
6	Soils (peat) contaminated with toluene.	One (1) monitoring well (WK-MW-18-1) and two (2) test pits (WK-TP-18-4 and WK-TP-18-5)	Samples submitted to analysis for BTEX have shown concentrations below the CSQG values for an industrial use for coarse grain soils. It should be noted that toluene has been detected in the sample collected between 2.0 and 2.3 m at the location of test pit test pit WK-TP-18-4.
12	Spill of an aviation fuel barrel in 2015 to the north of the sector of the refueling pump	Two (2) surface surveys WK-MA-18-3 and WK-MA-18-4)	Samples submitted to analysis have shown concentrations below the CSQG values for an industrial use for coarse grain soils. It should be noted that PHC C ₁₀ -C ₅₀ , for which there is no CSQG have shown concentrations ranging from "<A" to "B-C", according to the MELCC's generic criteria. It should also be noted that PHC F3 have been detected and that the IPP corresponds to a hydrocarbon in the region of oil.
13	Presence of a gutter, a sump and a water/oil separator all connected to underground piping in the garage.	One (1) inner borehole (WK-F-18-2)	Except for metals, all other analyzed parameters have not been detected in samples submitted to chemical analysis.
14 and 21	Pump island and former presence of underground piping connecting the aboveground diesel tank to the fuel pump.	One (1) test pit (WK-TP-18-8)	All analyzed parameters have not been detected in samples submitted to chemical analysis.
15	Aircraft refueling zone.	Two (2) surface surveys (WK-MA-18-5 and WK-MA-18-6)	Samples submitted to analysis have shown concentrations below the CSQG values for an industrial use for coarse grain soils. It should be noted that PHC C ₁₀ -C ₅₀ , for which there is no CSQG have shown concentrations ranging

No.	Concern	Performed Woks	Environmental Situation/Comment
			from "<A" to "B-C", according to the MELCC's generic criteria.
16	Diesel barrels to the west of the pump island, on the ground	Two (2) surface surveys (WK-MA-18-7 and WK-MA-18-8)	Samples submitted to analysis have shown concentrations below the CSQG values for an industrial use for coarse grain soils. It should be noted that PHC C ₁₀ -C ₅₀ , for which there is no CSQG have shown concentrations ranging from "<A" to "B-C", according to the MELCC's generic criteria. It should also be noted that PHC F3 have been detected and that the IPP corresponds to a hydrocarbon in the region of oil.
17	Empty aviation fuel barrels stored to the southwest of the garage, on wooden pallets.	Two (2) surface surveys (WK-MA-18-9 and WK-MA-18-10)	All analyzed parameters have not been detected in samples submitted to chemical analysis.
18	Stains on the ground	Two (2) surface surveys (WK-MA-18-11 and WK-MA-18-12)	Samples submitted to analysis have shown concentrations below the CSQG values for an industrial use for coarse grain soils. It should be noted that PHC C ₁₀ -C ₅₀ , for which there is no CSQG have shown concentrations ranging from "<A" to "A-B", according to the MELCC's generic criteria. It should also be noted that PHC F3 have been detected and that the IPP corresponds to a hydrocarbon in the region of oil.
19	Presence of a deicing bay with glycol tanks.	One (1) test pit (WK-TP-18-9)	Ethylene glycol has not been detected in any of the samples submitted to chemical analysis.
20	Former presence of a mobile fuel tank and a former deicing bay.	Two (2) surface surveys (WK-MA-18-13 and WK-MA-18-14)	Samples submitted to analysis have shown concentrations below the CSQG values for an industrial use for coarse grain soils. It should be noted that PHC C ₁₀ -C ₅₀ , for which there is no CSQG have shown concentrations ranging from "<A" to "A-B", according to the MELCC's generic criteria. It should also be noted that PHC F3 have been detected and that the IPP corresponds to a hydrocarbon in the region of oil.
22	Spill from the fuel dispenser.	One (1) surface survey (WK-MA-18-15)	All analyzed parameters have not been detected in samples submitted to chemical analysis.

No.	Concern	Performed Woks	Environmental Situation/Comment
23	Temporary presence (few months) of the aircraft refueling zone to the north of the garage.	One (1) monitoring well (WK-MW-18-2).	All analyzed parameters have not been detected in samples submitted to chemical analysis.

5.2.1.1 Interpretation

In summary, the soils samples WK-TP-18-6-C, WK-TP-18-6-D and WK-TP-18-6-E, analyzed in laboratory, have shown ethylbenzene or PHC F2 concentrations exceeding the CSQG of the CCME for an industrial use for coarse grains soils. These samples have been collected at depth ranging from 1.00 to 2.15 m. That soil does not meet the maximum acceptable limit for a site with an industrial vocation and is not compatible with the current and projected of the property.

With regards to the MELCC's criteria for a commercial and industrial use, no sample submitted to chemical analysis has shown any exceedance.

5.2.2 Groundwater

The results of chemical analyses performed on groundwater samples, and collected from the monitoring wells are presented in Table 2, included at the end of the text, and schematically, in Figure 5, also included at the end of the text. Key elements being drawn upon examining this data are the following:

Table F: Environmental situation with regards to concerns (groundwater)

No.	Environnemental Concern	Monitoring Well	Environmental Situation/Comment
1	Groundwater showing naphtalene (PAHs) and toluene (MAHs) contamination exceeding the CCME's recommendation for the protection of aquatic life. It should be mentioned that as part of the current mandate, the groundwater analytical results have not been compared to the CCME's recommendations aim at protecting aquatic life which target the protection of surface water.	Sampling of five (5) existing monitoring wells (WK-MW-01-1 to -5)	The existing monitoring wells located outside the buildings have not been found due to the presence of compacted backfill materials above the top of the wells at ground surface level. However, as part of this study, two (2) new monitoring wells and two (2) existing monitoring well located inside the garage have been sampled. Naphtalene and toluene concentrations have been detected, without exceeding the applicable criteria.
7	Groundwater contaminated with PAHs concentrations exceeding the CCME's recommendations for the protection of aquatic life and the MDDEP's "for consumption purposes" criteria and with MAHs concentrations exceeding the CCME's recommendations for the protection of communities. It should be mentioned that as part of the current mandate, the groundwater analytical results have not been compared to the CCME's recommendations aim at protecting aquatic life which target the protection of surface	Sampling of existing monitoring wells F-2, F-4 and F-9, and new monitoring well WK-MW-18-1.	Sampling of groundwater from monitoring wells F-2, F-4 and WK-MW-18-1. The monitoring well F-9 has not been found. PAHs and MAHs have been detected in groundwater samples, without exceeding the applicable criteria.

No.	Environnemental Concern	Monitoring Well	Environmental Situation/Comment
5 and 8	water. As well, the MELCC's "consumption water" criteria and the CCME's recommendations for the protection of communities have not been used since the groundwater is not a drinking water supply source.		
	A spill event of approximately 4,450 l of heating oil from the tank beside the mechanical maintenance garage and presence of soils contaminated with PHC at the location of a survey located at the southeastern corner of the large inner section of the garage.	Sampling of groundwater from existing monitoring wells F-2 and F-4	PAHs and PHC C ₁₀ -C ₅₀ concentrations have been measured, but they do not exceed the FIGQS or the MELCC's RES criteria.
6	Soils (peat) contaminated with toluene.	One (1) monitoring well (WK-MW-18-1)	Toluene and ethylbenzene concentrations have been measured in the groundwater sample collected from the monitoring well WK-MW-18-1, but they do not exceed the FIGQS or the MELCC's RES criteria.
23	Temporary presence (few months) of the aircraft refueling zone to the north of the garage.	One (1) monitoring well (WK-MW-18-2).	The presence of PAHs, PHC C ₁₀ -C ₅₀ and MAHs has been noted, but concentrations do not exceed the FIGQS or the MELCC's RES criteria

5.2.2.1 Interpretation

Groundwater does not appear to be contaminated with regards to FIGQS.

In addition, even if the MELCC's RES criteria have not been exceeded, certain PAHs, PHC C₁₀-C₅₀ and MAHs concentrations exceed the method detection limit (MDL) in the groundwater samples, and the groundwater is considered contaminated under the MELCC's Intervention Guide. An evaluation of the impacts on groundwater must be performed (see Section 6.2.1).

5.2.3 Surface Water

The results of chemical analyses performed on the surface water samples collected from three (3) sampling points are presented in Table 3, included at the end of the text, and schematically, in Figure 5, also at the end of the text. Key elements being drawn upon examining this data are the following:

- ▶ Toluene concentrations have been measured in the three (3) collected samples. However, the measured concentrations are all below the CWQG and the MELCC's surface water quality criteria;
- ▶ The other MAHs, and PAHs, PHC HP C₁₀-C₅₀ and metals have not shown concentrations exceeding the analytical laboratory's RDL.

5.2.3.1 Interpretation

Surface water is not contaminated with regards to the CCME's CWQG for the protection of aquatic life.

As well, the surface water is not contaminated with regards to the surface water quality criteria defined by the MELCC for the prevention of the contamination of aquatic organisms and aquatic life (acute toxicity and chronic effect).

5.3 QUALITY CONTROL PROGRAM

Tables 1, 2 and 3 respectively show the analytical results related to duplicated soil, groundwater and surface water samples as well as the relative percentage difference (RPD) between the results obtained from the sample material and their duplicates.

The RPD is the absolute difference between two (2) values (original sample and field duplicate sample), divided by the average of the two (2) values, and multiplied by one hundred (100). It should be noted that only the parameters for which the measured concentration is ten (10) times higher than the laboratory's RDL have been taken into account in the calculation to get a relative difference between the material sample and its duplicate.

5.3.1 Soil Duplicate

Regarding soil duplicate, the RPD has not been calculated since the measured concentrations were below the detection limits or below ten (10) times the RDL. No change in the level of contamination has been observed between the material samples and duplicates. Finally, the field blank has shown values below the detection limits for all analyzed parameters.

5.3.2 Groundwater Duplicate

Regarding the groundwater duplicate, the RPD has not been calculated since the measured concentrations were below the detection limits or below ten (10) times the RDL. No change in the level of contamination has been observed between the material samples and duplicates. Finally, the field blank has shown only one (1) concentration equalling the laboratory's RDL, which could be interpreted as a false positive.

Aucun changement de niveau de contamination n'a été observé entre les échantillons parents et leur duplicata.

5.3.3 Surface Water Duplicate

Regarding the surface water duplicate, the RPD has not been calculated since the measured concentrations are below the detection limits or below ten (10) times the RDL. No change in the level of contamination has been observed between the material samples and duplicates.

5.3.4 Interpretation

In summary, the analytical results obtained for the original soil and water samples collected during this mandate and their duplicates, are generally similar, and they have showed a correct use of the analysis and sampling procedures. The relative differences calculated also show, in an indirect manner, a good replicability of the analytical methods since the relative deviation is the sum of the sampling error and analytical error.

Finally the detection limits reached by the laboratory for all the parameters analysed in the soil samples are equal or below the criterion "A" of the MELCC's Intervention Guide. Detection limits reached by the laboratory for all the parameters analysed in the groundwater samples are also equal to or below the ones listed in the CEAEQ's analytical methods.

The laboratory's internal control quality data presented in the analytical reports reveals that internal standards were met and the laboratories controls are deemed to be acceptable. Analyses conducted on laboratory duplicates reveal that the laboratory generally handled and prepared the samples correctly.

6 DISCUSSION OF RESULTS

6.1 EVALUATION OF VOLUMES OF IMPACTED SOILS

The theoretical volume of materials in place has been estimated with the standard polygonation method currently used in environment. Unless specified otherwise, the estimation of volumes is based on the following hypotheses:

- ▶ the lateral extension is delineated by the mid-distance between the adjacent surveys, property limits or existing buildings. Generally, it is assumed that there is a symmetric distribution of the contamination in the areas where there are no more surveys;
- ▶ the vertical extent of the impacted sectors has been estimated by considering the interval showing similar evidence of contamination defined with the analytical results and organoleptic observations made from the soil samples (hydrocarbon odours, presence of debris, visual estimate of percentage of soil versus residual waste, etc.). In the event where two (2) samples would show different contamination levels and come from the same stratigraphic layer and survey, the mid-distance between these two (2) samples has been used;
- ▶ the estimated theoretical volume is a volume of existing materials that does not take into account the excavation slopes and different depths of contamination that can be levelled during the excavation works.

The volumes have been calculated according to the method and hypotheses described above to provide an order of magnitude of the quantities of contaminated materials with regards to the CCME. The volume associated to the survey WK-TP-18-6, which soils are contaminated between 1.0 and 2.15 mbgs has been estimated at 35 m³. The volume associated to the survey F-8 performed in the garage and which soils are contaminated between 2.44 and 3.05 mbgs (Dessau, 2008), has been estimated at 45 m³. Finally the volume associated to the residual contamination along the eastern wall of the garage, and potentially underneath, between 0.00 mbgs and 2.60 mbgs has been estimated at 44 m³ (HDS, 2007). The location of these zones of non-complying materials is shown in Figure 3.

6.2 EVALUATION OF IMPACTS RELATED TO GROUNDWATER

6.2.1 Proven or Apprehended Impacts

Since PAHs, PHC C₁₀-C₅₀ and MAHs concentrations in groundwater samples exceed the MDL (see Section 5.2.2), an evaluation of the impacts on the groundwater quality must be performed for these parameters in compliance with the groundwater intervention process described in Section 7.8.4 of the MELCC's Intervention Guide.

Applicable quality criteria and standards are used to define an impact and they are applied according to the identified receptor(s). A proven impact is defined as an effective situation at the impact location whereas an apprehended impact is defined as a foreseeable impact given the dynamic nature of the groundwater contamination. More precisely, there is a proven or apprehended impact when:

- ▶ Present contaminants exceed the “for consumption purposes” quality criteria and groundwater is used (or usable) as a source of consumption water downstream from the land;
- ▶ Present contaminants exceed the RES criteria and the investigated site is located upstream of a water body or there is a nearby storm water system;
- ▶ Present contaminants exceed the municipal discharge standards to sanitary sewers (or unitary) and there is a nearby sanitary (or unitary) sewer system;
- ▶ There is a possibility of vapors infiltration of volatile substances in residences;
- ▶ There is exceedance of a standard or criteria associated to another use of the groundwater on the land or in its vicinity (ex.: livestock watering, industrial activities, pisciculture, etc.).

For PHC C₁₀-C₅₀ – that is an inclusive parameter – it is also required to measure the contaminants associated to PHC (MAHs, PAHs, CAHs, PCBs, etc.). PHC C₁₀-C₅₀ must not be present at concentration that can be detected by a visible film shielding or causing surface fading, be detected by smell or taste, and color the flesh of edible aquatic organisms or form deposits on the shoreline and bottom sediments.

On the basis of the analytical results obtained for groundwater samples according to the potential receptors and in compliance with the MELCC’s Intervention Guide, there would not be any proven or apprehended impact on the receptor(s) likely to intercept the groundwater at the location of the monitoring wells since the concentrations obtained for the analyzed parameters in groundwater samples are below the RES criteria of the MELCC’s Intervention Guide.

6.2.2 Potential Impacts (thresholds)

The thresholds refer to a concentration of contaminants from which a loss of use of the resource and risk of effect on health, uses, and environment are anticipated if the environment keeps on degrading. These thresholds are established according to the quality criteria applying to the use of the water on or close to a given land. They correspond to a fraction of the criteria, and they are verified on all the monitoring wells installed on the investigated site. When thresholds are exceeded, the groundwater quality will have to be monitored.

Given the fact that the water body is downstream, thresholds representing 50 % of the RES quality criteria have been used, as defined in the MELCC’s Intervention Guide.



Based on chemical analyses results of the groundwater collected from the monitoring wells, there is no potential impact for receptors likely to be affected by the groundwater since the concentrations measured in the groundwater of the sampled monitoring wells are below the established thresholds.

7 CONCLUSIONS AND RECOMMENDATIONS

On the basis of the results obtained as part of the current Phase II ESA, a volume of soils estimated at 35 m³ is contaminated with PHC F2 and ethylbenzene or toluene. These soils are not compatible with the current or projected use of the property.

It should be added that a residual contamination with PHC C₁₀-C₅₀ showing concentrations exceeding the MELCC's "C" criteria and with PAHs concentrations exceeding the CCME's CSQG for a land with a commercial/industrial vocation has been noted along the foundations and potentially underneath the garage. The volume of contaminated soils in that sector has been evaluated at 44 m³. Finally, soils contaminated with PHC F3 and F4 have been noted in one (1) borehole performed in the garage. The volume of contaminated soils in that sector has been evaluated at 45 m³.

However, considering the location of these contaminated soils, adjacent to the foundations or underneath the building, and the absence of contamination in the groundwater, Englobe does not recommend, for now, environmental remediation works in these sectors. Remediation works via excavation/disposition are not valid options for the portion of contaminated soils located underneath the building. With regards to soils that are adjacent to the foundations, this method would not guarantee the achievement of objectives since contaminated soils may also be present underneath the building. In situ remediation methods are not cost effective due to the small volume of contaminated soils. Thus Englobe recommends to proceed to a monitoring of the groundwater quality in these sectors to ensure that the contamination does not migrate outside the property limits. In addition, in the event when the building is demolished, contaminated soils should be managed according to their level of contamination.

The water samples collected during this characterization campaign were free of contamination with regards to the CCME's recommendations and MELCC's criteria.

8 REFERENCES

Bouwer, H. et Rice, R.C., 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells. *Water Resources Research*, vol. 12, no 3, pp. 423-428.

Conseil canadien des ministres de l'Environnement (2015). Protocole d'élaboration de recommandations pour la qualité des eaux souterraines pour utilisation sur les sites contaminés, ISBN 978-1-77202-016-8, 74 p.

Conseil canadien des ministres de l'Environnement (2010). Recommandations canadiennes pour la qualité des sols : Environnement et santé humaine – données tirées du site Internet du Tableau sommaire des recommandations canadiennes pour la qualité de l'environnement <http://sts.ccme.ca>

Conseil canadien des ministres de l'Environnement (2001). Recommandations canadiennes pour la qualité des eaux : protection de la vie aquatique – données tirées du site Internet du Tableau sommaire des recommandations canadiennes pour la qualité de l'environnement <http://sts.ccme.ca>

Englobe Corp., 2018. *Évaluation environnementale de site Phase I, Aéroport cri de Waskaganish, Waskaganish (Québec)*. N/Réf. : 129-P-0014860-0-00-100-SG-R-0003-00, 1749 p.

Englobe Corp., 2018. Réponse d'Environnement Canada - *Évaluation environnementale de site Phase I, Aéroport cri de Waskaganish, Waskaganish (Québec)*. N/Réf. : 129-P-0014860-0-00-100-SG-L-0003-00, 117 p.

Freeze, R.A. et Cherry, J.A. 1979. *Groundwater*. Prentice-Hall inc., Englewood Cliffs, N.J. 604 pages.

Groupe de travail sur la gestion des lieux contaminés (GTGLC) (2000). *Approche fédérale en matière de lieux contaminés*. ISBN 0-662-65363-7. 68 p.

Meridian Environmental inc. (2010). *Guidance Document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites*. 44 p.

Ministère de l'Environnement et de la Faune du Québec, 1999. *Guide de classification des eaux souterraines du Québec*. Services des pesticides et des eaux souterraines, Direction des politiques des secteurs agricole et naturel, Direction générale de l'environnement, 12 p.

Ministère de l'Environnement du Québec, 2003. *Guide de caractérisation des terrains*. Direction des politiques du secteur industriel - Service des lieux contaminés du MENV. Les publications du Québec, Sainte-Foy, Québec, 111 p.

Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques du Québec, Juillet 2016. *Guide d'intervention – Protection des sols et réhabilitation des*

terrains contaminés. Direction des lieux contaminés, Les publications du Québec, Sainte-Foy, 210 p.

Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques du Québec, Critères de la qualité de l'eau de surface - http://www.MDDELCC.gouv.qc.ca/eau/criteres_eau/index.asp.

Ministère du Développement durable, de l'Environnement et des Parcs du Québec, 2008. *Guide d'échantillonnage à des fins d'analyses environnementales – Généralités, cahier 1*. Centre d'expertise en analyse environnementale du Québec, Québec, 58 p.

Ministère du Développement durable, de l'Environnement et des Parcs du Québec, 2012. *Guide d'échantillonnage à des fins d'analyses environnementales – Échantillonnage des eaux souterraines, cahier 3*. Centre d'expertise en analyse environnementale du Québec, Québec, 60 p.

Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs du Québec, 2014. *Modes de conservation pour l'échantillonnage des eaux souterraines*. DR-09-09. Centre d'expertise en analyse environnementale du Québec, Québec, 7 p.

Ministère du Développement durable, de l'Environnement et des Parcs du Québec, 2012. *Modes de conservation pour l'échantillonnage des eaux de surface*. DR-09-10. Centre d'expertise en analyse environnementale du Québec, Québec, 7 p.

Ministère du Développement durable, de l'Environnement et des Parcs du Québec, 2010. *Modes de conservation pour l'échantillonnage des sols*. DR-09-02. Centre d'expertise en analyse environnementale du Québec, Québec, 7 p.

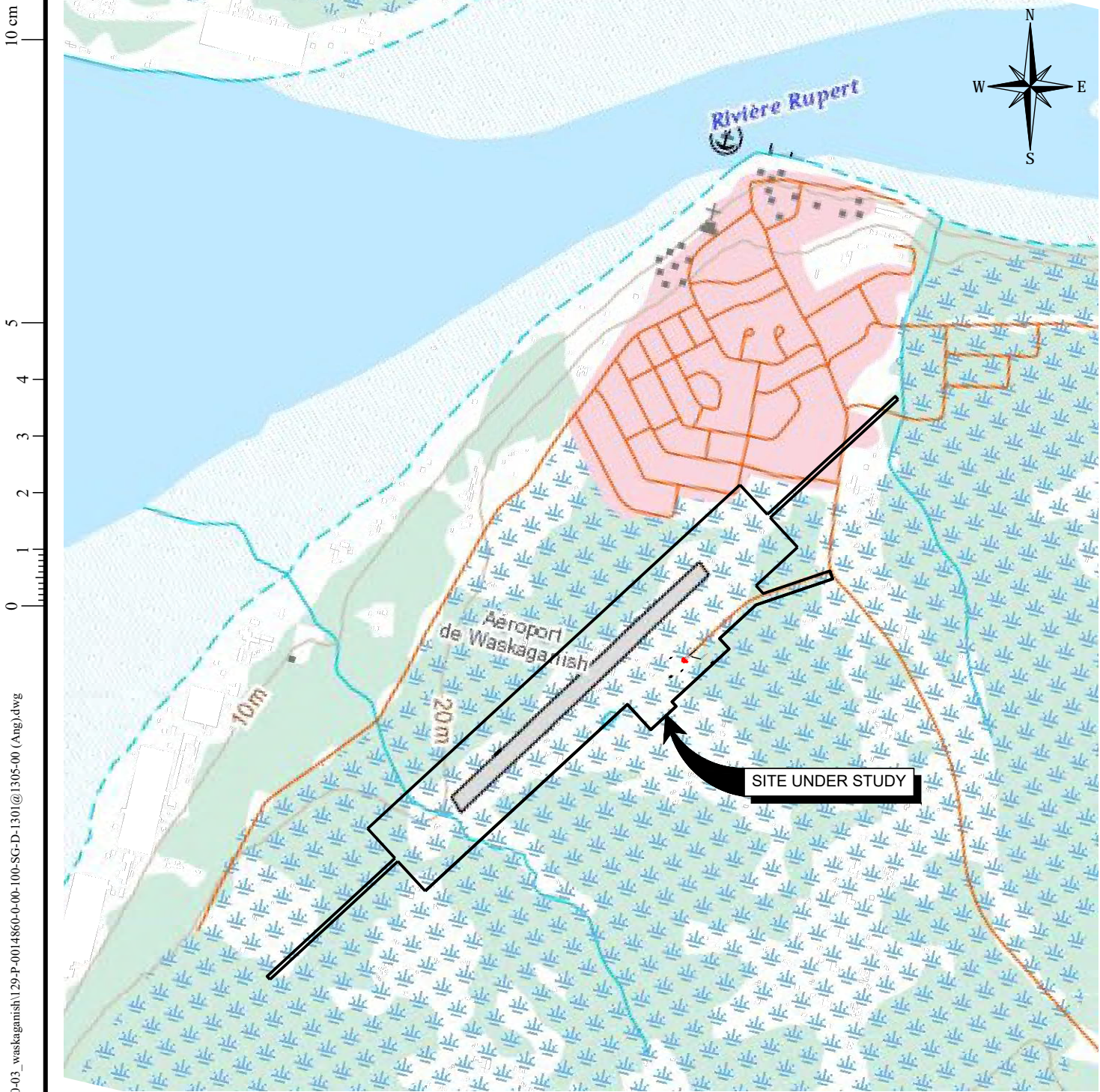
Ministère du Développement durable, de l'Environnement et des Parcs du Québec, 2010. *Guide d'échantillonnage à des fins d'analyses environnementales – Échantillonnage des sols, cahier 5*. Centre d'expertise en analyse environnementale du Québec, Québec, 59 p.

Lois et règlements refondus du Québec (L.R.Q et R.R.Q) :

- ▶ Loi sur la qualité de l'environnement (L.R.Q., c. Q-2);
- ▶ Règlement sur l'enfouissement des sols contaminés (R.R.Q., c. Q-2, r. 18);
- ▶ Règlement sur la protection et la réhabilitation des terrains (R.R.Q., c. Q-2, r. 37);
- ▶ Règlement sur le stockage et les centres de transfert de sols contaminés (R.R.Q., c. Q-2, r. 46).

Waterloo Hydrogeologic, 1999. *Aquifer Test, User's Manual: Intuitive analysis and reporting of pumping test and slug test data*, 176 p.


Figures



CANADA ATLAS - TOPORAMA

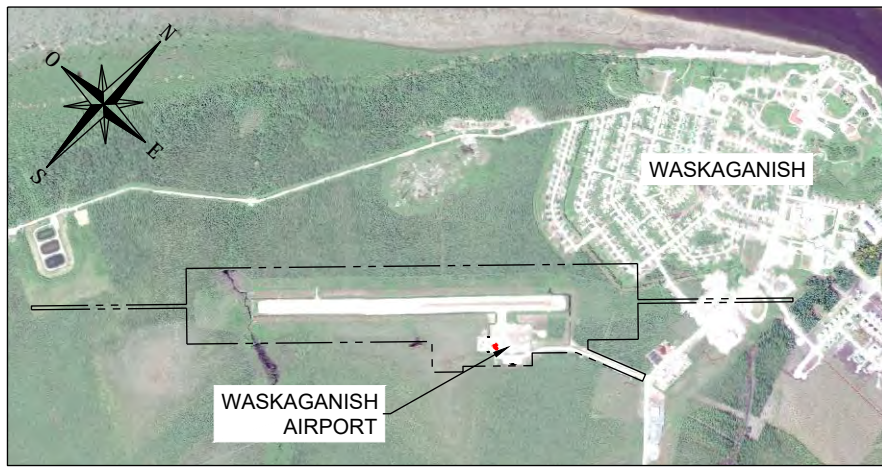
THIS DOCUMENT IS THE PROPERTY OF LVM AND, AS SUCH, IS PROTECTED BY LAW. IT IS SOLELY INTENDED FOR THE USE MENTIONED HEREIN. IT IS STRICTLY FORBIDDEN TO DUPLICATE OR ADAPT IT EITHER IN PART OR IN ITS ENTIRETY WITHOUT HAVING FIRST OBTAINED LVM'S WRITTEN AUTHORIZATION TO DO SO.

Client	PUBLIC SERVICES AND PROCUREMENT CANADA
Projet	PHASE II ENVIRONMENTAL SITE CHARACTERIZATION WASKAGANISH CREE AIRPORT, WASKAGANISH (QUEBEC)
Title	LOCATION OF THE SITE

		Englobe Corp. 505 du Parc-Technologique Blvd Suite 200 Québec (Québec) G1P 4S9 Telephone: 418.781.0191	
Prepared C. Drapeau	Discipline Environment	Project Manager C. Drapeau	
Drawn A. Giroux	Scale 1 : 20 000	Sequence No. 01 of 05	
Checked C. Gervais, Eng.	Date 2018-03-18		
Serv. char. 129	Project P-0014860	Wbs 0 00 100	Disc. Type SG D
		Drawing No. 1301	Rev. 00

Filename: G:\129P-0014860_TPSGC_Marché_CriVz5_CAD\OTP_0-00-100-03_waskaganish\129-P-0014860-0-00-100-SG-D-1301@1305-00 (Ang).dwg
 Printed: 2019/03/18 09:48

10 cm
5
4
3
2
1
0



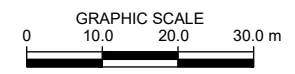
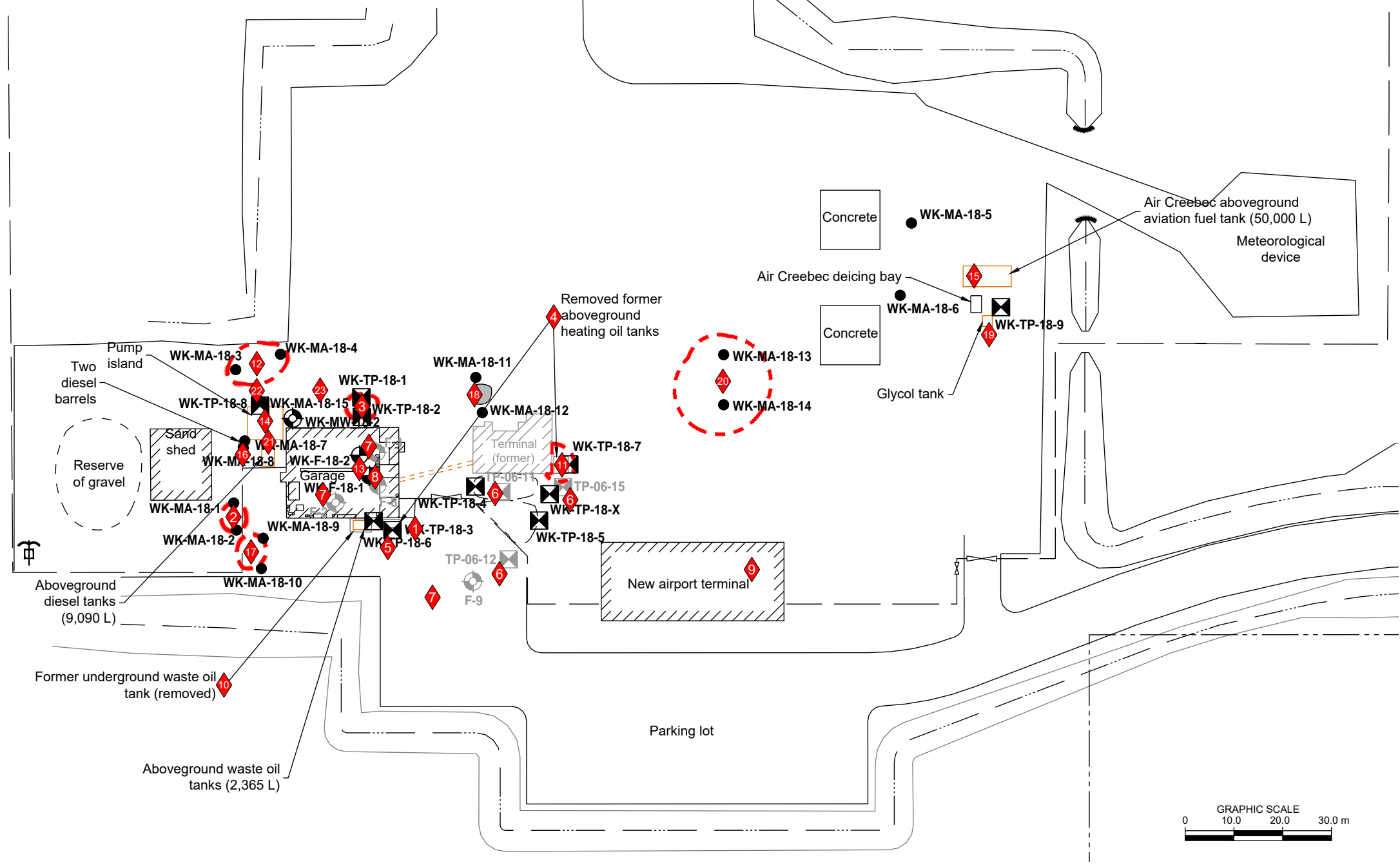
KEY PLAN

SCALE: 1 : 30 000

- Legend (con't)
- WK-MV-01-X Former monitoring well
 - ⊙ WK-MW-18-X Monitoring well
 - ⊠ WK-TP-18-X Test pit
 - WK-MA-18-X Surface sounding

- Limit of the lot
- Fence
- ⌒ Culvert
- ⬭ Approximate sector with an environmental concern
- Drainage ditch
- ▭ Building
- ⊕ Former drinking water well

- Legend
- Environmental Concerns**
- 1 Groundwater contaminated with naphthalene and toluene exceeding the CCME's criteria with regards to aquatic life (well dismantled during excavation in 2004-2005)
 - 2 ">C" PHC C₁₀-C₅₀ contaminated soils (Dessau-Soprin, 2002)
 - 3 Soils contaminated with toluene exceeding the CCME's criteria
 - 4 Two aboveground heating oil tanks
 - 5 Accidental spill of 4,500 L of heating oil on December 31, 2004 (Dessau-Soprin 2006, Dessau-Soprin 2007, HDS 2007, Dessau 2008)
 - 6 Soils (peat) contaminated with toluene exceeding MELCC's "B" criteria
 - 7 Groundwater contaminated with PAHs and/or MAHs exceeding CCME's criteria with regards to the protection of aquatic life (fresh water) and/or CCME's criteria for the protection of communities (HDS 2007, Dessau 2008)
 - 8 Contaminated soils in the "B-C" range of the MELCC's criteria (Dessau, 2008)
 - 9 ">C" contaminated soils with PHC C₁₀-C₅₀ and PAHs in the area of the new airport terminal (impossible to locate precisely) (Dessau 2010)
 - 10 Former underground waste oil tank (removed) (Stavibel, 2011)
 - 11 Soils contaminated with PHC C₁₀-C₅₀ in the "B-C" range of the MELCC's criteria in the area of the aboveground heating fuel tank of the former airport terminal (Golder, 2014)
 - 12 Accidental spill of an aviation fuel barrel in 2015
 - 13 Presence of a gutter, drainage well and water/oil separator connected via underground piping in the garage
 - 14 Presence of an island pump
 - 15 Presence of an aircraft refueling zone
 - 16 Presence of two diesel barrels on gravelled ground
 - 17 Presence of 14 empty aviation fuel barrels on wood pallets on gravel ground
 - 18 Presence of a stain on the ground (2017)
 - 19 Air Creebec deicing bay and glycol tank
 - 20 Sector of a former mobile aviation fuel tank and a former Air Creebec deicing bay
 - 21 Former presence of underground supply piping
 - 22 Former leak of the dispensing station
 - 23 Former presence of the refueling zone



Client **PUBLIC SERVICES AND PROCUREMENT CANADA**

Project **PHASE II ENVIRONMENTAL SITE CHARACTERIZATION**
WASKAGANISH CREE AIRPORT, WASKAGANISH (QUEBEC)

Title **FIGURE 2 LOCALIZATION PLAN OF THE ENVIRONMENTAL CONCERNS AND SOUNDINGS**

Englobe Corp.
505 du Parc-Technologique Blvd
Suite 200
Québec (Québec) G1P 4S9
Telephone: 418.781.0191

Prepared **C. Drapeau** Discipline **Environment** Project Manager **C. Drapeau**
Drawn **A. Giroux** Scale **1 : 1000** Date **2018-03-18** Sequence No. **02 of 05**
Checked **C. Gervais, Eng.**

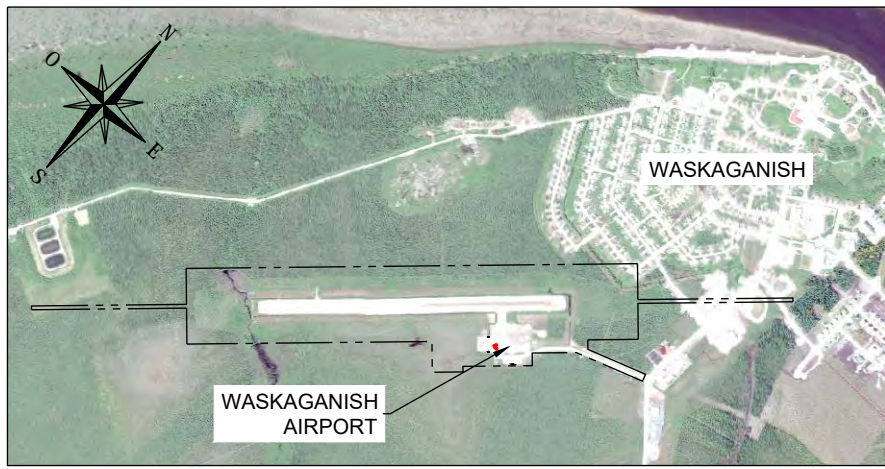
Serv. char.	Project	Wbs	Disc.	Type	Drawing No.	Rev.
129	P-0014860	0 00 100	SG	D	1302	00

THIS DOCUMENT IS THE PROPERTY OF LVM AND, AS SUCH, IS PROTECTED BY LAW. IT IS SOLELY INTENDED FOR THE USE MENTIONED HEREIN. IT IS STRICTLY FORBIDDEN TO DUPLICATE OR ADAPT IT EITHER IN PART OR IN ITS ENTIRETY WITHOUT HAVING FIRST OBTAINED LVM'S WRITTEN AUTHORIZATION TO DO SO.

References
- Google Earth Pro, version 7.1.8.3036
- Reference plan provided by the client : KGCIIV_TQC_2016.dwg

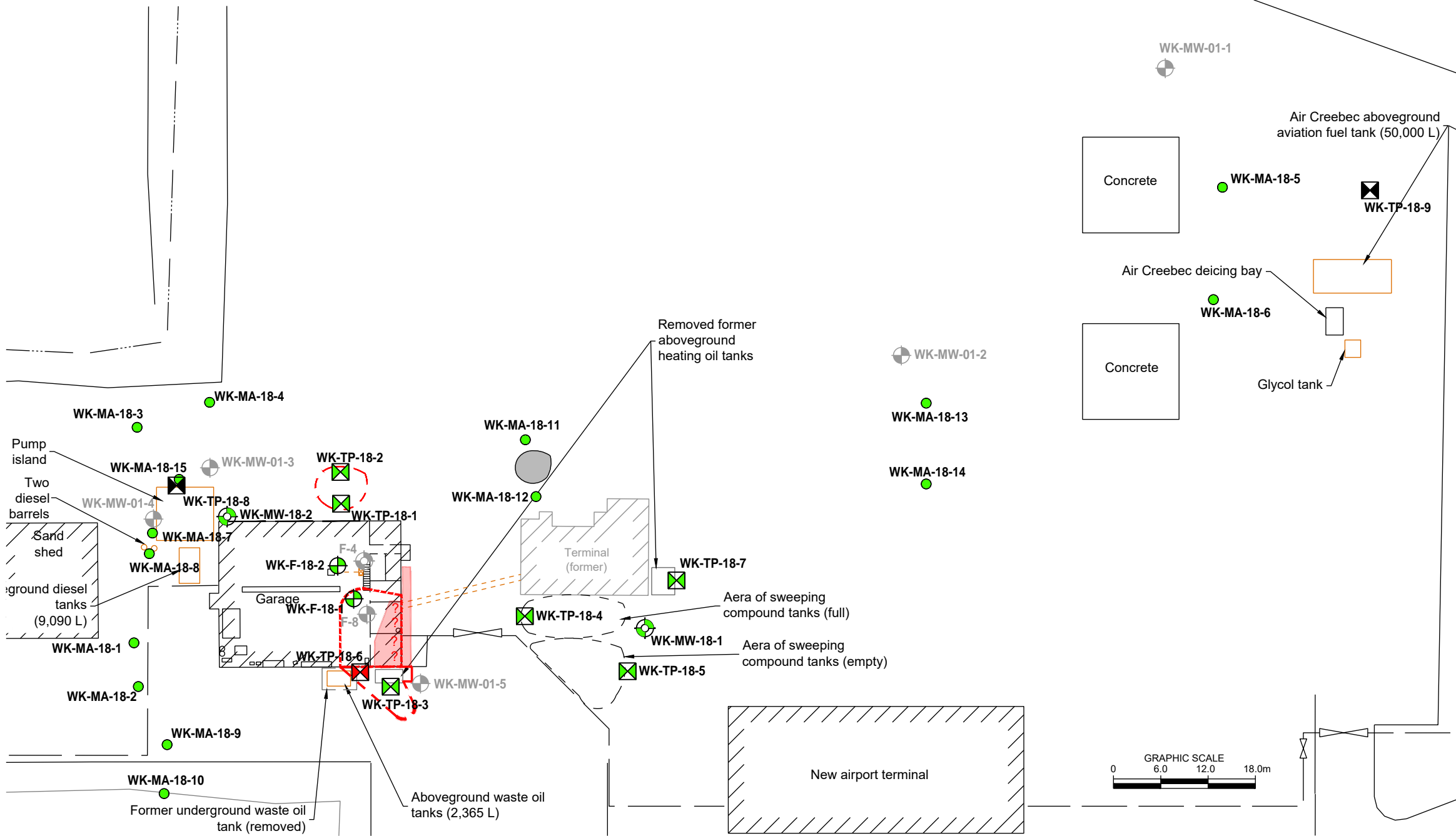
File name: G:\129\0014860_TPSGC_Marché_Criqz5_CAD\OTTP_0-00-100-03_waskaganish\129-P-0014860-0-00-100-SG-D-1301\1305-00 (Ang).dwg
 Printed: 2019/03/18 09:48

10 cm
5
4
3
2
1
0



KEY PLAN

SCALE: 1 : 30 000



Legend

- Approximate sector with an environmental concern
- WE-MV-01-4 Former borehole
- WE-MW-18-X Monitoring well
- WE-TE-18-X Test pit
- WE-F-18-X Borehole
- WE-MA-18-X Surface sounding
- Limit of the lot
- Fence
- Drainage ditch
- Building
- Delineation of the contaminated area
- Delineation of the contaminated area (Dessau, 2008)
- Delineation of the contaminated area (HDS, 2007)
- Approximate location

INTERPRETATION OF THE SOIL ANALYTICAL RESULTS WITH REGARDS TO THE CCME

- ≤ CSQG and/or Canada-wide standard for a commercial or industrial use
- > CSQG and/or Canada-wide standard for a commercial or industrial use

CCME: Canadian Council of Ministers of the Environment

Client **PUBLIC SERVICES AND PROCUREMENT CANADA**

Project **PHASE II ENVIRONMENTAL SITE CHARACTERIZATION**
WASKAGANISH CREE AIRPORT, WASKAGANISH (QUEBEC)

Title **FIGURE 3 SOIL ANALYTICAL RESULTS WITH REGARDS TO CCME**

Englobe Englobe Corp.
505 du Parc-Technologique Blvd Suite 200
Québec (Québec) G1P 4S9
Telephone: 418.781.0191

Prepared C. Drapeau	Discipline Environment	Project Manager C. Drapeau
Drawn A. Giroux	Scale 1 : 600	Sequence No. 03 of 05
Checked C. Gervais, Eng.	Date 2018-03-18	

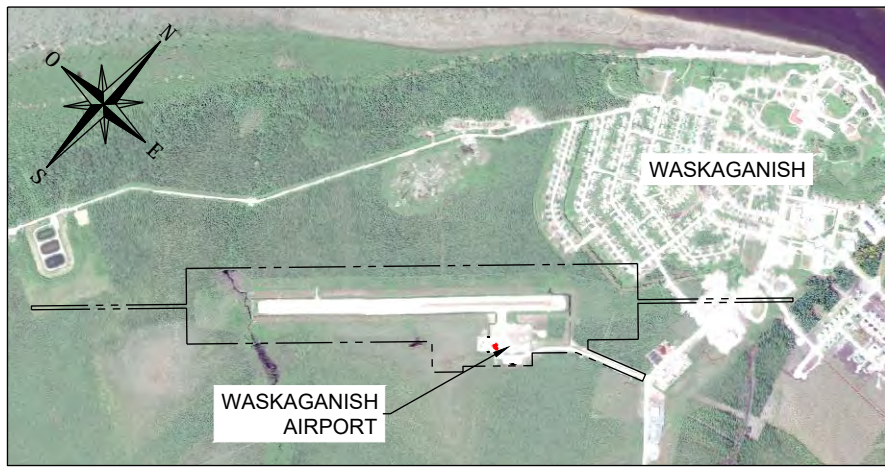
Serv. char.	Project	Wbs	Disc.	Type	Drawing No.	Rev.
129	P-0014860	0 00 100	SG	D	1303	00

THIS DOCUMENT IS THE PROPERTY OF LVM AND, AS SUCH, IS PROTECTED BY LAW. IT IS SOLELY INTENDED FOR THE USE MENTIONED HEREIN. IT IS STRICTLY FORBIDDEN TO DUPLICATE OR ADAPT IT EITHER IN PART OR IN ITS ENTIRETY WITHOUT HAVING FIRST OBTAINED LVM'S WRITTEN AUTHORIZATION TO DO SO.

References
- Google Earth Pro, version 7.1.8.3036
- Reference plan provided by the client : KGCIV_TQC_2016.dwg

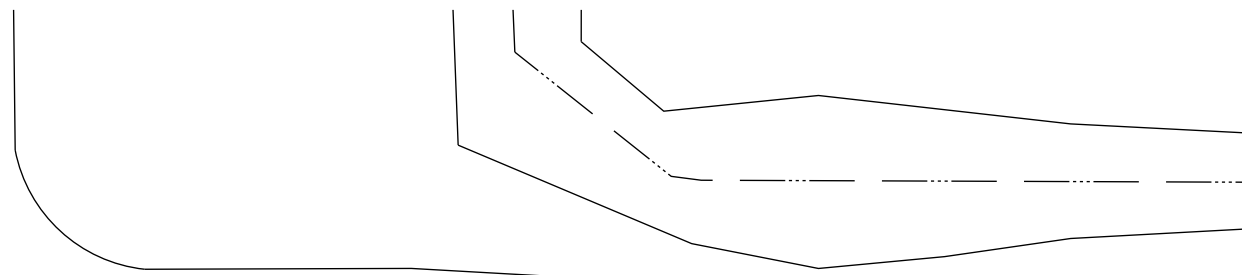
File name: G:\129\0014860_TPSGC_Marshe_Criuz5_CAD\OTTP_0-00-100-03_waskaganish\129-P-0014860-0-00-100-SG-D-1301@1305-00 (Ang).dwg
 Printed: 2019/03/18 09:48

10 cm
5
4
3
2
1
0



KEY PLAN

SCALE: 1 : 30 000



Legend

- Approximate sector with an environmental concern
- WE-MV-01-4 Former borehole
- WE-MW-18-X Monitoring well
- WE-TE-18-X Test pit
- WE-F-18-X Borehole
- WE-MA-18-X Surface sounding
- Limit of the lot
- Fence
- Drainage ditch
- Building
- Soils showing concentrations exceeding the MELCC's "C" criteria (Dessau, 2008)

INTERPRETATION OF THE SOIL ANALYTICAL RESULTS SURVEYS COLOR CODE

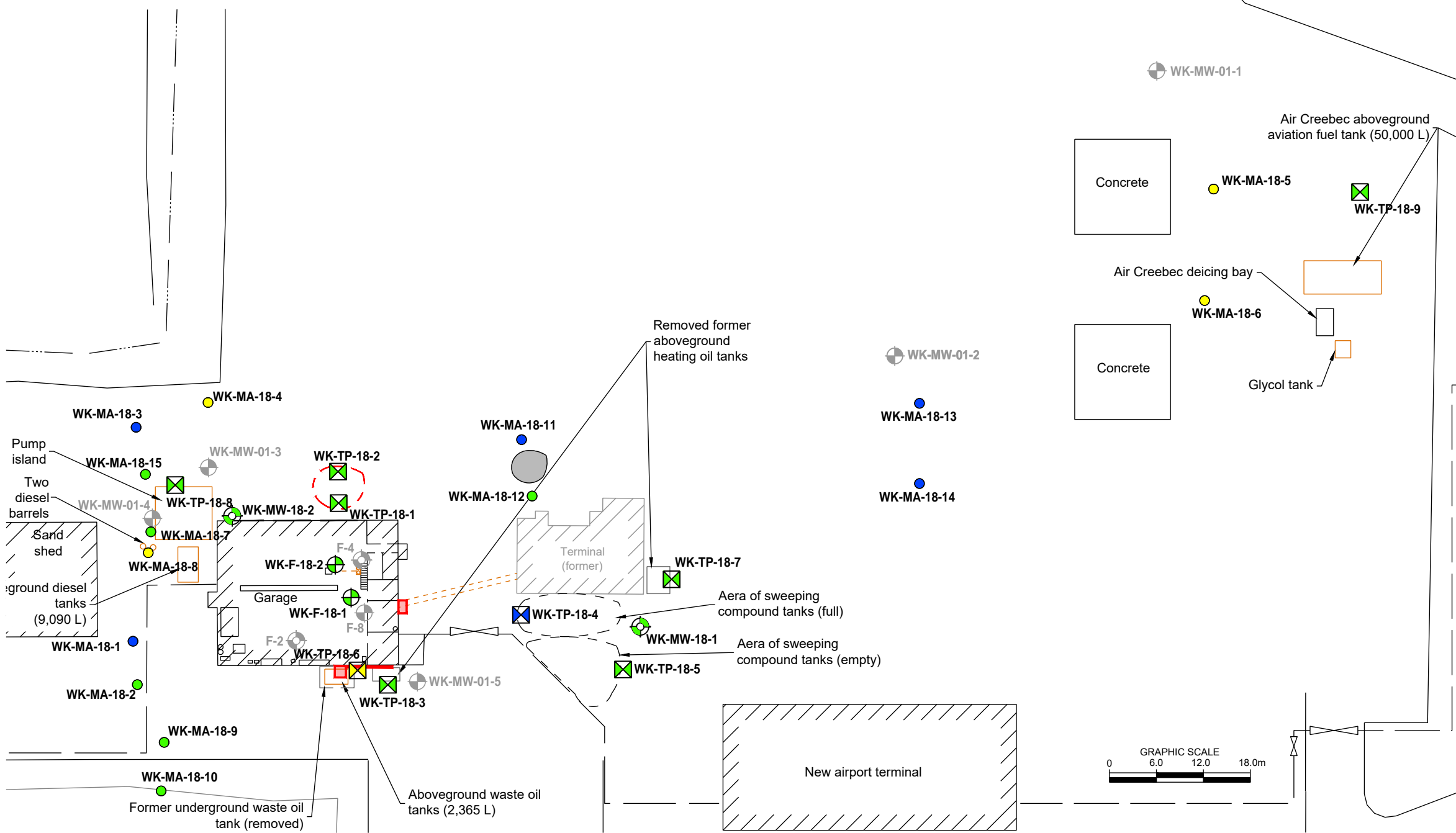
- ≤A
- "A-B" Range
- "B-C" Range
- "C-RESC" Range
- >RESC

Note: Indicated colour code corresponds to the maximum level of measured concentration for one or several compounds included in the analytical parameter.

The "B" and "C" criteria of the MELCC's Intervention Guide-Soil Protection and rehabilitation of contaminated sites respectively correspond to the limit values of Appendices I and II of the Regulation respecting the burial of contaminated soils (RESC).

RESC: Limits values of Appendix I of the Regulation respecting the burial of contaminated soil

MELCC: Ministère de l'Environnement et de la Lutte contre les changements climatiques



Client **PUBLIC SERVICES AND PROCUREMENT CANADA**

Projet **PHASE II ENVIRONMENTAL SITE CHARACTERIZATION**
WASKAGANISH CREE AIRPORT, WASKAGANISH (QUEBEC)

Title **FIGURE 4 SOIL ANALYTICAL RESULTS WITH REGARDS TO MELCC**

Englobe Corp.
505 du Parc-Technologique Blvd Suite 200
Québec (Quebec) G1P 4S9
Telephone: 418.781.0191

Prepared **C. Drapeau** Discipline **Environment** Project Manager **C. Drapeau**
Drawn **A. Giroux** Scale **1 : 600** Date **2018-03-18**
Checked **C. Gervais, Eng.** Sequence No. **04 of 05**

Serv. char.	Project	Wbs	Disc.	Type	Drawing No.	Rev.
129	P-0014860	0 00 100	SG	D	1304	00

THIS DOCUMENT IS THE PROPERTY OF LVM AND, AS SUCH, IS PROTECTED BY LAW. IT IS SOLELY INTENDED FOR THE USE MENTIONED HEREIN. IT IS STRICTLY FORBIDDEN TO DUPLICATE OR ADAPT IT EITHER IN PART OR IN ITS ENTIRETY WITHOUT HAVING FIRST OBTAINED LVM'S WRITTEN AUTHORIZATION TO DO SO.

References
- Google Earth Pro, version 7.1.8.3036
- Reference plan provided by the client : KGCIV_TQC_2016.dwg

File name: G:\129\p-0014860_TPSGC_Marshe_Criuz5_CAD\OTTP_0-00-100-03_waskaganish\129-P-0014860-0-00-100-SG-D-1301@1305-00 (Ang).dwg
 Printed: 2019/03/18 09:48

10 cm
5
4
3
2
1
0



GROUNDWATER

PARAMETER	CCME	MELCC
PHC C10 - C50	---	●
MAHs	●	●
PAHs	●	●
PHC F2-F4	●	---



Legend

- Approximate sector with an environmental concern
- WE-MV-01-4 Former monitoring well
- WE-MW-18-X Monitoring well
- WE-TE-18-X Test pit
- WE-F-18-X Borehole
- POINT-X Surface water sampling point
- Fence
- Drainage ditch
- Building

PRESENTATION OF WATER ANALYTICAL RESULTS

COLOR CODE (CCME)

- Concentrations below the CWQG and/or FIGQS of the CCME for a commercial/industrial land use
- Concentrations higher than the CWQG and/or FIGQS of the CCME for a commercial/industrial land use
- No recommendation

COLOR CODE (MELCC)

- Concentration below threshold
- Concentration higher than the threshold
- Concentration higher than the criteria

Note: Indicated colour code corresponds to the maximum level of measured concentration for one or several compounds included in the analytical parameter.

MELCC: Ministère de l'Environnement et de la Lutte contre les changements climatiques
CCME: Canadian Council of Ministers of the environment

SURFACE WATER

POINT-A

PARAMETER	CCME	MELCC
PHC C10 - C50	---	---
MAHs	●	●
Metals	●	●
PAHs	●	●

GROUNDWATER

WK-MW-18-2

PARAMETER	CCME	MELCC
PHC C10 - C50	---	●
MAHs	●	●
PAHs	●	●
PHC F2-F4	●	---

GROUNDWATER

F-2

PARAMETER	CCME	MELCC
PHC C10 - C50	---	●
MAHs	●	●
PAHs	●	●
PHC F2-F4	●	---

SURFACE WATER

POINT-B

PARAMETER	CCME	MELCC
PHC C10 - C50	---	---
MAHs	●	●
Metals	●	●
PAHs	●	●

GROUNDWATER

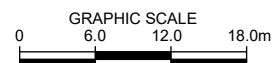
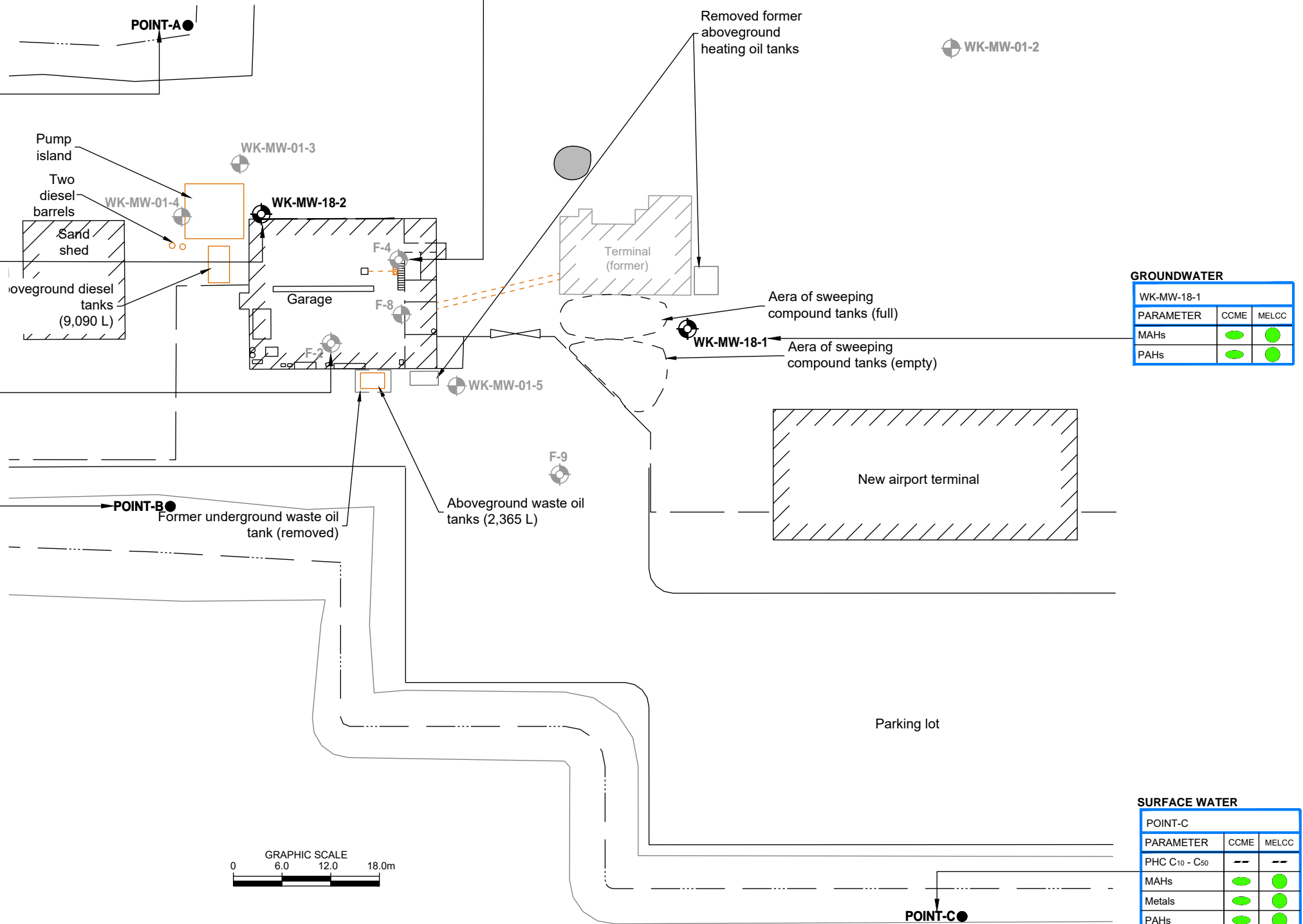
WK-MW-18-1

PARAMETER	CCME	MELCC
MAHs	●	●
PAHs	●	●

SURFACE WATER

POINT-C

PARAMETER	CCME	MELCC
PHC C10 - C50	---	---
MAHs	●	●
Metals	●	●
PAHs	●	●



THIS DOCUMENT IS THE PROPERTY OF LVM AND, AS SUCH, IS PROTECTED BY LAW. IT IS SOLELY INTENDED FOR THE USE MENTIONED HEREIN. IT IS STRICTLY FORBIDDEN TO DUPLICATE OR ADAPT IT EITHER IN PART OR IN ITS ENTIRETY WITHOUT HAVING FIRST OBTAINED LVM'S WRITTEN AUTHORIZATION TO DO SO.

References
- Google Earth Pro, version 7.1.8.3036
- Reference plan provided by the client : KGCIV_TQC_2016.dwg

File name: G:\129\10014860_TPSGC_Marché_Criqz5_CAD\OTP_0-00-100-03_waskaganish\129-P-0014860-0-00-100-SG-D-1301\01305-00 (Ang).dwg
 Printed: 2019/03/18 09:48

Client **PUBLIC SERVICES AND PROCUREMENT CANADA**

Projet **PHASE II ENVIRONMENTAL SITE CHARACTERIZATION**
WASKAGANISH CREE AIRPORT, WASKAGANISH (QUEBEC)

Title **FIGURE 5 WATER ANALYTICAL RESULTS**

Englobe Englobe Corp.
505 du Parc-Technologique Blvd Suite 200
Québec (Quebec) G1P 4S9
Telephone: 418.781.0191

Prepared **C. Drapeau** Discipline **Environment** Project Manager **C. Drapeau**
 Drawn **A. Giroux** Scale **1:600** Date **2018-03-18**
 Checked **C. Gervais, Eng.** Sequence No. **05 of 05**

Serv. char.	Project	Wbs	Disc.	Type	Drawing No.	Rev.
129	P-0014860	0 00 100	SG	D	1305	00

Tables

Table 1: Soils Samples Analytical Results Summary

Parameters	Unit	Intervention Guide ¹			RESC ²	CCME ³								Analytical Results									
		A ⁴	B	C	Appendix I	Agricultural		Residential/ Park		Commercial		Industrial		WK-MA-18-1-A	WK-MA-18-1-B	WK-MA-18-2-A	WK-MA-18-2-B	WK-MA-18-3-A	WK-MA-18-3-B	WK-MA-18-4-A	WK-MA-18-4-B	WK-MA-18-5-A	
Sample						Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine										
Maxxam ID																							
Sampling Date														26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	
Depth (m)														0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15	
Granulometry														Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	
GLYCOL																							
Ethylene glycol	mg/kg	2	97	411	411	960		960		960		960											
VOLATILE																							
Benzene	mg/kg	0.2	0.5	5	5	0.03	0.0068	0.03	0.0068	0.03	0.0068	0.03	0.0068	<0.0050					<0.10	<0.0050	<0.10	<0.0050	<0.10
Toluene	mg/kg	0.2	3	30	30	0.37	0.08	0.37	0.08	0.37	0.08	0.37	0.08	<0.020					<0.20	<0.020	<0.20	<0.020	<0.20
ethylbenzene	mg/kg	0.2	5	50	50	0.082	0.018	0.082	0.018	0.082	0.018	0.082	0.018	<0.010					<0.20	<0.010	<0.20	<0.010	<0.20
o-Xylene	mg/kg	--	--	--	50	--	--	--	--	--	--	--	--	<0.020						<0.020		<0.020	
p+m-Xylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	<0.040						<0.040		<0.040	
Xylenes (o,m,p)	mg/kg	0.4	5	50	50	11	2.4	11	2.4	11	2.4	11	2.4	<0.040					<0.20	<0.040	<0.20	<0.040	<0.20
F1 (C ₆ -C ₁₀)	mg/kg	--	--	--	--	30	210	30	210	320	320	320	320	<10						<10		<10	
F1 (C ₆ -C ₁₀) - BTEX	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	<10						<10		<10	
PAHs																							
Acénaphthene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--	<0.10						<0.10		<0.10	
Acénaphthylene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--	<0.10						<0.10		<0.10	
Anthracene	mg/kg	0.1	10	100	100	2.5		2.5		32		32		<0.10						<0.10		<0.10	
Benzo(a)anthracene	mg/kg	0.1	1	10	34	0.1		1		10		10		<0.050						<0.050		<0.050	
Benzo(a)pyrene	mg/kg	0.1	1	10	34	20		20		72		72		<0.050						<0.050		<0.050	
Benzo(b)fluoranthene	mg/kg	0.1	1	10	--	0.1		1		10		10		<0.050						<0.050		<0.050	
Benzo(j)fluoranthene	mg/kg	0.1	1	10	--	--		--		--		--		<0.050						<0.050		<0.050	
Benzo(k)fluoranthene	mg/kg	0.1	1	10	--	0.1		1		10		10		<0.050						<0.050		<0.050	
Benzo(b+j+k)fluoranthene	mg/kg	--	--	--	136	0.1		1		10		10		<0.050						<0.050		<0.050	
Benzo(c)phénanthrene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10						<0.10		<0.10	
Benzo(ghi)perylyene	mg/kg	0.1	1	10	18	--		--		--		--		<0.050						<0.050		<0.050	
Chrysene	mg/kg	0.1	1	10	34	--		--		--		--		<0.050						<0.050		<0.050	
Dibenzo(a,h)anthracene	mg/kg	0.1	1	10	82	0.1		1		10		10		<0.050						<0.050		<0.050	
Dibenzo(a,i)pyrene	mg/kg	0.1	1	10	34	--		--		--		--		<0.10						<0.10		<0.10	
Dibenzo(a,h)pyrene	mg/kg	0.1	1	10	34	--		--		--		--		<0.10						<0.10		<0.10	
Dibenzo(a,l)pyrene	mg/kg	0.1	1	10	34	--		--		--		--		<0.10						<0.10		<0.10	
7,12-Diméthylbenzanthracene	mg/kg	0.1	1	10	34	--		--		--		--		<0.10						<0.10		<0.10	
Fluoranthene	mg/kg	0.1	10	100	100	50		50		180		180		<0.10						<0.10		<0.10	
Fluorene	mg/kg	0.1	10	100	100	--		--		--		--		<0.10						<0.10		<0.10	
Indéno(1,2,3-cd)pyrene	mg/kg	0.1	1	10	34	0.1		1		10		10		<0.050						<0.050		<0.050	
3-Méthylcholanthrene	mg/kg	0.1	1	10	150	--		--		--		--		<0.10						<0.10		<0.10	
Naphtalene	mg/kg	0.1	5	50	56	0.013		0.013		0.013		0.013		<0.010						<0.010		<0.010	
Phénanthrene	mg/kg	0.1	5	50	56	0.046		0.046		0.046		0.046		<0.040						<0.040		<0.040	
Pyrene	mg/kg	0.1	10	100	100	0.1		10		100		100		<0.10						<0.10		<0.10	
2-Méthylnaphtalene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10						<0.10		<0.10	
1-Méthylnaphtalene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10						<0.10		<0.10	
1,3-Diméthylnaphtalene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10						<0.10		<0.10	
2,3,5-Triméthylnaphtalene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10						<0.10		<0.10	
ETT B[a]P ⁵	--	--	--	--	--	5.3		5.3		5.3		5.3											

Table 1: Soils Samples Analytical Results Summary

Parameters	Unit	Intervention Guide ¹			RESC ²	CCME ³								Analytical Results								
		A ⁴	B	C	Appendix I	Agricultural		Residential/ Park		Commercial		Industrial		WK-MA-18-1-A	WK-MA-18-1-B	WK-MA-18-2-A	WK-MA-18-2-B	WK-MA-18-3-A	WK-MA-18-3-B	WK-MA-18-4-A	WK-MA-18-4-B	WK-MA-18-5-A
Sample						Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine									
Maxxam ID														FN1284	FN1285	FN1282	FN1283	FN1280	FN1281	FN1278	FN1279	FN1304
Sampling Date														26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018
Depth (m)														0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15
Granulometry														Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse
PETROLEUM HYDROCARBONS																						
Petroleum hydrocarbons (C ₁₀ -C ₅₀)	mg/kg	300	700	3,500	10,000	--	--	--	--	--	--	--	--	<100	520	<100	<100	570	<100	820	380	370
F2 (C ₁₀ -C ₁₆)	mg/kg	--	--	--	--	150	150	150	150	260	260	260	260	<10					<10		<10	
F3 (C ₁₆ -C ₃₄)	mg/kg	--	--	--	--	300	1300	300	1300	1,700	2,500	1,700	2,500	<50					<50		410	
F4 (C ₃₄ -C ₅₀)	mg/kg	--	--	--	--	2,800	5,600	2,800	5,600	3,300	6,600	3,300	6,600	<50					<50		<50	
Base line reached at C50	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	YES					YES		YES	
IPP		--	--	--	--	--	--	--	--	--	--	--	--		OIL				OIL		OIL	OIL
VOLATILE																						
Chlorobenzene	mg/kg	0.2	1	10	10	0.1		1		10		10							<0.20		<0.20	<0.20
Dichloro-1,2 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10							<0.20		<0.20	<0.20
Dichloro-1,3 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10							<0.20		<0.20	<0.20
Dichloro-1,4 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10							<0.20		<0.20	<0.20
Styrene	mg/kg	0.2	5	50	50	0.1		5		50		50							<0.20		<0.20	<0.20
METALS																						
Cadmium (Cd)	mg/kg	0.9	5	20	100	1.4		10		22		22		<0.10								
Chromium (Cr)	mg/kg	100	250	800	4,000	64		64		87		87		4.9								
Copper (Cu)	mg/kg	65	100	500	2,500	63		63		91		91		5.7								
Nickel (Ni)	mg/kg	50	100	500	2,500	45		45		89		89		5.6								
Lead (Pb)	mg/kg	40	500	1,000	5,000	70		140		260		600		2.2								
Zinc (Zn)	mg/kg	150	500	1,500	7,500	250		250		410		410		12								

Notes:

- (1) : Intervention Guide, July 2016 (MDDELCC)
- (2) : Règlement sur l'enfouissement des sols contaminés (Regulation respecting the burial of contaminated soils) (Government of Quebec)
- (3) : Canadian Soils Quality Guidelines (CCME)
- (4) : Background values for the Superior Province for inorganic substances and method quantification limits for organic substance
- (5) : Excess lifetime cancer risk of 10⁻⁵
- : Not analyzed
- : No criteria or norm

Table 1: Soils Samples Analytical Results Summary

Parameters	Unit	Intervention Guide ¹			RESC ²	CCME ³																
		A ⁴	B	C	Appendix I	Agricultural		Residential/ Park		Commercial		Industrial		WK-MA-18-5-B	WK-MA-18-6-A	WK-MA-18-6-B	WK-MA-18-7-A	WK-MA-18-7-B	WK-MA-18-8-A	WK-MA-18-8-B	WK-MA-18-9-A	WK-MA-18-9-B
Sample						Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine									
Maxxam ID																						
Sampling Date														26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	27/06/2018	27/06/2018
Depth (m)														0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30
Granulometry														Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse
GLYCOL																						
Ethylene glycol	mg/kg	2	97	411	411	960		960		960		960										
VOLATILE																						
Benzene	mg/kg	0.2	0.5	5	5	0.03	0.0068	0.03	0.0068	0.03	0.0068	0.03	0.0068	<0.0050	<0.10	<0.0050		<0.10	<0.0050	<0.10	<0.10	<0.0050
Toluene	mg/kg	0.2	3	30	30	0.37	0.08	0.37	0.08	0.37	0.08	0.37	0.08	<0.020	<0.20	<0.020		<0.20	<0.020	<0.20	<0.20	<0.020
ethylbenzene	mg/kg	0.2	5	50	50	0.082	0.018	0.082	0.018	0.082	0.018	0.082	0.018	<0.010	<0.20	<0.010		<0.20	<0.010	<0.20	<0.20	<0.010
o-Xylene	mg/kg	--	--	--	50	--	--	--	--	--	--	--	--	<0.020		<0.020			<0.020			<0.020
p+m-Xylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	<0.040		<0.040			<0.040			<0.040
Xylenes (o,m,p)	mg/kg	0.4	5	50	50	11	2.4	11	2.4	11	2.4	11	2.4	<0.040	<0.20	<0.040		<0.20	<0.040	<0.20	<0.20	<0.040
F1 (C ₆ -C ₁₀)	mg/kg	--	--	--	--	30	210	30	210	320	320	320	320	<10		<10			<10			<10
F1 (C ₆ -C ₁₀) - BTEX	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	<10		<10			<10			<10
PAHs																						
Acénaphthene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--	<0.10	<0.10			<0.10				<0.10
Acénaphthylene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--	<0.10	<0.10			<0.10				<0.10
Anthracene	mg/kg	0.1	10	100	100	2.5		2.5		32		32		<0.10	<0.10			<0.10				<0.10
Benzo(a)anthracene	mg/kg	0.1	1	10	34	0.1		1		10		10		<0.050	<0.050			<0.050				<0.050
Benzo(a)pyrene	mg/kg	0.1	1	10	34	20		20		72		72		<0.050	<0.050			<0.050				<0.050
Benzo(b)fluoranthene	mg/kg	0.1	1	10	--	0.1		1		10		10		<0.050	<0.050			<0.050				<0.050
Benzo(j)fluoranthene	mg/kg	0.1	1	10	--	--		--		--		--		<0.050	<0.050			<0.050				<0.050
Benzo(k)fluoranthene	mg/kg	0.1	1	10	--	0.1		1		10		10		<0.050	<0.050			<0.050				<0.050
Benzo(b+j+k)fluoranthene	mg/kg	--	--	--	136	0.1		1		10		10		<0.050	<0.050			<0.050				<0.050
Benzo(c)phénanthrene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10	<0.10			<0.10				<0.10
Benzo(ghi)perylene	mg/kg	0.1	1	10	18	--		--		--		--		<0.050	<0.050			<0.050				<0.050
Chrysene	mg/kg	0.1	1	10	34	--		--		--		--		<0.050	<0.050			<0.050				<0.050
Dibenzo(a,h)anthracene	mg/kg	0.1	1	10	82	0.1		1		10		10		<0.050	<0.050			<0.050				<0.050
Dibenzo(a,i)pyrene	mg/kg	0.1	1	10	34	--		--		--		--		<0.10	<0.10			<0.10				<0.10
Dibenzo(a,h)pyrene	mg/kg	0.1	1	10	34	--		--		--		--		<0.10	<0.10			<0.10				<0.10
Dibenzo(a,l)pyrene	mg/kg	0.1	1	10	34	--		--		--		--		<0.10	<0.10			<0.10				<0.10
7,12-Diméthylbenzanthracene	mg/kg	0.1	1	10	34	--		--		--		--		<0.10	<0.10			<0.10				<0.10
Fluoranthene	mg/kg	0.1	10	100	100	50		50		180		180		<0.10	<0.10			<0.10				<0.10
Fluorene	mg/kg	0.1	10	100	100	--		--		--		--		<0.10	<0.10			<0.10				<0.10
Indéno(1,2,3-cd)pyrene	mg/kg	0.1	1	10	34	0.1		1		10		10		<0.050	<0.050			<0.050				<0.050
3-Méthylcholanthrene	mg/kg	0.1	1	10	150	--		--		--		--		<0.10	<0.10			<0.10				<0.10
Naphtalene	mg/kg	0.1	5	50	56	0.013		0.013		0.013		0.013		<0.010	<0.010			<0.010				<0.010
Phénanthrene	mg/kg	0.1	5	50	56	0.046		0.046		0.046		0.046		<0.040	<0.040			<0.040				<0.040
Pyrene	mg/kg	0.1	10	100	100	0.1		10		100		100		<0.10	<0.10			<0.10				<0.10
2-Méthylnaphtalene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10	<0.10			<0.10				<0.10
1-Méthylnaphtalene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10	<0.10			<0.10				<0.10
1,3-Diméthylnaphtalene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10	<0.10			<0.10				<0.10
2,3,5-Triméthylnaphtalene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10	<0.10			<0.10				<0.10
ETT B[a]P ⁵	--	--	--	--	--	5.3		5.3		5.3		5.3										

Table 1: Soils Samples Analytical Results Summary

Parameters	Unit	Intervention Guide ¹			RESC ²	CCME ³																	
		A ⁴	B	C	Appendix I	Agricultural		Residential/ Park		Commercial		Industrial		WK-MA-18-5-B	WK-MA-18-6-A	WK-MA-18-6-B	WK-MA-18-7-A	WK-MA-18-7-B	WK-MA-18-8-A	WK-MA-18-8-B	WK-MA-18-9-A	WK-MA-18-9-B	
Sample						Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine
Maxxam ID																							
Sampling Date														26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	27/06/2018	27/06/2018
Depth (m)														0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15
Granulometry														Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse
PETROLEUM HYDROCARBONS																							
Petroleum hydrocarbons (C ₁₀ -C ₅₀)	mg/kg	300	700	3,500	10,000	--	--	--	--	--	--	--	--	2700	190	960	170	<100	1200	400	<100	<100	<100
F2 (C ₁₀ -C ₁₆)	mg/kg	--	--	--	--	150	150	150	150	260	260	260	260	<10		<10			<10				<10
F3 (C ₁₆ -C ₃₄)	mg/kg	--	--	--	--	300	1300	300	1300	1,700	2,500	1,700	2,500	170		260			1300				<50
F4 (C ₃₄ -C ₅₀)	mg/kg	--	--	--	--	2,800	5,600	2,800	5,600	3,300	6,600	3,300	6,600	<50		<50			<50				<50
Base line reached at C50	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	YES		YES			YES				YES
IPP		--	--	--	--	--	--	--	--	--	--	--	--	OIL		OIL					OIL		
VOLATILE																							
Chlorobenzene	mg/kg	0.2	1	10	10	0.1		1		10		10							<0.20				<0.20
Dichloro-1,2 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10							<0.20				<0.20
Dichloro-1,3 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10							<0.20				<0.20
Dichloro-1,4 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10							<0.20				<0.20
Styrene	mg/kg	0.2	5	50	50	0.1		5		50		50							<0.20				<0.20
METALS																							
Cadmium (Cd)	mg/kg	0.9	5	20	100	1.4		10		22		22											
Chromium (Cr)	mg/kg	100	250	800	4,000	64		64		87		87											
Copper (Cu)	mg/kg	65	100	500	2,500	63		63		91		91											
Nickel (Ni)	mg/kg	50	100	500	2,500	45		45		89		89											
Lead (Pb)	mg/kg	40	500	1,000	5,000	70		140		260		600											
Zinc (Zn)	mg/kg	150	500	1,500	7,500	250		250		410		410											

- Notes:
- (1) : Intervention Guide, July 2016 (MDDELCC)
 - (2) : Règlement sur l'enfouissement des sols contaminés (Regulation respecting the burial of contaminated soils) (Government of Quebec)
 - (3) : Canadian Soils Quality Guidelines (CCME)
 - (4) : Background values for the Superior Province for inorganic substances and method quantification limits for organic substance
 - (5) : Excess lifetime cancer risk of 10⁻⁵
 - : Not analyzed
 - : No criteria or norm

Table 1: Soils Samples Analytical Results Summary

Parameters	Unit	Intervention Guide ¹			RESC ²	CCME ³																
		A ⁴	B	C	Appendix I	Agricultural		Residential/ Park		Commercial		Industrial		WK-MA-18-10-A	WK-MA-18-10-B	WK-MA-18-11-A	WK-MA-18-11-B	WK-MA-18-12-A	WK-MA-18-12-B	WK-MA-18-13-A	WK-MA-18-13-B	WK-MA-18-14-A
						Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse
Maxxam ID														FM9507	FM9508	FN1302	FN1303	FN1300	FN1301	FN1310	FN1311	FN1312
Sampling Date														27/06/2018	27/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018
Depth (m)														0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15
Granulometry														Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse
GLYCOL																						
Ethylene glycol	mg/kg	2	97	411	411	960	960	960	960											<2.0		
VOLATILE																						
Benzene	mg/kg	0.2	0.5	5	5	0.03	0.0068	0.03	0.0068	0.03	0.0068	0.03	0.0068	<0.0050		<0.0050			<0.0050	<0.10	<0.0050	<0.10
Toluene	mg/kg	0.2	3	30	30	0.37	0.08	0.37	0.08	0.37	0.08	0.37	0.08	<0.020		<0.020			<0.020	<0.20	<0.020	<0.20
ethylbenzene	mg/kg	0.2	5	50	50	0.082	0.018	0.082	0.018	0.082	0.018	0.082	0.018	<0.010		<0.010			<0.010	<0.20	<0.010	<0.20
o-Xylene	mg/kg	--	--	--	50	--	--	--	--	--	--	--	--	<0.020		<0.020			<0.020		<0.020	
p+m-Xylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	<0.040		<0.040			<0.040		<0.040	
Xylenes (o,m,p)	mg/kg	0.4	5	50	50	11	2.4	11	2.4	11	2.4	11	2.4	<0.040		<0.040			<0.040	<0.20	<0.040	<0.20
F1 (C ₆ -C ₁₀)	mg/kg	--	--	--	--	30	210	30	210	320	320	320	320	<10		<10			<10		<10	
F1 (C ₆ -C ₁₀) - BTEX	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	<10		<10			<10		<10	
PAHs																						
Acénaphthene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--	<0.10		<0.10			<0.10		<0.10	<0.10
Acénaphthylene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--	<0.10		<0.10			<0.10		<0.10	<0.10
Anthracene	mg/kg	0.1	10	100	100	2.5	--	2.5	--	32	--	32	--	<0.10		<0.10			<0.10		<0.10	<0.10
Benzo(a)anthracene	mg/kg	0.1	1	10	34	0.1	--	1	--	10	--	10	--	<0.050		<0.050			<0.050		<0.050	<0.050
Benzo(a)pyrene	mg/kg	0.1	1	10	34	20	--	20	--	72	--	72	--	<0.050		<0.050			<0.050		<0.050	<0.050
Benzo(b)fluoranthene	mg/kg	0.1	1	10	--	0.1	--	1	--	10	--	10	--	<0.050		<0.050			<0.050		<0.050	<0.050
Benzo(j)fluoranthene	mg/kg	0.1	1	10	--	--	--	--	--	--	--	--	--	<0.050		<0.050			<0.050		<0.050	<0.050
Benzo(k)fluoranthene	mg/kg	0.1	1	10	--	0.1	--	1	--	10	--	10	--	<0.050		<0.050			<0.050		<0.050	<0.050
Benzo(b+j+k)fluoranthene	mg/kg	--	--	--	136	0.1	--	1	--	10	--	10	--	<0.050		<0.050			<0.050		<0.050	<0.050
Benzo(c)phénanthrene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--	<0.10		<0.10			<0.10		<0.10	<0.10
Benzo(ghi)perylyene	mg/kg	0.1	1	10	18	--	--	--	--	--	--	--	--	<0.050		<0.050			<0.050		<0.050	<0.050
Chrysene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--	<0.050		<0.050			<0.050		<0.050	<0.050
Dibenzo(a,h)anthracene	mg/kg	0.1	1	10	82	0.1	--	1	--	10	--	10	--	<0.050		<0.050			<0.050		<0.050	<0.050
Dibenzo(a,i)pyrene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--	<0.10		<0.10			<0.10		<0.10	<0.10
Dibenzo(a,h)pyrene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--	<0.10		<0.10			<0.10		<0.10	<0.10
Dibenzo(a,l)pyrene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--	<0.10		<0.10			<0.10		<0.10	<0.10
7,12-Diméthylbenzanthracene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--	<0.10		<0.10			<0.10		<0.10	<0.10
Fluoranthene	mg/kg	0.1	10	100	100	50	--	50	--	180	--	180	--	<0.10		<0.10			<0.10		<0.10	<0.10
Fluorene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--	<0.10		<0.10			<0.10		<0.10	<0.10
Indéno(1,2,3-cd)pyrene	mg/kg	0.1	1	10	34	0.1	--	1	--	10	--	10	--	<0.050		<0.050			<0.050		<0.050	<0.050
3-Méthylcholanthrene	mg/kg	0.1	1	10	150	--	--	--	--	--	--	--	--	<0.10		<0.10			<0.10		<0.10	<0.10
Naphtalene	mg/kg	0.1	5	50	56	0.013	--	0.013	--	0.013	--	0.013	--	<0.010		<0.010			<0.010		<0.010	<0.010
Phénanthrene	mg/kg	0.1	5	50	56	0.046	--	0.046	--	0.046	--	0.046	--	<0.040		<0.040			<0.040		<0.040	<0.040
Pyrene	mg/kg	0.1	10	100	100	0.1	--	10	--	100	--	100	--	<0.10		<0.10			<0.10		<0.10	<0.10
2-Méthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--	<0.10		<0.10			<0.10		<0.10	<0.10
1-Méthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--	<0.10		<0.10			<0.10		<0.10	<0.10
1,3-Diméthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--	<0.10		<0.10			<0.10		<0.10	<0.10
2,3,5-Triméthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--	<0.10		<0.10			<0.10		<0.10	<0.10
ETT B[a]P ⁵	--	--	--	--	--	5.3	--	5.3	--	5.3	--	5.3	--									

Table 1: Soils Samples Analytical Results Summary

Parameters	Unit	Intervention Guide ¹			RESC ²	CCME ³																	
		A ⁴	B	C	Appendix I	Agricultural		Residential/ Park		Commercial		Industrial		WK-MA-18-10-A	WK-MA-18-10-B	WK-MA-18-11-A	WK-MA-18-11-B	WK-MA-18-12-A	WK-MA-18-12-B	WK-MA-18-13-A	WK-MA-18-13-B	WK-MA-18-14-A	
Sample						Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine
Maxxam ID														FM9507	FM9508	FN1302	FN1303	FN1300	FN1301	FN1310	FN1311	FN1312	
Sampling Date														27/06/2018	27/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018
Depth (m)														0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30	0-0.15	0.15-0.30
Granulometry														Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse
PETROLEUM HYDROCARBONS																							
Petroleum hydrocarbons (C ₁₀ -C ₅₀)	mg/kg	<u>300</u>	<u>700</u>	3,500	10,000	--	--	--	--	--	--	--	--	<100	<100	<u>360</u>	<u>340</u>	220	<100	<u>430</u>	<u>330</u>	<u>380</u>	
F2 (C ₁₀ -C ₁₆)	mg/kg	--	--	--	--	150	150	150	150	260	260	260	260	<10	<10	<10			<10		<10		
F3 (C ₁₆ -C ₃₄)	mg/kg	--	--	--	--	300	1300	300	1300	1,700	2,500	1,700	2,500	<50	<50	240			120		80		
F4 (C ₃₄ -C ₅₀)	mg/kg	--	--	--	--	2,800	5,600	2,800	5,600	3,300	6,600	3,300	6,600	<50	<50				<50		<50		
Base line reached at C50	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	YES	YES	YES			YES		YES		
IPP		--	--	--	--	--	--	--	--	--	--	--	--			OIL	OIL			OIL	OIL	OIL	
VOLATILE																							
Chlorobenzene	mg/kg	0.2	1	10	10	0.1		1		10		10		<0.20								<0.20	
Dichloro-1,2 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10		<0.20							<0.20		<0.20
Dichloro-1,3 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10		<0.20							<0.20		<0.20
Dichloro-1,4 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10		<0.20							<0.20		<0.20
Styrene	mg/kg	0.2	5	50	50	0.1		5		50		50		<0.20							<0.20		<0.20
METALS																							
Cadmium (Cd)	mg/kg	0.9	5	20	100	1.4		10		22		22											
Chromium (Cr)	mg/kg	100	250	800	4,000	64		64		87		87											
Copper (Cu)	mg/kg	65	100	500	2,500	63		63		91		91											
Nickel (Ni)	mg/kg	50	100	500	2,500	45		45		89		89											
Lead (Pb)	mg/kg	40	500	1,000	5,000	70		140		260		600											
Zinc (Zn)	mg/kg	150	500	1,500	7,500	250		250		410		410											

Notes:

- (1) : Intervention Guide, July 2016 (MDDELCC)
- (2) : Règlement sur l'enfouissement des sols contaminés (Regulation respecting the burial of contaminated soils) (Government of Quebec)
- (3) : Canadian Soils Quality Guidelines (CCME)
- (4) : Background values for the Superior Province for inorganic substances and method quantification limits for organic substance
- (5) : Excess lifetime cancer risk of 10⁻⁵
- : Not analyzed
- : No criteria or norm

Table 1: Soils Samples Analytical Results Summary

Parameters	Unit	Intervention Guide ¹			RESC ²	CCME ³																
		A ⁴	B	C	Appendix I	Agricultural		Residential/ Park		Commercial		Industrial		WK-MA-18-14-B	WK-MA-18-15-1	WK-TP-18-1-D	WK-TP-18-1-E	WK-TP-18-2-D	WK-TP-18-2-E	WK-TP-18-3-C	WK-TP-18-4-E	WK-TP-18-4-F
						Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	FN1313	FO0090	FN1058	FN1059	FN1063	FN1064	FN1078
Maxxam ID																						
Sampling Date														26/06/2018	26/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	26/06/2018	26/06/2018
Depth (m)														0.15-0.30	0-0.15	1.5-2.0	2.0-2.2	1.5-2.0	2.0-2.2	1.0-1.5	2.0-2.3	2.3-2.5
Granulometry														Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse
GLYCOL																						
Ethylene glycol	mg/kg	2	97	411	411	960	960	960	960	960	960	960	960	<2,0								
VOLATILE																						
Benzene	mg/kg	0.2	0.5	5	5	0.03	0.0068	0.03	0.0068	0.03	0.0068	0.03	0.0068	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.10	<0.10
Toluene	mg/kg	0.2	3	30	30	0.37	0.08	0.37	0.08	0.37	0.08	0.37	0.08	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.3	<0.20
ethylbenzene	mg/kg	0.2	5	50	50	0.082	0.018	0.082	0.018	0.082	0.018	0.082	0.018	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.20	<0.20
o-Xylene	mg/kg	--	--	--	50	--	--	--	--	--	--	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020		
p+m-Xylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040		
Xylenes (o,m,p)	mg/kg	0.4	5	50	50	11	2.4	11	2.4	11	2.4	11	2.4	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.20	<0.20
F1 (C ₆ -C ₁₀)	mg/kg	--	--	--	--	30	210	30	210	320	320	320	320	<10	<10	<10	<10	<10	<10	<10		
F1 (C ₆ -C ₁₀) - BTEX	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	<10	<10	<10	<10	<10	<10	<10		
PAHs																						
Acénaphthene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--	<0.10							<0.10	
Acénaphthylene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--	<0.10							<0.10	
Anthracene	mg/kg	0.1	10	100	100	2.5	--	2.5	--	32	--	32	--	<0.10							<0.10	
Benzo(a)anthracene	mg/kg	0.1	1	10	34	0.1	--	1	--	10	--	10	--	<0.050							<0.050	
Benzo(a)pyrene	mg/kg	0.1	1	10	34	20	--	20	--	72	--	72	--	<0.050							<0.050	
Benzo(b)fluoranthene	mg/kg	0.1	1	10	--	0.1	--	1	--	10	--	10	--	<0.050							<0.050	
Benzo(j)fluoranthene	mg/kg	0.1	1	10	--	--	--	--	--	--	--	--	--	<0.050							<0.050	
Benzo(k)fluoranthene	mg/kg	0.1	1	10	--	0.1	--	1	--	10	--	10	--	<0.050							<0.050	
Benzo(b+j+k)fluoranthene	mg/kg	--	--	--	136	0.1	--	1	--	10	--	10	--	<0.050							<0.050	
Benzo(c)phénanthrene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--	<0.10							<0.10	
Benzo(ghi)perylene	mg/kg	0.1	1	10	18	--	--	--	--	--	--	--	--	<0.050							<0.050	
Chrysene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--	<0.050							<0.050	
Dibenzo(a,h)anthracene	mg/kg	0.1	1	10	82	0.1	--	1	--	10	--	10	--	<0.050							<0.050	
Dibenzo(a,i)pyrene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--	<0.10							<0.10	
Dibenzo(a,h)pyrene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--	<0.10							<0.10	
Dibenzo(a,l)pyrene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--	<0.10							<0.10	
7,12-Diméthylbenzanthracene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--	<0.10							<0.10	
Fluoranthene	mg/kg	0.1	10	100	100	50	--	50	--	180	--	180	--	<0.10							<0.10	
Fluorene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--	<0.10							<0.10	
Indéno(1,2,3-cd)pyrene	mg/kg	0.1	1	10	34	0.1	--	1	--	10	--	10	--	<0.050							<0.050	
3-Méthylcholanthrene	mg/kg	0.1	1	10	150	--	--	--	--	--	--	--	--	<0.10							<0.10	
Naphtalene	mg/kg	0.1	5	50	56	0.013	--	0.013	--	0.013	--	0.013	--	<0.010							<0.010	
Phénanthrene	mg/kg	0.1	5	50	56	0.046	--	0.046	--	0.046	--	0.046	--	<0.040							<0.040	
Pyrene	mg/kg	0.1	10	100	100	0.1	--	10	--	100	--	100	--	<0.10							<0.10	
2-Méthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--	<0.10							<0.10	
1-Méthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--	<0.10							<0.10	
1,3-Diméthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--	<0.10							<0.10	
2,3,5-Triméthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--	<0.10							<0.10	
ETT B[a]P ⁵	--	--	--	--	--	5.3	--	5.3	--	5.3	--	5.3	--									

Table 1: Soils Samples Analytical Results Summary

Parameters	Unit	Intervention Guide ¹			RESC ²	CCME ³																
		A ⁴	B	C	Appendix I	Agricultural		Residential/ Park		Commercial		Industrial		WK-MA-18-14-B	WK-MA-18-15-1	WK-TP-18-1-D	WK-TP-18-1-E	WK-TP-18-2-D	WK-TP-18-2-E	WK-TP-18-3-C	WK-TP-18-4-E	WK-TP-18-4-F
Maxxam ID						Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	FN1313	FO0090	FN1058	FN1059	FN1063	FN1064	FN1078	FN1094	FN1096
Sampling Date														26/06/2018	26/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	26/06/2018	26/06/2018
Depth (m)														0.15-0.30	0-0.15	1.5-2.0	2.0-2.2	1.5-2.0	2.0-2.2	1.0-1.5	2.0-2.3	2.3-2.5
Granulometry														Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse
PETROLEUM HYDROCARBONS																						
Petroleum hydrocarbons (C ₁₀ -C ₅₀)	mg/kg	300	700	3,500	10,000	--	--	--	--	--	--	--	--	<100	<100					<100		
F2 (C ₁₀ -C ₁₆)	mg/kg	--	--	--	--	150	150	150	150	260	260	260	260	<10	<10					<10		
F3 (C ₁₆ -C ₃₄)	mg/kg	--	--	--	--	300	1300	300	1300	1,700	2,500	1,700	2,500	210	<50					<50		
F4 (C ₃₄ -C ₅₀)	mg/kg	--	--	--	--	2,800	5,600	2,800	5,600	3,300	6,600	3,300	6,600	<50	<50					<50		
Base line reached at C50	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	YES	YES					YES		
IPP		--	--	--	--	--	--	--	--	--	--	--	--									
VOLATILE																						
Chlorobenzene	mg/kg	0.2	1	10	10	0.1		1		10		10									<0.20	<0.20
Dichloro-1,2 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10									<0.20	<0.20
Dichloro-1,3 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10									<0.20	<0.20
Dichloro-1,4 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10									<0.20	<0.20
Styrene	mg/kg	0.2	5	50	50	0.1		5		50		50									<0.20	<0.20
METALS																						
Cadmium (Cd)	mg/kg	0.9	5	20	100	1.4		10		22		22										
Chromium (Cr)	mg/kg	100	250	800	4,000	64		64		87		87										
Copper (Cu)	mg/kg	65	100	500	2,500	63		63		91		91										
Nickel (Ni)	mg/kg	50	100	500	2,500	45		45		89		89										
Lead (Pb)	mg/kg	40	500	1,000	5,000	70		140		260		600										
Zinc (Zn)	mg/kg	150	500	1,500	7,500	250		250		410		410										

Notes:

- (1) : Intervention Guide, July 2016 (MDDELCC)
- (2) : Règlement sur l'enfouissement des sols contaminés (Regulation respecting the burial of contaminated soils) (Government of Quebec)
- (3) : Canadian Soils Quality Guidelines (CCME)
- (4) : Background values for the Superior Province for inorganic substances and method quantification limits for organic substance
- (5) : Excess lifetime cancer risk of 10⁻⁵
- : Not analyzed
- : No criteria or norm

Table 1: Soils Samples Analytical Results Summary

Parameters	Unit	Intervention Guide ¹			RESC ²	CCME ³																	
		A ⁴	B	C	Appendix I	Agricultural		Residential/ Park		Commercial		Industrial		WK-TP-18-5-3	WK-TP-18-5-4	WK-TP-18-5-4-TT	WK-TP-18-6-B	WK-TP-18-6-C	WK-TP-18-6-D	WK-TP-18-6-E	WK-TP-18-7-B	WK-TP-18-7-C	
						Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	FN0803	FN0804	FN0805	FN1072	FN1073	FN1074	FO0008	FN1067
Maxxam ID																							
Sampling Date														26/06/2018	26/06/2018	26/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	
Depth (m)														1.0-1.5	1.5-2.0	Duplicata	0.5-1.0	1.0-1.5	1.5-2.0	2.0-2.15	0.5-1.0	1.0-1.5	
Granulometry														Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	
GLYCOL																							
Ethylene glycol	mg/kg	2	97	411	411	960	960	960	960														
VOLATILE																							
Benzene	mg/kg	0.2	0.5	5	5	0.03	0.0068	0.03	0.0068	0.03	0.0068	0.03	0.0068	<0.10	<0.10	<0.10	<0.10	<0.10	<0.0050		<0.10	<0.10	
Toluene	mg/kg	0.2	3	30	30	0.37	0.08	0.37	0.08	0.37	0.08	0.37	0.08	<0.20	<0.20	<0.20	<0.20	<0.20	<0.020		<0.20	<0.20	
ethylbenzene	mg/kg	0.2	5	50	50	0.082	0.018	0.082	0.018	0.082	0.018	0.082	0.018	<0.20	<0.20	<0.20	<0.20	0.31	<0.010		<0.20	<0.20	
o-Xylene	mg/kg	--	--	--	50	--	--	--	--	--	--	--	--						<0.020				
p+m-Xylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--						<0.040				
Xylenes (o,m,p)	mg/kg	0.4	5	50	50	11	2.4	11	2.4	11	2.4	11	2.4	<0.20	<0.20	<0.20	<0.20	2.4	<0.040		<0.20	<0.20	
F1 (C ₆ -C ₁₀)	mg/kg	--	--	--	--	30	210	30	210	320	320	320	320						35				
F1 (C ₆ -C ₁₀) - BTEX	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--						35				
PAHs																							
Acénaphthene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--						<0.10			<0.10	
Acénaphthylene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--						<0.10			<0.10	
Anthracene	mg/kg	0.1	10	100	100	2.5	--	2.5	--	32	--	32	--						<0.10			<0.10	
Benzo(a)anthracene	mg/kg	0.1	1	10	34	0.1	--	1	--	10	--	10	--						<0.050			<0.050	
Benzo(a)pyrene	mg/kg	0.1	1	10	34	20	--	20	--	72	--	72	--						<0.050			<0.050	
Benzo(b)fluoranthene	mg/kg	0.1	1	10	--	0.1	--	1	--	10	--	10	--						<0.050			<0.050	
Benzo(j)fluoranthene	mg/kg	0.1	1	10	--	--	--	--	--	--	--	--	--						<0.050			<0.050	
Benzo(k)fluoranthene	mg/kg	0.1	1	10	--	0.1	--	1	--	10	--	10	--						<0.050			<0.050	
Benzo(b+j+k)fluoranthene	mg/kg	--	--	--	136	0.1	--	1	--	10	--	10	--						<0.050			<0.050	
Benzo(c)phénanthrene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--						<0.10			<0.10	
Benzo(ghi)pérylene	mg/kg	0.1	1	10	18	--	--	--	--	--	--	--	--						<0.050			<0.050	
Chrysene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--						<0.050			<0.050	
Dibenzo(a,h)anthracene	mg/kg	0.1	1	10	82	0.1	--	1	--	10	--	10	--						<0.050			<0.050	
Dibenzo(a,i)pyrene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--						<0.10			<0.10	
Dibenzo(a,h)pyrene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--						<0.10			<0.10	
Dibenzo(a,l)pyrene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--						<0.10			<0.10	
7,12-Diméthylbenzanthracene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--						<0.10			<0.10	
Fluoranthene	mg/kg	0.1	10	100	100	50	--	50	--	180	--	180	--						<0.10			<0.10	
Fluorene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--						<0.10			<0.10	
Indéno(1,2,3-cd)pyrene	mg/kg	0.1	1	10	34	0.1	--	1	--	10	--	10	--						<0.050			<0.050	
3-Méthylcholanthrene	mg/kg	0.1	1	10	150	--	--	--	--	--	--	--	--						<0.10			<0.10	
Naphtalene	mg/kg	0.1	5	50	56	0.013	--	0.013	--	0.013	--	0.013	--						<0.010			<0.010	
Phénanthrene	mg/kg	0.1	5	50	56	0.046	--	0.046	--	0.046	--	0.046	--						<0.040			<0.040	
Pyrene	mg/kg	0.1	10	100	100	0.1	--	10	--	100	--	100	--						<0.10			<0.10	
2-Méthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--						<0.10			<0.10	
1-Méthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--						<0.10			<0.10	
1,3-Diméthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--						<0.10			<0.10	
2,3,5-Triméthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--						<0.10			<0.10	
ETT B[a]P ⁵	--	--	--	--	--	5.3	--	5.3	--	5.3	--	5.3	--										

Table 1: Soils Samples Analytical Results Summary

Parameters	Unit	Intervention Guide ¹			RESC ²	CCME ³																	
		A ⁴	B	C	Appendix I	Agricultural		Residential/ Park		Commercial		Industrial		WK-TP-18-5-3	WK-TP-18-5-4	WK-TP-18-5-4-TT	WK-TP-18-6-B	WK-TP-18-6-C	WK-TP-18-6-D	WK-TP-18-6-E	WK-TP-18-7-B	WK-TP-18-7-C	
Sample						Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine										
Maxxam ID														FN0803	FN0804	FN0805	FN1072	FN1073	FN1074	FO0008	FN1067	FO0004	
Sampling Date														26/06/2018	26/06/2018	26/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	
Depth (m)														1.0-1.5	1.5-2.0	Duplicata	0.5-1.0	1.0-1.5	1.5-2.0	2.0-2.15	0.5-1.0	1.0-1.5	
Granulometry														Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	
PETROLEUM HYDROCARBONS																							
Petroleum hydrocarbons (C ₁₀ -C ₅₀)	mg/kg	300	700	3,500	10,000	--	--	--	--	--	--	--	--				<100	<100	380	1400	180		
F2 (C ₁₀ -C ₁₆)	mg/kg	--	--	--	--	150	150	150	150	260	260	260	260					15	310	1800			
F3 (C ₁₆ -C ₃₄)	mg/kg	--	--	--	--	300	1300	300	1300	1,700	2,500	1,700	2,500					<50	160	760			
F4 (C ₃₄ -C ₅₀)	mg/kg	--	--	--	--	2,800	5,600	2,800	5,600	3,300	6,600	3,300	6,600					<50	<50	<50			
Base line reached at C50	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--					YES	YES	YES			
IPP		--	--	--	--	--	--	--	--	--	--	--	--						diesel #1/aviation fuel	heating oil/ diesel #2			
VOLATILE																							
Chlorobenzene	mg/kg	0.2	1	10	10	0.1		1		10		10		<0.20	<0.20	<0.20	<0.20	<0.20				<0.20	<0.20
Dichloro-1,2 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10		<0.20	<0.20	<0.20	<0.20	<0.20				<0.20	<0.20
Dichloro-1,3 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10		<0.20	<0.20	<0.20	<0.20	<0.20				<0.20	<0.20
Dichloro-1,4 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10		<0.20	<0.20	<0.20	<0.20	<0.20				<0.20	<0.20
Styrene	mg/kg	0.2	5	50	50	0.1		5		50		50		<0.20	<0.20	<0.20	<0.20	<0.20				<0.20	<0.20
METALS																							
Cadmium (Cd)	mg/kg	0.9	5	20	100	1.4		10		22		22							<0.10				
Chromium (Cr)	mg/kg	100	250	800	4,000	64		64		87		87							4.2				
Copper (Cu)	mg/kg	65	100	500	2,500	63		63		91		91							4.9				
Nickel (Ni)	mg/kg	50	100	500	2,500	45		45		89		89							3				
Lead (Pb)	mg/kg	40	500	1,000	5,000	70		140		260		600							1.6				
Zinc (Zn)	mg/kg	150	500	1,500	7,500	250		250		410		410							12				

Notes:

- (1) : Intervention Guide, July 2016 (MDDELCC)
- (2) : Règlement sur l'enfouissement des sols contaminés (Regulation respecting the burial of contaminated soils) (Government of Quebec)
- (3) : Canadian Soils Quality Guidelines (CCME)
- (4) : Background values for the Superior Province for inorganic substances and method quantification limits for organic substance
- (5) : Excess lifetime cancer risk of 10⁻⁵
- : Not analyzed
- : No criteria or norm

Table 1: Soils Samples Analytical Results Summary

Parameters	Unit	Intervention Guide ¹			RESC ²	CCME ³																
		A ⁴	B	C	Appendix I	Agricultural		Residential/ Park		Commercial		Industrial		WK-TP-18-7-D	WK-TP-18-7-E	WK-TP-18-8-A	WK-TP-18-8-B	WK-TP-18-9-A	WK-TP-18-9-D	WK-F-18-1-4	WK-F-18-1-7	WK-F-18-2-4
Maxxam ID						Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	FO0005	FN1070	FN1085	FN1086	FN1097	FN1100	FN0836	FN0838	FN0842
Sampling Date														27/06/2018	27/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018
Depth (m)														1.5-2.0	2.0-2.2	0-0.5	0.5-1.0	0-0.5	1.5-2.0	1.80-2.40	3.60-4.20	1.80-2.40
Granulometry														Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Fine	Fine
GLYCOL																						
Ethylene glycol	mg/kg	2	97	411	411	960	960	960	960										<2,0	<2,0		
VOLATILE																						
Benzene	mg/kg	0.2	0.5	5	5	0.03	0.0068	0.03	0.0068	0.03	0.0068	0.03	0.0068		<0.0050	<0.10	<0.0050				<0.0050	<0.10
Toluene	mg/kg	0.2	3	30	30	0.37	0.08	0.37	0.08	0.37	0.08	0.37	0.08		<0.020	<0.20	<0.020				<0.020	<0.20
ethylbenzene	mg/kg	0.2	5	50	50	0.082	0.018	0.082	0.018	0.082	0.018	0.082	0.018		<0.010	<0.20	<0.010				<0.010	<0.20
o-Xylene	mg/kg	--	--	--	50	--	--	--	--	--	--	--	--		<0.020		<0.020				<0.020	
p+m-Xylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--		<0.040		<0.040				<0.040	
Xylenes (o,m,p)	mg/kg	0.4	5	50	50	11	2.4	11	2.4	11	2.4	11	2.4		<0.040	<0.20	<0.040				<0.040	<0.20
F1 (C ₆ -C ₁₀)	mg/kg	--	--	--	--	30	210	30	210	320	320	320	320		<10		<10				<10	
F1 (C ₆ -C ₁₀) - BTEX	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--		<10		<10				<10	
PAHs																						
Acénaphthene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--		<0.10	<0.10					<0.10	
Acénaphthylene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--		<0.10	<0.10					<0.10	
Anthracene	mg/kg	0.1	10	100	100	2.5	--	2.5	--	32	--	32	--		<0.10	<0.10					<0.10	
Benzo(a)anthracene	mg/kg	0.1	1	10	34	0.1	--	1	--	10	--	10	--		<0.050	<0.050					<0.050	
Benzo(a)pyrene	mg/kg	0.1	1	10	34	20	--	20	--	72	--	72	--		<0.050	<0.050					<0.050	
Benzo(b)fluoranthene	mg/kg	0.1	1	10	--	0.1	--	1	--	10	--	10	--		<0.050	<0.050					<0.050	
Benzo(j)fluoranthene	mg/kg	0.1	1	10	--	--	--	--	--	--	--	--	--		<0.050	<0.050					<0.050	
Benzo(k)fluoranthene	mg/kg	0.1	1	10	--	0.1	--	1	--	10	--	10	--		<0.050	<0.050					<0.050	
Benzo(b+j+k)fluoranthene	mg/kg	--	--	--	136	0.1	--	1	--	10	--	10	--		<0.050	<0.050					<0.050	
Benzo(c)phénanthrene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--		<0.10	<0.10					<0.10	
Benzo(ghi)pérylene	mg/kg	0.1	1	10	18	--	--	--	--	--	--	--	--		<0.050	<0.050					<0.050	
Chrysene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--		<0.050	<0.050					<0.050	
Dibenzo(a,h)anthracene	mg/kg	0.1	1	10	82	0.1	--	1	--	10	--	10	--		<0.050	<0.050					<0.050	
Dibenzo(a,i)pyrene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--		<0.10	<0.10					<0.10	
Dibenzo(a,h)pyrene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--		<0.10	<0.10					<0.10	
Dibenzo(a,l)pyrene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--		<0.10	<0.10					<0.10	
7,12-Diméthylbenzanthracene	mg/kg	0.1	1	10	34	--	--	--	--	--	--	--	--		<0.10	<0.10					<0.10	
Fluoranthene	mg/kg	0.1	10	100	100	50	--	50	--	180	--	180	--		<0.10	<0.10					<0.10	
Fluorene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--		<0.10	<0.10					<0.10	
Indéno(1,2,3-cd)pyrene	mg/kg	0.1	1	10	34	0.1	--	1	--	10	--	10	--		<0.050	<0.050					<0.050	
3-Méthylcholanthrene	mg/kg	0.1	1	10	150	--	--	--	--	--	--	--	--		<0.10	<0.10					<0.10	
Naphtalene	mg/kg	0.1	5	50	56	0.013	--	0.013	--	0.013	--	0.013	--		<0.010	<0.010					<0.010	
Phénanthrene	mg/kg	0.1	5	50	56	0.046	--	0.046	--	0.046	--	0.046	--		<0.040	<0.040					<0.040	
Pyrene	mg/kg	0.1	10	100	100	0.1	--	10	--	100	--	100	--		<0.10	<0.10					<0.10	
2-Méthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--		<0.10	<0.10					<0.10	
1-Méthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--		<0.10	<0.10					<0.10	
1,3-Diméthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--		<0.10	<0.10					<0.10	
2,3,5-Triméthylnaphtalene	mg/kg	0.1	1	10	56	--	--	--	--	--	--	--	--		<0.10	<0.10					<0.10	
ETT B[a]P ⁵	--	--	--	--	--	5.3	--	5.3	--	5.3	--	5.3	--									

Table 1: Soils Samples Analytical Results Summary

Parameters	Unit	Intervention Guide ¹			RESC ²	CCME ³																
		A ⁴	B	C	Appendix I	Agricultural		Residential/ Park		Commercial		Industrial		WK-TP-18-7-D	WK-TP-18-7-E	WK-TP-18-8-A	WK-TP-18-8-B	WK-TP-18-9-A	WK-TP-18-9-D	WK-F-18-1-4	WK-F-18-1-7	WK-F-18-2-4
Sample						Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine									
Maxxam ID														FO0005	FN1070	FN1085	FN1086	FN1097	FN1100	FN0836	FN0838	FN0842
Sampling Date														27/06/2018	27/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018
Depth (m)														1.5-2.0	2.0-2.2	0-0.5	0.5-1.0	0-0.5	1.5-2.0	1.80-2.40	3.60-4.20	1.80-2.40
Granulometry														Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Coarse	Fine	Fine
PETROLEUM HYDROCARBONS																						
Petroleum hydrocarbons (C ₁₀ -C ₅₀)	mg/kg	300	700	3,500	10,000	--	--	--	--	--	--	--	--	<100	<100	190	<100			<100	<100	<100
F2 (C ₁₀ -C ₁₆)	mg/kg	--	--	--	--	150	150	150	150	260	260	260	260	<10	<10		<10			<10	<10	<10
F3 (C ₁₆ -C ₃₄)	mg/kg	--	--	--	--	300	1300	300	1300	1,700	2,500	1,700	2,500	<50	<50		<50			<50	<50	<50
F4 (C ₃₄ -C ₅₀)	mg/kg	--	--	--	--	2,800	5,600	2,800	5,600	3,300	6,600	3,300	6,600	<50	<50		<50			<50	<50	<50
Base line reached at C50	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	YES	YES		YES			YES	YES	YES
IPP		--	--	--	--	--	--	--	--	--	--	--	--									
VOLATILE																						
Chlorobenzene	mg/kg	0.2	1	10	10	0.1		1		10		10				<0.20					<0.20	
Dichloro-1,2 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10				<0.20					<0.20	
Dichloro-1,3 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10				<0.20					<0.20	
Dichloro-1,4 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10				<0.20					<0.20	
Styrene	mg/kg	0.2	5	50	50	0.1		5		50		50				<0.20					<0.20	
METALS																						
Cadmium (Cd)	mg/kg	0.9	5	20	100	1.4		10		22		22										
Chromium (Cr)	mg/kg	100	250	800	4,000	64		64		87		87										
Copper (Cu)	mg/kg	65	100	500	2,500	63		63		91		91										
Nickel (Ni)	mg/kg	50	100	500	2,500	45		45		89		89										
Lead (Pb)	mg/kg	40	500	1,000	5,000	70		140		260		600										
Zinc (Zn)	mg/kg	150	500	1,500	7,500	250		250		410		410										

Notes:

- (1) : Intervention Guide, July 2016 (MDDELCC)
- (2) : Règlement sur l'enfouissement des sols contaminés (Regulation respecting the burial of contaminated soils) (Government of Quebec)
- (3) : Canadian Soils Quality Guidelines (CCME)
- (4) : Background values for the Superior Province for inorganic substances and method quantification limits for organic substance
- (5) : Excess lifetime cancer risk of 10⁻⁵
- : Not analyzed
- : No criteria or norm

Table 1: Soils Samples Analytical Results Summary

Parameters	Unit	Intervention Guide ¹			RESC ²	CCME ³															BL TERRAIN WK-TP-18-6		
		A ⁴	B	C	Appendix I	Agricultural		Residential/Park		Commercial		Industrial		WK-F-18-2-5	WK-F-18-2-6	WK-MW-18-1-3	WK-MW-18-1-6	WK-MW-18-2-1	WK-MW-18-2-3	WK-MW-18-2-4	WK-18-2-4-TT	TP-18-6	
Sample						Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine										
Maxxam ID														FN0843	FN0807	FN0817	FN0818	FN0809	FN0810	FN0811	FO089	FN1650	
Sampling Date														26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	27/06/2018	
Depth (m)														2.40-3.00	3.00-3.60	1.20-1.80	3.00-3.60	0-0.61	1.20-1.80	1.80-2.40	Duplicate	Field blank	
Granulometry														Fine	Fine	Coarse	Fine	Coarse	Coarse	Coarse	Coarse		
GLYCOL																							
Ethylene glycol	mg/kg	2	97	411	411	960		960		960		960											
VOLATILE																							
Benzene	mg/kg	0.2	0.5	5	5	0.03	0.0068	0.03	0.0068	0.03	0.0068	0.03	0.0068	<0.0050			<0.10	<0.10			<0.0050		<0.10
Toluene	mg/kg	0.2	3	30	30	0.37	0.08	0.37	0.08	0.37	0.08	0.37	0.08	<0.020			<0.20	<0.20			<0.020		<0.20
ethylbenzene	mg/kg	0.2	5	50	50	0.082	0.018	0.082	0.018	0.082	0.018	0.082	0.018	<0.010			<0.20	<0.20			<0.010		<0.20
o-Xylene	mg/kg	--	--	--	50	--	--	--	--	--	--	--	--	<0.020							<0.020		
p+m-Xylene	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	<0.040							<0.040		
Xylenes (o,m,p)	mg/kg	0.4	5	50	50	11	2.4	11	2.4	11	2.4	11	2.4	<0.040			<0.20	<0.20			<0.040		<0.20
F1 (C ₆ -C ₁₀)	mg/kg	--	--	--	--	30	210	30	210	320	320	320	320	<10							<10		
F1 (C ₆ -C ₁₀) - BTEX	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	<10							<10		
PAHs																							
Acénaphthene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--	<0.10							<0.10		
Acénaphthylene	mg/kg	0.1	10	100	100	--	--	--	--	--	--	--	--	<0.10							<0.10		
Anthracene	mg/kg	0.1	10	100	100	2.5		2.5		32		32		<0.10							<0.10		
Benzo(a)anthracene	mg/kg	0.1	1	10	34	0.1		1		10		10		<0.050							<0.050		
Benzo(a)pyrene	mg/kg	0.1	1	10	34	20		20		72		72		<0.050							<0.050		
Benzo(b)fluoranthene	mg/kg	0.1	1	10	--	0.1		1		10		10		<0.050							<0.050		
Benzo(j)fluoranthene	mg/kg	0.1	1	10	--	--		--		--		--		<0.050							<0.050		
Benzo(k)fluoranthene	mg/kg	0.1	1	10	--	0.1		1		10		10		<0.050							<0.050		
Benzo(b+j+k)fluoranthene	mg/kg	--	--	--	136	0.1		1		10		10		<0.050							<0.050		
Benzo(c)phénanthrene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10							<0.10		
Benzo(ghi)perylene	mg/kg	0.1	1	10	18	--		--		--		--		<0.050							<0.050		
Chrysene	mg/kg	0.1	1	10	34	--		--		--		--		<0.050							<0.050		
Dibenzo(a,h)anthracene	mg/kg	0.1	1	10	82	0.1		1		10		10		<0.050							<0.050		
Dibenzo(a,i)pyrene	mg/kg	0.1	1	10	34	--		--		--		--		<0.10							<0.10		
Dibenzo(a,h)pyrene	mg/kg	0.1	1	10	34	--		--		--		--		<0.10							<0.10		
Dibenzo(a,l)pyrene	mg/kg	0.1	1	10	34	--		--		--		--		<0.10							<0.10		
7,12-Diméthylbenzanthracene	mg/kg	0.1	1	10	34	--		--		--		--		<0.10							<0.10		
Fluoranthene	mg/kg	0.1	10	100	100	50		50		180		180		<0.10							<0.10		
Fluorene	mg/kg	0.1	10	100	100	--		--		--		--		<0.10							<0.10		
Indéno(1,2,3-cd)pyrene	mg/kg	0.1	1	10	34	0.1		1		10		10		<0.050							<0.050		
3-Méthylcholanthrene	mg/kg	0.1	1	10	150	--		--		--		--		<0.10							<0.10		
Naphtalene	mg/kg	0.1	5	50	56	0.013		0.013		0.013		0.013		<0.010							<0.010		
Phénanthrene	mg/kg	0.1	5	50	56	0.046		0.046		0.046		0.046		<0.040							<0.040		
Pyrene	mg/kg	0.1	10	100	100	0.1		10		100		100		<0.10							<0.10		
2-Méthylnaphtalene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10							<0.10		
1-Méthylnaphtalene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10							<0.10		
1,3-Diméthylnaphtalene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10							<0.10		
2,3,5-Triméthylnaphtalene	mg/kg	0.1	1	10	56	--		--		--		--		<0.10							<0.10		
ETT B[a]P ⁵	--	--	--	--	--	5.3		5.3		5.3		5.3											

Table 1: Soils Samples Analytical Results Summary

Parameters	Unit	Intervention Guide ¹			RESC ²	CCME ³													BL TERRAIN WK-TP-18-6			
		A ⁴	B	C	Appendix I	Agricultural		Residential/Park		Commercial		Industrial		WK-F-18-2-5	WK-F-18-2-6	WK-MW-18-1-3	WK-MW-18-1-6	WK-MW-18-2-1		WK-MW-18-2-3	WK-MW-18-2-4	WK-18-2-4-TT
Sample						Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine									
Maxxam ID														FN0843	FN0807	FN0817	FN0818	FN0809	FN0810	FN0811	FO0089	FN1650
Sampling Date														26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	26/06/2018	27/06/2018
Depth (m)														2.40-3.00	3.00-3.60	1.20-1.80	3.00-3.60	0-0.61	1.20-1.80	1.80-2.40	Duplicate	Field blank
Granulometry														Fine	Fine	Coarse	Fine	Coarse	Coarse	Coarse	Coarse	
PETROLEUM HYDROCARBONS																						
Petroleum hydrocarbons (C ₁₀ -C ₅₀)	mg/kg	300	700	3,500	10,000	--	--	--	--	--	--	--	--	<100	<100			<100	<100	<100	<100	
F2 (C ₁₀ -C ₁₆)	mg/kg	--	--	--	--	150	150	150	150	260	260	260	260	<10	<10			<10		<10		
F3 (C ₁₆ -C ₃₄)	mg/kg	--	--	--	--	300	1300	300	1300	1,700	2,500	1,700	2,500	<50	<50			<50		<50		
F4 (C ₃₄ -C ₅₀)	mg/kg	--	--	--	--	2,800	5,600	2,800	5,600	3,300	6,600	3,300	6,600	<50	<50			<50		<50		
Base line reached at C50	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	YES	YES			YES		YES		
IPP		--	--	--	--	--	--	--	--	--	--	--	--									
VOLATILE																						
Chlorobenzene	mg/kg	0.2	1	10	10	0.1		1		10		10						<0.20	<0.20			<0.20
Dichloro-1,2 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10						<0.20	<0.20			<0.20
Dichloro-1,3 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10						<0.20	<0.20			<0.20
Dichloro-1,4 benzene	mg/kg	0.2	1	10	10	0.1		1		10		10						<0.20	<0.20			<0.20
Styrene	mg/kg	0.2	5	50	50	0.1		5		50		50						<0.20	<0.20			<0.20
METALS																						
Cadmium (Cd)	mg/kg	0.9	5	20	100	1.4		10		22		22		<0.10								
Chromium (Cr)	mg/kg	100	250	800	4,000	64		64		87		87		9.4								
Copper (Cu)	mg/kg	65	100	500	2,500	63		63		91		91		2.1								
Nickel (Ni)	mg/kg	50	100	500	2,500	45		45		89		89		5.2								
Lead (Pb)	mg/kg	40	500	1,000	5,000	70		140		260		600		1.8								
Zinc (Zn)	mg/kg	150	500	1,500	7,500	250		250		410		410		10								

Notes:

- (1) : Intervention Guide, July 2016 (MDDELCC)
- (2) : Règlement sur l'enfouissement des sols contaminés (Regulation respecting the burial of contaminated soils) (Government of Quebec)
- (3) : Canadian Soils Quality Guidelines (CCME)
- (4) : Background values for the Superior Province for inorganic substances and method quantification limits for organic substance
- (5) : Excess lifetime cancer risk of 10⁻⁵
- : Not analyzed
- : No criteria or norm

Table 2: Groundwater Samples Analytical Results Summary

Parameters	Unit	RDL	Intervention Guide ¹		FIGQS - Use of lands for commercial and industrial purposes ²						Analytical Results						
Sample			RES	Threshold	Inhalation		Organisms present in soil - Direct contact		Organismes vivants en eau douce		WK-MW-18-1	WK-MW-18-2	WK-MW-18-2-TT	RPD %	F-4	F2	TRIP BLANK
Maxxam ID					Fine	Coarse	Fine	Coarse	Fine	Coarse	06/07/2018	06/07/2018	06/07/2018		FM6836	FM6837	FM7101
Sampling Date														06/07/2018	06/07/2018	06/07/2018	
PAHs																	
Acenaphthene	ug/L	0.030	100	50	--	--	--	--	5.8	5.8	<0.030	<0.030	<0.030	n.c.	0.032	<0.030	-
Anthracene	ug/L	0.030	--	--	--	--	320	320	0.012	0.012	<0.012	<0.012	<0.012	n.c.	<0.012	<0.012	-
Benzo(a)anthracene	ug/L	0.030	1.8	0.9	--	--	--	--	0.018	0.018	<0.018	<0.018	<0.018	n.c.	<0.018	<0.018	-
Benzo(b)fluoranthene	ug/L	0.060	1.8	0.9	--	--	--	--	0.48	0.48	<0.060	<0.060	<0.060	n.c.	<0.060	<0.060	-
Benzo(j)fluoranthene	ug/L	0.060	1.8	0.9	--	--	--	--	0.48	0.48	<0.060	<0.060	<0.060	n.c.	<0.060	<0.060	-
Benzo(k)fluoranthene	ug/L	0.060	1.8	0.9	--	--	--	--	0.48	0.48	<0.060	<0.060	<0.060	n.c.	<0.060	<0.060	-
Benzo(a)pyrene	ug/L	0.0080	1.8	0.9	--	--	6.6	6.6	0.017	0.015	<0.0080	<0.0080	<0.0080	n.c.	<0.0080	<0.0080	-
Chrysene	ug/L	0.030	1.8	0.9	--	--	--	--	1.4	1.4	<0.030	<0.030	<0.030	n.c.	<0.030	<0.030	-
Dibenzo(a,h)anthracene	ug/L	0.030	1.8	0.9	--	--	--	--	0.28	0.28	<0.030	<0.030	<0.030	n.c.	<0.030	<0.030	-
Fluoranthene	ug/L	0.030	14	7.0	--	--	860	860	0.04	0.04	<0.030	<0.030	<0.030	n.c.	<0.030	<0.030	-
Fluorene	ug/L	0.030	110	55	--	--	--	--	3	3	<0.030	<0.030	<0.030	n.c.	0.081	<0.030	-
Indeno(1,2,3-cd)pyrene	ug/L	0.030	1.8	0.9	--	--	--	--	0.23	0.23	<0.030	<0.030	<0.030	n.c.	<0.030	<0.030	-
Naphthalene	ug/L	0.030	100	50	-	7,000	--	--	1.1	1.1	<0.030	0.11	0.11	n.c.	0.83	0.062	-
Phenanthrene	ug/L	0.030	4.7	2.4	--	--	--	--	0.4	0.4	<0.030	<0.030	<0.030	n.c.	<0.030	<0.030	-
Pyrene	ug/L	0.030	--	--	--	--	--	--	0.025	0.025	<0.020	<0.020	<0.020	n.c.	<0.020	<0.020	-
PETROLEUM HYDROCARBONS																	
Petroleum hydrocarbons (C ₁₀ -C ₅₀)	ug/L	100	2,800	1,400	--	--	--	--	--	--	-	<100	130	n.c.	150	1100	-
F2 (C ₁₀ -C ₁₆)	ug/L	100	--	--	--	17,000	3,100	3,100	--	1,300	-	<100	<100	n.c.	<100	<100	-
F3 (C ₁₆ -C ₃₄)	ug/L	--	--	--	--	--	--	--	--	--	-	<200	<200	n.c.	<200	<200	-
F4 (C ₃₄ -C ₅₀)	ug/L	--	--	--	--	--	--	--	--	--	-	<200	<200	n.c.	<200	<200	-
VOLATILE																	
Benzene	ug/L	0.40	950	475	19,000	1,800	540,000	350,000	33,000	690	<0.20	0.5	<0.40	n.c.	<0.40	<0.40	<0.20
Toluene	ug/L	0.40	200	100	--	--	240,000	200,000	--	83	0.7	<0.40	<0.40	n.c.	<0.40	<0.40	0.1
Ethylbenzene	ug/L	0.40	160	80	--	--	150,000	110,000	--	41,000	0.14	0.55	0.47	n.c.	<0.40	<0.40	<0.10
p+m-Xylene	ug/L	0.80	--	--	--	--	--	--	--	--	-	1.1	1.1	n.c.	<0.80	<0.80	-
o-Xylene	ug/L	0.40	--	--	--	--	--	--	--	--	-	0.76	0.72	n.c.	<0.40	<0.40	-
Xylenes (o,m,p)	ug/L	0.80	370	185	--	48,000	74,000	120,000	--	18,000	<0.40	1.9	1.8	n.c.	<0.80	<0.80	<0.40
F1 (C ₆ -C ₁₀)	ug/L	100	--	--	--	9,100	9,900	11,000	--	9,800	-	<100	<100	n.c.	<100	<100	-
F1 (C ₆ -C ₁₀) - BTEX	ug/L	100	--	--	--	--	--	--	--	--	-	<100	<100	n.c.	<100	<100	-
Chlorobenzene	ug/L	0.20	130	65	2,200	180	--	--	1.3	1.3	<0.20	<0.20	<0.20	n.c.	<0.20	<0.20	<0.20
Dichloro-1,2 benzene	ug/L	0.20	70	35	--	64,000	--	--	0.7	0.7	<0.20	<0.20	<0.20	n.c.	<0.20	<0.20	<0.20
Dichloro-1,3 benzene	ug/L	0.10	100	50	--	--	--	--	150	150	<0.10	<0.10	<0.10	n.c.	<0.10	<0.10	<0.10
Dichloro-1,4 benzene	ug/L	0.20	100	50	32,000	2,600	--	--	26	26	<0.20	<0.20	<0.20	n.c.	<0.20	<0.20	<0.20
Styrene	ug/L	0.10	800	400	--	51,000	--	--	72	72	<0.10	<0.10	<0.10	n.c.	<0.10	<0.10	<0.10

- Notes:**
- (1) : Intervention Guide, July 2016 (MDDELCC) - Résurgence dans les eaux de surface (Resurgence in surface water)
 - (2) : Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites, June 2016 (4th version) (FSCAP)
 - : Not analyzed
 - : No criteria or norm
 - n. c. : Not calculated
 - 5.9** : Concentration exceeding the most restrictive value of the recommended criteria



Table 3: Surface Water Samples Analytical Results Summary

Parameters	Unit	CCME - CWQG: Protection of aquatic life (fresh water)		MELCC - Critères de qualité de l'eau de surface (Surface water quality criteria)			Analytical Results				
				Prevention of contamination (aquatic organisms only)	Protection of aquatic life (acute effect)	Protection of aquatic life (chronic effect)	POINT-A	POINT-A-TT	RPD %	POINT-B	POINT-C
Sample		Short-term exposure	Long-term exposure				FM5842	FM5848			FM5849
Maxxam ID							06/07/2018	06/07/2018		06/07/2018	06/07/2018
Sampling Date											
VOLATILE											
Benzene	ug/L	-	370	51	950	370	<0.20	<0.20	n.c.	<0.20	<0.20
Toluene	ug/L	-	2	15,000	1,300	2	0.17	0.17	n.c.	0.68	0.13
Ethylbenzene	ug/L	-	90	2,100	160	90	<0.10	<0.10	n.c.	<0.10	<0.10
Xylenes (o,m,p)	ug/L	-	-	16,000	370	41	<0.40	<0.40	n.c.	<0.40	<0.40
Chlorobenzene	ug/L	-	1.3	1600	220	1.3	<0.20	<0.20	n.c.	<0.20	<0.20
Dichloro-1,2 benzene	ug/L	-	0.7	1300	120	0.7	<0.20	<0.20	n.c.	<0.20	<0.20
Dichloro-1,3 benzene	ug/L	-	150	960	100	28	<0.10	<0.10	n.c.	<0.10	<0.10
Dichloro-1,4 benzene	ug/L	-	26	190	100	26	<0.20	<0.20	n.c.	<0.20	<0.20
Styrene		-	72	8	1,400	72	<0.10	<0.10	n.c.	<0.10	<0.10
PAHs											
Total PAHs (RES)	ug/L	-	-	-	-	-	<0.060	<0.060	n.c.	<0.060	<0.060
Acenaphthene	ug/L	-	5.8	990	100	38	<0.030	<0.030	n.c.	<0.030	<0.030
Anthracene	ug/L	-	0.012	40,000	-	-	<0.030	<0.030	n.c.	<0.030	<0.030
Benzo(a)anthracene	ug/L	-	0.018	0.018	-	-	<0.030	<0.030	n.c.	<0.030	<0.030
Benzo(b)fluoranthene	ug/L	-	-	0.018	-	-	<0.060	<0.060	n.c.	<0.060	<0.060
Benzo(i)fluoranthene	ug/L	-	-	-	-	-	<0.060	<0.060	n.c.	<0.060	<0.060
Benzo(k)fluoranthene	ug/L	-	-	0.018	-	-	<0.060	<0.060	n.c.	<0.060	<0.060
Benzo(a)pyrene	ug/L	-	0.015	0.018	-	-	<0.0080	<0.0080	n.c.	<0.0080	<0.0080
Chrysene	ug/L	-	-	0.018	-	-	<0.030	<0.030	n.c.	<0.030	<0.030
Dibenzo(a,h)anthracene	ug/L	-	-	0.018	-	-	<0.030	<0.030	n.c.	<0.030	<0.030
Fluoranthene	ug/L	-	0.04	140	14	1.6	<0.030	<0.030	n.c.	<0.030	<0.030
Fluorene	ug/L	-	3	5,300	110	12	<0.030	<0.030	n.c.	<0.030	<0.030
Indeno(1,2,3-cd)pyrene	ug/L	-	-	0.018	-	-	<0.030	<0.030	n.c.	<0.030	<0.030
Naphthalene	ug/L	-	1.1	1,200	100	11	<0.030	<0.030	n.c.	<0.030	<0.030
Phenanthrene	ug/L	-	0.4	-	4.7	1.4	<0.030	<0.030	n.c.	<0.030	<0.030
Pyrene	ug/L	-	0.025	4,000	-	-	<0.030	<0.030	n.c.	<0.030	<0.030
PETROLEUM HYDROCARBONS											
Petroleum hydrocarbons (C ₁₀ -C ₅₀)	ug/L	-	-	-	-	-	<100	<100	n.c.	<100	<100
METALS ICP-MS											
Cadmium (Cd)	ug/L	1	0.09	130	0.21	0.049	<0.010	<0.010	n.c.	<0.010	<0.010
Chromium (Cr)	ug/L	-	-	9,400	-	-	<0.010	<0.010	n.c.	<0.010	<0.010
Copper (Cu)	ug/L	-	2	38,000	1.6	0.13	<0.0090	<0.0090	n.c.	<0.0090	<0.0090
Nickel (Ni)	ug/L	-	25	4,600	67	7.4	<0.010	<0.010	n.c.	<0.010	<0.010
Lead (Pb)	ug/L	-	1	190	4.4	0.17	<0.010	<0.010	n.c.	<0.010	<0.010
Zinc (Zn)	ug/L	37	7	26,000	17	17	<0.020	<0.020	n.c.	<0.020	<0.020

Notes:

- : Not analyzed
- : No criteria or norm
- 5.9 : Concentration exceeding the most restrictive value of the comparison criteria
- n.c. : Not calculated
- % : Quality control exceeding acceptable limits

Appendix 1 Scope and Limitations

SCOPE AND LIMITATIONS

This report was prepared and work to which it refers was undertaken by Englobe on behalf of client. It is intended for the sole and exclusive use of the client. Any person other than the client who uses this report, draws on this report or takes a decision based on this report is the only one to bear liability for such use. The client and Englobe do not declare anything and do not provide any guarantee related to this report and the work referred to in this report to anyone. They disclaim any obligation towards any other person or any liability whatever it may consist of towards all losses, expenses, damages, fines, penalties and other harm that any other person may suffer by the use of this report, the belief he/she holds towards it or towards any decision or measure based on this report on the work mentioned herein.

Investigations conducted by Englobe for this report and any conclusion or recommendation presented in this report are representative of Englobe Corp appraisal of the locations observed at the time of the site inspection at the date(s) provided in this report as well as of available information at the time this report was presented. This report was prepared to specifically address this site and is partly based on visual observations of the location, underground research at some precise locations and depths as well as on a specific analysis of chemical and material parameters during a certain time span, as is described in this report. Unless otherwise indicated, the conclusions may not be applied to the site's former nor future state, to sections of the site that were not available for a direct investigation nor for chemical, material or analyses parameters that were not addressed. Substances other than the ones targeted by the investigation described in this report may exist on the site, substances targeted by this investigation may be present in other locations of the site that were not investigated and concentrations of substances targeted different than the ones indicated in the report may exist in locations other than the ones where samples were collected.

In the event where the condition of the site or where applicable standards were to change or should additional information become available at some future time, the modification of findings, conclusions or recommendations of the present report may be required.

Except for the client, the reproduction or distribution of the report and the use of information contained herein, whether in part or in total, is not authorized without having obtained Englobe express written authorization. No provision of the present report aims to constitute or provide a legal advice.

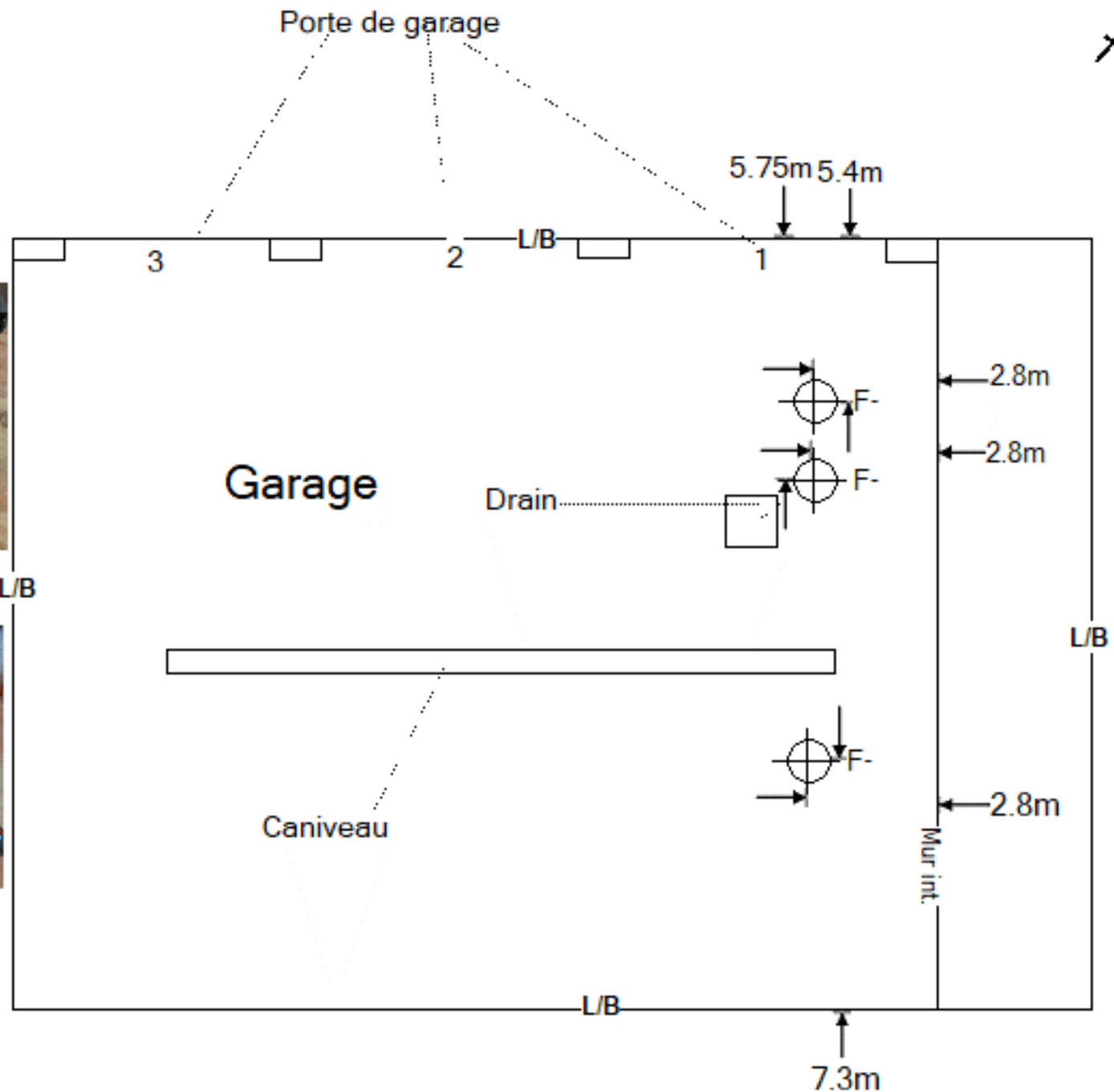


Appendix 2 Promark-Telecon Reports



LOCALISÉ LE (J-M-A) / LOCATED ON (D-M-Y)	No PROJET / PROJECT No	No DEMANDE / REQUEST No
22-06-2018		201823213

Waskaganish



Forage aux points indiqués seulement

Attention : Veuillez prendre note que la localisation par géoradar (GPR) est limité à une profondeur de 16 pouces

CROQUIS PAS À L'ÉCHELLE/DRAWING NOT TO SCALE

LEGENDE

AQ	Aqueduc	EG	Égout Combiné	H	Huile	-F-	forage		Zone localisée/Area marked	
EL	Réseau Électrique	DP	Drain de Plancher	AC	Autres Conduits	-T-	trancher		Lampadaire/Lamp post	
SAN	Égout Sanitaire	GP	Gaz Privé	BC	Boucle de détection		Vanne/Valve		Borne Fontaine/Hydrant	
PLV	Égout Pluvial	VT	Ventilation		Puisard ou égout/Catch basin or sewer		Poteau/Pole		Transfo HQ	
RT	Réseau Télécom.	INT	Inconnu		Puit d'accès/Man hole		Piédestal/Pedestal		Bord de chemin/Edge of street	
L/B			Ligne de Batiment/ Building Line			B/A			Bord d'asphalte/Edge of asphalt	

Localisé par / Located by : AUBIN THOMAS

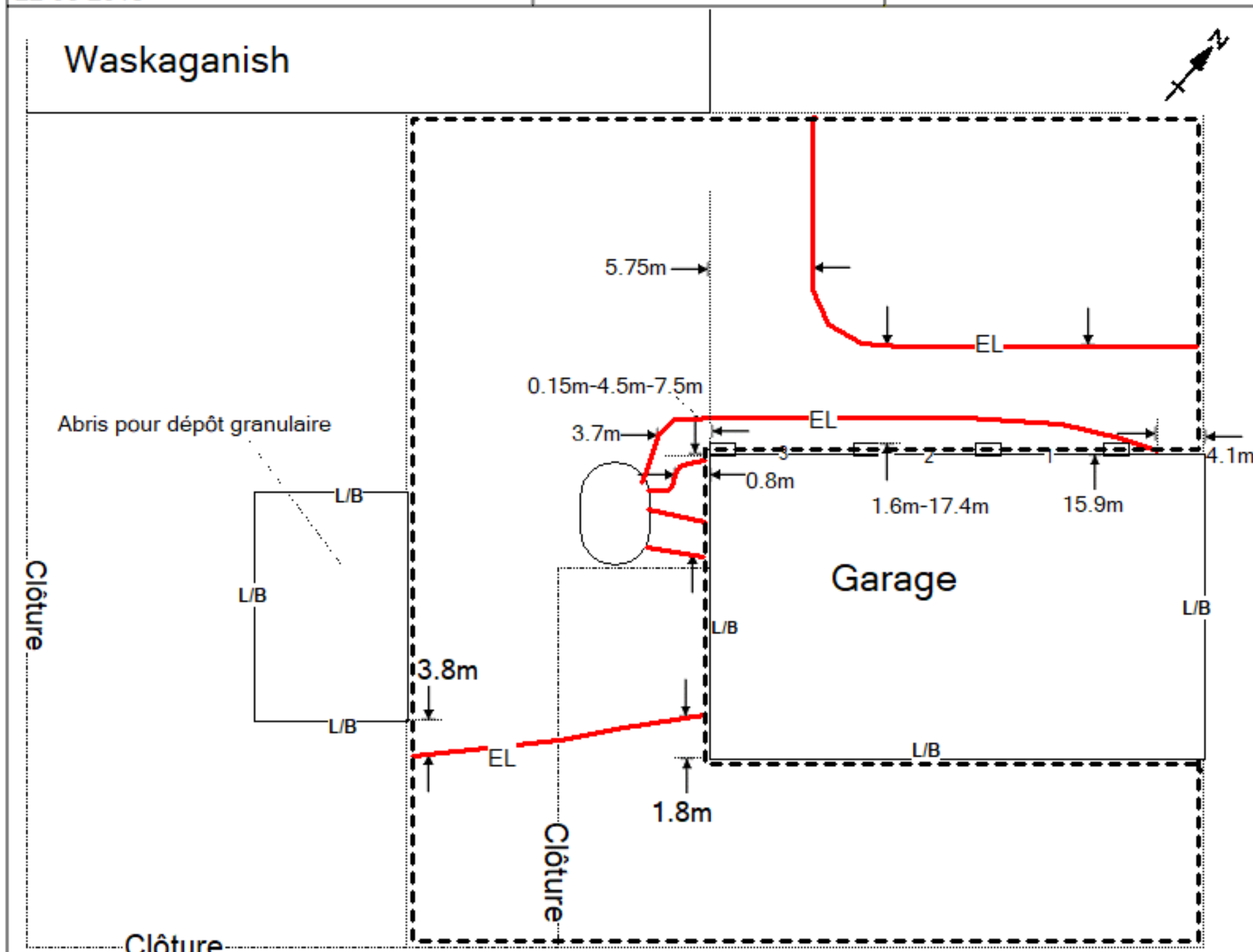
Accepté par / Accepted by : _____

Cette localisation est valide pour les réseaux :

Travaux débutés / Work started : Oui/Yes () Non/No (✓)
Sol / Ground : Mouillé / Wet () Enneigé / Snowy () GPR ()

Note interne

LOCALISÉ LE (J-M-A) / LOCATED ON (D-M-Y)	No PROJET / PROJECT No	No DEMANDE / REQUEST No
22-06-2018		201823213



Sanitaires non localisables

Attention, tous conduits de type PVC, PEX ou en plastique sont non localisable.

CROQUIS PAS À L'ÉCHELLE/DRAWING NOT TO SCALE

LEGENDE

AQ	Aqueduc	EG	Égout Combiné	H	Huile	-F-	forage		Zone localisée/Area marked		
EL	Réseau Électrique	DP	Drain de Plancher	AC	Autres Conduits	-T-	trancher		Lampadaire/Lamp post		
SAN	Égout Sanitaire	GP	Gaz Privé	BC	Boucle de détection		Vanne/Valve		Borne Fontaine/Hydrant		
PLV	Égout Pluvial	VT	Ventilation		Puisard ou égout/Catch basin or sewer or pluvial or rain water		Poteau/Pole		Transfo HQ		
RT	Réseau Télécom.	INT	Inconnu				Puit d'accès/Man hole		Piédestal/Pedestal		
	L/B	Ligne de Batiment/ Building Line			B/A	Bord d'asphalte/Edge of asphalt			B/C	Bord de chemin/Edge of street	

Localisé par / Located by : AUBIN THOMAS

Accepté par / Accepted by :

Travaux débutés / Work started : Oui/Yes () Non/No (✓)

Sol / Ground :

Mouillé / Wet ()

Enneigé / Snowy ()

GPR ()

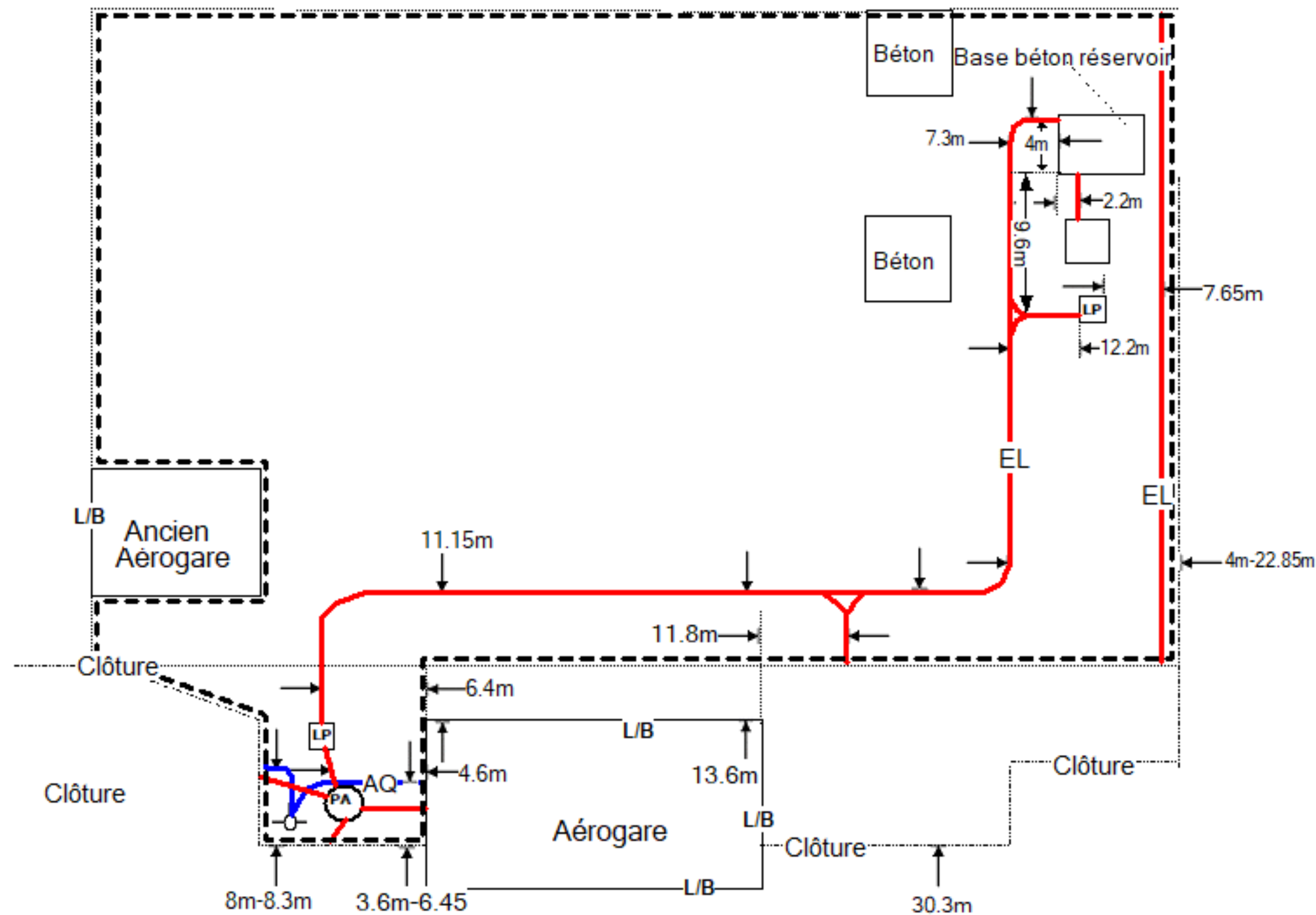
Cette localisation est valide pour les réseaux :

Localisation privée

Note interne

LOCALISÉ LE (J-M-A) / LOCATED ON (D-M-Y)	No PROJET / PROJECT No	No DEMANDE / REQUEST No
22-06-2018		201823213

Waskaganish



«Possibilité de réseau abandonné non localisable à proximité»

Sanitaires non-localisables

Attention, tous conduits de type PVC, PEX ou en plastique sont non localisable.

CROQUIS PAS À L'ÉCHELLE/DRAWING NOT TO SCALE

LEGENDE

AQ	Aqueduc	EG	Égout Combiné	H	Huile	-F-	forage		Zone localisée/Area marked
EL	Réseau Électrique	DP	Drain de Plancher	AC	Autres Conduits	-T-	trancher		Lampadaire/Lamp post
SAN	Égout Sanitaire	GP	Gaz Privé	BC	Boucle de détection		Vanne/Valve		Borne Fontaine/Hydrant
PLV	Égout Pluvial	VT	Ventilation		Puisard ou égout/Catch basin or sewer		Poteau/Pole		Transfo HQ
RT	Réseau Télécom.	INT	Inconnu		Puisard ou égout/Catch basin or sewer		Poteau/Pole		Puit d'accès/Man hole
	L/B		Ligne de Batiment/ Building Line		Puisard ou égout/Catch basin or sewer		Poteau/Pole		Piedestal/Pedestal
	B/A		Bord d'asphalte/Edge of asphalt		Puisard ou égout/Catch basin or sewer		Poteau/Pole		B/C
					Puisard ou égout/Catch basin or sewer		Poteau/Pole		Bord de chemin/Edge of street

Localisé par / Located by : AUBIN THOMAS
 Accepté par / Accepted by : _____

Cette localisation est valide pour les réseaux :

Localisation privée

Travaux débutés / Work started : Oui/Yes (✓) Non/No ()
 Sol / Ground : Mouillé / Wet () Enneigé / Snowy () GPR ()

Note interne

Appendix 3 Boreholes Logs



EXPLANATION NOTES ON THE BORING LOG

During the subsoil investigation, the boring log summarizes soil and rock properties and ground water conditions obtained from field and laboratory tests. This note explains the different symbols and abbreviations used in this log.

DEPTH: Depth of the different geological boundaries from the ground level. On the left the scale is in meters, on the right it is in feet.

ELEVATION: Reference to the geodesic elevation of the soil or to a bench mark of arbitrary elevation, at the location of the boring.

DESCRIPTION OF THE STRATIGRAPHIC UNITS: Every geological formation is detailed.

The proportion of the different elements of the soil, defined following the size of the particles, is given as per the classification hereafter. The relative compacity of cohesionless soils is defined by the N index of the Standard Penetration test. The consistency of cohesive soil is defined by their shear resistance.

CLASSIFICATION

Clay
Clay and silt (undifferentiated)
Sand
Gravel
Cobble
Boulder

DIMENSION DES PARTICULES

smaller than 0,002 mm
smaller than 0,080 mm
from 0,080 to 5 mm
from 5 to 75 mm
from 75 to 300 mm
greater than 300 mm

DESCRIPTION

"Traces" (tr.)
"Some" (s.)
Adjective (ex.: sandy, silty)
"And" (ex.: sand and gravel)

PROPORTION

1 to 10 %
10 to 20 %
20 to 35 %
35 to 50 %

COHESIONLESS SOILS

COMPACTNESS

Very loose
Loose
Compact
Dense
Very dense

SPT "N" Index

0 to 4
4 to 10
10 to 30
30 to 50
greater than 50

COHESIVE SOILS

CONSISTENCY

Very soft
Soft
Firm
Stiff
Very stiff
Hard

UNDRAINED SHEAR STRENGTH (kPa)

< 12
12 - 25
25 - 50
50 - 100
100 - 200
> 200

PLASTICITY

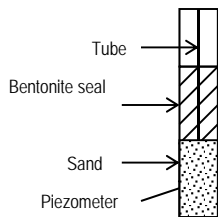
Low
Medium
High

LIQUIDITY LIMIT

smaller than 30 %
between 30 and 50 %
greater than 50 %

WATER LEVEL

Groundwater level measured during the geotechnical investigation is shown in this column. The details of the installation of the piezometer are illustrated as shown.



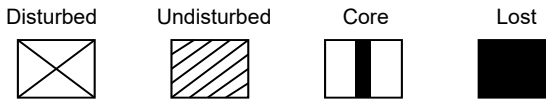
SAMPLES AND TESTS

TYPE AND NUMBER: Each sample is labelled in accordance with the number of this column and the given notation refers to samples types.

- SS = Split Spoon
- TM = Thin wall tube (Shelby)
- PS = Piston Sampler
- PW = Englobe Sampler
- RC = Drilling of rock or coarse elements

)
DUP Field duplicate

CONDITION: The position, the length and the condition of each sample are shown in this column. The symbol shows the condition of the sample.



RECOVERY: The recovery of the sample is expressed as a percentage of the length of penetration of the sampler. The length of the sampler is measured from the top to the cutting edge of the sampler, even if the bottom part of the sample has been lost.

"N" INDEX: The standard penetration index shown in this column is expressed with the letter "N". This index is obtained with the standard penetration test. It corresponds to the number of blows required to drive the last 300 mm of the split spoon, with a 622 Newton hammer, freely falling from an height of 762 mm. For a 610 mm long split spoon, the N index is obtained by the summation of the number of blows required for the driving of the 2nd and 3rd 150 mm. The refusal (R) indicates a number of blows greater than 100. A set of numbers, as 28-30-50/60 mm, indicates the number of blows required to drive the 1st and 2nd 150 mm of the split spoon. Moreover it indicates 50 blows for a penetration of 60 mm before the test was suspended.

"RQD" INDEX: Quality index: Total length of all rock cores of 100 mm and more in length ÷ the length of the core run. The RQD index is an indirect measure of the number of "natural" fractures and of the amount of the alteration in a rock mass.

ROCK QUALITY, DESIGNATION (RQD %)

< 25
25 - 50
50 - 75
75 - 90
90 - 100

CLASSIFICATION

very poor quality
poor quality
fair quality
good quality
excellent quality

IN SITU AND LABORATORY TESTS: This column shows, at the corresponding depth, the results of tests carried out in the field or in the laboratory (shear strength, dynamic penetration, Atterberg limits with the cone, etc.). For more information, please refer to the legend in the upper part of the boring log

ORGANIC VAPORS: This column shows the results from the organic vapors measurements at the corresponding depth.

ODORS: This column show smelled odors during sampling and the description on the soils on the field at the corresponding depth. They are described as follow:




L: light M: mean S: strong

The type of these odors is described in the stratigraphic description at the corresponding depth.

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26							
Technofor Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____				
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	Analyses	COV (ppm)	
0				Description Stratigraphique								0
				Dalle de béton								
				Remblai : sable fin à moyen, traces de gravier et de cailloux, brun-gris		0,26m	F-18-1-1	X	92			
							F-18-1-2	X	41			
							F-18-1-3	X	42			5
				Remblai : sable grossier, traces de gravier et de cailloux, gris, humide		1,80m	F-18-1-4	X	59		A AC	
				Silt argileux, lit de sable, gris, humide Présence de matière organique : branche et racines		2,40m	F-18-1-5	X	0			
				Silt argileux, gris, lâche, saturé		3,00m	F-18-1-6	X	72			10
							F-18-1-7	X	72		A B D AC	
				Fin du forage à 4,30 mètres de profondeur		4,30m						15
				AC= HP F1-F4								
				Arrêt à la profondeur visée								

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02									
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada									
Méthode de sondage:		De À		État des échantillons			Date: 2018-06-26						
Technofo				<input type="checkbox"/> Non échantillonné	<input checked="" type="checkbox"/> Remanié								
Géoprobe				<input checked="" type="checkbox"/> Intact	<input type="checkbox"/> Perdu	<input type="checkbox"/> Carotte							
Type d'échantillons				Essais									
CF	Carottier fendu:			N: Indice de pénétration standard									
TM	Tube à paroi mince:			RQD: Indice de qualité de la roche									
PS	Tube à position fixe:			R: Refus à l'enfoncement									
CR	Tube carottier, Calibre:			Analyses									
PW	Carottier Fondatec			A: Hydrocarbures pétroliers C10-C50									
MA	Prélèvement manuel			B: Hydrocarbures aromatiques monocycliques ou BTEX									
TA	Tarière manuelle			C: Métaux									
LA	Lavage			D: Hydrocarbures aromatiques polycycliques									
				AC: Autre analyse chimique									
				COV: Composés organiques volatils									
				COV (ppm): Mesure des vapeurs organiques									
				Niveau de référence: _____		Coordonnées X: _____							
				Y: _____		Niveau d'eau mesuré ∇							
				Élévation (m) _____		Date _____							
				Niveau de la phase libre mesuré ∇									
				Élévation (m) _____		Date _____							
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Description Stratigraphique	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
					Schéma	Détails				N	Analyses	COV (ppm)	
0				Dalle de béton			F-18-2-1	<input checked="" type="checkbox"/>	56				0
				Remblai : sable fin à moyen, traces de gravier 0,49m et de cailloux, brun gris, humide			F-18-2-2	<input checked="" type="checkbox"/>	33				
				Remblai : sable grossier, traces de gravier, brun 1,20m Présence de matière organique			F-18-2-3	<input checked="" type="checkbox"/>	43				5
				Silt argileux, traces de lit de sable, gris, lâche, saturé 1,80m			F-18-2-4	<input checked="" type="checkbox"/>	49		A AC		
				Silt argileux, gris, compact 3,00m			F-18-2-5	<input checked="" type="checkbox"/>	54		A C D AC		10
							F-18-2-6	<input checked="" type="checkbox"/>	100				
							F-18-2-7	<input checked="" type="checkbox"/>	100				
				Fin du forage à 4,20 mètres de profondeur 4,20m									15
				AC= HP F1-F4									
				Arrêt à la profondeur visée									

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26							
Technofo Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____				
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	Analyses	COV (ppm)	
0												0
				Remblai : sable moyen graveleux, brun		A	<input checked="" type="checkbox"/>			A-C-D-AC		
				Remblai : sable moyen graveleux, brun	0,15m	B	<input checked="" type="checkbox"/>			A		
				Présence de cailloux	0,30m							
				Fin du forage à 0,30 mètre de profondeur								
				Arrêt à la profondeur visée								
				AC=HP F1-F4								
1												5
2												10
3												15
4												

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02									
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada									
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26								
Technofo Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____					
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)	
				Schéma	Détails				N	RQD	Analyses		COV (ppm)
0				Description Stratigraphique								0	
				Remblai : sable moyen graveleux, brun		0,15m	A	<input checked="" type="checkbox"/>			A-D-AC		
				Remblai : sable moyen graveleux, brun		0,15m	B	<input checked="" type="checkbox"/>			A-B		
				Présence de cailloux		0,30m							
				Fin du forage à 0,30 mètre de profondeur									
				Arrêt à la profondeur visée									
				AC=HP F1-F4									
1													5
2													10
3													15
4													

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26							
Technofo Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____				
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	RQD	Analyses	
0												0
				Remblai : sable moyen graveleux, brun		0,15m	A	<input checked="" type="checkbox"/>			A-D-AC	
				Remblai : sable moyen graveleux, brun		0,15m	B	<input checked="" type="checkbox"/>			D-AC	
				Présence de cailloux		0,30m						
				Fin du forage à 0,30 mètre de profondeur								
				Arrêt à la profondeur visée								
				AC=HP F1-F4								
1												
2												
3												
4												
												15

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26							
Technofoor Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____				
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	RQD	Analyses	
0				Description Stratigraphique								0
				Remblai : sable moyen graveleux, brun		0,15m	A	<input checked="" type="checkbox"/>			A-AC-AC1	
				Remblai : sable moyen graveleux, brun		0,15m	B	<input checked="" type="checkbox"/>			A-B-D	
				Présence de cailloux		0,30m						
				Fin du forage à 0,30 mètre de profondeur								
				AC=HP F1-F4 AC1=Glycole								
1				Arrêt à la profondeur visée								
2												
3												10
4												15

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26							
Technofoor Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____				
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	Analyses	COV (ppm)	
0				Description Stratigraphique								0
				Remblai : sable moyen graveleux, brun		0,15m	A	<input checked="" type="checkbox"/>			A-B-D	
				Remblai : sable moyen graveleux, brun		0,15m	B	<input checked="" type="checkbox"/>			A-AC-AC1	
				Présence de cailloux		0,30m						
				Fin du forage à 0,30 mètre de profondeur								
				AC=HP F1-F4 AC1=Glycole								
				Arrêt à la profondeur visée								
1												5
2												10
3												15
4												

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26							
Technofo Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____				
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	Analyses	COV (ppm)	
0												0
				Remblai : sable moyen graveleux, brun		A	<input checked="" type="checkbox"/>					
				Remblai : sable moyen graveleux, brun	0,15m	B	<input checked="" type="checkbox"/>					
				Présence de cailloux	0,30m							
				Fin du forage à 0,30 mètre de profondeur								
				Arrêt à la profondeur visée								
				AC=HP F1-F4								
1												5
2												10
3												15
4												

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26							
Technofofor Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____				
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	Analyses	COV (ppm)	
0				Description Stratigraphique								0
				Remblai : sable moyen graveleux, brun			A			A		
				Remblai : sable moyen graveleux, brun	0,15m		B			A		
				Présence de cailloux	0,30m							
				Fin du forage à 0,30 mètre de profondeur								
				Arrêt à la profondeur visée								
				AC=HP F1-F4								
1												
2												
3												10
4												15




PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26							
Technofoor Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____				
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	Analyses	COV (ppm)	
0												0
				Remblai : sable moyen graveleux, brun		0,15m	A	<input checked="" type="checkbox"/>			A	
				Remblai : sable moyen graveleux, brun		0,15m	B	<input checked="" type="checkbox"/>			A-B-D-AC	
				Présence de cailloux		0,30m						
				Fin du forage à 0,30 mètre de profondeur								
				Arrêt à la profondeur visée								
				AC=HP F1-F4								
1												5
2												10
3												15
4												

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26							
Technofoor Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____				
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	Analyses	COV (ppm)	
0												0
				Remblai : sable moyen graveleux, brun		A	<input checked="" type="checkbox"/>				A	
				Remblai : sable moyen graveleux, brun	0,15m		<input checked="" type="checkbox"/>					
				Présence de cailloux	0,30m	B	<input checked="" type="checkbox"/>				A-B-D-AC	
				Fin du forage à 0,30 mètre de profondeur								
				Arrêt à la profondeur visée								
				AC=HP F1-F4								
-1												
-2												
-3												10
-4												15

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26							
Technofofor Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____				
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	Analyses	COV (ppm)	
0												0
				Remblai : sable moyen graveleux, brun		A	<input checked="" type="checkbox"/>			AC		
				Remblai : sable moyen graveleux, brun	0,15m	B	<input checked="" type="checkbox"/>			B-D		
				Présence de cailloux	0,30m							
				Fin du forage à 0,30 mètre de profondeur								
				Arrêt à la profondeur visée								
				AC=HP F1-F4								
1												5
2												10
3												15
4												

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26							
Technofoor Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____				
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	RQD	Analyses	
0				Description Stratigraphique								0
				Remblai : sable moyen graveleux, brun		0,15m	A	<input checked="" type="checkbox"/>			A-D-AC	
				Remblai : sable moyen graveleux, brun		0,15m	B	<input checked="" type="checkbox"/>			D-AC	
				Présence de cailloux		0,30m						
				Fin du forage à 0,30 mètre de profondeur								
				Arrêt à la profondeur visée								
				AC=HP F1-F4								
1												5
2												10
3												15
4												

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26							
Technofo Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____				
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	RQD	Analyses	
0												0
				Remblai : sable moyen graveleux, brun		0,15m	A	<input checked="" type="checkbox"/>			A-D-AC	
				Remblai : sable moyen graveleux, brun		0,15m	B	<input checked="" type="checkbox"/>			D-AC	
				Présence de cailloux		0,30m						
				Fin du forage à 0,30 mètre de profondeur								
				Arrêt à la profondeur visée								
				AC=HP F1-F4								
1												5
2												10
3												15
4												

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26							
Technofoor Géoprobe					Niveau de référence: _____							
Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage		Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____							
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	Analyses	COV (ppm)	
0				Description Stratigraphique								0
				Remblai : sable moyen graveleux, brun		A	<input checked="" type="checkbox"/>			A-AC		
				Remblai : sable moyen graveleux, brun		B	<input checked="" type="checkbox"/>			A-B		
				Présence de cailloux								
				Fin du forage à 0,30 mètre de profondeur								
				Arrêt à la profondeur visée								
				AC=HP F1-F4								
1												
2												
3												
4												
												5
												10
												15

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26							
Technofoor Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____				
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	Analyses	COV (ppm)	
0				Description Stratigraphique								0
				Remblai : sable moyen graveleux, brun		0,15m	A	<input checked="" type="checkbox"/>			A-B	
				Remblai : sable moyen graveleux, brun		0,15m	B	<input checked="" type="checkbox"/>			A-D-AC	
				Présence de cailloux		0,30m						
				Fin du forage à 0,30 mètre de profondeur								
				Arrêt à la profondeur visée								
				AC=HP F1-F4								
1												5
2												10
3												15
4												

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02									
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada									
Méthode de sondage:		De À		État des échantillons			Date: 2018-06-26						
Technofoir				<input type="checkbox"/> Non échantillonné	<input checked="" type="checkbox"/> Remanié								
Géoprobe				<input checked="" type="checkbox"/> Intact	<input checked="" type="checkbox"/> Perdu	<input type="checkbox"/> Carotte							
Type d'échantillons				Essais									
CF	Carottier fendu:			N: Indice de pénétration standard				Date: _____					
TM	Tube à paroi mince:			RQD: Indice de qualité de la roche				Niveau de référence: _____					
PS	Tube à position fixe:			R: Refus à l'enfoncement				Coordonnées X: _____					
CR	Tube carottier, Calibre:			Analyses				Y: _____					
PW	Carottier Fondatec			A: Hydrocarbures pétroliers C10-C50				Niveau d'eau mesuré ∇					
MA	Prélèvement manuel			B: Hydrocarbures aromatiques monocycliques ou BTEX				Élévation (m) _____ Date _____					
TA	Tarière manuelle			C: Métaux									
LA	Lavage			D: Hydrocarbures aromatiques polycycliques									
				AC: Autre analyse chimique				Niveau de la phase libre mesuré ∇					
				COV: Composés organiques volatils				Élévation (m) _____ Date _____					
				COV (ppm): Mesure des vapeurs organiques									
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Description Stratigraphique	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
					Schéma	Détails				N	Analyses	COV (ppm)	
0				Remblai : sable fin à moyen, traces de gravier et de cailloux, humide									0
						0.0m	NW-18-1-1	X	49				
						0.61m	NW-18-1-2	X	39				
						1.20m	NW-18-1-3	X	25	B			5
				Remblai : sable grossier, traces de gravier et de cailloux, brun-gris, saturé		1.80m	NW-18-1-4	X	0				
						2.10m	NW-18-1-5	X	0				
						2.40m	NW-18-1-6	X	20	B			
				Silt argileux, gris, lâche, saturé		3.00m	NW-18-1-7	X	100				10
						3.60m							
				Fin du forage à 4,20 mètres de profondeur		4.20m							15
				Arrêt à la profondeur visée									

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02									
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada									
Méthode de sondage: De À		État des échantillons			Date: 2018-06-26								
Technofo Géoprobe		<input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Niveau de référence: _____								
Type d'échantillons		Essais			Coordonnées X: _____								
CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage		N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement			Y: _____								
		Analyses			Niveau d'eau mesuré ∇								
		A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils			Élévation (m) _____ Date _____								
		COV (ppm): Mesure des vapeurs organiques			Niveau de la phase libre mesuré ∇								
					Élévation (m) _____ Date _____								
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Description Stratigraphique	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
					Schéma	Détails				N	Analyses	COV (ppm)	
0				Remblai : sable grossier, traces de cailloux et de gravier, brun-gris, humide Présence de matière organique			NM-18-2-1	<input checked="" type="checkbox"/>	56		A		0
						← 0,61m Sable de silice							
						← 1,20m Bentonite							
						← 1,80m Tubage en PCV					A B D AC		5
						← 2,10m Crépine					A		
				Silt argileux, traces de lit de sable, saturé 2,40m		← 2,40m Sable de silice							
						← 3,60m							
						← 4,20m							
				Fin du forage à 4,20 mètres de profondeur AC= HP F1-F4									15

NO. **WK-TP-18-1**

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02								
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada								
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-27							
Technofoor Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____				
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
				Schéma	Détails				N	Analyses	COV (ppm)	
0				Description Stratigraphique								0
				Remblai : sable graveleux, brun Présence de cailloux			A			A C D AC		
			0,50m	Remblai : sable graveleux, brun, humide Présence de cailloux			B					
1							C					
			1,50m				D			B		5
2			2,00m	Remblai : sable graveleux, brun, saturé Présence de cailloux et de racines			E			B		
			2,20m	Fin du forage à 2,20 mètres de profondeur								
				AC= HP F1-F4								
				Refus sur sol gelé								
3												10
4												15

NO. **WK-TP-18-2**

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02									
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada									
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> Perdu <input checked="" type="checkbox"/> Carotte			Date: 2018-06-27								
Technofo Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____					
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Description Stratigraphique	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
					Schéma	Détails				N	Analyses	COV (ppm)	
0				Remblai : sable graveleux, brun Présence de cailloux			A	<input checked="" type="checkbox"/>			A		0
				Remblai : sable graveleux, brun, humide Présence de cailloux	0,50m		B	<input checked="" type="checkbox"/>					0,50m
							C	<input checked="" type="checkbox"/>					1,00m
							D	<input checked="" type="checkbox"/>			B		1,50m
				Remblai : sable graveleux, brun, saturé Présence de cailloux et de racines	2,00m		E	<input checked="" type="checkbox"/>			B		2,00m
				Fin du forage à 2,20 mètres de profondeur	2,20m								2,20m
				AC= HP F1-F4 Refus sur sol gelé									
													10
													15

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02									
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada									
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> Perdu <input checked="" type="checkbox"/> Carotte			Date: 2018-06-27								
Technofo Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____					
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Description Stratigraphique	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
					Schéma	Détails				N	Analyses	COV (ppm)	
0				Remblai : sable moyen graveleux, brun Présence de cailloux			A	<input checked="" type="checkbox"/>					0
				Remblai : sable moyen graveleux, brun, humide Présence de cailloux	0,50m		B	<input checked="" type="checkbox"/>					
1				Sable fin à moyen graveleux, humide	1,00m		C	<input checked="" type="checkbox"/>			A B D AC		5
2				Fin du forage à 2,00 mètres de profondeur AC=HP F1-F4	2,00m		D	<input checked="" type="checkbox"/>					15

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02									
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada									
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26								
Technofo Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____					
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Description Stratigraphique	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
					Schéma	Détails				N	Analyses	COV (ppm)	
0				Remblai : sable graveleux, brun			A	<input checked="" type="checkbox"/>					0
				Remblai : sable graveleux, brun Présence de cailloux	0,50m		B	<input checked="" type="checkbox"/>					
1				Remblai : sable graveleux, brun, humide Présence de cailloux	1,00m		C	<input checked="" type="checkbox"/>					
				Remblai : sable graveleux, brun, humide Présence de cailloux et de racines	1,50m		D	<input checked="" type="checkbox"/>					5
2				Silt argileux, gris	2,30m		E	<input checked="" type="checkbox"/>			B		
				Fin du forage à 2,50 mètres de profondeur	2,50m		F	<input checked="" type="checkbox"/>			B		
3				Refus sur sol gelé									10
4													15

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02									
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada									
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26								
Technofoor Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____					
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Description Stratigraphique	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
					Schéma	Détails				N	Analyses	COV (ppm)	
0				Remblai : sable grossier, traces de gravier et de cailloux, brun, humide Présence de roche			TP-18-5-1	<input checked="" type="checkbox"/>					0
							0,50m	<input checked="" type="checkbox"/>					
							TP-18-5-2	<input checked="" type="checkbox"/>					
1							1,00m	<input checked="" type="checkbox"/>			B		
				Remblai : sable grossier, traces de silt, brun Présence de matière organique	1,50m		TP-18-5-3	<input checked="" type="checkbox"/>					
							1,50m	<input checked="" type="checkbox"/>			B		5
							TP-18-5-4 TP-18-5-4-TT	<input checked="" type="checkbox"/>			B B		
2				Silt argileux, présence de lit de sable, gris	2,00m		2,00m	<input checked="" type="checkbox"/>					
							TP-18-5-5	<input checked="" type="checkbox"/>					
				Fin du forage à 2,50 mètres de profondeur Arrêt à la profondeur visée	2,50m		2,50m	<input checked="" type="checkbox"/>					
3													10
4													15

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02									
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada									
Méthode de sondage:		De À		État des échantillons			Date: 2018-06-27						
Technofo				<input type="checkbox"/> Non échantillonné	<input checked="" type="checkbox"/> Remanié								
Géoprobe				<input checked="" type="checkbox"/> Intact	<input type="checkbox"/> Perdu	<input type="checkbox"/> Carotte							
Type d'échantillons				Essais									
CF	Carottier fendu:			N: Indice de pénétration standard									
TM	Tube à paroi mince:			RQD: Indice de qualité de la roche									
PS	Tube à position fixe:			R: Refus à l'enfoncement									
CR	Tube carottier, Calibre:			Analyses									
PW	Carottier Fondatec			A: Hydrocarbures pétroliers C10-C50									
MA	Prélèvement manuel			B: Hydrocarbures aromatiques monocycliques ou BTEX									
TA	Tarière manuelle			C: Métaux									
LA	Lavage			D: Hydrocarbures aromatiques polycycliques									
				AC: Autre analyse chimique									
				COV: Composés organiques volatils									
				COV (ppm): Mesure des vapeurs organiques									
				Niveau de référence: _____									
				Coordonnées X: _____									
				Y: _____									
				Niveau d'eau mesuré ∇									
				Élévation (m) _____ Date _____									
				Niveau de la phase libre mesuré ∇									
				Élévation (m) _____ Date _____									
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Description Stratigraphique	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
					Schéma	Détails				N	Analyses	COV (ppm)	
0				Sable graveleux, brun Présence de cailloux			A	<input checked="" type="checkbox"/>					0
				Sable graveleux, brun, humide Présence de cailloux Présence d'une polythène noir			B	<input checked="" type="checkbox"/>			A		0,50m
				Sable graveleux, brun, humide Présence de cailloux Présence d'une polythène noir Présence d'odeurs d'hydrocarbures			C	<input checked="" type="checkbox"/>			A B C D AC		1,00m
				Sable graveleux, brun, humide Présence de cailloux et de racines Présence d'une polythène noir Présence d'odeurs d'hydrocarbures			D	<input checked="" type="checkbox"/>			A		1,50m
				Sable graveleux, brun, humide Présence de cailloux, de racines et de tourbe Présence d'une polythène noir Présence d'odeurs d'hydrocarbures			E	<input checked="" type="checkbox"/>					2,00m
				Fin du forage à 2,15 mètres de profondeur									2,15m
				AC=HP F1-F4									
				Refus sur sol gelé									
													10
													15

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02									
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada									
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> Perdu <input checked="" type="checkbox"/> Carotte			Date: 2018-06-26								
Technofoor Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____					
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Description Stratigraphique	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
					Schéma	Détails				N	Analyses	COV (ppm)	
0				Sable moyen graveleux, brun			A	<input checked="" type="checkbox"/>			A D AC		0
				Sable moyen graveleux, brun Présence de cailloux	0,50m		B	<input checked="" type="checkbox"/>			A B		
1				Sable moyen graveleux, brun, humide Présence de cailloux	1,00m		C	<input checked="" type="checkbox"/>					
				Sable moyen graveleux, brun, humide Présence de cailloux et de racines	1,50m		D	<input checked="" type="checkbox"/>					5
2				Fin du forage à 2,20 mètres de profondeur Refus sur sol gelé AC=HP F1-F4	2,20m		E	<input checked="" type="checkbox"/>					
3													10
4													15

PROJET: Caractérisation environnementale de site phase II				No. DE DOSSIER: 129-P-0014860-0-00-100-02									
ENDROIT: Aéroport Cri de Waskaganish				CLIENT: Services publics et approvisionnement Canada									
Méthode de sondage: De À		État des échantillons <input type="checkbox"/> Non échantillonné <input checked="" type="checkbox"/> Remanié <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Perdu <input type="checkbox"/> Carotte			Date: 2018-06-26								
Technofoor Géoprobe Type d'échantillons CF Carottier fendu: TM Tube à paroi mince: PS Tube à position fixe: CR Tube carottier, Calibre: PW Carottier Fondatec MA Prélèvement manuel TA Tarière manuelle LA Lavage					Essais N: Indice de pénétration standard RQD: Indice de qualité de la roche R: Refus à l'enfoncement Analyses A: Hydrocarbures pétroliers C10-C50 B: Hydrocarbures aromatiques monocycliques ou BTEX C: Métaux D: Hydrocarbures aromatiques polycycliques AC: Autre analyse chimique COV: Composés organiques volatils COV (ppm): Mesure des vapeurs organiques			Niveau de référence: _____ Coordonnées X: _____ Y: _____ Niveau d'eau mesuré ∇ Élévation (m) _____ Date _____ Niveau de la phase libre mesuré ∇ Élévation (m) _____ Date _____					
Profondeur (m)	Élévation (m)	Eau souterraine	Phase libre	Description Stratigraphique	Installation		Type et Numéro d'échantillon	État	Récupération %	Essais			Profondeur (pi)
					Schéma	Détails				N	RQD	Analyses	
0				Sable moyen graveleux, brun			A	<input checked="" type="checkbox"/>					0
				Sable moyen graveleux, brun, humide Présence de cailloux et de fils électriques coupé	0,50m		B	<input checked="" type="checkbox"/>					0,50m
				Sable moyen graveleux, brun, saturé Présence de cailloux et de fils électriques coupé	1,50m		C	<input checked="" type="checkbox"/>					1,00m
				Sable moyen graveleux, brun, saturé Présence de cailloux et de fils électriques coupé	2,50m		D	<input checked="" type="checkbox"/>					1,50m
				Sable silteux, gris, saturé	2,50m		E	<input checked="" type="checkbox"/>					2,00m
				Fin du forage à 2,70 mètres de profondeur	2,70m		F	<input checked="" type="checkbox"/>					2,50m
													2,70m
													10
													15

Appendix 4 Procedures for the Collection, Transportation and Storage of Samples

PROCEDURES FOR THE COLLECTION, TRANSPORTATION AND STORAGE OF SAMPLES

All the sampling, transportation and storage procedures performed by Englobe for soil, water and residual waste are subject to a rigorous control. These procedures, which meet the requirements of the various guides of Ministry of Sustainable Development, Environment and Parks (MDDEFP), are summarized in the following paragraphs.

Sampling Procedures

Soil

Soil samples are collected using appropriate sampling equipment (trowels, core barrels, augers, etc.), which are thoroughly washed between each sampling sequence, following the procedure presented under the heading Washing Procedures for the Sampling Instruments.

Following their collection, each soil sample is transferred into a container with a capacity ranging from 50 to 500 ml depending on the parameters to be analyzed. The guide entitled: Modes de conservation pour l'échantillonnage des sols of the Centre d'expertise en analyse environnementale du Québec (CEAEQ) defines the quantities of sample required, the type of containers to use, and preservation periods of the soil samples. The sample containers are prepared and provided by the analytical laboratory.

Various types of samples may be collected as part of the soil characterization. The following paragraphs present the main types of samples and particular methodologies associated to the sample types.

Grab sample

The grab sample is taken at a specific location on site, corresponding to small areas of several, to tens of centimetres (e.g. 10 cm × 10 cm or 20 cm × 20 cm). In the case of borehole drilling, the sample is taken from a maximum thickness of 0.6 m. If the quantity of collected soil is sufficient, the containers are completely filled (no headspace) and closed with a lid lined with aluminum foil or Teflon.

Composite sample

A composite soil sample consists of a several grab samples combined in equal proportions or combined proportionally to the weight or volume of the area or the lot that each sample represents. A composite sample can be prepared in the field or laboratory, using an inert container that was thoroughly cleaned. The procedure involves collecting the sub-samples using the same methodology and mixing the subsamples in the container. The sample is then transferred to a sampling container for storage and transport to the laboratory. In the event that field conditions (climatic or other) do not allow for the homogenization in the field, this procedure is performed by the laboratory. If the quantity of collected soil is sufficient, the containers are completely filled (no headspace) and closed with a lid lined with aluminum foil or Teflon.

Duplicate sample

The procedure for preparing duplicate samples involves splitting the mixed sample in two equal portions, one comprising the source sample and the second comprising the duplicate.

When the soil collected originates from a cylindrical sampler, such as a split spoon sampler, the sample is cut in half lengthwise and each segment is transferred to distinct containers.

Sample for volatile compounds

Specific precautions are taken with samples collected for the analysis of volatile compounds. The field sampling is carried out so as to minimize the contact of the sample with the atmosphere and the samples are not mixed.

Samples collected for hydrocarbons

When the quantity of the soil sample permits and the sampling is performed for hydrocarbons, duplicate soil samples are collected. The duplicate sample serves for the measurement of hydrocarbon vapours in the sample headspace.

Groundwater

Prior to groundwater sampling, all wells are purged using either a dedicated bailer or dedicated tubing ("Waterra"). The purging of a well involves either removing a volume of water equivalent to at least three times the volume of the well and surrounding filter pack, or until the well is dry, or until the stabilization of measured physicochemical parameters (pH, temperature, conductivity, etc.) in groundwater is observed. Subsequently, the groundwater samples are collected with the same equipment used during the well purging.

Water samples are collected in a container with a capacity ranging from 40 to 1000 ml, according to the parameters being analyzed. The guide entitled *Mode de conservation pour l'échantillonnage des eaux souterraines* of the CEAEQ defines the required sample volume, the type of container, the necessary preserving agents and the maximum preservation period. The sample containers are prepared and provided by the analytical laboratory.

Generally, no groundwater samples are collected in the presence free-floating hydrocarbons on the groundwater's surface, unless the work scope requires such a sampling. In the event that free-floating hydrocarbons are present, the thickness is measured using an interface probe.

Free-floating hydrocarbons

The sampling of free-floating hydrocarbons, if required, is conducted when there is a sufficient volume present. The sampling is performed using a dedicated bailer or by other methods deemed appropriate (e.g. peristaltic pump). Free-floating hydrocarbons are collected in containers with capacities ranging from 40 to 1000 ml depending on the parameters to be analyzed. The guide entitled: Modes de conservation des échantillons relatifs à l'application du Règlement sur les matières dangereuses of the CEAEQ specifies the required sample volume, containers, and preservation periods between collection and analysis of the samples. The sample containers are prepared and provided by the analytical laboratory.

Washing Procedures for the Sampling Instruments

Unless the instruments are dedicated to a specific sampling point, all sampling instruments are washed and rinsed according to the procedure described in the MDDEFP Sampling Guide for Environmental Analysis (Book 5 - Soil Sampling, rev. 2009).

The instruments used for the sampling and preparation of soil samples are cleaned prior to collection of each grab or composite sample. The first step in the cleaning procedure involves the following sequence:

- ▶ rinse of the sampling instruments in water, with a quality consistent with planned analyses, such as to remove adhering particles;
- ▶ clean the surfaces with a brush, water and detergent that leaves no residue (e.g. Alconox);
- ▶ rinse with water to remove the detergent, followed by a second wash if the residue remains present;
- ▶ rinse with purified water and drain the excess water. Adequate flushing is performed to ensure that the liquid contacts the sampling instrument's entire surface.

In cases where soil samples are subject only to the analysis of inorganic parameters, the first cleaning step is usually sufficient.

In the case where the soil samples are subject to the analysis of organic parameters, a second cleaning procedure is performed. This step consists of the following:

- ▶ rinse with acetone;
- ▶ rinse with hexane;
- ▶ a second rinse with acetone and the instrument is allowed to dry.

In the case where acetone or hexane is a contaminant of concern, or could create analytical interference (e.g. volatile organic compounds), it is replaced by an equivalent product (e.g. methanol).

When the sampling instrument is contaminated with an oily residue, it may be necessary to clean the instrument with a cloth soaked in a solvent before starting the rinsing steps.

Identification, Transport and Storage of Samples

All the collected soil and groundwater samples are properly identified and placed under cool conditions in a cooler, allowing them to remain at a temperature in the range of 4 ° C until their receipt at the analytical laboratory. The samples are delivered to the laboratory and accompanied by a chain of custody form duly completed and when possible, the delivery is completed within a delay of 24 hours.

Soil and groundwater which are not retained for chemical analysis are kept by the laboratory for a minimum period of one month from the date of their receipt. Unless instructed otherwise, the samples are discarded after this period.

The specifications for the storage methods for various matrices according to the parameters analyzed are provided in the guides entitled: Modes de conservation pour l'échantillonnage des sols, Modes de conservation pour l'échantillonnage des eaux souterraines and Modes de conservation des échantillons related to the application of the Regulation respecting hazardous materials of the CEAEQ.

Appendix 5 Chemical Analyses Certificates

Votre # du projet: P-0014860-0-00-100-04

Adresse du site: WASKAGANISH

Votre # Bordereau: 915940

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/12

Rapport: R2382363

Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B827073

Reçu: 2018/07/06, 13:30

Matrice: EAU DE SURFACE
Nombre d'échantillons reçus: 4

Analyses	Quantité	Date de l'	Date	Méthode de laboratoire	Référence Primaire
		extraction	Analysé		
Hydrocarbures pétroliers (C10-C50)	4	2018/07/09	2018/07/11	QUE SOP-00209	MA400-HYD 1.1 R3 m
Interprétation des produits pétroliers	4	N/A	2018/07/12		MA408-IdePet 1.0 R1m
Hydrocarbures aromatiques monocycliques	4	N/A	2018/07/10	QUE SOP-00202	MA.400-COV 2.0 R4 m
Métaux extractibles totaux par ICP	4	2018/07/09	2018/07/09	QUE SOP-00132	MA.200-Mét. 1.2 R5 m
Hydrocarbures aromatiques polycycliques	4	2018/07/09	2018/07/10	QUE SOP-00207	MA.400-HAP 1.1 R5 m

Remarques:

Les laboratoires Maxxam sont accrédités ISO/IEC 17025:2005. Sauf indication contraire, les méthodes d'analyses utilisées par Maxxam s'inspirent des méthodes de référence d'organismes provinciaux, fédéraux et américains, tel que le CCME, le MDDELCC, l'EPA et l'APHA.

Toutes les analyses présentées ont été réalisées conformément aux procédures et aux pratiques relatives à la méthodologie, à l'assurance qualité et au contrôle de la qualité généralement appliquées par les employés de Maxxam (sauf s'il en a été convenu autrement par écrit entre le client et Maxxam). Toutes les données de laboratoire rencontrent les contrôles statistiques et respectent tous les critères du CQ et les critères de performance des méthodes, sauf s'il en a été signalé autrement. Tous les blancs de méthode sont rapportés, toutefois, les données des échantillons correspondants ne sont pas corrigées pour la valeur du blanc, sauf indication contraire.

Les responsabilités de Maxxam sont restreintes au coût réel de l'analyse, sauf s'il en a été convenu autrement par écrit. Il n'existe aucune autre garantie, explicite ou implicite. Le client a fait appel à Maxxam pour l'analyse de ses échantillons conformément aux méthodes de référence mentionnées dans ce rapport. L'interprétation et l'utilisation des résultats sont sous l'entière responsabilité du client et ne font pas partie des services offerts par Maxxam, sauf si convenu autrement par écrit.

Les résultats des échantillons solides, sauf les biotes, sont rapportés en fonction de la masse sèche, sauf indication contraire. Les analyses organiques ne sont pas corrigées en fonction de la récupération, sauf pour les méthodes de dilution isotopique.

Les résultats s'appliquent seulement aux échantillons analysés.

Le présent rapport ne doit pas être reproduit, sinon dans son intégralité, sans le consentement écrit du laboratoire.

Lorsque la méthode de référence comprend un suffixe « m », cela signifie que la méthode d'analyse du laboratoire contient des modifications validées et appliquées afin d'améliorer la performance de la méthode de référence.

Notez: Les données brutes sont utilisées pour le calcul du RPD (% d'écart relatif). L'arrondissement des résultats finaux peut expliquer la variation apparente.

Note : Les paramètres inclus dans le présent certificat sont accrédités par le MDDELCC, à moins d'indication contraire.

Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Votre # Bordereau: 915940

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/12
Rapport: R2382363
Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B827073

Reçu: 2018/07/06, 13:30

clé de cryptage

Veillez adresser toute question concernant ce certificat d'analyse à votre chargé(e) de projets

Alain Lemieux, Chargé de projets

Courriel: ALemieux@maxxam.ca

Téléphone (418)658-5784 Ext:7066451

=====

Ce rapport a été produit et distribué en utilisant une procédure automatisée sécuritaire.

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Dossier Maxxam: B827073
Date du rapport: 2018/07/12

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (EAU DE SURFACE)

ID Maxxam				FM5842		FM5848		FM5849		FM5850			
Date d'échantillonnage				2018/07/06		2018/07/06		2018/07/06		2018/07/06			
# Bordereau				915940		915940		915940		915940			
	Unités	A	B	POINT-A	CR	POINT-A-TT	CR	POINT-B	CR	POINT-C	CR	LDR	Lot CQ
HAP													
Acénaphthène	ug/L	-	100	<0.030		<0.030		<0.030		<0.030		0.030	1914401
Anthracène	ug/L	-	-	<0.030		<0.030		<0.030		<0.030		0.030	1914401
Benzo(a)anthracène	ug/L	-	-	<0.030		<0.030		<0.030		<0.030		0.030	1914401
Benzo(b)fluoranthène †	ug/L	-	-	<0.060		<0.060		<0.060		<0.060		0.060	1914401
Benzo(j)fluoranthène †	ug/L	-	-	<0.060		<0.060		<0.060		<0.060		0.060	1914401
Benzo(k)fluoranthène †	ug/L	-	-	<0.060		<0.060		<0.060		<0.060		0.060	1914401
Benzo(a)pyrène	ug/L	0.01	-	<0.0080		<0.0080		<0.0080		<0.0080		0.0080	1914401
Chrysène	ug/L	-	-	<0.030		<0.030		<0.030		<0.030		0.030	1914401
Dibenzo(a,h)anthracène	ug/L	-	-	<0.030		<0.030		<0.030		<0.030		0.030	1914401
Fluoranthène	ug/L	-	14	<0.030		<0.030		<0.030		<0.030		0.030	1914401
Fluorène	ug/L	-	110	<0.030		<0.030		<0.030		<0.030		0.030	1914401
Indéno(1,2,3-cd)pyrène	ug/L	-	-	<0.030		<0.030		<0.030		<0.030		0.030	1914401
Naphtalène	ug/L	100	100	<0.030		<0.030		<0.030		<0.030		0.030	1914401
Phénanthrène	ug/L	-	4.7	<0.030		<0.030		<0.030		<0.030		0.030	1914401
Pyrène	ug/L	-	-	<0.030		<0.030		<0.030		<0.030		0.030	1914401
HAP totaux (RES) †	ug/L	-	1.8	<0.060		<0.060		<0.060		<0.060		0.060	1914401
Récupération des Surrogates (%)													
D10-Anthracène	%	-	-	99		98		93		91		N/A	1914401
D12-Benzo(a)pyrène	%	-	-	98		95		86		89		N/A	1914401
D14-Terphenyl	%	-	-	101		98		90		90		N/A	1914401
D8-Acenaphthylene	%	-	-	96		94		90		88		N/A	1914401
D8-Naphtalène	%	-	-	96		95		90		88		N/A	1914401
LDR = Limite de détection rapportée													
Lot CQ = Lot contrôle qualité													
† Accréditation non existante pour ce paramètre													
N/A = Non Applicable													

Dossier Maxxam: B827073
Date du rapport: 2018/07/12

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (EAU DE SURFACE)

ID Maxxam			FM5842		FM5848		FM5849		FM5850			
Date d'échantillonnage			2018/07/06		2018/07/06		2018/07/06		2018/07/06			
# Bordereau			915940		915940		915940		915940			
	Unités	B	POINT-A	CR	POINT-A-TT	CR	POINT-B	CR	POINT-C	CR	LDR	Lot CQ
HYDROCARBURES PÉTROLIERS												
Hydrocarbures pétroliers (C10-C50)	ug/L	2800	<100		<100		<100		<100		100	1914374
Récupération des Surrogates (%)												
1-Chlorooctadécane	%	-	90		78		91		82		N/A	1914374
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable												

Dossier Maxxam: B827073
Date du rapport: 2018/07/12

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (EAU DE SURFACE)

ID Maxxam				FM5842		FM5848		FM5849		FM5850			
Date d'échantillonnage				2018/07/06		2018/07/06		2018/07/06		2018/07/06			
# Bordereau				915940		915940		915940		915940			
	Unités	A	B	POINT-A	CR	POINT-A-TT	CR	POINT-B	CR	POINT-C	CR	LDR	Lot CQ
VOLATILS													
Benzène	ug/L	0.5	950	<0.20		<0.20		<0.20		<0.20		0.20	1914375
Chlorobenzène	ug/L	30	130	<0.20		<0.20		<0.20		<0.20		0.20	1914375
Dichloro-1,2 benzène	ug/L	150	70	<0.20		<0.20		<0.20		<0.20		0.20	1914375
Dichloro-1,3 benzène	ug/L	-	100	<0.10		<0.10		<0.10		<0.10		0.10	1914375
Dichloro-1,4 benzène	ug/L	5	100	<0.20		<0.20		<0.20		<0.20		0.20	1914375
Éthylbenzène	ug/L	2.4	160	<0.10		<0.10		<0.10		<0.10		0.10	1914375
Styrène	ug/L	20	800	<0.10		<0.10		<0.10		<0.10		0.10	1914375
Toluène	ug/L	24	200	0.17	<A	0.17	<A	0.68	<A	0.13	<A	0.10	1914375
Xylènes (o,m,p) †	ug/L	300	370	<0.40		<0.40		<0.40		<0.40		0.40	1914375
Récupération des Surrogates (%)													
4-Bromofluorobenzène	%	-	-	107		105		106		107		N/A	1914375
D4-1,2-Dichloroéthane	%	-	-	98		99		97		105		N/A	1914375
D8-Toluène	%	-	-	93		93		93		89		N/A	1914375
LDR = Limite de détection rapportée													
Lot CQ = Lot contrôle qualité													
† Accréditation non existante pour ce paramètre													
N/A = Non Applicable													

Dossier Maxxam: B827073
Date du rapport: 2018/07/12

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

MÉTAUX EXTRACTIBLES TOTAUX (EAU DE SURFACE)

ID Maxxam				FM5842		FM5848		FM5848			
Date d'échantillonnage				2018/07/06		2018/07/06		2018/07/06			
# Bordereau				915940		915940		915940			
	Unités	A	B	POINT-A	CR	POINT-A-TT	CR	POINT-A-TT Dup. de Lab.	CR	LDR	Lot CQ

MÉTAUX											
Cadmium (Cd)	mg/L	0.005	0.0011	<0.010		<0.010		<0.010		0.010	1914158
Chrome (Cr)	mg/L	0.05	-	<0.010		<0.010		<0.010		0.010	1914158
Cuivre (Cu)	mg/L	1	0.0073	<0.0090		<0.0090		<0.0090		0.0090	1914158
Nickel (Ni)	mg/L	0.07	0.26	<0.010		<0.010		<0.010		0.010	1914158
Plomb (Pb)	mg/L	0.01	0.034	<0.010		<0.010		<0.010		0.010	1914158
Zinc (Zn)	mg/L	5	0.067	<0.020		<0.020		<0.020		0.020	1914158
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
Duplicata de laboratoire											

ID Maxxam				FM5849		FM5850				
Date d'échantillonnage				2018/07/06		2018/07/06				
# Bordereau				915940		915940				
	Unités	A	B	POINT-B	CR	POINT-C	CR	LDR	Lot CQ	

MÉTAUX										
Cadmium (Cd)	mg/L	0.005	0.0011	<0.010		<0.010		0.010	1914158	
Chrome (Cr)	mg/L	0.05	-	<0.010		<0.010		0.010	1914158	
Cuivre (Cu)	mg/L	1	0.0073	<0.0090		<0.0090		0.0090	1914158	
Nickel (Ni)	mg/L	0.07	0.26	<0.010		<0.010		0.010	1914158	
Plomb (Pb)	mg/L	0.01	0.034	<0.010		<0.010		0.010	1914158	
Zinc (Zn)	mg/L	5	0.067	<0.020		<0.020		0.020	1914158	
LDR = Limite de détection rapportée										
Lot CQ = Lot contrôle qualité										

Dossier Maxxam: B827073
Date du rapport: 2018/07/12

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

INTERPRETATION QUALITATIVE
Hydrocarbures pétroliers (C10-C50)

Échantillon	Interpretation Qualitative
POINT-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
POINT-A-TT	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
POINT-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
POINT-C	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.

Dossier Maxxam: B827073
Date du rapport: 2018/07/12

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

REMARQUES GÉNÉRALES

A,B,CR: Les critères des sols proviennent de l'Annexe 2 du « Guide d'intervention-Protection des sols et réhabilitation des terrains contaminés. MDDELCC, 2016. » et intitulé « Grille des critères génériques pour les sols ». Les critères des sols sont ceux de la province géologique des Basses-Terres du Saint-Laurent.

Les critères A et B pour l'eau souterraine proviennent de l'annexe 7 intitulé « Grille des critères de qualité des eaux souterraines » du guide d'intervention mentionné plus haut. A=Eau de consommation; B=Résurgence dans l'eau de surface

Ces références ne sont rapportées qu'à titre indicatif et ne doivent être interprétées dans aucun autre contexte.

- = Ce composé ne fait pas partie de la réglementation.

HAP PAR GCMS (EAU DE SURFACE)

Le résultat de HAP totaux (RES) représente la somme des 8 composés suivants: benzo(a)anthracène, benzo(b)fluoranthène, benzo(j)fluoranthène, benzo(k)fluoranthène, benzo(a)pyrène, chrysène, dibenzo(a,h)anthracène et indéno(1,2,3-c,d)pyrène.

Les résultats bruts non-arrondis sont utilisés dans le calcul des HAP totaux (RES). Ce résultat total est alors arrondi à deux chiffres significatifs.

HYDROCARBURES PAR GCFID (EAU DE SURFACE)

La similitude des hydrocarbures rapportés est obtenue par une comparaison visuelle du chromatogramme de l'échantillon avec la bibliothèque des chromatogrammes des produits de référence. Comme certaines variables tels que les multiproduits, le degré et le type de dégradation et la présence d'hydrocarbures non pétrogénétiques qui ne peuvent pas être reproduites dans les spectres de référence, l'information doit être vue comme qualitative et, en conséquence, Maxxam ne peut aucunement être tenu responsable des conclusions formulées pour ces données.

Les résultats ne se rapportent qu'aux échantillons soumis pour analyse

Dossier Maxxam: B827073
Date du rapport: 2018/07/12

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1914158	JRC	MRC	Cadmium (Cd)	2018/07/09		97	%
			Chrome (Cr)	2018/07/09		103	%
			Cuivre (Cu)	2018/07/09		105	%
			Nickel (Ni)	2018/07/09		104	%
			Plomb (Pb)	2018/07/09		94	%
			Zinc (Zn)	2018/07/09		98	%
1914158	JRC	Blanc fortifié	Cadmium (Cd)	2018/07/09		100	%
			Chrome (Cr)	2018/07/09		102	%
			Cuivre (Cu)	2018/07/09		100	%
			Nickel (Ni)	2018/07/09		100	%
			Plomb (Pb)	2018/07/09		102	%
			Zinc (Zn)	2018/07/09		101	%
1914158	JRC	Blanc de méthode	Cadmium (Cd)	2018/07/09	<0.010		mg/L
			Chrome (Cr)	2018/07/09	<0.010		mg/L
			Cuivre (Cu)	2018/07/09	<0.0090		mg/L
			Nickel (Ni)	2018/07/09	<0.010		mg/L
			Plomb (Pb)	2018/07/09	<0.010		mg/L
			Zinc (Zn)	2018/07/09	<0.020		mg/L
1914374	VLP	Blanc fortifié	1-Chlorooctadécane	2018/07/11		99	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/11		82	%
1914374	VLP	Blanc fortifié DUP	1-Chlorooctadécane	2018/07/11		92	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/11		81	%
1914374	VLP	Blanc de méthode	1-Chlorooctadécane	2018/07/11		87	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/11	<100		ug/L
1914375	VLP	Blanc fortifié	4-Bromofluorobenzène	2018/07/09		105	%
			D4-1,2-Dichloroéthane	2018/07/09		95	%
			D8-Toluène	2018/07/09		97	%
			Benzène	2018/07/09		101	%
			Chlorobenzène	2018/07/09		110	%
			Dichloro-1,2 benzène	2018/07/09		107	%
			Dichloro-1,3 benzène	2018/07/09		107	%
			Dichloro-1,4 benzène	2018/07/09		113	%
			Éthylbenzène	2018/07/09		102	%
			Styrène	2018/07/09		113	%
			Toluène	2018/07/09		100	%
			Xylènes (o,m,p)	2018/07/09		100	%
			4-Bromofluorobenzène	2018/07/09		103	%
			D4-1,2-Dichloroéthane	2018/07/09		95	%
D8-Toluène	2018/07/09		97	%			
Benzène	2018/07/09	<0.20		ug/L			
Chlorobenzène	2018/07/09	<0.20		ug/L			
Dichloro-1,2 benzène	2018/07/09	<0.20		ug/L			
Dichloro-1,3 benzène	2018/07/09	<0.10		ug/L			
Dichloro-1,4 benzène	2018/07/09	<0.20		ug/L			
Éthylbenzène	2018/07/09	<0.10		ug/L			
Styrène	2018/07/09	<0.10		ug/L			
Toluène	2018/07/09	<0.10		ug/L			
Xylènes (o,m,p)	2018/07/09	<0.40		ug/L			
1914401	VLP	Blanc fortifié	D10-Anthracène	2018/07/10		102	%
			D12-Benzo(a)pyrène	2018/07/10		104	%
			D14-Terphenyl	2018/07/10		110	%

Dossier Maxxam: B827073
Date du rapport: 2018/07/12

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			D8-Acenaphthylene	2018/07/10		97	%
			D8-Naphtalène	2018/07/10		98	%
			Acénaphène	2018/07/10		86	%
			Anthracène	2018/07/10		99	%
			Benzo(a)anthracène	2018/07/10		86	%
			Benzo(b)fluoranthène	2018/07/10		108	%
			Benzo(j)fluoranthène	2018/07/10		98	%
			Benzo(k)fluoranthène	2018/07/10		92	%
			Benzo(a)pyrène	2018/07/10		101	%
			Chrysène	2018/07/10		87	%
			Dibenzo(a,h)anthracène	2018/07/10		104	%
			Fluoranthène	2018/07/10		90	%
			Fluorène	2018/07/10		93	%
			Indéno(1,2,3-cd)pyrène	2018/07/10		94	%
			Naphtalène	2018/07/10		95	%
			Phénanthrène	2018/07/10		94	%
			Pyrène	2018/07/10		92	%
1914401	VLP	Blanc de méthode	D10-Anthracène	2018/07/10		103	%
			D12-Benzo(a)pyrène	2018/07/10		101	%
			D14-Terphenyl	2018/07/10		105	%
			D8-Acenaphthylene	2018/07/10		99	%
			D8-Naphtalène	2018/07/10		99	%
			Acénaphène	2018/07/10	<0.030		ug/L
			Anthracène	2018/07/10	<0.030		ug/L
			Benzo(a)anthracène	2018/07/10	<0.030		ug/L
			Benzo(b)fluoranthène	2018/07/10	<0.060		ug/L
			Benzo(j)fluoranthène	2018/07/10	<0.060		ug/L
			Benzo(k)fluoranthène	2018/07/10	<0.060		ug/L
			Benzo(a)pyrène	2018/07/10	<0.0080		ug/L
			Chrysène	2018/07/10	<0.030		ug/L
			Dibenzo(a,h)anthracène	2018/07/10	<0.030		ug/L
			Fluoranthène	2018/07/10	<0.030		ug/L
			Fluorène	2018/07/10	<0.030		ug/L
			Indéno(1,2,3-cd)pyrène	2018/07/10	<0.030		ug/L
			Naphtalène	2018/07/10	<0.030		ug/L
			Phénanthrène	2018/07/10	<0.030		ug/L
			Pyrène	2018/07/10	<0.030		ug/L
			HAP totaux (RES)	2018/07/10	<0.060		ug/L

MRC: Un échantillon de concentration connue préparé dans des conditions rigoureuses par un organisme externe. Utilisé pour vérifier la justesse de la méthode.

Blanc fortifié: Un blanc, d'une matrice exempte de contaminants, auquel a été ajouté une quantité connue d'analyte provenant généralement d'une deuxième source. Utilisé pour évaluer la précision de la méthode.

Blanc de méthode: Une partie aliquote de matrice pure soumise au même processus analytique que les échantillons, du prétraitement au dosage. Sert à évaluer toutes contaminations du laboratoire.

Surrogate: Composé se comportant de façon similaire aux composés analysés et ajouté à l'échantillon avant l'analyse. Sert à évaluer la qualité de l'extraction.

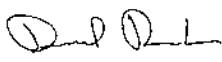

Réc = Récupération

Dossier Maxxam: B827073
Date du rapport: 2018/07/12

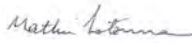

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

PAGE DES SIGNATURES DE VALIDATION

Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:

David Provencher, B.Sc., Chimiste, Analyste Senior

Mathieu Letourneau, B.Sc., Chimiste, Spécialiste scientifique

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Votre # du projet: P-0014860-0-00-100-04

Adresse du site: WASKAGANISH

Votre # Bordereau: E-915939

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/13

Rapport: R2382698

Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B827240

Reçu: 2018/07/06, 13:30

Matrice: EAU SOUTERRAINE
Nombre d'échantillons reçus: 6

Analyses	Quantité	Date de l'	Date	Méthode de laboratoire	Référence Primaire
		extraction	Analysé		
Hydrocarbures pétroliers (C10-C50)	4	2018/07/10	2018/07/11	QUE SOP-00209	MA400-HYD 1.1 R3 m
Hydrocarbures pétroliers CCME F1 & BTEX (1)	2	N/A	2018/07/11	STL SOP-00131	CCME PHC-CWS m
Hydrocarbures pétroliers CCME F1 & BTEX (1)	1	N/A	2018/07/12	STL SOP-00131	CCME PHC-CWS m
Hydrocarbures pétroliers CCME F1 & BTEX (1)	1	N/A	2018/07/13	STL SOP-00131	CCME PHC-CWS m
Hydrocarbures pétroliers (F2-F4) (1)	4	2018/07/10	2018/07/11	STL SOP-00170	CCME PHC-CWS m
Interprétation des produits pétroliers	4	N/A	2018/07/12		MA408-IdePet 1.0 R1m
Hydrocarbures aromatiques monocycliques	6	N/A	2018/07/10	QUE SOP-00202	MA.400-COV 2.0 R4 m
HAP (CCME)	5	2018/07/10	2018/07/11	QUE SOP-00207	MA.400-HAP 1.1 R5 m

Remarques:

Les laboratoires Maxxam sont accrédités ISO/IEC 17025:2005. Sauf indication contraire, les méthodes d'analyses utilisées par Maxxam s'inspirent des méthodes de référence d'organismes provinciaux, fédéraux et américains, tel que le CCME, le MDDELCC, l'EPA et l'APHA.

Toutes les analyses présentées ont été réalisées conformément aux procédures et aux pratiques relatives à la méthodologie, à l'assurance qualité et au contrôle de la qualité généralement appliquées par les employés de Maxxam (sauf s'il en a été convenu autrement par écrit entre le client et Maxxam). Toutes les données de laboratoire rencontrent les contrôles statistiques et respectent tous les critères du CQ et les critères de performance des méthodes, sauf s'il en a été signalé autrement. Tous les blancs de méthode sont rapportés, toutefois, les données des échantillons correspondants ne sont pas corrigées pour la valeur du blanc, sauf indication contraire.

Les responsabilités de Maxxam sont restreintes au coût réel de l'analyse, sauf s'il en a été convenu autrement par écrit. Il n'existe aucune autre garantie, explicite ou implicite. Le client a fait appel à Maxxam pour l'analyse de ses échantillons conformément aux méthodes de référence mentionnées dans ce rapport. L'interprétation et l'utilisation des résultats sont sous l'entière responsabilité du client et ne font pas partie des services offerts par Maxxam, sauf si convenu autrement par écrit.

Les résultats des échantillons solides, sauf les biotes, sont rapportés en fonction de la masse sèche, sauf indication contraire. Les analyses organiques ne sont pas corrigées en fonction de la récupération, sauf pour les méthodes de dilution isotopique.

Les résultats s'appliquent seulement aux échantillons analysés.

Le présent rapport ne doit pas être reproduit, sinon dans son intégralité, sans le consentement écrit du laboratoire.

Lorsque la méthode de référence comprend un suffixe « m », cela signifie que la méthode d'analyse du laboratoire contient des modifications validées et appliquées afin d'améliorer la performance de la méthode de référence.

Notez: Les données brutes sont utilisées pour le calcul du RPD (% d'écart relatif). L'arrondissement des résultats finaux peut expliquer la variation apparente.

Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Votre # Bordereau: E-915939

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/13
Rapport: R2382698
Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B827240

Reçu: 2018/07/06, 13:30

(1) Cette analyse a été effectuée par Maxxam -Ville St. Laurent

Note : Les paramètres inclus dans le présent certificat sont accrédités par le MDDELCC, à moins d'indication contraire.

clé de cryptage

Veillez adresser toute question concernant ce certificat d'analyse à votre chargé(e) de projets
Alain Lemieux, Chargé de projets
Courriel: ALemieux@maxxam.ca
Téléphone (418)658-5784 Ext:7066451

=====
Ce rapport a été produit et distribué en utilisant une procédure automatisée sécuritaire.

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Dossier Maxxam: B827240
Date du rapport: 2018/07/13

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (EAU SOUTERRAINE)

ID Maxxam				FM6829			FM6835			FM6836			
Date d'échantillonnage				2018/07/06 13:30			2018/07/06 13:30			2018/07/06 13:30			
# Bordereau				E-915939			E-915939			E-915939			
	Unités	A	B	WK-MW-18-2	CR	Lot CQ	WK-MW-18-2-TT	CR	Lot CQ	F-4	CR	LDR	Lot CQ

VOLATILS

Benzène	ug/L	0.5	950	0.50	A	1915036	<0.40		1916146	<0.40		0.40	1915036
Toluène	ug/L	24	200	<0.40		1915036	<0.40		1916146	<0.40		0.40	1915036
Éthylbenzène	ug/L	2.4	160	0.55	<A	1915036	0.47	<A	1916146	<0.40		0.40	1915036
p+m-Xylène	ug/L	-	-	1.1		1915036	1.1		1916146	<0.80		0.80	1915036
o-Xylène	ug/L	-	-	0.76		1915036	0.72		1916146	<0.40		0.40	1915036
Xylènes (o,m,p) †	ug/L	300	370	1.9	<A	1915036	1.8	<A	1916146	<0.80		0.80	1915036
F1 (C6-C10) †	ug/L	-	-	<100		1915036	<100		1916146	<100		100	1915036
F1 (C6-C10) - BTEX †	ug/L	-	-	<100		1915036	<100		1916146	<100		100	1915036

Récupération des Surrogates (%)

1,4-Difluorobenzène	%	-	-	101		1915036	103		1916146	98		N/A	1915036
4-Bromofluorobenzène	%	-	-	97		1915036	96		1916146	97		N/A	1915036
D10-Ethylbenzène	%	-	-	113		1915036	109		1916146	120		N/A	1915036
D4-1,2-Dichloroéthane	%	-	-	109		1915036	110		1916146	109		N/A	1915036

LDR = Limite de détection rapportée

Lot CQ = Lot contrôle qualité

† Accréditation non existante pour ce paramètre

N/A = Non Applicable

Dossier Maxxam: B827240
Date du rapport: 2018/07/13

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (EAU SOUTERRAINE)

ID Maxxam				FM6837			
Date d'échantillonnage				2018/07/06 13:30			
# Bordereau				E-915939			
	Unités	A	B	F2	CR	LDR	Lot CQ
VOLATILS							
Benzène	ug/L	0.5	950	<0.40		0.40	1915036
Toluène	ug/L	24	200	<0.40		0.40	1915036
Éthylbenzène	ug/L	2.4	160	<0.40		0.40	1915036
p+m-Xylène	ug/L	-	-	<0.80		0.80	1915036
o-Xylène	ug/L	-	-	<0.40		0.40	1915036
Xylènes (o,m,p) †	ug/L	300	370	<0.80		0.80	1915036
F1 (C6-C10) †	ug/L	-	-	<100		100	1915036
F1 (C6-C10) - BTEX †	ug/L	-	-	<100		100	1915036
Récupération des Surrogates (%)							
1,4-Difluorobenzène	%	-	-	98		N/A	1915036
4-Bromofluorobenzène	%	-	-	97		N/A	1915036
D10-Ethylbenzène	%	-	-	121		N/A	1915036
D4-1,2-Dichloroéthane	%	-	-	106		N/A	1915036
LDR = Limite de détection rapportée							
Lot CQ = Lot contrôle qualité							
† Accréditation non existante pour ce paramètre							
N/A = Non Applicable							

Dossier Maxxam: B827240
Date du rapport: 2018/07/13

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (EAU SOUTERRAINE)

ID Maxxam				FM6829		FM6834		FM6835			
Date d'échantillonnage				2018/07/06 13:30		2018/07/06 13:30		2018/07/06 13:30			
# Bordereau				E-915939		E-915939		E-915939			
	Unités	A	B	WK-MW-18-2	CR	WK-MW-18-1	CR	WK-MW-18-2-TT	CR	LDR	Lot CQ
HAP											
Acénaphène	ug/L	-	100	<0.030		<0.030		<0.030		0.030	1914905
Anthracène	ug/L	-	-	<0.012		<0.012		<0.012		0.012	1914905
Benzo(a)anthracène	ug/L	-	-	<0.018		<0.018		<0.018		0.018	1914905
Benzo(b)fluoranthène †	ug/L	-	-	<0.060		<0.060		<0.060		0.060	1914905
Benzo(j)fluoranthène †	ug/L	-	-	<0.060		<0.060		<0.060		0.060	1914905
Benzo(k)fluoranthène †	ug/L	-	-	<0.060		<0.060		<0.060		0.060	1914905
Benzo(a)pyrène	ug/L	0.01	-	<0.0080		<0.0080		<0.0080		0.0080	1914905
Chrysène	ug/L	-	-	<0.030		<0.030		<0.030		0.030	1914905
Dibenzo(a,h)anthracène	ug/L	-	-	<0.030		<0.030		<0.030		0.030	1914905
Fluoranthène	ug/L	-	14	<0.030		<0.030		<0.030		0.030	1914905
Fluorène	ug/L	-	110	<0.030		<0.030		<0.030		0.030	1914905
Indéno(1,2,3-cd)pyrène	ug/L	-	-	<0.030		<0.030		<0.030		0.030	1914905
Naphtalène	ug/L	100	100	0.11	<A	<0.030		0.11	<A	0.030	1914905
Phénanthrène	ug/L	-	4.7	<0.030		<0.030		<0.030		0.030	1914905
Pyrène	ug/L	-	-	<0.020		<0.020		<0.020		0.020	1914905
Acénaphthylène	ug/L	-	-	<0.030		<0.030		<0.030		0.030	1914905
Benzo(ghi)pérylène	ug/L	-	-	<0.10		<0.10		<0.10		0.10	1914905
1-Méthylnaphtalène †	ug/L	-	-	0.16		<0.10		0.15		0.10	1914905
2-Méthylnaphtalène †	ug/L	-	-	0.18		<0.10		0.15		0.10	1914905
Récupération des Surrogates (%)											
D10-Anthracène	%	-	-	89		90		85		N/A	1914905
D12-Benzo(a)pyrène	%	-	-	96		98		94		N/A	1914905
D14-Terphenyl	%	-	-	101		103		99		N/A	1914905
D8-Acenaphthylene	%	-	-	83		83		82		N/A	1914905
D8-Naphtalène	%	-	-	88		89		86		N/A	1914905
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité † Accréditation non existante pour ce paramètre N/A = Non Applicable											

Dossier Maxxam: B827240
Date du rapport: 2018/07/13

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (EAU SOUTERRAINE)

ID Maxxam				FM6836		FM6837			
Date d'échantillonnage				2018/07/06 13:30		2018/07/06 13:30			
# Bordereau				E-915939		E-915939			
	Unités	A	B	F-4	CR	F2	CR	LDR	Lot CQ
HAP									
Acénaphène	ug/L	-	100	0.032	<B	<0.030		0.030	1914905
Anthracène	ug/L	-	-	<0.012		<0.012		0.012	1914905
Benzo(a)anthracène	ug/L	-	-	<0.018		<0.018		0.018	1914905
Benzo(b)fluoranthène †	ug/L	-	-	<0.060		<0.060		0.060	1914905
Benzo(j)fluoranthène †	ug/L	-	-	<0.060		<0.060		0.060	1914905
Benzo(k)fluoranthène †	ug/L	-	-	<0.060		<0.060		0.060	1914905
Benzo(a)pyrène	ug/L	0.01	-	<0.0080		<0.0080		0.0080	1914905
Chrysène	ug/L	-	-	<0.030		<0.030		0.030	1914905
Dibenzo(a,h)anthracène	ug/L	-	-	<0.030		<0.030		0.030	1914905
Fluoranthène	ug/L	-	14	<0.030		<0.030		0.030	1914905
Fluorène	ug/L	-	110	0.081	<B	<0.030		0.030	1914905
Indéno(1,2,3-cd)pyrène	ug/L	-	-	<0.030		<0.030		0.030	1914905
Naphtalène	ug/L	100	100	0.83	<A	0.062	<A	0.030	1914905
Phénanthrène	ug/L	-	4.7	<0.030		<0.030		0.030	1914905
Pyrène	ug/L	-	-	<0.020		<0.020		0.020	1914905
Acénaphthylène	ug/L	-	-	<0.030		<0.030		0.030	1914905
Benzo(ghi)pérylène	ug/L	-	-	<0.10		<0.10		0.10	1914905
1-Méthylnaphtalène †	ug/L	-	-	0.64		<0.10		0.10	1914905
2-Méthylnaphtalène †	ug/L	-	-	0.52		<0.10		0.10	1914905
Récupération des Surrogates (%)									
D10-Anthracène	%	-	-	87		86		N/A	1914905
D12-Benzo(a)pyrène	%	-	-	97		95		N/A	1914905
D14-Terphenyl	%	-	-	101		104		N/A	1914905
D8-Acenaphthylene	%	-	-	75		77		N/A	1914905
D8-Naphtalène	%	-	-	86		87		N/A	1914905
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité † Accréditation non existante pour ce paramètre N/A = Non Applicable									

Dossier Maxxam: B827240
Date du rapport: 2018/07/13

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (EAU SOUTERRAINE)

ID Maxxam			FM6829		FM6835		FM6836		FM6837			
Date d'échantillonnage			2018/07/06 13:30		2018/07/06 13:30		2018/07/06 13:30		2018/07/06 13:30			
# Bordereau			E-915939		E-915939		E-915939		E-915939			
	Unités	B	WK-MW-18-2	CR	WK-MW-18-2-TT	CR	F-4	CR	F2	CR	LDR	Lot CQ

HYDROCARBURES PÉTROLIERS												
F2 (C10-C16) †	ug/L	-	<100		<100		<100		<100		100	1914820
Hydrocarbures pétroliers (C10-C50)	ug/L	2800	<100		130	<B	150	<B	1100	<B	100	1914904
F3 (C16-C34) †	ug/L	-	<200		<200		<200		<200		200	1914820
F4 (C34-C50) †	ug/L	-	<200		<200		<200		<200		200	1914820
Ligne de base atteinte à C50 †	ug/L	-	OUI		OUI		OUI		OUI		N/A	1914820
Récupération des Surrogates (%)												
1-Chlorooctadécane	%	-	99		102		99		100		N/A	1914904
O-Terphenyl	%	-	106		92		88		87		N/A	1914820

LDR = Limite de détection rapportée

Lot CQ = Lot contrôle qualité

† Accréditation non existante pour ce paramètre

N/A = Non Applicable

Dossier Maxxam: B827240
Date du rapport: 2018/07/13

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (EAU SOUTERRAINE)

ID Maxxam				FM6829		FM6834		FM6835		FM6836			
Date d'échantillonnage				2018/07/06 13:30		2018/07/06 13:30		2018/07/06 13:30		2018/07/06 13:30			
# Bordereau				E-915939		E-915939		E-915939		E-915939			
	Unités	A	B	WK-MW-18-2	CR	WK-MW-18-1	CR	WK-MW-18-2-TT	CR	F-4	CR	LDR	Lot CQ

VOLATILS													
Benzène	ug/L	0.5	950	0.30	<A	<0.20		0.50	A	<0.20		0.20	1914375
Chlorobenzène	ug/L	30	130	<0.20		<0.20		<0.20		<0.20		0.20	1914375
Dichloro-1,2 benzène	ug/L	150	70	<0.20		<0.20		<0.20		<0.20		0.20	1914375
Dichloro-1,3 benzène	ug/L	-	100	<0.10		<0.10		<0.10		<0.10		0.10	1914375
Dichloro-1,4 benzène	ug/L	5	100	<0.20		<0.20		<0.20		<0.20		0.20	1914375
Éthylbenzène	ug/L	2.4	160	0.34	<A	0.14	<A	0.49	<A	<0.10		0.10	1914375
Styrène	ug/L	20	800	<0.10		<0.10		<0.10		<0.10		0.10	1914375
Toluène	ug/L	24	200	0.26	<A	0.70	<A	0.34	<A	0.17	<A	0.10	1914375
Xylènes (o,m,p) †	ug/L	300	370	1.5	<A	<0.40		1.8	<A	<0.40		0.40	1914375

Récupération des Surrogates (%)													
4-Bromofluorobenzène	%	-	-	106		105		105		105		N/A	1914375
D4-1,2-Dichloroéthane	%	-	-	89		100		99		102		N/A	1914375
D8-Toluène	%	-	-	95		93		93		92		N/A	1914375

LDR = Limite de détection rapportée

Lot CQ = Lot contrôle qualité

† Accréditation non existante pour ce paramètre

N/A = Non Applicable

Dossier Maxxam: B827240
Date du rapport: 2018/07/13

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (EAU SOUTERRAINE)

ID Maxxam				FM6837		FM7101		FM7101			
Date d'échantillonnage				2018/07/06 13:30		2018/07/06 13:30		2018/07/06 13:30			
# Bordereau				E-915939		E-915939		E-915939			
	Unités	A	B	F2	CR	BLANC TRANSPORT	CR	BLANC TRANSPORT Dup. de Lab.	CR	LDR	Lot CQ

VOLATILS

Benzène	ug/L	0.5	950	0.20	<A	<0.20		<0.20		0.20	1914375
Chlorobenzène	ug/L	30	130	<0.20		<0.20		<0.20		0.20	1914375
Dichloro-1,2 benzène	ug/L	150	70	<0.20		<0.20		<0.20		0.20	1914375
Dichloro-1,3 benzène	ug/L	-	100	<0.10		<0.10		<0.10		0.10	1914375
Dichloro-1,4 benzène	ug/L	5	100	<0.20		<0.20		<0.20		0.20	1914375
Éthylbenzène	ug/L	2.4	160	<0.10		<0.10		<0.10		0.10	1914375
Styrène	ug/L	20	800	<0.10		<0.10		<0.10		0.10	1914375
Toluène	ug/L	24	200	0.28	<A	0.10	<A	<0.10		0.10	1914375
Xylènes (o,m,p) †	ug/L	300	370	0.44	<A	<0.40		<0.40		0.40	1914375

Récupération des Surrogates (%)

4-Bromofluorobenzène	%	-	-	105		106		107		N/A	1914375
D4-1,2-Dichloroéthane	%	-	-	99		101		102		N/A	1914375
D8-Toluène	%	-	-	95		92		91		N/A	1914375

LDR = Limite de détection rapportée

Lot CQ = Lot contrôle qualité

Duplicata de laboratoire

† Accréditation non existante pour ce paramètre

N/A = Non Applicable

Dossier Maxxam: B827240
Date du rapport: 2018/07/13

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

INTERPRETATION QUALITATIVE
Hydrocarbures pétroliers (C10-C50)

Échantillon	Interpretation Qualitative
WK-MW-18-2	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MW-18-2-TT	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
F-4	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
F2	Voir section des commentaires.

Dossier Maxxam: B827240
Date du rapport: 2018/07/13

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

REMARQUES GÉNÉRALES

A,B,CR: Les critères des sols proviennent de l'Annexe 2 du « Guide d'intervention-Protection des sols et réhabilitation des terrains contaminés. MDDELCC, 2016. » et intitulé « Grille des critères génériques pour les sols ». Les critères des sols sont ceux de la province géologique des Basses-Terres du Saint-Laurent.

Les critères A et B pour l'eau souterraine proviennent de l'annexe 7 intitulé « Grille des critères de qualité des eaux souterraines » du guide d'intervention mentionné plus haut. A=Eau de consommation; B=Résurgence dans l'eau de surface

Ces références ne sont rapportées qu'à titre indicatif et ne doivent être interprétées dans aucun autre contexte.

- = Ce composé ne fait pas partie de la réglementation.

HYDROCARBURES PÉTROLIERS F1BTEX (EAU SOUTERRAINE)

Veuillez noter que les résultats ci-dessus ont été corrigés pour le blanc d'instrument.

Noter que les résultats totaux sont arrondis à deux chiffres significatifs.

HYDROCARBURES PAR GCFID (EAU SOUTERRAINE)

La similitude des hydrocarbures rapportés est obtenue par une comparaison visuelle du chromatogramme de l'échantillon avec la bibliothèque des chromatogrammes des produits de référence. Comme certaines variables tels que les multiproduits, le degré et le type de dégradation et la présence d'hydrocarbures non pétrogénétiques qui ne peuvent pas être reproduites dans les spectres de référence, l'information doit être vue comme qualitative et, en conséquence, Maxxam ne peut aucunement être tenu responsable des conclusions formulées pour ces données.

IPP FM6837 : C14 - C40 : Même région chromatographique que l'huile hydraulique, l'huile à transformateur, l'huile à transmission et l'huile à moteur.

Les résultats ne se rapportent qu'aux échantillons soumis pour analyse

Dossier Maxxam: B827240
Date du rapport: 2018/07/13

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités			
1914375	VLP	Blanc fortifié	4-Bromofluorobenzène	2018/07/09		105	%			
			D4-1,2-Dichloroéthane	2018/07/09		95	%			
			D8-Toluène	2018/07/09		97	%			
			Benzène	2018/07/09		101	%			
			Chlorobenzène	2018/07/09		110	%			
			Dichloro-1,2 benzène	2018/07/09		107	%			
			Dichloro-1,3 benzène	2018/07/09		107	%			
			Dichloro-1,4 benzène	2018/07/09		113	%			
			Éthylbenzène	2018/07/09		102	%			
			Styrène	2018/07/09		113	%			
			Toluène	2018/07/09		100	%			
			Xylènes (o,m,p)	2018/07/09		100	%			
			1914375	VLP	Blanc de méthode	4-Bromofluorobenzène	2018/07/09		103	%
						D4-1,2-Dichloroéthane	2018/07/09		95	%
D8-Toluène	2018/07/09					97	%			
Benzène	2018/07/09	<0.20					ug/L			
Chlorobenzène	2018/07/09	<0.20					ug/L			
Dichloro-1,2 benzène	2018/07/09	<0.20					ug/L			
Dichloro-1,3 benzène	2018/07/09	<0.10					ug/L			
Dichloro-1,4 benzène	2018/07/09	<0.20					ug/L			
Éthylbenzène	2018/07/09	<0.10					ug/L			
Styrène	2018/07/09	<0.10					ug/L			
Toluène	2018/07/09	<0.10					ug/L			
Xylènes (o,m,p)	2018/07/09	<0.40					ug/L			
1914820	MP	Blanc fortifié				O-Terphenyl	2018/07/11		94	%
						F2 (C10-C16)	2018/07/11		90	%
			F3 (C16-C34)	2018/07/11		90	%			
			F4 (C34-C50)	2018/07/11		90	%			
1914820	MP	Blanc de méthode	O-Terphenyl	2018/07/11		90	%			
			F2 (C10-C16)	2018/07/11	<100		ug/L			
			F3 (C16-C34)	2018/07/11	<200		ug/L			
			F4 (C34-C50)	2018/07/11	<200		ug/L			
1914904	DP3	Blanc fortifié	1-Chlorooctadécane	2018/07/11		102	%			
			Hydrocarbures pétroliers (C10-C50)	2018/07/11		88	%			
1914904	DP3	Blanc de méthode	1-Chlorooctadécane	2018/07/11		99	%			
			Hydrocarbures pétroliers (C10-C50)	2018/07/11	<100		ug/L			
1914905	SBF	Blanc fortifié	D10-Anthracène	2018/07/11		89	%			
			D12-Benzo(a)pyrène	2018/07/11		97	%			
			D14-Terphenyl	2018/07/11		109	%			
			D8-Acenaphthylene	2018/07/11		77	%			
			D8-Naphtalène	2018/07/11		87	%			
			Acénaphène	2018/07/11		76	%			
			Anthracène	2018/07/11		84	%			
			Benzo(a)anthracène	2018/07/11		84	%			
			Benzo(b)fluoranthène	2018/07/11		90	%			
			Benzo(j)fluoranthène	2018/07/11		93	%			
			Benzo(k)fluoranthène	2018/07/11		79	%			
			Benzo(a)pyrène	2018/07/11		91	%			
			Chrysène	2018/07/11		86	%			
			Dibenzo(a,h)anthracène	2018/07/11		94	%			
			Fluoranthène	2018/07/11		87	%			

Dossier Maxxam: B827240
Date du rapport: 2018/07/13

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1914905	SBF	Blanc de méthode	Fluorène	2018/07/11		85	%
			Indéno(1,2,3-cd)pyrène	2018/07/11		90	%
			Naphtalène	2018/07/11		82	%
			Phénanthrène	2018/07/11		88	%
			Pyrène	2018/07/11		87	%
			Acénaphtylène	2018/07/11		71	%
			Benzo(ghi)pérylène	2018/07/11		93	%
			1-Méthylnaphtalène	2018/07/11		82	%
			2-Méthylnaphtalène	2018/07/11		86	%
			D10-Anthracène	2018/07/11		89	%
			D12-Benzo(a)pyrène	2018/07/11		99	%
			D14-Terphenyl	2018/07/11		105	%
			D8-Acenaphthylene	2018/07/11		79	%
			D8-Naphtalène	2018/07/11		91	%
			Acénaphène	2018/07/11	<0.030		ug/L
			Anthracène	2018/07/11	<0.012		ug/L
			Benzo(a)anthracène	2018/07/11	<0.018		ug/L
			Benzo(b)fluoranthène	2018/07/11	<0.060		ug/L
			Benzo(j)fluoranthène	2018/07/11	<0.060		ug/L
			Benzo(k)fluoranthène	2018/07/11	<0.060		ug/L
			Benzo(a)pyrène	2018/07/11	<0.0080		ug/L
			Chrysène	2018/07/11	<0.030		ug/L
			Dibenzo(a,h)anthracène	2018/07/11	<0.030		ug/L
			Fluoranthène	2018/07/11	<0.030		ug/L
			Fluorène	2018/07/11	<0.030		ug/L
			Indéno(1,2,3-cd)pyrène	2018/07/11	<0.030		ug/L
			Naphtalène	2018/07/11	<0.030		ug/L
			Phénanthrène	2018/07/11	<0.030		ug/L
Pyrène	2018/07/11	<0.020		ug/L			
Acénaphtylène	2018/07/11	<0.030		ug/L			
Benzo(ghi)pérylène	2018/07/11	<0.10		ug/L			
1-Méthylnaphtalène	2018/07/11	<0.10		ug/L			
2-Méthylnaphtalène	2018/07/11	<0.10		ug/L			
1915036	TS2	Blanc fortifié	1,4-Difluorobenzène	2018/07/11		99	%
			4-Bromofluorobenzène	2018/07/11		97	%
			D10-Ethylbenzène	2018/07/11		116	%
			D4-1,2-Dichloroéthane	2018/07/11		109	%
			Benzène	2018/07/11		106	%
			Toluène	2018/07/11		95	%
			Éthylbenzène	2018/07/11		109	%
			p+m-Xylène	2018/07/11		98	%
			o-Xylène	2018/07/11		102	%
			Xylènes (o,m,p)	2018/07/11		100	%
			F1 (C6-C10)	2018/07/11		107	%
			1915036	TS2	Blanc de méthode	1,4-Difluorobenzène	2018/07/11
4-Bromofluorobenzène	2018/07/11					97	%
D10-Ethylbenzène	2018/07/11					115	%
D4-1,2-Dichloroéthane	2018/07/11					107	%
Benzène	2018/07/11	<0.40					ug/L
Toluène	2018/07/11	<0.40					ug/L
Éthylbenzène	2018/07/11	<0.40		ug/L			

Dossier Maxxam: B827240
Date du rapport: 2018/07/13

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			p+m-Xylène	2018/07/11	<0.80		ug/L
			o-Xylène	2018/07/11	<0.40		ug/L
			Xylènes (o,m,p)	2018/07/11	<0.80		ug/L
			F1 (C6-C10)	2018/07/11	<100		ug/L
			F1 (C6-C10) - BTEX	2018/07/11	<100		ug/L
1916146	ABE	Blanc fortifié	1,4-Difluorobenzène	2018/07/13		102	%
			4-Bromofluorobenzène	2018/07/13		96	%
			D10-Ethylbenzène	2018/07/13		108	%
			D4-1,2-Dichloroéthane	2018/07/13		110	%
			Benzène	2018/07/13		93	%
			Toluène	2018/07/13		82	%
			Éthylbenzène	2018/07/13		95	%
			p+m-Xylène	2018/07/13		84	%
			o-Xylène	2018/07/13		87	%
			Xylènes (o,m,p)	2018/07/13		86	%
			F1 (C6-C10)	2018/07/13		92	%
1916146	ABE	Blanc de méthode	1,4-Difluorobenzène	2018/07/13		94	%
			4-Bromofluorobenzène	2018/07/13		99	%
			D10-Ethylbenzène	2018/07/13		102	%
			D4-1,2-Dichloroéthane	2018/07/13		102	%
			Benzène	2018/07/13	<0.40		ug/L
			Toluène	2018/07/13	<0.40		ug/L
			Éthylbenzène	2018/07/13	<0.40		ug/L
			p+m-Xylène	2018/07/13	<0.80		ug/L
			o-Xylène	2018/07/13	<0.40		ug/L
			Xylènes (o,m,p)	2018/07/13	<0.80		ug/L
			F1 (C6-C10)	2018/07/13	<100		ug/L
			F1 (C6-C10) - BTEX	2018/07/13	<100		ug/L

Blanc fortifié: Un blanc, d'une matrice exempte de contaminants, auquel a été ajouté une quantité connue d'analyte provenant généralement d'une deuxième source. Utilisé pour évaluer la précision de la méthode.

Blanc de méthode: Une partie aliquote de matrice pure soumise au même processus analytique que les échantillons, du prétraitement au dosage. Sert à évaluer toutes contaminations du laboratoire.

Surrogate: Composé se comportant de façon similaire aux composés analysés et ajouté à l'échantillon avant l'analyse. Sert à évaluer la qualité de l'extraction.

Réc = Récupération

Dossier Maxxam: B827240
Date du rapport: 2018/07/13

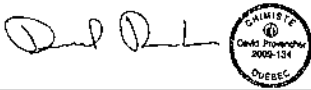
Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

PAGE DES SIGNATURES DE VALIDATION

Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:



Christian Guiang, B.Sc., Chimiste



David Provencher, B.Sc., Chimiste, Analyste Senior



Francois Faucher, B.Sc., Chimiste



Mathieu Letourneau, B.Sc., Chimiste, Spécialiste scientifique

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Votre # du projet: P-0014860-0-00-100-04

Adresse du site: WASKAGANISH

Votre # Bordereau: E-915938

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/20

Rapport: R2384400

Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B827762

Reçu: 2018/07/09, 14:00

Matrice: SOL
Nombre d'échantillons reçus: 4

Analyses	Quantité	Date de l' extraction	Date Analysé	Méthode de laboratoire	Référence Primaire
Hydrocarbures pétroliers (C10-C50)	2	2018/07/12	2018/07/13	QUE SOP-00210	MA400-HYD 1.1 R3 m
Hydrocarbures pétroliers (C10-C50) (1)	2	2018/07/13	2018/07/13	STL SOP-00172	MA.400-HYD. 1.1 R3 m
CCME F1/BTEX-MeOH sur le terrain (1, 2)	2	N/A	2018/07/19	STL SOP-00131	CCME PHC-CWS m
Hydrocarbures pétroliers (F2-F4) (1, 2)	2	2018/07/13	2018/07/13	STL SOP-00170	CCME PHC-CWS m
Interprétation des produits pétroliers	2	N/A	2018/07/13		MA408-IdePet 1.0 R1m
HAM-Conservation au MeOH sur le terrain (3)	1	N/A	2018/07/17	QUE SOP-00202	MA.400-COV 2.0 R4 m
HAM-Conservation au MeOH sur le terrain (3)	1	N/A	2018/07/19	QUE SOP-00202	MA.400-COV 2.0 R4 m
HAP (CCME)	1	2018/07/12	2018/07/13	QUE SOP-00208	MA.400-HAP 1.1 R5 m
HAP (CCME) (1)	1	2018/07/13	2018/07/13	STL SOP-00178	MA.400-HAP 1.1 R5 m

Remarques:

Les laboratoires Maxxam sont accrédités ISO/IEC 17025:2005. Sauf indication contraire, les méthodes d'analyses utilisées par Maxxam s'inspirent des méthodes de référence d'organismes provinciaux, fédéraux et américains, tel que le CCME, le MDDELCC, l'EPA et l'APHA.

Toutes les analyses présentées ont été réalisées conformément aux procédures et aux pratiques relatives à la méthodologie, à l'assurance qualité et au contrôle de la qualité généralement appliquées par les employés de Maxxam (sauf s'il en a été convenu autrement par écrit entre le client et Maxxam). Toutes les données de laboratoire rencontrent les contrôles statistiques et respectent tous les critères du CQ et les critères de performance des méthodes, sauf s'il en a été signalé autrement. Tous les blancs de méthode sont rapportés, toutefois, les données des échantillons correspondants ne sont pas corrigées pour la valeur du blanc, sauf indication contraire.

Les responsabilités de Maxxam sont restreintes au coût réel de l'analyse, sauf s'il en a été convenu autrement par écrit. Il n'existe aucune autre garantie, explicite ou implicite. Le client a fait appel à Maxxam pour l'analyse de ses échantillons conformément aux méthodes de référence mentionnées dans ce rapport. L'interprétation et l'utilisation des résultats sont sous l'entière responsabilité du client et ne font pas partie des services offerts par Maxxam, sauf si convenu autrement par écrit.

Les résultats des échantillons solides, sauf les biotes, sont rapportés en fonction de la masse sèche, sauf indication contraire. Les analyses organiques ne sont pas corrigées en fonction de la récupération, sauf pour les méthodes de dilution isotopique.

Les résultats s'appliquent seulement aux échantillons analysés.

Le présent rapport ne doit pas être reproduit, sinon dans son intégralité, sans le consentement écrit du laboratoire.

Lorsque la méthode de référence comprend un suffixe « m », cela signifie que la méthode d'analyse du laboratoire contient des modifications validées et appliquées afin d'améliorer la performance de la méthode de référence.

Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Votre # Bordereau: E-915938

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/20
Rapport: R2384400
Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B827762

Reçu: 2018/07/09, 14:00

Notez: Les données brutes sont utilisées pour le calcul du RPD (% d'écart relatif). L'arrondissement des résultats finaux peut expliquer la variation apparente.

(1) Cette analyse a été effectuée par Maxxam -Ville St. Laurent

(2) Tous les résultats pour le CCME répondent aux critères exigés, sauf indication contraire dans le rapport. Les méthodes du SP-HCP utilisées par Maxxam respectent tous les éléments imposés par la méthode de référence et les éléments se rapportant à la performance ont été validés. Toutes les modifications ont été validées et jugées équivalentes d'après l'Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods, September 2003. La documentation est fournie sur demande. Différence par rapport à la Méthode de référence pour le standard pancanadien relatif aux hydrocarbures pétroliers dans le sol – méthode du 1er volet : les résultats pour les fractions F2/F3/F4 sont rapportés à l'aide d'une extraction à froid par solvant au lieu d'une extraction avec un appareil Soxhlet.

(3) Aucune date d'extraction n'est fournie pour les analyses de F1/BTEX et COV lorsque les sols sont conservés dans le méthanol sur le terrain. La date d'extraction correspond à la date d'échantillonnage à moins d'indication contraire.

Note : Les paramètres inclus dans le présent certificat sont accrédités par le MDDELCC, à moins d'indication contraire.

clé de cryptage

Veillez adresser toute question concernant ce certificat d'analyse à votre chargé(e) de projets

Alain Lemieux, Chargé de projets

Courriel: ALemieux@maxxam.ca

Téléphone (418)658-5784 Ext:7066451

=====
Ce rapport a été produit et distribué en utilisant une procédure automatisée sécuritaire.

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam					FM9506		FM9507			
Date d'échantillonnage					2018/06/27		2018/06/27			
# Bordereau					E-915938		E-915938			
	Unités	A	B	C	WK-MA-18-9-B	CR	WK-MA-18-10-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	2.4		3.5		N/A	N/A
VOLATILS										
Benzène	mg/kg	0.2	0.5	5	<0.0050		<0.0050		0.0050	1917211
Toluène	mg/kg	0.2	3	30	<0.020		<0.020		0.020	1917211
Éthylbenzène	mg/kg	0.2	5	50	<0.010		<0.010		0.010	1917211
o-Xylène	mg/kg	-	-	-	<0.020		<0.020		0.020	1917211
p+m-Xylène	mg/kg	-	-	-	<0.040		<0.040		0.040	1917211
Xylènes (o,m,p) †	mg/kg	0.4	5	50	<0.040		<0.040		0.040	1917211
F1 (C6-C10) †	mg/kg	-	-	-	<10		<10		10	1917211
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	<10		<10		10	1917211
Récupération des Surrogates (%)										
1,4-Difluorobenzène	%	-	-	-	100		99		N/A	1917211
4-Bromofluorobenzène	%	-	-	-	99		101		N/A	1917211
D10-Ethylbenzène	%	-	-	-	98		90		N/A	1917211
D4-1,2-Dichloroéthane	%	-	-	-	97		95		N/A	1917211
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre										

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam					FM9506			FM9507		FM9507			
Date d'échantillonnage					2018/06/27			2018/06/27		2018/06/27			
# Bordereau					E-915938			E-915938		E-915938			
	Unités	A	B	C	WK-MA-18-9-B	CR	Lot CQ	WK-MA-18-10-A	CR	WK-MA-18-10-A Dup. de Lab.	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	2.4		N/A	3.5		3.5		N/A	N/A
HAP													
Acénaphhtène	mg/kg	0.1	10	100	<0.10		1916091	<0.10		<0.10		0.10	1915843
Acénaphthylène	mg/kg	0.1	10	100	<0.10		1916091	<0.10		<0.10		0.10	1915843
Anthracène	mg/kg	0.1	10	100	<0.10		1916091	<0.10		<0.10		0.10	1915843
Benzo(a)anthracène	mg/kg	0.1	1	10	<0.050		1916091	<0.050		<0.050		0.050	1915843
Benzo(a)pyrène	mg/kg	0.1	1	10	<0.050		1916091	<0.050		<0.050		0.050	1915843
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	<0.050		1916091	<0.050		<0.050		0.050	1915843
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	<0.050		1916091	<0.050		<0.050		0.050	1915843
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	<0.050		1916091	<0.050		<0.050		0.050	1915843
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	<0.050		1916091	<0.050		<0.050		0.050	1915843
Benzo(c)phénanthrène	mg/kg	0.1	1	10	<0.10		1916091	<0.10		<0.10		0.10	1915843
Benzo(ghi)pérylène	mg/kg	0.1	1	10	<0.050		1916091	<0.050		<0.050		0.050	1915843
Chrysène	mg/kg	0.1	1	10	<0.050		1916091	<0.050		<0.050		0.050	1915843
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	<0.050		1916091	<0.050		<0.050		0.050	1915843
Dibenzo(a,i)pyrène	mg/kg	0.1	1	10	<0.10		1916091	<0.10		<0.10		0.10	1915843
Dibenzo(a,h)pyrène	mg/kg	0.1	1	10	<0.10		1916091	<0.10		<0.10		0.10	1915843
Dibenzo(a,l)pyrène	mg/kg	0.1	1	10	<0.10		1916091	<0.10		<0.10		0.10	1915843
7,12-Diméthylbenzanthracène	mg/kg	0.1	1	10	<0.10		1916091	<0.10		<0.10		0.10	1915843
Fluoranthène	mg/kg	0.1	10	100	<0.10		1916091	<0.10		<0.10		0.10	1915843
Fluorène	mg/kg	0.1	10	100	<0.10		1916091	<0.10		<0.10		0.10	1915843
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	<0.050		1916091	<0.050		<0.050		0.050	1915843
3-Méthylcholanthrène	mg/kg	0.1	1	10	<0.10		1916091	<0.10		<0.10		0.10	1915843
Naphtalène	mg/kg	0.1	5	50	<0.010		1916091	<0.010		<0.010		0.010	1915843
Phénanthrène	mg/kg	0.1	5	50	<0.040		1916091	<0.040		<0.040		0.040	1915843
Pyrène	mg/kg	0.1	10	100	<0.10		1916091	<0.10		<0.10		0.10	1915843
2-Méthylnaphtalène	mg/kg	0.1	1	10	<0.10		1916091	<0.10		<0.10		0.10	1915843
1-Méthylnaphtalène	mg/kg	0.1	1	10	<0.10		1916091	<0.10		<0.10		0.10	1915843
1,3-Diméthylnaphtalène	mg/kg	0.1	1	10	<0.10		1916091	<0.10		<0.10		0.10	1915843
2,3,5-Triméthylnaphtalène	mg/kg	0.1	1	10	<0.10		1916091	<0.10		<0.10		0.10	1915843
Récupération des Surrogates (%)													
D10-Anthracène	%	-	-	-	94		1916091	79		79		N/A	1915843
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité Duplicata de laboratoire N/A = Non Applicable † Accréditation non existante pour ce paramètre													

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam					FM9506			FM9507		FM9507			
Date d'échantillonnage					2018/06/27			2018/06/27		2018/06/27			
# Bordereau					E-915938			E-915938		E-915938			
	Unités	A	B	C	WK-MA-18-9-B	CR	Lot CQ	WK-MA-18-10-A	CR	WK-MA-18-10-A Dup. de Lab.	CR	LDR	Lot CQ
D12-Benzo(a)pyrène	%	-	-	-	92		1916091	77		77		N/A	1915843
D14-Terphenyl	%	-	-	-	98		1916091	81		80		N/A	1915843
D8-Acenaphthylene	%	-	-	-	82		1916091	80		80		N/A	1915843
D8-Naphtalène	%	-	-	-	88		1916091	80		80		N/A	1915843

LDR = Limite de détection rapportée

Lot CQ = Lot contrôle qualité

Duplicata de laboratoire

N/A = Non Applicable

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam					FM9505		FM9505			FM9506			
Date d'échantillonnage					2018/06/27		2018/06/27			2018/06/27			
# Bordereau					E-915938		E-915938			E-915938			
	Unités	A	B	C	WK-MA-18-9-A	CR	WK-MA-18-9-A	CR	Lot CQ	WK-MA-18-9-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	2.5		2.5		N/A	2.4		N/A	N/A
HYDROCARBURES PÉTROLIERS													
Hydrocarbures pétroliers (C10-C50)	mg/kg	300	700	3500	<100		<100		1915837	<100		100	1916089
F2 (C10-C16) †	mg/kg	-	-	-	N/A		N/A		N/A	<10		10	1916095
F3 (C16-C34) †	mg/kg	-	-	-	N/A		N/A		N/A	<50		50	1916095
F4 (C34-C50) †	mg/kg	-	-	-	N/A		N/A		N/A	<50		50	1916095
Ligne de base atteinte à C50 †	mg/kg	-	-	-	N/A		N/A		N/A	OUI		N/A	1916095
Récupération des Surrogates (%)													
1-Chlorooctadécane	%	-	-	-	86		87		1915837	83		N/A	1916089
O-Terphenyl	%	-	-	-	N/A		N/A		N/A	81		N/A	1916095
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité Duplicata de laboratoire N/A = Non Applicable † Accréditation non existante pour ce paramètre													

ID Maxxam					FM9507		FM9507						
Date d'échantillonnage					2018/06/27		2018/06/27						
# Bordereau					E-915938		E-915938						
	Unités	A	B	C	WK-MA-18-10-A	CR	WK-MA-18-10-A	CR	LDR	Lot CQ			
% HUMIDITÉ	%	-	-	-	3.5		3.5		N/A	N/A			
HYDROCARBURES PÉTROLIERS													
Hydrocarbures pétroliers (C10-C50)	mg/kg	300	700	3500	<100		<100			100		1915837	
Récupération des Surrogates (%)													
1-Chlorooctadécane	%	-	-	-	86		90			N/A		1915837	
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité Duplicata de laboratoire N/A = Non Applicable													

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam					FM9508			
Date d'échantillonnage					2018/06/27			
# Bordereau					E-915938			
	Unités	A	B	C	WK-MA-18-10-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	5.0		N/A	N/A
HYDROCARBURES PÉTROLIERS								
Hydrocarbures pétroliers (C10-C50)	mg/kg	300	700	3500	<100		100	1916089
F2 (C10-C16) †	mg/kg	-	-	-	<10		10	1916095
F3 (C16-C34) †	mg/kg	-	-	-	<50		50	1916095
F4 (C34-C50) †	mg/kg	-	-	-	<50		50	1916095
Ligne de base atteinte à C50 †	mg/kg	-	-	-	OUI		N/A	1916095
Récupération des Surrogates (%)								
1-Chlorooctadécane	%	-	-	-	83		N/A	1916089
O-Terphenyl	%	-	-	-	82		N/A	1916095
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre								

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (SOL)

ID Maxxam					FM9505			FM9507			
Date d'échantillonnage					2018/06/27			2018/06/27			
# Bordereau					E-915938			E-915938			
	Unités	A	B	C	WK-MA-18-9-A	CR	Lot CQ	WK-MA-18-10-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	2.5		N/A	3.5		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.2	0.5	5	<0.10		1917914	<0.10		0.10	1917200
Chlorobenzène	mg/kg	0.2	1	10	<0.20		1917914	<0.20		0.20	1917200
Dichloro-1,2 benzène	mg/kg	0.2	1	10	<0.20		1917914	<0.20		0.20	1917200
Dichloro-1,3 benzène	mg/kg	0.2	1	10	<0.20		1917914	<0.20		0.20	1917200
Dichloro-1,4 benzène	mg/kg	0.2	1	10	<0.20		1917914	<0.20		0.20	1917200
Éthylbenzène	mg/kg	0.2	5	50	<0.20		1917914	<0.20		0.20	1917200
Styrène	mg/kg	0.2	5	50	<0.20		1917914	<0.20		0.20	1917200
Toluène	mg/kg	0.2	3	30	<0.20		1917914	<0.20		0.20	1917200
Xylènes (o,m,p) †	mg/kg	0.4	5	50	<0.20		1917914	<0.20		0.20	1917200
Récupération des Surrogates (%)											
4-Bromofluorobenzène	%	-	-	-	107		1917914	101		N/A	1917200
D10-Ethylbenzène	%	-	-	-	103		1917914	123		N/A	1917200
D4-1,2-Dichloroéthane	%	-	-	-	94		1917914	110		N/A	1917200
D8-Toluène	%	-	-	-	96		1917914	103		N/A	1917200
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

INTERPRETATION QUALITATIVE
Hydrocarbures pétroliers (C10-C50)

Échantillon	Interpretation Qualitative
WK-MA-18-9-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-9-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-10-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-10-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

REMARQUES GÉNÉRALES

Tous les résultats sont calculés sur une base sèche excepté lorsque non-applicable.

Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FM9505, FM9506

Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FM9506

HAP (CCME): Échantillon reçu congelé.: FM9506

CCME F1/BTEX-MeOH sur le terrain: Analyses demandées avec délai de conservation dépassé: FM9506

Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FM9507

HAP (CCME): Échantillon reçu congelé.: FM9507

CCME F1/BTEX-MeOH sur le terrain: Analyses demandées avec délai de conservation dépassé: FM9507

Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FM9508

Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FM9508

A,B,C,CR: Les critères des sols proviennent de l'Annexe 2 du « Guide d'intervention-Protection des sols et réhabilitation des terrains contaminés. MDDELCC, 2016. » et intitulé « Grille des critères génériques pour les sols ». Les critères des sols sont ceux de la province géologique des Basses-Terres du Saint-Laurent.

Les critères A et B pour l'eau souterraine proviennent de l'annexe 7 intitulé « Grille des critères de qualité des eaux souterraines » du guide d'intervention mentionné plus haut. A=Eau de consommation; B=Résurgence dans l'eau de surface

Ces références ne sont rapportées qu'à titre indicatif et ne doivent être interprétées dans aucun autre contexte.

- = Ce composé ne fait pas partie de la réglementation.

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

Noter que les résultats totaux sont arrondis à deux chiffres significatifs.

Veillez noter que les résultats ci-dessus ont été corrigés pour le blanc d'instrument.

L'extraction a été faite à délai de conservation dépassé pour les échantillons FM9606-03 et FM9607-03.

HAP PAR GCMS (SOL)

Les résultats bruts non-arrondis sont utilisés dans le calcul du benzo(b+j+k)fluoranthène. Ce résultat total est alors arrondi à deux chiffres significatifs.

HYDROCARBURES PAR GCFID (SOL)

La similitude des hydrocarbures rapportés est obtenue par une comparaison visuelle du chromatogramme de l'échantillon avec la bibliothèque des chromatogrammes des produits de référence. Comme certaines variables tels que les multiproduits, le degré et le type de dégradation et la présence d'hydrocarbures non pétrogénétiques qui ne peuvent pas être reproduites dans les spectres de référence, l'information doit être vue comme qualitative et, en conséquence, Maxxam ne peut aucunement être tenu responsable des conclusions formulées pour ces données.

HAM PAR GC/MS (SOL)

L'extraction a été faite à délai de conservation dépassé pour l'échantillon FM9507.

Les résultats ne se rapportent qu'aux échantillons soumis pour analyse

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1915837	VLP	Blanc fortifié	1-Chlorooctadécane	2018/07/13		99	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/13		72	%
1915837	VLP	Blanc de méthode	1-Chlorooctadécane	2018/07/12		95	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/12	<100		mg/kg
1915843	VLP	Blanc fortifié	D10-Anthracène	2018/07/12		79	%
			D12-Benzo(a)pyrène	2018/07/12		80	%
			D14-Terphenyl	2018/07/12		83	%
			D8-Acenaphthylene	2018/07/12		80	%
			D8-Naphtalène	2018/07/12		82	%
			Acénaphène	2018/07/12		69	%
			Acénaphtylène	2018/07/12		72	%
			Anthracène	2018/07/12		73	%
			Benzo(a)anthracène	2018/07/12		66	%
			Benzo(a)pyrène	2018/07/12		75	%
			Benzo(b)fluoranthène	2018/07/12		71	%
			Benzo(j)fluoranthène	2018/07/12		76	%
			Benzo(k)fluoranthène	2018/07/12		62	%
			Benzo(b+j+k)fluoranthène	2018/07/12		70	%
			Benzo(c)phénanthrène	2018/07/12		71	%
			Benzo(ghi)pérylène	2018/07/12		72	%
			Chrysène	2018/07/12		68	%
			Dibenzo(a,h)anthracène	2018/07/12		72	%
			Dibenzo(a,i)pyrène	2018/07/12		59	%
			Dibenzo(a,h)pyrène	2018/07/12		60	%
			Dibenzo(a,l)pyrène	2018/07/12		81	%
			7,12-Diméthylbenzanthracène	2018/07/12		64	%
			Fluoranthène	2018/07/12		71	%
			Fluorène	2018/07/12		73	%
			Indéno(1,2,3-cd)pyrène	2018/07/12		72	%
			3-Méthylcholanthrène	2018/07/12		62	%
			Naphtalène	2018/07/12		80	%
			Phénanthrène	2018/07/12		73	%
			Pyrène	2018/07/12		70	%
			2-Méthylnaphtalène	2018/07/12		79	%
			1-Méthylnaphtalène	2018/07/12		77	%
			1,3-Diméthylnaphtalène	2018/07/12		76	%
			2,3,5-Triméthylnaphtalène	2018/07/12		74	%
1915843	VLP	Blanc de méthode	D10-Anthracène	2018/07/12		86	%
			D12-Benzo(a)pyrène	2018/07/12		82	%
			D14-Terphenyl	2018/07/12		85	%
			D8-Acenaphthylene	2018/07/12		85	%
			D8-Naphtalène	2018/07/12		88	%
			Acénaphène	2018/07/12	<0.10		mg/kg
			Acénaphtylène	2018/07/12	<0.10		mg/kg
			Anthracène	2018/07/12	<0.10		mg/kg
			Benzo(a)anthracène	2018/07/12	<0.050		mg/kg
			Benzo(a)pyrène	2018/07/12	<0.050		mg/kg
			Benzo(b)fluoranthène	2018/07/12	<0.050		mg/kg
			Benzo(j)fluoranthène	2018/07/12	<0.050		mg/kg
			Benzo(k)fluoranthène	2018/07/12	<0.050		mg/kg
			Benzo(b+j+k)fluoranthène	2018/07/12	ND		mg/kg

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			Benzo(c)phénanthrène	2018/07/12	<0.10		mg/kg
			Benzo(ghi)pérylène	2018/07/12	<0.050		mg/kg
			Chrysène	2018/07/12	<0.050		mg/kg
			Dibenzo(a,h)anthracène	2018/07/12	<0.050		mg/kg
			Dibenzo(a,i)pyrène	2018/07/12	<0.10		mg/kg
			Dibenzo(a,h)pyrène	2018/07/12	<0.10		mg/kg
			Dibenzo(a,l)pyrène	2018/07/12	<0.10		mg/kg
			7,12-Diméthylbenzanthracène	2018/07/12	<0.10		mg/kg
			Fluoranthène	2018/07/12	<0.10		mg/kg
			Fluorène	2018/07/12	<0.10		mg/kg
			Indéno(1,2,3-cd)pyrène	2018/07/12	<0.050		mg/kg
			3-Méthylcholanthrène	2018/07/12	<0.10		mg/kg
			Naphtalène	2018/07/12	<0.010		mg/kg
			Phénanthrène	2018/07/12	<0.040		mg/kg
			Pyrène	2018/07/12	<0.10		mg/kg
			2-Méthylnaphtalène	2018/07/12	<0.10		mg/kg
			1-Méthylnaphtalène	2018/07/12	<0.10		mg/kg
			1,3-Diméthylnaphtalène	2018/07/12	<0.10		mg/kg
			2,3,5-Triméthylnaphtalène	2018/07/12	<0.10		mg/kg
1916089	RDH	Blanc fortifié	1-Chlorooctadécane	2018/07/13		76	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/13		88	%
1916089	RDH	Blanc de méthode	1-Chlorooctadécane	2018/07/13		80	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/13	<100		mg/kg
1916091	FMA	Blanc fortifié	D10-Anthracène	2018/07/13		92	%
			D12-Benzo(a)pyrène	2018/07/13		92	%
			D14-Terphenyl	2018/07/13		96	%
			D8-Acenaphthylene	2018/07/13		80	%
			D8-Naphtalène	2018/07/13		88	%
			Acénaphène	2018/07/13		88	%
			Acénaphtylène	2018/07/13		96	%
			Anthracène	2018/07/13		100	%
			Benzo(a)anthracène	2018/07/13		92	%
			Benzo(a)pyrène	2018/07/13		93	%
			Benzo(b)fluoranthène	2018/07/13		96	%
			Benzo(j)fluoranthène	2018/07/13		103	%
			Benzo(k)fluoranthène	2018/07/13		102	%
			Benzo(b+j+k)fluoranthène	2018/07/13		100	%
			Benzo(c)phénanthrène	2018/07/13		94	%
			Benzo(ghi)pérylène	2018/07/13		94	%
			Chrysène	2018/07/13		93	%
			Dibenzo(a,h)anthracène	2018/07/13		92	%
			Dibenzo(a,i)pyrène	2018/07/13		72	%
			Dibenzo(a,h)pyrène	2018/07/13		74	%
			Dibenzo(a,l)pyrène	2018/07/13		96	%
			7,12-Diméthylbenzanthracène	2018/07/13		91	%
			Fluoranthène	2018/07/13		96	%
			Fluorène	2018/07/13		96	%
			Indéno(1,2,3-cd)pyrène	2018/07/13		90	%
			3-Méthylcholanthrène	2018/07/13		81	%
			Naphtalène	2018/07/13		95	%
			Phénanthrène	2018/07/13		95	%

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			Pyrène	2018/07/13		92	%
			2-Méthylnaphtalène	2018/07/13		97	%
			1-Méthylnaphtalène	2018/07/13		90	%
			1,3-Diméthylnaphtalène	2018/07/13		93	%
			2,3,5-Triméthylnaphtalène	2018/07/13		96	%
1916091	FMA	Blanc de méthode	D10-Anthracène	2018/07/13		98	%
			D12-Benzo(a)pyrène	2018/07/13		98	%
			D14-Terphenyl	2018/07/13		100	%
			D8-Acenaphthylene	2018/07/13		88	%
			D8-Naphtalène	2018/07/13		94	%
			Acénaphène	2018/07/13	<0.10		mg/kg
			Acénaphthylène	2018/07/13	<0.10		mg/kg
			Anthracène	2018/07/13	<0.10		mg/kg
			Benzo(a)anthracène	2018/07/13	<0.050		mg/kg
			Benzo(a)pyrène	2018/07/13	<0.050		mg/kg
			Benzo(b)fluoranthène	2018/07/13	<0.050		mg/kg
			Benzo(j)fluoranthène	2018/07/13	<0.050		mg/kg
			Benzo(k)fluoranthène	2018/07/13	<0.050		mg/kg
			Benzo(b+j+k)fluoranthène	2018/07/13	<0.050		mg/kg
			Benzo(c)phénanthrène	2018/07/13	<0.10		mg/kg
			Benzo(ghi)pérylène	2018/07/13	<0.050		mg/kg
			Chrysène	2018/07/13	<0.050		mg/kg
			Dibenzo(a,h)anthracène	2018/07/13	<0.050		mg/kg
			Dibenzo(a,i)pyrène	2018/07/13	<0.10		mg/kg
			Dibenzo(a,h)pyrène	2018/07/13	<0.10		mg/kg
			Dibenzo(a,l)pyrène	2018/07/13	<0.10		mg/kg
			7,12-Diméthylbenzanthracène	2018/07/13	<0.10		mg/kg
			Fluoranthène	2018/07/13	<0.10		mg/kg
			Fluorène	2018/07/13	<0.10		mg/kg
			Indéno(1,2,3-cd)pyrène	2018/07/13	<0.050		mg/kg
			3-Méthylcholanthrène	2018/07/13	<0.10		mg/kg
			Naphtalène	2018/07/13	<0.010		mg/kg
			Phénanthrène	2018/07/13	<0.040		mg/kg
			Pyrène	2018/07/13	<0.10		mg/kg
			2-Méthylnaphtalène	2018/07/13	<0.10		mg/kg
			1-Méthylnaphtalène	2018/07/13	<0.10		mg/kg
			1,3-Diméthylnaphtalène	2018/07/13	<0.10		mg/kg
			2,3,5-Triméthylnaphtalène	2018/07/13	<0.10		mg/kg
1916095	MP	Blanc fortifié	O-Terphenyl	2018/07/13		77	%
			F2 (C10-C16)	2018/07/13		93	%
			F3 (C16-C34)	2018/07/13		93	%
			F4 (C34-C50)	2018/07/13		93	%
1916095	MP	Blanc de méthode	O-Terphenyl	2018/07/13		88	%
			F2 (C10-C16)	2018/07/13	<10		mg/kg
			F3 (C16-C34)	2018/07/13	<50		mg/kg
			F4 (C34-C50)	2018/07/13	<50		mg/kg
1917200	FF	Blanc fortifié	4-Bromofluorobenzène	2018/07/17		101	%
			D10-Ethylbenzène	2018/07/17		116	%
			D4-1,2-Dichloroéthane	2018/07/17		97	%
			D8-Toluène	2018/07/17		105	%
			Benzène	2018/07/17		117	%

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			Chlorobenzène	2018/07/17		119	%
			Dichloro-1,2 benzène	2018/07/17		123	%
			Dichloro-1,3 benzène	2018/07/17		124	%
			Dichloro-1,4 benzène	2018/07/17		125	%
			Éthylbenzène	2018/07/17		122	%
			Styrène	2018/07/17		119	%
			Toluène	2018/07/17		118	%
			Xylènes (o,m,p)	2018/07/17		123	%
1917200	FF	Blanc de méthode	4-Bromofluorobenzène	2018/07/17		100	%
			D10-Ethylbenzène	2018/07/17		117	%
			D4-1,2-Dichloroéthane	2018/07/17		99	%
			D8-Toluène	2018/07/17		105	%
			Benzène	2018/07/17	<0.10		mg/kg
			Chlorobenzène	2018/07/17	<0.20		mg/kg
			Dichloro-1,2 benzène	2018/07/17	<0.20		mg/kg
			Dichloro-1,3 benzène	2018/07/17	<0.20		mg/kg
			Dichloro-1,4 benzène	2018/07/17	<0.20		mg/kg
			Éthylbenzène	2018/07/17	<0.20		mg/kg
			Styrène	2018/07/17	<0.20		mg/kg
			Toluène	2018/07/17	<0.20		mg/kg
			Xylènes (o,m,p)	2018/07/17	<0.20		mg/kg
1917211	NTD	Blanc fortifié	1,4-Difluorobenzène	2018/07/19		105	%
			4-Bromofluorobenzène	2018/07/19		100	%
			D10-Ethylbenzène	2018/07/19		90	%
			D4-1,2-Dichloroéthane	2018/07/19		105	%
			Benzène	2018/07/19		107	%
			Toluène	2018/07/19		90	%
			Éthylbenzène	2018/07/19		94	%
			o-Xylène	2018/07/19		88	%
			p+m-Xylène	2018/07/19		86	%
			Xylènes (o,m,p)	2018/07/19		87	%
			F1 (C6-C10)	2018/07/19		94	%
1917211	NTD	Blanc de méthode	1,4-Difluorobenzène	2018/07/19		102	%
			4-Bromofluorobenzène	2018/07/19		101	%
			D10-Ethylbenzène	2018/07/19		92	%
			D4-1,2-Dichloroéthane	2018/07/19		98	%
			Benzène	2018/07/19	<0.0050		mg/kg
			Toluène	2018/07/19	<0.020		mg/kg
			Éthylbenzène	2018/07/19	<0.010		mg/kg
			o-Xylène	2018/07/19	<0.020		mg/kg
			p+m-Xylène	2018/07/19	<0.040		mg/kg
			Xylènes (o,m,p)	2018/07/19	<0.040		mg/kg
			F1 (C6-C10)	2018/07/19	<10		mg/kg
			F1 (C6-C10) - BTEX	2018/07/19	<10		mg/kg
1917914	SBF	Blanc fortifié	4-Bromofluorobenzène	2018/07/19		107	%
			D10-Ethylbenzène	2018/07/19		102	%
			D4-1,2-Dichloroéthane	2018/07/19		88	%
			D8-Toluène	2018/07/19		97	%
			Benzène	2018/07/19		88	%
			Chlorobenzène	2018/07/19		98	%
			Dichloro-1,2 benzène	2018/07/19		92	%

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1917914	SBF	Blanc de méthode	Dichloro-1,3 benzène	2018/07/19		98	%
			Dichloro-1,4 benzène	2018/07/19		95	%
			Éthylbenzène	2018/07/19		90	%
			Styrène	2018/07/19		89	%
			Toluène	2018/07/19		91	%
			Xylènes (o,m,p)	2018/07/19		87	%
			4-Bromofluorobenzène	2018/07/19		105	%
			D10-Ethylbenzène	2018/07/19		103	%
			D4-1,2-Dichloroéthane	2018/07/19		93	%
			D8-Toluène	2018/07/19		95	%
			Benzène	2018/07/19	<0.10		mg/kg
			Chlorobenzène	2018/07/19	<0.20		mg/kg
			Dichloro-1,2 benzène	2018/07/19	<0.20		mg/kg
			Dichloro-1,3 benzène	2018/07/19	<0.20		mg/kg
			Dichloro-1,4 benzène	2018/07/19	<0.20		mg/kg
			Éthylbenzène	2018/07/19	<0.20		mg/kg
			Styrène	2018/07/19	<0.20		mg/kg
			Toluène	2018/07/19	<0.20		mg/kg
			Xylènes (o,m,p)	2018/07/19	<0.20		mg/kg

Blanc fortifié: Un blanc, d'une matrice exempte de contaminants, auquel a été ajouté une quantité connue d'analyte provenant généralement d'une deuxième source. Utilisé pour évaluer la précision de la méthode.

Blanc de méthode: Une partie aliquote de matrice pure soumise au même processus analytique que les échantillons, du prétraitement au dosage. Sert à évaluer toutes contaminations du laboratoire.

Surrogate: Composé se comportant de façon similaire aux composés analysés et ajouté à l'échantillon avant l'analyse. Sert à évaluer la qualité de l'extraction.

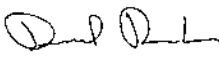

Réc = Récupération

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

PAGE DES SIGNATURES DE VALIDATION

Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:

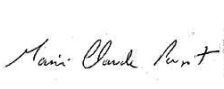

David Provencher, B.Sc., Chimiste, Analyste Senior




Francois Faucher, B.Sc., Chimiste




Maria Dragna Apopei, B.Sc., Chimiste



Marie-Claude Poupart, B.Sc., Chimiste




Mathieu Letourneau, B.Sc., Chimiste, Spécialiste scientifique




Michel Poulin, B.Sc., Chimiste

Nouredine Chafiaai, B.Sc., Chimiste

Dossier Maxxam: B827762
Date du rapport: 2018/07/20

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

PAGE DES SIGNATURES DE VALIDATION (SUITE)

Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Votre # du projet: P-0014860-0-00-100-04

Adresse du site: Waskaganish

Votre # Bordereau: 11618, 11617, 11619

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/19

Rapport: R2384005

Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B828064

Reçu: 2018/07/09, 14:00

Matrice: SOL
Nombre d'échantillons reçus: 13

Analyses	Quantité	Date de l'	Date	Méthode de laboratoire	Référence Primaire
		extraction	Analysé		
Hydrocarbures pétroliers (C10-C50)	2	2018/07/14	2018/07/14	QUE SOP-00210	MA400-HYD 1.1 R3 m
Hydrocarbures pétroliers (C10-C50) (1)	6	2018/07/16	2018/07/17	STL SOP-00172	MA.400-HYD. 1.1 R3 m
CCME F1/BTEX-MeOH sur le terrain (1, 2)	3	N/A	2018/07/17	STL SOP-00131	CCME PHC-CWS m
Hydrocarbures pétroliers (F2-F4) (1, 2)	1	2018/07/16	2018/07/16	STL SOP-00170	CCME PHC-CWS m
Hydrocarbures pétroliers (F2-F4) (1, 2)	5	2018/07/16	2018/07/17	STL SOP-00170	CCME PHC-CWS m
Interprétation des produits pétroliers	2	N/A	2018/07/13		MA408-IdePet 1.0 R1m
Hydrocarbures aromatiques monocycliques (1)	1	2018/07/16	2018/07/16	STL SOP-00145	MA.400-COV 2.0 R4 m
HAM-Conservation au MeOH sur le terrain (3)	2	N/A	2018/07/13	QUE SOP-00202	MA.400-COV 2.0 R4 m
HAM-Conservation au MeOH sur le terrain (3)	2	N/A	2018/07/14	QUE SOP-00202	MA.400-COV 2.0 R4 m
HAM-Conservation au MeOH sur le terrain (3)	1	N/A	2018/07/17	QUE SOP-00202	MA.400-COV 2.0 R4 m
Métaux extractibles totaux par ICP-MS (1)	1	2018/07/16	2018/07/17	STL SOP-00006	MA.200-Mét.1.2 R5 m
HAP (CCME) (1)	3	2018/07/16	2018/07/17	STL SOP-00178	MA.400-HAP 1.1 R5 m

Remarques:

Les laboratoires Maxxam sont accrédités ISO/IEC 17025:2005. Sauf indication contraire, les méthodes d'analyses utilisées par Maxxam s'inspirent des méthodes de référence d'organismes provinciaux, fédéraux et américains, tel que le CCME, le MDDELCC, l'EPA et l'APHA.

Toutes les analyses présentées ont été réalisées conformément aux procédures et aux pratiques relatives à la méthodologie, à l'assurance qualité et au contrôle de la qualité généralement appliquées par les employés de Maxxam (sauf s'il en a été convenu autrement par écrit entre le client et Maxxam). Toutes les données de laboratoire rencontrent les contrôles statistiques et respectent tous les critères du CQ et les critères de performance des méthodes, sauf s'il en a été signalé autrement. Tous les blancs de méthode sont rapportés, toutefois, les données des échantillons correspondants ne sont pas corrigées pour la valeur du blanc, sauf indication contraire.

Les responsabilités de Maxxam sont restreintes au coût réel de l'analyse, sauf s'il en a été convenu autrement par écrit. Il n'existe aucune autre garantie, explicite ou implicite. Le client a fait appel à Maxxam pour l'analyse de ses échantillons conformément aux méthodes de référence mentionnées dans ce rapport. L'interprétation et l'utilisation des résultats sont sous l'entière responsabilité du client et ne font pas partie des services offerts par Maxxam, sauf si convenu autrement par écrit.

Les résultats des échantillons solides, sauf les biotes, sont rapportés en fonction de la masse sèche, sauf indication contraire. Les analyses organiques ne sont pas corrigées en fonction de la récupération, sauf pour les méthodes de dilution isotopique.

Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Votre # Bordereau: 11618, 11617, 11619

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/19
Rapport: R2384005
Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B828064

Reçu: 2018/07/09, 14:00

Les résultats s'appliquent seulement aux échantillons analysés.

Le présent rapport ne doit pas être reproduit, sinon dans son intégralité, sans le consentement écrit du laboratoire.

Lorsque la méthode de référence comprend un suffixe « m », cela signifie que la méthode d'analyse du laboratoire contient des modifications validées et appliquées afin d'améliorer la performance de la méthode de référence.

Notez: Les données brutes sont utilisées pour le calcul du RPD (% d'écart relatif). L'arrondissement des résultats finaux peut expliquer la variation apparente.

(1) Cette analyse a été effectuée par Maxxam -Ville St. Laurent

(2) Tous les résultats pour le CCME répondent aux critères exigés, sauf indication contraire dans le rapport. Les méthodes du SP-HCP utilisées par Maxxam respectent tous les éléments imposés par la méthode de référence et les éléments se rapportant à la performance ont été validés. Toutes les modifications ont été validées et jugées équivalentes d'après l'Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods, September 2003. La documentation est fournie sur demande. Différence par rapport à la Méthode de référence pour le standard pancanadien relatif aux hydrocarbures pétroliers dans le sol – méthode du 1er volet : les résultats pour les fractions F2/F3/F4 sont rapportés à l'aide d'une extraction à froid par solvant au lieu d'une extraction avec un appareil Soxhlet.

(3) Aucune date d'extraction n'est fournie pour les analyses de F1/BTEX et COV lorsque les sols sont conservés dans le méthanol sur le terrain. La date d'extraction correspond à la date d'échantillonnage à moins d'indication contraire.

Note : Les paramètres inclus dans le présent certificat sont accrédités par le MDDELCC, à moins d'indication contraire.

clé de cryptage

Veuillez adresser toute question concernant ce certificat d'analyse à votre chargé(e) de projets

Alain Lemieux, Chargé de projets

Courriel: ALemieux@maxxam.ca

Téléphone (418)658-5784 Ext:7066451

=====
Ce rapport a été produit et distribué en utilisant une procédure automatisée sécuritaire.

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les « signataires » requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam					FN0810		FN0836		FN0843			
Date d'échantillonnage					2018/06/26		2018/06/26		2018/06/26			
# Bordereau					11617		11619		11619			
	Unités	A	B	C	WK-MW-18-2-3	CR	WK-F-18-1-4	CR	WK-F-18-2-5	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	7.9		21		20		N/A	N/A
VOLATILS												
Benzène	mg/kg	0.2	0.5	5	<0.0050		<0.0050		<0.0050		0.0050	1916720
Toluène	mg/kg	0.2	3	30	<0.020		<0.020		<0.020		0.020	1916720
Éthylbenzène	mg/kg	0.2	5	50	<0.010		<0.010		<0.010		0.010	1916720
o-Xylène	mg/kg	-	-	-	<0.020		<0.020		<0.020		0.020	1916720
p+m-Xylène	mg/kg	-	-	-	<0.040		<0.040		<0.040		0.040	1916720
Xylènes (o,m,p) †	mg/kg	0.4	5	50	<0.040		<0.040		<0.040		0.040	1916720
F1 (C6-C10) †	mg/kg	-	-	-	<10		<10		<10		10	1916720
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	<10		<10		<10		10	1916720
Récupération des Surrogates (%)												
1,4-Difluorobenzène	%	-	-	-	102		98		101		N/A	1916720
4-Bromofluorobenzène	%	-	-	-	109		110		108		N/A	1916720
D10-Ethylbenzène	%	-	-	-	111		109		110		N/A	1916720
D4-1,2-Dichloroéthane	%	-	-	-	105		106		104		N/A	1916720
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

HAP PAR GCMS (SOL)

ID Maxxam					FN0810		FN0838		FN0843			
Date d'échantillonnage					2018/06/26		2018/06/26		2018/06/26			
# Bordereau					11617		11619		11619			
	Unités	A	B	C	WK-MW-18-2-3	CR	WK-F-18-1-7	CR	WK-F-18-2-5	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	7.9		19		20		N/A	N/A
HAP												
Acénaphène	mg/kg	0.1	10	100	<0.10		<0.10		<0.10		0.10	1916795
Acénaphylène	mg/kg	0.1	10	100	<0.10		<0.10		<0.10		0.10	1916795
Anthracène	mg/kg	0.1	10	100	<0.10		<0.10		<0.10		0.10	1916795
Benzo(a)anthracène	mg/kg	0.1	1	10	<0.050		<0.050		<0.050		0.050	1916795
Benzo(a)pyrène	mg/kg	0.1	1	10	<0.050		<0.050		<0.050		0.050	1916795
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	<0.050		<0.050		<0.050		0.050	1916795
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	<0.050		<0.050		<0.050		0.050	1916795
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	<0.050		<0.050		<0.050		0.050	1916795
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	<0.050		<0.050		<0.050		0.050	1916795
Benzo(c)phénanthrène	mg/kg	0.1	1	10	<0.10		<0.10		<0.10		0.10	1916795
Benzo(ghi)pérylène	mg/kg	0.1	1	10	<0.050		<0.050		<0.050		0.050	1916795
Chrysène	mg/kg	0.1	1	10	<0.050		<0.050		<0.050		0.050	1916795
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	<0.050		<0.050		<0.050		0.050	1916795
Dibenzo(a,i)pyrène	mg/kg	0.1	1	10	<0.10		<0.10		<0.10		0.10	1916795
Dibenzo(a,h)pyrène	mg/kg	0.1	1	10	<0.10		<0.10		<0.10		0.10	1916795
Dibenzo(a,l)pyrène	mg/kg	0.1	1	10	<0.10		<0.10		<0.10		0.10	1916795
7,12-Diméthylbenzanthracène	mg/kg	0.1	1	10	<0.10		<0.10		<0.10		0.10	1916795
Fluoranthène	mg/kg	0.1	10	100	<0.10		<0.10		<0.10		0.10	1916795
Flurène	mg/kg	0.1	10	100	<0.10		<0.10		<0.10		0.10	1916795
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	<0.050		<0.050		<0.050		0.050	1916795
3-Méthylcholanthrène	mg/kg	0.1	1	10	<0.10		<0.10		<0.10		0.10	1916795
Naphtalène	mg/kg	0.1	5	50	<0.010		<0.010		<0.010		0.010	1916795
Phénanthrène	mg/kg	0.1	5	50	<0.040		<0.040		<0.040		0.040	1916795
Pyrene	mg/kg	0.1	10	100	<0.10		<0.10		<0.10		0.10	1916795
2-Méthylnaphtalène	mg/kg	0.1	1	10	<0.10		<0.10		<0.10		0.10	1916795
1-Méthylnaphtalène	mg/kg	0.1	1	10	<0.10		<0.10		<0.10		0.10	1916795
1,3-Diméthylnaphtalène	mg/kg	0.1	1	10	<0.10		<0.10		<0.10		0.10	1916795
2,3,5-Triméthylnaphtalène	mg/kg	0.1	1	10	<0.10		<0.10		<0.10		0.10	1916795
Récupération des Surrogates (%)												
D10-Anthracène	%	-	-	-	92		96		100		N/A	1916795
D12-Benzo(a)pyrène	%	-	-	-	92		90		98		N/A	1916795
D14-Terphenyl	%	-	-	-	92		96		102		N/A	1916795
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

HAP PAR GCMS (SOL)

ID Maxxam					FN0810		FN0838		FN0843			
Date d'échantillonnage					2018/06/26		2018/06/26		2018/06/26			
# Bordereau					11617		11619		11619			
	Unités	A	B	C	WK-MW-18-2-3	CR	WK-F-18-1-7	CR	WK-F-18-2-5	CR	LDR	Lot CQ
D8-Acenaphthylene	%	-	-	-	78		82		86		N/A	1916795
D8-Naphtalène	%	-	-	-	86		90		96		N/A	1916795
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable												

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam					FN0807			FN0809			
Date d'échantillonnage					2018/06/26			2018/06/26			
# Bordereau					11617			11617			
	Unités	A	B	C	WK-F-18-2-6	CR	Lot CQ	WK-MW-18-2-1	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	19		N/A	3.2		N/A	N/A
HYDROCARBURES PÉTROLIERS											
Hydrocarbures pétroliers (C10-C50)	mg/kg	300	700	3500	<100		1916793	<100		100	1916371
F2 (C10-C16) †	mg/kg	-	-	-	<10		1916738	N/A		10	N/A
F3 (C16-C34) †	mg/kg	-	-	-	<50		1916738	N/A		50	N/A
F4 (C34-C50) †	mg/kg	-	-	-	<50		1916738	N/A		50	N/A
Ligne de base atteinte à C50 †	mg/kg	-	-	-	OUI		1916738	N/A		N/A	N/A
Récupération des Surrogates (%)											
1-Chlorooctadécane	%	-	-	-	83		1916793	113		N/A	1916371
O-Terphenyl	%	-	-	-	91		1916738	N/A		N/A	N/A
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

ID Maxxam					FN0810			FN0811			
Date d'échantillonnage					2018/06/26			2018/06/26			
# Bordereau					11617			11617			
	Unités	A	B	C	WK-MW-18-2-3	CR	Lot CQ	WK-MW-18-2-4	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	7.9		N/A	6.3		N/A	N/A
HYDROCARBURES PÉTROLIERS											
Hydrocarbures pétroliers (C10-C50)	mg/kg	300	700	3500	<100		1916793	<100		100	1916371
F2 (C10-C16) †	mg/kg	-	-	-	<10		1916738	N/A		10	N/A
F3 (C16-C34) †	mg/kg	-	-	-	<50		1916738	N/A		50	N/A
F4 (C34-C50) †	mg/kg	-	-	-	<50		1916738	N/A		50	N/A
Ligne de base atteinte à C50 †	mg/kg	-	-	-	OUI		1916738	N/A		N/A	N/A
Récupération des Surrogates (%)											
1-Chlorooctadécane	%	-	-	-	75		1916793	110		N/A	1916371
O-Terphenyl	%	-	-	-	95		1916738	N/A		N/A	N/A
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam					FN0836		FN0838		FN0842			
Date d'échantillonnage					2018/06/26		2018/06/26		2018/06/26			
# Bordereau					11619		11619		11619			
	Unités	A	B	C	WK-F-18-1-4	CR	WK-F-18-1-7	CR	WK-F-18-2-4	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	21		19		17		N/A	N/A
HYDROCARBURES PÉTROLIERS												
Hydrocarbures pétroliers (C10-C50)	mg/kg	300	700	3500	<100		<100		<100		100	1916793
F2 (C10-C16) †	mg/kg	-	-	-	<10		<10		<10		10	1916738
F3 (C16-C34) †	mg/kg	-	-	-	<50		<50		<50		50	1916738
F4 (C34-C50) †	mg/kg	-	-	-	<50		<50		<50		50	1916738
Ligne de base atteinte à C50 †	mg/kg	-	-	-	OUI		OUI		OUI		N/A	1916738
Récupération des Surrogates (%)												
1-Chlorooctadécane	%	-	-	-	83		79		80		N/A	1916793
O-Terphenyl	%	-	-	-	98		96		95		N/A	1916738
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

ID Maxxam							FN0843					
Date d'échantillonnage							2018/06/26					
# Bordereau							11619					
	Unités	A	B	C	WK-F-18-2-5	CR	LDR	Lot CQ				
% HUMIDITÉ	%	-	-	-	20		N/A	N/A				
HYDROCARBURES PÉTROLIERS												
Hydrocarbures pétroliers (C10-C50)	mg/kg	300	700	3500	<100		100	1916793				
F2 (C10-C16) †	mg/kg	-	-	-	<10		10	1916738				
F3 (C16-C34) †	mg/kg	-	-	-	<50		50	1916738				
F4 (C34-C50) †	mg/kg	-	-	-	<50		50	1916738				
Ligne de base atteinte à C50 †	mg/kg	-	-	-	OUI		N/A	1916738				
Récupération des Surrogates (%)												
1-Chlorooctadécane	%	-	-	-	84		N/A	1916793				
O-Terphenyl	%	-	-	-	91		N/A	1916738				
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

HAM PAR GC/MS (SOL)

ID Maxxam					FN0803		FN0804		FN0805			
Date d'échantillonnage					2018/06/26		2018/06/26		2018/06/26			
# Bordereau					11618		11618		11618			
	Unités	A	B	C	WK-TP-18-5-3	CR	WK-TP-18-5-4	CR	WK-TP-18-5-4-TT	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	5.8		18		18		N/A	N/A
VOLATILS												
Benzène	mg/kg	0.2	0.5	5	<0.10		<0.10		<0.10		0.10	1916337
Chlorobenzène	mg/kg	0.2	1	10	<0.20		<0.20		<0.20		0.20	1916337
Dichloro-1,2 benzène	mg/kg	0.2	1	10	<0.20		<0.20		<0.20		0.20	1916337
Dichloro-1,3 benzène	mg/kg	0.2	1	10	<0.20		<0.20		<0.20		0.20	1916337
Dichloro-1,4 benzène	mg/kg	0.2	1	10	<0.20		<0.20		<0.20		0.20	1916337
Éthylbenzène	mg/kg	0.2	5	50	<0.20		<0.20		<0.20		0.20	1916337
Styrène	mg/kg	0.2	5	50	<0.20		<0.20		<0.20		0.20	1916337
Toluène	mg/kg	0.2	3	30	<0.20		<0.20		<0.20		0.20	1916337
Xylènes (o,m,p) †	mg/kg	0.4	5	50	<0.20		<0.20		<0.20		0.20	1916337
Récupération des Surrogates (%)												
4-Bromofluorobenzène	%	-	-	-	99		97		97		N/A	1916337
D10-Ethylbenzène	%	-	-	-	117		110		115		N/A	1916337
D4-1,2-Dichloroéthane	%	-	-	-	95		101		96		N/A	1916337
D8-Toluène	%	-	-	-	95		100		100		N/A	1916337
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

HAM PAR GC/MS (SOL)

ID Maxxam					FN0817		FN0818			FN0838			
Date d'échantillonnage					2018/06/26		2018/06/26			2018/06/26			
# Bordereau					11617		11617			11619			
	Unités	A	B	C	WK-MW-18-1-3	CR	WK-MW-18-1-6	CR	Lot CQ	WK-F-18-1-7	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	12		18		N/A	19		N/A	N/A
VOLATILS													
Benzène	mg/kg	0.2	0.5	5	<0.10		<0.10		1916337	<0.10		0.10	1916642
Chlorobenzène	mg/kg	0.2	1	10	<0.20		<0.20		1916337	<0.20		0.20	1916642
Dichloro-1,2 benzène	mg/kg	0.2	1	10	<0.20		<0.20		1916337	<0.20		0.20	1916642
Dichloro-1,3 benzène	mg/kg	0.2	1	10	<0.20		<0.20		1916337	<0.20		0.20	1916642
Dichloro-1,4 benzène	mg/kg	0.2	1	10	<0.20		<0.20		1916337	<0.20		0.20	1916642
Éthylbenzène	mg/kg	0.2	5	50	<0.20		<0.20		1916337	<0.20		0.20	1916642
Styrène	mg/kg	0.2	5	50	<0.20		<0.20		1916337	<0.20		0.20	1916642
Toluène	mg/kg	0.2	3	30	<0.20		<0.20		1916337	<0.20		0.20	1916642
Xylènes (o,m,p) †	mg/kg	0.4	5	50	<0.20		<0.20		1916337	<0.20		0.20	1916642
Récupération des Surrogates (%)													
4-Bromofluorobenzène	%	-	-	-	N/A		N/A		N/A	100		N/A	1916642
D10-Ethylbenzène	%	-	-	-	N/A		N/A		N/A	101		N/A	1916642
D4-1,2-Dichloroéthane	%	-	-	-	N/A		N/A		N/A	106		N/A	1916642
D8-Toluène	%	-	-	-	N/A		N/A		N/A	101		N/A	1916642
4-Bromofluorobenzène	%	-	-	-	98		98		1916337	N/A		N/A	N/A
D10-Ethylbenzène	%	-	-	-	108		104		1916337	N/A		N/A	N/A
D4-1,2-Dichloroéthane	%	-	-	-	95		103		1916337	N/A		N/A	N/A
D8-Toluène	%	-	-	-	100		99		1916337	N/A		N/A	N/A
LDR = Limite de détection rapportée													
Lot CQ = Lot contrôle qualité													
N/A = Non Applicable													
† Accréditation non existante pour ce paramètre													

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

MÉTAUX EXTRACTIBLES TOTAUX (SOL)

ID Maxxam					FN0843			
Date d'échantillonnage					2018/06/26			
# Bordereau					11619			
	Unités	A	B	C	WK-F-18-2-5	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	20		N/A	N/A
MÉTAUX								
Cadmium (Cd)	mg/kg	1.5	5	20	<0.10		0.10	1916792
Chrome (Cr)	mg/kg	100	250	800	9.4	<A	1.0	1916792
Cuivre (Cu)	mg/kg	50	100	500	2.1	<A	1.0	1916792
Nickel (Ni)	mg/kg	50	100	500	5.2	<A	0.50	1916792
Plomb (Pb)	mg/kg	50	500	1000	1.8	<A	1.0	1916792
Zinc (Zn)	mg/kg	140	500	1500	10	<A	5.0	1916792
LDR = Limite de détection rapportée								
Lot CQ = Lot contrôle qualité								
N/A = Non Applicable								

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

INTERPRETATION QUALITATIVE
Hydrocarbures pétroliers (C10-C50)

Échantillon	Interpretation Qualitative
WK-MW-18-2-1	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MW-18-2-4	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

REMARQUES GÉNÉRALES

Tous les résultats sont calculés sur une base sèche excepté lorsque non-applicable.

Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN0807

Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN0807

Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN0809, FN0810

Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN0810

HAP (CCME): Échantillon reçu congelé.: FN0810

CCME F1/BTEX-MeOH sur le terrain: Analyses demandées avec délai de conservation dépassé: FN0810

Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN0811, FN0836

Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN0836

CCME F1/BTEX-MeOH sur le terrain: Analyses demandées avec délai de conservation dépassé: FN0836

Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN0838

Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN0838

Hydrocarbures aromatiques monocycliques: Échantillon reçu congelé.: FN0838

HAP (CCME): Échantillon reçu congelé.: FN0838

Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN0842

Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN0842

Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN0843

Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN0843

Métaux extractibles totaux par ICP-MS: Échantillon reçu congelé.: FN0843

HAP (CCME): Échantillon reçu congelé.: FN0843

CCME F1/BTEX-MeOH sur le terrain: Analyses demandées avec délai de conservation dépassé: FN0843

A,B,C,CR: Les critères des sols proviennent de l'Annexe 2 du « Guide d'intervention-Protection des sols et réhabilitation des terrains contaminés.

MDDELCC, 2016. » et intitulé « Grille des critères génériques pour les sols ». Les critères des sols sont ceux de la province géologique des Basses-Terres du Saint-Laurent.

Les critères A et B pour l'eau souterraine proviennent de l'annexe 7 intitulé « Grille des critères de qualité des eaux souterraines » du guide d'intervention mentionné plus haut. A=Eau de consommation; B=Résurgence dans l'eau de surface

Ces références ne sont rapportées qu'à titre indicatif et ne doivent être interprétées dans aucun autre contexte.

- = Ce composé ne fait pas partie de la réglementation.

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

Noter que les résultats totaux sont arrondis à deux chiffres significatifs.

Veillez noter que les résultats ci-dessus ont été corrigés pour le blanc d'instrument.

HAP PAR GCMS (SOL)

Les résultats bruts non-arrondis sont utilisés dans le calcul du benzo(b+j+k)fluoranthène. Ce résultat total est alors arrondi à deux chiffres significatifs.

HYDROCARBURES PAR GCFID (SOL)

La similitude des hydrocarbures rapportés est obtenue par une comparaison visuelle du chromatogramme de l'échantillon avec la bibliothèque des chromatogrammes des produits de référence. Comme certaines variables tels que les multiproduits, le degré et le type de dégradation et la présence d'hydrocarbures non pétrogénétiques qui ne peuvent pas être reproduites dans les spectres de référence, l'information doit être vue comme qualitative et, en conséquence, Maxxam ne peut aucunement être tenu responsable des conclusions formulées pour ces données.

HAM PAR GC/MS (SOL)

Veillez noter que les échantillons sont analysés par Headspace GC/MS.

Les résultats ne se rapportent qu'aux échantillons soumis pour analyse

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

RAPPORT ASSURANCE QUALITÉ

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1916337	VLP	Blanc fortifié	4-Bromofluorobenzène	2018/07/13		98	%
			D10-Ethylbenzène	2018/07/13		105	%
			D4-1,2-Dichloroéthane	2018/07/13		99	%
			D8-Toluène	2018/07/13		98	%
			Benzène	2018/07/13		104	%
			Chlorobenzène	2018/07/13		100	%
			Dichloro-1,2 benzène	2018/07/13		95	%
			Dichloro-1,3 benzène	2018/07/13		99	%
			Dichloro-1,4 benzène	2018/07/13		95	%
			Éthylbenzène	2018/07/13		100	%
			Styrène	2018/07/13		104	%
			Toluène	2018/07/13		101	%
			Xylènes (o,m,p)	2018/07/13		97	%
			1916337	VLP	Blanc de méthode	4-Bromofluorobenzène	2018/07/13
D10-Ethylbenzène	2018/07/13					110	%
D4-1,2-Dichloroéthane	2018/07/13					91	%
D8-Toluène	2018/07/13					99	%
Benzène	2018/07/13	<0.20					mg/kg
Chlorobenzène	2018/07/13	<0.40					mg/kg
Dichloro-1,2 benzène	2018/07/13	<0.40					mg/kg
Dichloro-1,3 benzène	2018/07/13	<0.40					mg/kg
Dichloro-1,4 benzène	2018/07/13	<0.40					mg/kg
Éthylbenzène	2018/07/13	<0.40					mg/kg
Styrène	2018/07/13	<0.40					mg/kg
Toluène	2018/07/13	<0.40					mg/kg
Xylènes (o,m,p)	2018/07/13	<0.40					mg/kg
1916371	VLP	Blanc fortifié				1-Chlorooctadécane	2018/07/14
			Hydrocarbures pétroliers (C10-C50)	2018/07/14		86	%
1916371	VLP	Blanc de méthode	1-Chlorooctadécane	2018/07/14		114	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/14	<100		mg/kg
1916642	JL1	Blanc fortifié	4-Bromofluorobenzène	2018/07/16		98	%
			D10-Ethylbenzène	2018/07/16		110	%
			D4-1,2-Dichloroéthane	2018/07/16		102	%
			D8-Toluène	2018/07/16		104	%
			Benzène	2018/07/16		117	%
			Chlorobenzène	2018/07/16		111	%
			Dichloro-1,2 benzène	2018/07/16		104	%
			Dichloro-1,3 benzène	2018/07/16		110	%
			Dichloro-1,4 benzène	2018/07/16		109	%
			Éthylbenzène	2018/07/16		115	%
			Styrène	2018/07/16		110	%
			Toluène	2018/07/16		112	%
			Xylènes (o,m,p)	2018/07/16		115	%
			1916642	JL1	Blanc de méthode	4-Bromofluorobenzène	2018/07/16
D10-Ethylbenzène	2018/07/16					105	%
D4-1,2-Dichloroéthane	2018/07/16					101	%
D8-Toluène	2018/07/16					103	%
Benzène	2018/07/16	<0.10					mg/kg
Chlorobenzène	2018/07/16	<0.20					mg/kg
Dichloro-1,2 benzène	2018/07/16	<0.20					mg/kg
Dichloro-1,3 benzène	2018/07/16	<0.20					mg/kg

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités			
1916720	FF	Blanc fortifié	Dichloro-1,4 benzène	2018/07/16	<0.20		mg/kg			
			Éthylbenzène	2018/07/16	<0.20		mg/kg			
			Styrène	2018/07/16	<0.20		mg/kg			
			Toluène	2018/07/16	<0.20		mg/kg			
			Xylènes (o,m,p)	2018/07/16	<0.20		mg/kg			
			1,4-Difluorobenzène	2018/07/17		99	%			
			4-Bromofluorobenzène	2018/07/17		108	%			
			D10-Ethylbenzène	2018/07/17		101	%			
			D4-1,2-Dichloroéthane	2018/07/17		115	%			
			Benzène	2018/07/17		96	%			
			Toluène	2018/07/17		86	%			
			Éthylbenzène	2018/07/17		92	%			
			o-Xylène	2018/07/17		88	%			
			p+m-Xylène	2018/07/17		83	%			
			Xylènes (o,m,p)	2018/07/17		86	%			
1916720	FF	Blanc de méthode	F1 (C6-C10)	2018/07/17		112	%			
			1,4-Difluorobenzène	2018/07/17		99	%			
			4-Bromofluorobenzène	2018/07/17		106	%			
			D10-Ethylbenzène	2018/07/17		112	%			
			D4-1,2-Dichloroéthane	2018/07/17		111	%			
			Benzène	2018/07/17	<0.0050		mg/kg			
			Toluène	2018/07/17	<0.020		mg/kg			
			Éthylbenzène	2018/07/17	<0.010		mg/kg			
			o-Xylène	2018/07/17	<0.020		mg/kg			
			p+m-Xylène	2018/07/17	<0.040		mg/kg			
			Xylènes (o,m,p)	2018/07/17	<0.040		mg/kg			
			F1 (C6-C10)	2018/07/17	<10		mg/kg			
			F1 (C6-C10) - BTEX	2018/07/17	<10		mg/kg			
			1916738	MP	Blanc fortifié	O-Terphenyl	2018/07/16		79	%
						F2 (C10-C16)	2018/07/16		93	%
F3 (C16-C34)	2018/07/16					93	%			
F4 (C34-C50)	2018/07/16					93	%			
O-Terphenyl	2018/07/16					74	%			
1916738	MP	Blanc de méthode	F2 (C10-C16)	2018/07/16	<10		mg/kg			
			F3 (C16-C34)	2018/07/16	<50		mg/kg			
			F4 (C34-C50)	2018/07/16	<50		mg/kg			
			O-Terphenyl	2018/07/16		74	%			
1916792	KK	Blanc fortifié	Cadmium (Cd)	2018/07/17		109	%			
			Chrome (Cr)	2018/07/17		106	%			
			Cuivre (Cu)	2018/07/17		112	%			
			Nickel (Ni)	2018/07/17		109	%			
			Plomb (Pb)	2018/07/17		105	%			
			Zinc (Zn)	2018/07/17		108	%			
			Cadmium (Cd)	2018/07/17	<0.10		mg/kg			
1916792	KK	Blanc de méthode	Chrome (Cr)	2018/07/17	<1.0		mg/kg			
			Cuivre (Cu)	2018/07/17	<1.0		mg/kg			
			Nickel (Ni)	2018/07/17	<0.50		mg/kg			
			Plomb (Pb)	2018/07/17	<1.0		mg/kg			
			Zinc (Zn)	2018/07/17	<5.0		mg/kg			
			1-Chlorooctadécane	2018/07/17		72	%			
1916793	MP	Blanc fortifié	Hydrocarbures pétroliers (C10-C50)	2018/07/17		95	%			
			1-Chlorooctadécane	2018/07/17		75	%			

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1916795	AH3	Blanc fortifié	Hydrocarbures pétroliers (C10-C50)	2018/07/17	<100		mg/kg
			D10-Anthracène	2018/07/17		96	%
			D12-Benzo(a)pyrène	2018/07/17		96	%
			D14-Terphenyl	2018/07/17		94	%
			D8-Acenaphthylene	2018/07/17		80	%
			D8-Naphtalène	2018/07/17		90	%
			Acénaphtène	2018/07/17		86	%
			Acénaphtylène	2018/07/17		96	%
			Anthracène	2018/07/17		96	%
			Benzo(a)anthracène	2018/07/17		93	%
			Benzo(a)pyrène	2018/07/17		90	%
			Benzo(b)fluoranthène	2018/07/17		95	%
			Benzo(j)fluoranthène	2018/07/17		101	%
			Benzo(k)fluoranthène	2018/07/17		96	%
			Benzo(b+j+k)fluoranthène	2018/07/17		98	%
			Benzo(c)phénanthrène	2018/07/17		92	%
			Benzo(ghi)pérylène	2018/07/17		93	%
			Chrysène	2018/07/17		94	%
			Dibenzo(a,h)anthracène	2018/07/17		95	%
			Dibenzo(a,i)pyrène	2018/07/17		91	%
			Dibenzo(a,h)pyrène	2018/07/17		90	%
			Dibenzo(a,l)pyrène	2018/07/17		100	%
			7,12-Diméthylbenzanthracène	2018/07/17		102	%
			Fluoranthène	2018/07/17		95	%
			Fluorène	2018/07/17		96	%
			Indéno(1,2,3-cd)pyrène	2018/07/17		93	%
			3-Méthylcholanthrène	2018/07/17		95	%
			Naphtalène	2018/07/17		94	%
			Phénanthrène	2018/07/17		94	%
			Pyrène	2018/07/17		90	%
			2-Méthylnaphtalène	2018/07/17		98	%
			1-Méthylnaphtalène	2018/07/17		91	%
1,3-Diméthylnaphtalène	2018/07/17		92	%			
2,3,5-Triméthylnaphtalène	2018/07/17		99	%			
1916795	AH3	Blanc de méthode	D10-Anthracène	2018/07/17		98	%
			D12-Benzo(a)pyrène	2018/07/17		96	%
			D14-Terphenyl	2018/07/17		94	%
			D8-Acenaphthylene	2018/07/17		82	%
			D8-Naphtalène	2018/07/17		90	%
			Acénaphtène	2018/07/17	<0.10		mg/kg
			Acénaphtylène	2018/07/17	<0.10		mg/kg
			Anthracène	2018/07/17	<0.10		mg/kg
			Benzo(a)anthracène	2018/07/17	<0.050		mg/kg
			Benzo(a)pyrène	2018/07/17	<0.050		mg/kg
			Benzo(b)fluoranthène	2018/07/17	<0.050		mg/kg
			Benzo(j)fluoranthène	2018/07/17	<0.050		mg/kg
			Benzo(k)fluoranthène	2018/07/17	<0.050		mg/kg
			Benzo(b+j+k)fluoranthène	2018/07/17	<0.050		mg/kg
			Benzo(c)phénanthrène	2018/07/17	<0.10		mg/kg
			Benzo(ghi)pérylène	2018/07/17	<0.050		mg/kg
Chrysène	2018/07/17	<0.050		mg/kg			

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			Dibenzo(a,h)anthracène	2018/07/17	<0.050		mg/kg
			Dibenzo(a,i)pyrène	2018/07/17	<0.10		mg/kg
			Dibenzo(a,h)pyrène	2018/07/17	<0.10		mg/kg
			Dibenzo(a,l)pyrène	2018/07/17	<0.10		mg/kg
			7,12-Diméthylbenzanthracène	2018/07/17	<0.10		mg/kg
			Fluoranthène	2018/07/17	<0.10		mg/kg
			Fluorène	2018/07/17	<0.10		mg/kg
			Indéno(1,2,3-cd)pyrène	2018/07/17	<0.050		mg/kg
			3-Méthylcholanthrène	2018/07/17	<0.10		mg/kg
			Naphtalène	2018/07/17	<0.010		mg/kg
			Phénanthrène	2018/07/17	<0.040		mg/kg
			Pyrene	2018/07/17	<0.10		mg/kg
			2-Méthylnaphtalène	2018/07/17	<0.10		mg/kg
			1-Méthylnaphtalène	2018/07/17	<0.10		mg/kg
			1,3-Diméthylnaphtalène	2018/07/17	<0.10		mg/kg
			2,3,5-Triméthylnaphtalène	2018/07/17	<0.10		mg/kg

Blanc fortifié: Un blanc, d'une matrice exempte de contaminants, auquel a été ajouté une quantité connue d'analyte provenant généralement d'une deuxième source. Utilisé pour évaluer la précision de la méthode.

Blanc de méthode: Une partie aliquote de matrice pure soumise au même processus analytique que les échantillons, du prétraitement au dosage. Sert à évaluer toutes contaminations du laboratoire.

Surrogate: Composé se comportant de façon similaire aux composés analysés et ajouté à l'échantillon avant l'analyse. Sert à évaluer la qualité de l'extraction.

Réc = Récupération

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

PAGE DES SIGNATURES DE VALIDATION

Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:



Corina Tue, B.Sc. Chimiste



Dochka Koleva Hristova, B.Sc., Chimiste



Jean-Frederic Lamy, B.Sc., Chimiste, Spécialiste Scientifique



Maria Dragna Apopei, B.Sc., Chimiste



Mathieu Letourneau, B.Sc., Chimiste, Spécialiste scientifique



Michel Poulin, B.Sc., Chimiste



Ngoc-Thuy Do, B.Sc., Chimiste

Dossier Maxxam: B828064
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: Waskaganish
Initiales du préleveur: GP

PAGE DES SIGNATURES DE VALIDATION (SUITE)

Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Votre # du projet: P-0014860-0-00-100-04
 Adresse du site: WASKAGANISH
 Votre # Bordereau: E-915935, E-915936, E-915937

Attention: Christine Gervais

Englobe Corp.
 QUÉBEC - PARC TECHNOLOGIQUE
 505 boul. du Parc Technologique
 Bureau 200
 Québec, QC
 CANADA G1P 4S9

Date du rapport: 2018/07/19
 # Rapport: R2384006
 Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B828103

Reçu: 2018/07/09, 14:00

Matrice: SOL
 Nombre d'échantillons reçus: 11

Analyses	Quantité	Date de l'		Méthode de laboratoire	Référence Primaire
		extraction	Date Analysé		
Hydrocarbures pétroliers (C10-C50)	3	2018/07/14	2018/07/14	QUE SOP-00210	MA400-HYD 1.1 R3 m
Hydrocarbures pétroliers (C10-C50) (1)	3	2018/07/14	2018/07/17	STL SOP-00172	MA.400-HYD. 1.1 R3 m
CCME F1/BTEX-MeOH sur le terrain (1, 2)	4	N/A	2018/07/14	STL SOP-00131	CCME PHC-CWS m
CCME F1/BTEX-MeOH sur le terrain (1, 2)	3	N/A	2018/07/16	STL SOP-00131	CCME PHC-CWS m
Hydrocarbures pétroliers (F2-F4) (1, 2)	3	2018/07/14	2018/07/16	STL SOP-00170	CCME PHC-CWS m
Interprétation des produits pétroliers	3	N/A	2018/07/13		MA408-IdePet 1.0 R1m
Interprétation des produits pétroliers (1)	1	N/A	N/A		MA408-IdePet 1.0 R1m
HAM-Conservation au MeOH sur le terrain (3)	3	N/A	2018/07/17	QUE SOP-00202	MA.400-COV 2.0 R4 m
Métaux extractibles totaux par ICP-MS	1	2018/07/16	2018/07/16	QUE SOP-00132	MA.200-Mét. 1.2 R5 m
HAP (CCME)	2	2018/07/14	2018/07/14	QUE SOP-00208	MA.400-HAP 1.1 R5 m
HAP (CCME) (1)	2	2018/07/14	2018/07/16	STL SOP-00178	MA.400-HAP 1.1 R5 m

Remarques:

Les laboratoires Maxxam sont accrédités ISO/IEC 17025:2005. Sauf indication contraire, les méthodes d'analyses utilisées par Maxxam s'inspirent des méthodes de référence d'organismes provinciaux, fédéraux et américains, tel que le CCME, le MDDELCC, l'EPA et l'APHA.

Toutes les analyses présentées ont été réalisées conformément aux procédures et aux pratiques relatives à la méthodologie, à l'assurance qualité et au contrôle de la qualité généralement appliquées par les employés de Maxxam (sauf s'il en a été convenu autrement par écrit entre le client et Maxxam). Toutes les données de laboratoire rencontrent les contrôles statistiques et respectent tous les critères du CQ et les critères de performance des méthodes, sauf s'il en a été signalé autrement. Tous les blancs de méthode sont rapportés, toutefois, les données des échantillons correspondants ne sont pas corrigées pour la valeur du blanc, sauf indication contraire.

Les responsabilités de Maxxam sont restreintes au coût réel de l'analyse, sauf s'il en a été convenu autrement par écrit. Il n'existe aucune autre garantie, explicite ou implicite. Le client a fait appel à Maxxam pour l'analyse de ses échantillons conformément aux méthodes de référence mentionnées dans ce rapport. L'interprétation et l'utilisation des résultats sont sous l'entière responsabilité du client et ne font pas partie des services offerts par Maxxam, sauf si convenu autrement par écrit.

Les résultats des échantillons solides, sauf les biotes, sont rapportés en fonction de la masse sèche, sauf indication contraire. Les analyses organiques ne sont pas corrigées en fonction de la récupération, sauf pour les méthodes de dilution isotopique.

Les résultats s'appliquent seulement aux échantillons analysés.

Le présent rapport ne doit pas être reproduit, sinon dans son intégralité, sans le consentement écrit du laboratoire.

Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Votre # Bordereau: E-915935, E-915936, E-915937

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/19
Rapport: R2384006
Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B828103

Reçu: 2018/07/09, 14:00

Lorsque la méthode de référence comprend un suffixe « m », cela signifie que la méthode d'analyse du laboratoire contient des modifications validées et appliquées afin d'améliorer la performance de la méthode de référence.

Notez: Les données brutes sont utilisées pour le calcul du RPD (% d'écart relatif). L'arrondissement des résultats finaux peut expliquer la variation apparente.

(1) Cette analyse a été effectuée par Maxxam -Ville St. Laurent

(2) Tous les résultats pour le CCME répondent aux critères exigés, sauf indication contraire dans le rapport. Les méthodes du SP-HCP utilisées par Maxxam respectent tous les éléments imposés par la méthode de référence et les éléments se rapportant à la performance ont été validés. Toutes les modifications ont été validées et jugées équivalentes d'après l'Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods, September 2003. La documentation est fournie sur demande. Différence par rapport à la Méthode de référence pour le standard pancanadien relatif aux hydrocarbures pétroliers dans le sol – méthode du 1er volet : les résultats pour les fractions F2/F3/F4 sont rapportés à l'aide d'une extraction à froid par solvant au lieu d'une extraction avec un appareil Soxhlet.

(3) Aucune date d'extraction n'est fournie pour les analyses de F1/BTEX et COV lorsque les sols sont conservés dans le méthanol sur le terrain. La date d'extraction correspond à la date d'échantillonnage à moins d'indication contraire.

Note : Les paramètres inclus dans le présent certificat sont accrédités par le MDDELCC, à moins d'indication contraire.

clé de cryptage

Veuillez adresser toute question concernant ce certificat d'analyse à votre chargé(e) de projets

Alain Lemieux, Chargé de projets

Courriel: ALemieux@maxxam.ca

Téléphone (418)658-5784 Ext:7066451

=====

Ce rapport a été produit et distribué en utilisant une procédure automatisée sécuritaire.

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les « signataires » requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam					FN1058		FN1059		FN1063			
Date d'échantillonnage					2018/06/27		2018/06/27		2018/06/27			
# Bordereau					E-915935		E-915935		E-915935			
	Unités	A	B	C	WK-TP-18-1-D	CR	WK-TP-18-1-E	CR	WK-TP-18-2-D	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	6.3		13		8.1		N/A	N/A
VOLATILS												
Benzène	mg/kg	0.2	0.5	5	<0.0050		<0.0050		<0.0050		0.0050	1916384
Toluène	mg/kg	0.2	3	30	<0.020		<0.020		<0.020		0.020	1916384
Éthylbenzène	mg/kg	0.2	5	50	<0.010		<0.010		<0.010		0.010	1916384
o-Xylène	mg/kg	-	-	-	<0.020		<0.020		<0.020		0.020	1916384
p+m-Xylène	mg/kg	-	-	-	<0.040		<0.040		<0.040		0.040	1916384
Xylènes (o,m,p) †	mg/kg	0.4	5	50	<0.040		<0.040		<0.040		0.040	1916384
F1 (C6-C10) †	mg/kg	-	-	-	<10		<10		<10		10	1916384
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	<10		<10		<10		10	1916384
Récupération des Surrogates (%)												
1,4-Difluorobenzène	%	-	-	-	100		99		98		N/A	1916384
4-Bromofluorobenzène	%	-	-	-	96		97		97		N/A	1916384
D10-Ethylbenzène	%	-	-	-	114		113		121		N/A	1916384
D4-1,2-Dichloroéthane	%	-	-	-	110		113		113		N/A	1916384
LDR = Limite de détection rapportée												
Lot CQ = Lot contrôle qualité												
N/A = Non Applicable												
† Accréditation non existante pour ce paramètre												

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam					FN1064		FN1070		FN1074			
Date d'échantillonnage					2018/06/27		2018/06/27		2018/06/27			
# Bordereau					E-915935		E-915936		E-915936			
	Unités	A	B	C	WK-TP-18-2-E	CR	WK-TP-18-7-E	CR	WK-TP-18-6-D	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	15		9.9		8.3		N/A	N/A
VOLATILS												
Benzène	mg/kg	0.2	0.5	5	<0.0050		<0.0050		<0.0050		0.0050	1916384
Toluène	mg/kg	0.2	3	30	<0.020		<0.020		<0.020		0.020	1916384
Éthylbenzène	mg/kg	0.2	5	50	<0.010		<0.010		<0.010		0.010	1916384
o-Xylène	mg/kg	-	-	-	<0.020		<0.020		<0.020		0.020	1916384
p+m-Xylène	mg/kg	-	-	-	<0.040		<0.040		<0.040		0.040	1916384
Xylènes (o,m,p) †	mg/kg	0.4	5	50	<0.040		<0.040		<0.040		0.040	1916384
F1 (C6-C10) †	mg/kg	-	-	-	<10		<10		35		10	1916384
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	<10		<10		35		10	1916384
Récupération des Surrogates (%)												
1,4-Difluorobenzène	%	-	-	-	99		98		98		N/A	1916384
4-Bromofluorobenzène	%	-	-	-	97		93		94		N/A	1916384
D10-Ethylbenzène	%	-	-	-	110		117		129		N/A	1916384
D4-1,2-Dichloroéthane	%	-	-	-	112		116		120		N/A	1916384
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam					FN1078			
Date d'échantillonnage					2018/06/27			
# Bordereau					E-915937			
	Unités	A	B	C	WK-TP-18-3-C	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	6.7		N/A	N/A
VOLATILS								
Benzène	mg/kg	0.2	0.5	5	<0.0050		0.0050	1916384
Toluène	mg/kg	0.2	3	30	<0.020		0.020	1916384
Éthylbenzène	mg/kg	0.2	5	50	<0.010		0.010	1916384
o-Xylène	mg/kg	-	-	-	<0.020		0.020	1916384
p+m-Xylène	mg/kg	-	-	-	<0.040		0.040	1916384
Xylènes (o,m,p) †	mg/kg	0.4	5	50	<0.040		0.040	1916384
F1 (C6-C10) †	mg/kg	-	-	-	<10		10	1916384
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	<10		10	1916384
Récupération des Surrogates (%)								
1,4-Difluorobenzène	%	-	-	-	100		N/A	1916384
4-Bromofluorobenzène	%	-	-	-	111		N/A	1916384
D10-Ethylbenzène	%	-	-	-	119		N/A	1916384
D4-1,2-Dichloroéthane	%	-	-	-	99		N/A	1916384
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre								

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam					FN1067			FN1070			
Date d'échantillonnage					2018/06/27			2018/06/27			
# Bordereau					E-915936			E-915936			
	Unités	A	B	C	WK-TP-18-7-B	CR	Lot CQ	WK-TP-18-7-E	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	2.9		N/A	9.9		N/A	N/A
HAP											
Acénaphène	mg/kg	0.1	10	100	<0.10		1916377	<0.10		0.10	1916413
Acénaphylène	mg/kg	0.1	10	100	<0.10		1916377	<0.10		0.10	1916413
Anthracène	mg/kg	0.1	10	100	<0.10		1916377	<0.10		0.10	1916413
Benzo(a)anthracène	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Benzo(a)pyrène	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	<0.050		1916377	<0.050		0.050	1916413
Benzo(c)phénanthrène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
Benzo(ghi)pérylène	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Chrysène	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Dibenzo(a,i)pyrène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
Dibenzo(a,h)pyrène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
Dibenzo(a,l)pyrène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
7,12-Diméthylbenzanthracène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
Fluoranthène	mg/kg	0.1	10	100	<0.10		1916377	<0.10		0.10	1916413
Fluorène	mg/kg	0.1	10	100	<0.10		1916377	<0.10		0.10	1916413
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
3-Méthylcholanthrène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
Naphtalène	mg/kg	0.1	5	50	<0.010		1916377	<0.010		0.010	1916413
Phénanthrène	mg/kg	0.1	5	50	<0.040		1916377	<0.040		0.040	1916413
Pyrène	mg/kg	0.1	10	100	<0.10		1916377	<0.10		0.10	1916413
2-Méthylnaphtalène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
1-Méthylnaphtalène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
1,3-Diméthylnaphtalène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
2,3,5-Triméthylnaphtalène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
Récupération des Surrogates (%)											
D10-Anthracène	%	-	-	-	82		1916377	88		N/A	1916413
D12-Benzo(a)pyrène	%	-	-	-	73		1916377	86		N/A	1916413
D14-Terphenyl	%	-	-	-	83		1916377	86		N/A	1916413
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											
† Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam					FN1067			FN1070			
Date d'échantillonnage					2018/06/27			2018/06/27			
# Bordereau					E-915936			E-915936			
	Unités	A	B	C	WK-TP-18-7-B	CR	Lot CQ	WK-TP-18-7-E	CR	LDR	Lot CQ
D8-Acenaphthylene	%	-	-	-	83		1916377	76		N/A	1916413
D8-Naphtalène	%	-	-	-	87		1916377	88		N/A	1916413
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam	FN1073					FN1078					
Date d'échantillonnage	2018/06/27					2018/06/27					
# Bordereau	E-915936					E-915937					
	Unités	A	B	C	WK-TP-18-6-C	CR	Lot CQ	WK-TP-18-3-C	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	4.3		N/A	6.7		N/A	N/A
HAP											
Acénaphène	mg/kg	0.1	10	100	<0.10		1916377	<0.10		0.10	1916413
Acénaphylène	mg/kg	0.1	10	100	<0.10		1916377	<0.10		0.10	1916413
Anthracène	mg/kg	0.1	10	100	<0.10		1916377	<0.10		0.10	1916413
Benzo(a)anthracène	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Benzo(a)pyrène	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	<0.050		1916377	<0.050		0.050	1916413
Benzo(c)phénanthrène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
Benzo(ghi)pérylène	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Chrysène	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
Dibenzo(a,i)pyrène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
Dibenzo(a,h)pyrène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
Dibenzo(a,l)pyrène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
7,12-Diméthylbenzanthracène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
Fluoranthène	mg/kg	0.1	10	100	<0.10		1916377	<0.10		0.10	1916413
Fluorène	mg/kg	0.1	10	100	<0.10		1916377	<0.10		0.10	1916413
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	<0.050		1916377	<0.050		0.050	1916413
3-Méthylcholanthrène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
Naphtalène	mg/kg	0.1	5	50	<0.010		1916377	<0.010		0.010	1916413
Phénanthrène	mg/kg	0.1	5	50	<0.040		1916377	<0.040		0.040	1916413
Pyrène	mg/kg	0.1	10	100	<0.10		1916377	<0.10		0.10	1916413
2-Méthylnaphtalène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
1-Méthylnaphtalène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
1,3-Diméthylnaphtalène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
2,3,5-Triméthylnaphtalène	mg/kg	0.1	1	10	<0.10		1916377	<0.10		0.10	1916413
Récupération des Surrogates (%)											
D10-Anthracène	%	-	-	-	85		1916377	90		N/A	1916413
D12-Benzo(a)pyrène	%	-	-	-	75		1916377	88		N/A	1916413
D14-Terphenyl	%	-	-	-	84		1916377	82		N/A	1916413
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828103
 Date du rapport: 2018/07/19

Englobe Corp.
 Votre # du projet: P-0014860-0-00-100-04
 Adresse du site: WASKAGANISH
 Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam					FN1073			FN1078			
Date d'échantillonnage					2018/06/27			2018/06/27			
# Bordereau					E-915936			E-915937			
	Unités	A	B	C	WK-TP-18-6-C	CR	Lot CQ	WK-TP-18-3-C	CR	LDR	Lot CQ
D8-Acenaphthylene	%	-	-	-	83		1916377	76		N/A	1916413
D8-Naphtalène	%	-	-	-	87		1916377	88		N/A	1916413
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable											

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam					FN1067				FN1070			
Date d'échantillonnage					2018/06/27				2018/06/27			
# Bordereau					E-915936				E-915936			
	Unités	A	B	C	WK-TP-18-7-B	CR	Lot CQ	WK-TP-18-7-E	CR	LDR	Lot CQ	
% HUMIDITÉ	%	-	-	-	2.9		N/A	9.9		N/A	N/A	
HYDROCARBURES PÉTROLIERS												
Hydrocarbures pétroliers (C10-C50)	mg/kg	300	700	3500	180	<A	1916371	<100		100	1916411	
F2 (C10-C16) †	mg/kg	-	-	-	N/A		N/A	<10		10	1916421	
F3 (C16-C34) †	mg/kg	-	-	-	N/A		N/A	<50		50	1916421	
F4 (C34-C50) †	mg/kg	-	-	-	N/A		N/A	<50		50	1916421	
Ligne de base atteinte à C50 †	mg/kg	-	-	-	N/A		N/A	OUI		N/A	1916421	
Récupération des Surrogates (%)												
1-Chlorooctadécane	%	-	-	-	108		1916371	97		N/A	1916411	
O-Terphenyl	%	-	-	-	N/A		N/A	93		N/A	1916421	
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

ID Maxxam					FN1072			FN1073			FN1074		
Date d'échantillonnage					2018/06/27			2018/06/27			2018/06/27		
# Bordereau					E-915936			E-915936			E-915936		
	Unités	A	B	C	WK-TP-18-6-B	CR	WK-TP-18-6-C	CR	Lot CQ	WK-TP-18-6-D	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	4.7		4.3		N/A	8.3		N/A	N/A
HYDROCARBURES PÉTROLIERS													
Hydrocarbures pétroliers (C10-C50)	mg/kg	300	700	3500	<100		<100		1916371	380	A-B	100	1916411
F2 (C10-C16) †	mg/kg	-	-	-	N/A		N/A		N/A	310		10	1916421
F3 (C16-C34) †	mg/kg	-	-	-	N/A		N/A		N/A	160		50	1916421
F4 (C34-C50) †	mg/kg	-	-	-	N/A		N/A		N/A	<50		50	1916421
Ligne de base atteinte à C50 †	mg/kg	-	-	-	N/A		N/A		N/A	OUI		N/A	1916421
Récupération des Surrogates (%)													
1-Chlorooctadécane	%	-	-	-	108		113		1916371	93		N/A	1916411
O-Terphenyl	%	-	-	-	N/A		N/A		N/A	90		N/A	1916421
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre													

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam					FN1078			
Date d'échantillonnage					2018/06/27			
# Bordereau					E-915937			
	Unités	A	B	C	WK-TP-18-3-C	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	6.7		N/A	N/A
HYDROCARBURES PÉTROLIERS								
Hydrocarbures pétroliers (C10-C50)	mg/kg	300	700	3500	<100		100	1916411
F2 (C10-C16) †	mg/kg	-	-	-	<10		10	1916421
F3 (C16-C34) †	mg/kg	-	-	-	<50		50	1916421
F4 (C34-C50) †	mg/kg	-	-	-	<50		50	1916421
Ligne de base atteinte à C50 †	mg/kg	-	-	-	OUI		N/A	1916421
Récupération des Surrogates (%)								
1-Chlorooctadécane	%	-	-	-	92		N/A	1916411
O-Terphenyl	%	-	-	-	96		N/A	1916421
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre								

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (SOL)

ID Maxxam					FN1067		FN1073		FN1650			
Date d'échantillonnage					2018/06/27		2018/06/27		2018/06/27			
# Bordereau					E-915936		E-915936		E-915937			
	Unités	A	B	C	WK-TP-18-7-B	CR	WK-TP-18-6-C	CR	BL TERRAIN WK-TP-18-6	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	2.9		4.3		N/A		N/A	N/A
VOLATILS												
Benzène	mg/kg	0.2	0.5	5	<0.10		<0.10		<0.10		0.10	1916781
Chlorobenzène	mg/kg	0.2	1	10	<0.20		<0.20		<0.20		0.20	1916781
Dichloro-1,2 benzène	mg/kg	0.2	1	10	<0.20		<0.20		<0.20		0.20	1916781
Dichloro-1,3 benzène	mg/kg	0.2	1	10	<0.20		<0.20		<0.20		0.20	1916781
Dichloro-1,4 benzène	mg/kg	0.2	1	10	<0.20		<0.20		<0.20		0.20	1916781
Éthylbenzène	mg/kg	0.2	5	50	<0.20		0.31	A-B	<0.20		0.20	1916781
Styrène	mg/kg	0.2	5	50	<0.20		<0.20		<0.20		0.20	1916781
Toluène	mg/kg	0.2	3	30	<0.20		<0.20		<0.20		0.20	1916781
Xylènes (o,m,p) †	mg/kg	0.4	5	50	<0.20		2.4	A-B	<0.20		0.20	1916781
Récupération des Surrogates (%)												
4-Bromofluorobenzène	%	-	-	-	94		93		93		N/A	1916781
D10-Ethylbenzène	%	-	-	-	102		105		137 (1)		N/A	1916781
D4-1,2-Dichloroéthane	%	-	-	-	103		99		102		N/A	1916781
D8-Toluène	%	-	-	-	99		99		98		N/A	1916781
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre (1) La récupération ou l'écart relatif (RPD) pour ce composé est en dehors des limites de contrôle, mais l'ensemble du contrôle qualité rencontre les critères d'acceptabilité pour cette analyse												

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

MÉTAUX EXTRACTIBLES TOTAUX (SOL)

ID Maxxam					FN1073			
Date d'échantillonnage					2018/06/27			
# Bordereau					E-915936			
	Unités	A	B	C	WK-TP-18-6-C	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	4.3		N/A	N/A
MÉTAUX								
Cadmium (Cd)	mg/kg	1.5	5	20	<0.10		0.10	1916569
Chrome (Cr)	mg/kg	100	250	800	4.2	<A	1.0	1916569
Cuivre (Cu)	mg/kg	50	100	500	4.9	<A	1.0	1916569
Nickel (Ni)	mg/kg	50	100	500	3.0	<A	0.50	1916569
Plomb (Pb)	mg/kg	50	500	1000	1.6	<A	1.0	1916569
Zinc (Zn)	mg/kg	140	500	1500	12	<A	5.0	1916569
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable								

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

INTERPRETATION QUALITATIVE
Hydrocarbures pétroliers (C10-C50)

Échantillon	Interpretation Qualitative
WK-TP-18-7-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-TP-18-6-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-TP-18-6-C	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

REMARQUES GÉNÉRALES

Tous les résultats sont calculés sur une base sèche excepté lorsque non-applicable.

Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1067
HAP (CCME): Échantillon reçu congelé.: FN1067
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1070
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1070
HAP (CCME): Échantillon reçu congelé.: FN1070
CCME F1/BTEX-MeOH sur le terrain: Analyses demandées avec délai de conservation dépassé: FN1070
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1072, FN1073
Métaux extractibles totaux par ICP-MS: Échantillon reçu congelé.: FN1073
HAP (CCME): Échantillon reçu congelé.: FN1073
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1074, FN1078
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1078
HAP (CCME): Échantillon reçu congelé.: FN1078
CCME F1/BTEX-MeOH sur le terrain: Analyses demandées avec délai de conservation dépassé: FN1078

A,B,C,CR: Les critères des sols proviennent de l'Annexe 2 du « Guide d'intervention-Protection des sols et réhabilitation des terrains contaminés. MDDELCC, 2016. » et intitulé « Grille des critères génériques pour les sols ». Les critères des sols sont ceux de la province géologique des Basses-Terres du Saint-Laurent.

Les critères A et B pour l'eau souterraine proviennent de l'annexe 7 intitulé « Grille des critères de qualité des eaux souterraines » du guide d'intervention mentionné plus haut. A=Eau de consommation; B=Résurgence dans l'eau de surface

Ces références ne sont rapportées qu'à titre indicatif et ne doivent être interprétées dans aucun autre contexte.

- = Ce composé ne fait pas partie de la réglementation.

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

Veuillez noter que les résultats ci-dessus ont été corrigés pour le blanc d'instrument.

Noter que les résultats totaux sont arrondis à deux chiffres significatifs.

L'extraction a été faite à délai de conservation dépassé pour les échantillons FN1058-03, FN1059-03, FN1063-03, FN1064-03, FN1070-03, FN1074-03 et FN1078-03.

HAP PAR GCMS (SOL)

Les résultats bruts non-arrondis sont utilisés dans le calcul du benzo(b+j+k)fluoranthène. Ce résultat total est alors arrondi à deux chiffres significatifs.

HYDROCARBURES PAR GCFID (SOL)

FN1074:

C10 - C28 : Même région chromatographique que le diesel #1, le kérosène et le carburant d'aviation.

La similitude des hydrocarbures rapportés est obtenue par une comparaison visuelle du chromatogramme de l'échantillon avec la bibliothèque des chromatogrammes des produits de référence. Comme certaines variables tels que les multiproduits, le degré et le type de dégradation et la présence d'hydrocarbures non pétrogénétiques qui ne peuvent pas être reproduites dans les spectres de référence, l'information doit être vue comme qualitative et, en conséquence, Maxxam ne peut aucunement être tenu responsable des conclusions formulées pour ces données.

HAM PAR GC/MS (SOL)

Veuillez noter que les échantillons sont analysés par Headspace GC/MS.

Les résultats ne se rapportent qu'aux échantillons soumis pour analyse

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1916371	VLP	Blanc fortifié	1-Chlorooctadécane	2018/07/14		109	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/14		86	%
1916371	VLP	Blanc de méthode	1-Chlorooctadécane	2018/07/14		114	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/14	<100		mg/kg
1916377	VLP	Blanc fortifié	D10-Anthracène	2018/07/14		80	%
			D12-Benzo(a)pyrène	2018/07/14		80	%
			D14-Terphenyl	2018/07/14		87	%
			D8-Acenaphthylene	2018/07/14		83	%
			D8-Naphtalène	2018/07/14		85	%
			Acénaphène	2018/07/14		72	%
			Acénaphtylène	2018/07/14		75	%
			Anthracène	2018/07/14		76	%
			Benzo(a)anthracène	2018/07/14		65	%
			Benzo(a)pyrène	2018/07/14		75	%
			Benzo(b)fluoranthène	2018/07/14		66	%
			Benzo(j)fluoranthène	2018/07/14		79	%
			Benzo(k)fluoranthène	2018/07/14		60	%
			Benzo(b+j+k)fluoranthène	2018/07/14		684000	%
			Benzo(c)phénanthrène	2018/07/14		73	%
			Benzo(ghi)pérylène	2018/07/14		73	%
			Chrysène	2018/07/14		67	%
			Dibenzo(a,h)anthracène	2018/07/14		65	%
			Dibenzo(a,i)pyrène	2018/07/14		33 (1)	%
			Dibenzo(a,h)pyrène	2018/07/14		32 (1)	%
			Dibenzo(a,l)pyrène	2018/07/14		75	%
			7,12-Diméthylbenzanthracène	2018/07/14		62	%
			Fluoranthène	2018/07/14		71	%
			Fluorène	2018/07/14		77	%
			Indéno(1,2,3-cd)pyrène	2018/07/14		70	%
			3-Méthylcholanthrène	2018/07/14		37 (1)	%
			Naphtalène	2018/07/14		82	%
			Phénanthrène	2018/07/14		72	%
			Pyrène	2018/07/14		73	%
			2-Méthylnaphtalène	2018/07/14		82	%
			1-Méthylnaphtalène	2018/07/14		78	%
			1,3-Diméthylnaphtalène	2018/07/14		77	%
			2,3,5-Triméthylnaphtalène	2018/07/14		77	%
1916377	VLP	Blanc de méthode	D10-Anthracène	2018/07/14		91	%
			D12-Benzo(a)pyrène	2018/07/14		81	%
			D14-Terphenyl	2018/07/14		89	%
			D8-Acenaphthylene	2018/07/14		89	%
			D8-Naphtalène	2018/07/14		92	%
			Acénaphène	2018/07/14	<0.10		mg/kg
			Acénaphtylène	2018/07/14	<0.10		mg/kg
			Anthracène	2018/07/14	<0.10		mg/kg
			Benzo(a)anthracène	2018/07/14	<0.050		mg/kg
			Benzo(a)pyrène	2018/07/14	<0.050		mg/kg
			Benzo(b)fluoranthène	2018/07/14	<0.050		mg/kg
			Benzo(j)fluoranthène	2018/07/14	<0.050		mg/kg
			Benzo(k)fluoranthène	2018/07/14	<0.050		mg/kg
			Benzo(b+j+k)fluoranthène	2018/07/14	<0.050		mg/kg

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			Benzo(c)phénanthrène	2018/07/14	<0.10		mg/kg
			Benzo(ghi)pérylène	2018/07/14	<0.050		mg/kg
			Chrysène	2018/07/14	<0.050		mg/kg
			Dibenzo(a,h)anthracène	2018/07/14	<0.050		mg/kg
			Dibenzo(a,i)pyrène	2018/07/14	<0.10		mg/kg
			Dibenzo(a,h)pyrène	2018/07/14	<0.10		mg/kg
			Dibenzo(a,l)pyrène	2018/07/14	<0.10		mg/kg
			7,12-Diméthylbenzanthracène	2018/07/14	<0.10		mg/kg
			Fluoranthène	2018/07/14	<0.10		mg/kg
			Fluorène	2018/07/14	<0.10		mg/kg
			Indéno(1,2,3-cd)pyrène	2018/07/14	<0.050		mg/kg
			3-Méthylcholanthrène	2018/07/14	<0.10		mg/kg
			Naphtalène	2018/07/14	<0.010		mg/kg
			Phénanthrène	2018/07/14	<0.040		mg/kg
			Pyrène	2018/07/14	<0.10		mg/kg
			2-Méthylnaphtalène	2018/07/14	<0.10		mg/kg
			1-Méthylnaphtalène	2018/07/14	<0.10		mg/kg
			1,3-Diméthylnaphtalène	2018/07/14	<0.10		mg/kg
			2,3,5-Triméthylnaphtalène	2018/07/14	<0.10		mg/kg
1916384	ABE	Blanc fortifié	1,4-Difluorobenzène	2018/07/14		100	%
			4-Bromofluorobenzène	2018/07/14		97	%
			D10-Ethylbenzène	2018/07/14		108	%
			D4-1,2-Dichloroéthane	2018/07/14		112	%
			Benzène	2018/07/14		105	%
			Toluène	2018/07/14		94	%
			Éthylbenzène	2018/07/14		109	%
			o-Xylène	2018/07/14		101	%
			p+m-Xylène	2018/07/14		97	%
			Xylènes (o,m,p)	2018/07/14		99	%
			F1 (C6-C10)	2018/07/14		104	%
1916384	ABE	Blanc de méthode	1,4-Difluorobenzène	2018/07/14		100	%
			4-Bromofluorobenzène	2018/07/14		97	%
			D10-Ethylbenzène	2018/07/14		109	%
			D4-1,2-Dichloroéthane	2018/07/14		110	%
			Benzène	2018/07/14	<0.0050		mg/kg
			Toluène	2018/07/14	<0.020		mg/kg
			Éthylbenzène	2018/07/14	<0.010		mg/kg
			o-Xylène	2018/07/14	<0.020		mg/kg
			p+m-Xylène	2018/07/14	<0.040		mg/kg
			Xylènes (o,m,p)	2018/07/14	<0.040		mg/kg
			F1 (C6-C10)	2018/07/14	<10		mg/kg
			F1 (C6-C10) - BTEX	2018/07/14	<10		mg/kg
1916411	CG2	Blanc fortifié	1-Chlorooctadécane	2018/07/16		66	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/16		80	%
1916411	CG2	Blanc de méthode	1-Chlorooctadécane	2018/07/16		99	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/16	<100		mg/kg
1916413	JRM	Blanc fortifié	D10-Anthracène	2018/07/16		96	%
			D12-Benzo(a)pyrène	2018/07/16		96	%
			D14-Terphenyl	2018/07/16		88	%
			D8-Acenaphthylene	2018/07/16		80	%
			D8-Naphtalène	2018/07/16		94	%

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			Acénaphène	2018/07/16		88	%
			Acénaphylène	2018/07/16		92	%
			Anthracène	2018/07/16		97	%
			Benzo(a)anthracène	2018/07/16		92	%
			Benzo(a)pyrène	2018/07/16		89	%
			Benzo(b)fluoranthène	2018/07/16		93	%
			Benzo(j)fluoranthène	2018/07/16		95	%
			Benzo(k)fluoranthène	2018/07/16		89	%
			Benzo(b+j+k)fluoranthène	2018/07/16		92	%
			Benzo(c)phénanthrène	2018/07/16		91	%
			Benzo(ghi)pérylène	2018/07/16		90	%
			Chrysène	2018/07/16		94	%
			Dibenzo(a,h)anthracène	2018/07/16		92	%
			Dibenzo(a,i)pyrène	2018/07/16		87	%
			Dibenzo(a,h)pyrène	2018/07/16		81	%
			Dibenzo(a,l)pyrène	2018/07/16		94	%
			7,12-Diméthylbenzanthracène	2018/07/16		85	%
			Fluoranthène	2018/07/16		93	%
			Fluorène	2018/07/16		93	%
			Indéno(1,2,3-cd)pyrène	2018/07/16		92	%
			3-Méthylcholanthrène	2018/07/16		96	%
			Naphtalène	2018/07/16		98	%
			Phénanthrène	2018/07/16		94	%
			Pyrène	2018/07/16		94	%
			2-Méthylnaphtalène	2018/07/16		99	%
			1-Méthylnaphtalène	2018/07/16		92	%
			1,3-Diméthylnaphtalène	2018/07/16		90	%
			2,3,5-Triméthylnaphtalène	2018/07/16		91	%
1916413	JRM	Blanc de méthode	D10-Anthracène	2018/07/16		98	%
			D12-Benzo(a)pyrène	2018/07/16		98	%
			D14-Terphenyl	2018/07/16		88	%
			D8-Acenaphthylene	2018/07/16		84	%
			D8-Naphtalène	2018/07/16		98	%
			Acénaphène	2018/07/16	<0.10		mg/kg
			Acénaphylène	2018/07/16	<0.10		mg/kg
			Anthracène	2018/07/16	<0.10		mg/kg
			Benzo(a)anthracène	2018/07/16	<0.050		mg/kg
			Benzo(a)pyrène	2018/07/16	<0.050		mg/kg
			Benzo(b)fluoranthène	2018/07/16	<0.050		mg/kg
			Benzo(j)fluoranthène	2018/07/16	<0.050		mg/kg
			Benzo(k)fluoranthène	2018/07/16	<0.050		mg/kg
			Benzo(b+j+k)fluoranthène	2018/07/16	<0.050		mg/kg
			Benzo(c)phénanthrène	2018/07/16	<0.10		mg/kg
			Benzo(ghi)pérylène	2018/07/16	<0.050		mg/kg
			Chrysène	2018/07/16	<0.050		mg/kg
			Dibenzo(a,h)anthracène	2018/07/16	<0.050		mg/kg
			Dibenzo(a,i)pyrène	2018/07/16	<0.10		mg/kg
			Dibenzo(a,h)pyrène	2018/07/16	<0.10		mg/kg
			Dibenzo(a,l)pyrène	2018/07/16	<0.10		mg/kg
			7,12-Diméthylbenzanthracène	2018/07/16	<0.10		mg/kg
			Fluoranthène	2018/07/16	<0.10		mg/kg

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			Fluorène	2018/07/16	<0.10		mg/kg
			Indéno(1,2,3-cd)pyrène	2018/07/16	<0.050		mg/kg
			3-Méthylcholanthrène	2018/07/16	<0.10		mg/kg
			Naphtalène	2018/07/16	<0.010		mg/kg
			Phénanthrène	2018/07/16	<0.040		mg/kg
			Pyrène	2018/07/16	<0.10		mg/kg
			2-Méthylnaphtalène	2018/07/16	<0.10		mg/kg
			1-Méthylnaphtalène	2018/07/16	<0.10		mg/kg
			1,3-Diméthylnaphtalène	2018/07/16	<0.10		mg/kg
			2,3,5-Triméthylnaphtalène	2018/07/16	<0.10		mg/kg
1916421	CG2	Blanc fortifié	O-Terphenyl	2018/07/16		76	%
			F2 (C10-C16)	2018/07/16		89	%
			F3 (C16-C34)	2018/07/16		89	%
			F4 (C34-C50)	2018/07/16		89	%
1916421	CG2	Blanc de méthode	O-Terphenyl	2018/07/16		86	%
			F2 (C10-C16)	2018/07/16	<10		mg/kg
			F3 (C16-C34)	2018/07/16	<50		mg/kg
			F4 (C34-C50)	2018/07/16	<50		mg/kg
1916569	JRC	MRC	Cadmium (Cd)	2018/07/16		89	%
			Chrome (Cr)	2018/07/16		90	%
			Cuivre (Cu)	2018/07/16		90	%
			Nickel (Ni)	2018/07/16		91	%
			Plomb (Pb)	2018/07/16		84	%
			Zinc (Zn)	2018/07/16		91	%
1916569	JRC	Blanc fortifié	Cadmium (Cd)	2018/07/16		93	%
			Chrome (Cr)	2018/07/16		96	%
			Cuivre (Cu)	2018/07/16		96	%
			Nickel (Ni)	2018/07/16		96	%
			Plomb (Pb)	2018/07/16		89	%
			Zinc (Zn)	2018/07/16		98	%
1916569	JRC	Blanc de méthode	Cadmium (Cd)	2018/07/16	<0.10		mg/kg
			Chrome (Cr)	2018/07/16	<1.0		mg/kg
			Cuivre (Cu)	2018/07/16	<1.0		mg/kg
			Nickel (Ni)	2018/07/16	<0.50		mg/kg
			Plomb (Pb)	2018/07/16	<1.0		mg/kg
			Zinc (Zn)	2018/07/16	<5.0		mg/kg
1916781	MEP	Blanc fortifié	4-Bromofluorobenzène	2018/07/17		91	%
			D10-Ethylbenzène	2018/07/17		94	%
			D4-1,2-Dichloroéthane	2018/07/17		103	%
			D8-Toluène	2018/07/17		103	%
			Benzène	2018/07/17		87	%
			Chlorobenzène	2018/07/17		85	%
			Dichloro-1,2 benzène	2018/07/17		76	%
			Dichloro-1,3 benzène	2018/07/17		78	%
			Dichloro-1,4 benzène	2018/07/17		74	%
			Éthylbenzène	2018/07/17		83	%
			Styrène	2018/07/17		83	%
			Toluène	2018/07/17		87	%
			Xylènes (o,m,p)	2018/07/17		81	%
1916781	MEP	Blanc de méthode	4-Bromofluorobenzène	2018/07/17		94	%
			D10-Ethylbenzène	2018/07/17		99	%

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			D4-1,2-Dichloroéthane	2018/07/17		101	%
			D8-Toluène	2018/07/17		100	%
			Benzène	2018/07/17	<0.10		mg/kg
			Chlorobenzène	2018/07/17	<0.20		mg/kg
			Dichloro-1,2 benzène	2018/07/17	<0.20		mg/kg
			Dichloro-1,3 benzène	2018/07/17	<0.20		mg/kg
			Dichloro-1,4 benzène	2018/07/17	<0.20		mg/kg
			Éthylbenzène	2018/07/17	<0.20		mg/kg
			Styrène	2018/07/17	<0.20		mg/kg
			Toluène	2018/07/17	<0.20		mg/kg
			Xylènes (o,m,p)	2018/07/17	<0.20		mg/kg

MRC: Un échantillon de concentration connue préparé dans des conditions rigoureuses par un organisme externe. Utilisé pour vérifier la justesse de la méthode.

Blanc fortifié: Un blanc, d'une matrice exempte de contaminants, auquel a été ajouté une quantité connue d'analyte provenant généralement d'une deuxième source. Utilisé pour évaluer la précision de la méthode.

Blanc de méthode: Une partie aliquote de matrice pure soumise au même processus analytique que les échantillons, du prétraitement au dosage. Sert à évaluer toutes contaminations du laboratoire.

Surrogate: Composé se comportant de façon similaire aux composés analysés et ajouté à l'échantillon avant l'analyse. Sert à évaluer la qualité de l'extraction.

Réc = Récupération

(1) La récupération ou l'écart relatif (RPD) pour ce composé est en dehors des limites de contrôle, mais l'ensemble du contrôle qualité rencontre les critères d'acceptabilité pour cette analyse

Dossier Maxxam: B828103
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

PAGE DES SIGNATURES DE VALIDATION

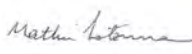
Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:






Francois Faucher, B.Sc., Chimiste




Maria Dragna Apopei, B.Sc., Chimiste




Mathieu Letourneau, B.Sc., Chimiste, Spécialiste scientifique

Michel Poulin, B.Sc., Chimiste

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Votre # du projet: P-0014860-0-00-100-04

Adresse du site: WASKAGANISH

Votre # Bordereau: 933433, 933434

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/19

Rapport: R2384153

Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B828106

Reçu: 2018/07/09, 14:00

Matrice: SOL
Nombre d'échantillons reçus: 6

Analyses	Quantité	Date de l' extraction	Date Analysé	Méthode de laboratoire	Référence Primaire
Hydrocarbures pétroliers (C10-C50)	1	2018/07/17	2018/07/17	QUE SOP-00210	MA400-HYD 1.1 R3 m
Hydrocarbures pétroliers (C10-C50) (1)	1	2018/07/18	2018/07/18	STL SOP-00172	MA.400-HYD. 1.1 R3 m
CCME F1/BTEX-MeOH sur le terrain (1, 2)	1	N/A	2018/07/19	STL SOP-00131	CCME PHC-CWS m
Hydrocarbures pétroliers (F2-F4) (1, 2)	1	2018/07/18	2018/07/18	STL SOP-00170	CCME PHC-CWS m
Éthylène glycol par colorimétrie	2	2018/07/13	2018/07/13	QUE SOP-00154	MA.400-Eth-Gly1.0R4m
Interprétation des produits pétroliers	1	N/A	2018/07/17		MA408-IdePet 1.0 R1m
HAM-Conservation au MeOH sur le terrain (3)	3	N/A	2018/07/17	QUE SOP-00202	MA.400-COV 2.0 R4 m
HAP (CCME)	1	2018/07/17	2018/07/17	QUE SOP-00208	MA.400-HAP 1.1 R5 m

Remarques:

Les laboratoires Maxxam sont accrédités ISO/IEC 17025:2005. Sauf indication contraire, les méthodes d'analyses utilisées par Maxxam s'inspirent des méthodes de référence d'organismes provinciaux, fédéraux et américains, tel que le CCME, le MDDELCC, l'EPA et l'APHA.

Toutes les analyses présentées ont été réalisées conformément aux procédures et aux pratiques relatives à la méthodologie, à l'assurance qualité et au contrôle de la qualité généralement appliquées par les employés de Maxxam (sauf s'il en a été convenu autrement par écrit entre le client et Maxxam). Toutes les données de laboratoire rencontrent les contrôles statistiques et respectent tous les critères du CQ et les critères de performance des méthodes, sauf s'il en a été signalé autrement. Tous les blancs de méthode sont rapportés, toutefois, les données des échantillons correspondants ne sont pas corrigées pour la valeur du blanc, sauf indication contraire.

Les responsabilités de Maxxam sont restreintes au coût réel de l'analyse, sauf s'il en a été convenu autrement par écrit. Il n'existe aucune autre garantie, explicite ou implicite. Le client a fait appel à Maxxam pour l'analyse de ses échantillons conformément aux méthodes de référence mentionnées dans ce rapport. L'interprétation et l'utilisation des résultats sont sous l'entière responsabilité du client et ne font pas partie des services offerts par Maxxam, sauf si convenu autrement par écrit.

Les résultats des échantillons solides, sauf les biotes, sont rapportés en fonction de la masse sèche, sauf indication contraire. Les analyses organiques ne sont pas corrigées en fonction de la récupération, sauf pour les méthodes de dilution isotopique.

Les résultats s'appliquent seulement aux échantillons analysés.

Le présent rapport ne doit pas être reproduit, sinon dans son intégralité, sans le consentement écrit du laboratoire.

Lorsque la méthode de référence comprend un suffixe « m », cela signifie que la méthode d'analyse du laboratoire contient des modifications validées et appliquées afin d'améliorer la performance de la méthode de référence.

Notez: Les données brutes sont utilisées pour le calcul du RPD (% d'écart relatif). L'arrondissement des résultats finaux peut expliquer la variation apparente.

Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Votre # Bordereau: 933433, 933434

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/19
Rapport: R2384153
Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B828106

Reçu: 2018/07/09, 14:00

- (1) Cette analyse a été effectuée par Maxxam -Ville St. Laurent
- (2) Tous les résultats pour le CCME répondent aux critères exigés, sauf indication contraire dans le rapport. Les méthodes du SP-HCP utilisées par Maxxam respectent tous les éléments imposés par la méthode de référence et les éléments se rapportant à la performance ont été validés. Toutes les modifications ont été validées et jugées équivalentes d'après l'Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods, September 2003. La documentation est fournie sur demande. Différence par rapport à la Méthode de référence pour le standard pancanadien relatif aux hydrocarbures pétroliers dans le sol – méthode du 1er volet : les résultats pour les fractions F2/F3/F4 sont rapportés à l'aide d'une extraction à froid par solvant au lieu d'une extraction avec un appareil Soxhlet.
- (3) Aucune date d'extraction n'est fournie pour les analyses de F1/BTEX et COV lorsque les sols sont conservés dans le méthanol sur le terrain. La date d'extraction correspond à la date d'échantillonnage à moins d'indication contraire.

Note : Les paramètres inclus dans le présent certificat sont accrédités par le MDDELCC, à moins d'indication contraire.

clé de cryptage

Veillez adresser toute question concernant ce certificat d'analyse à votre chargé(e) de projets
Alain Lemieux, Chargé de projets
Courriel: ALemieux@maxxam.ca
Téléphone (418)658-5784 Ext:7066451

=====
Ce rapport a été produit et distribué en utilisant une procédure automatisée sécuritaire.

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les « signataires » requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Dossier Maxxam: B828106
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

ÉTHYLÈNE GLYCOL PAR COLORIMÉTRIE (SOL)

ID Maxxam					FN1097		FN1100			
Date d'échantillonnage					2018/06/26		2018/06/26			
# Bordereau					933434		933434			
	Unités	A	B	C	WK-TP-18-9-A	CR	WK-TP-18-9-D	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	6.3		10		N/A	N/A
GLYCOLS										
Éthylène glycol	mg/kg	2	97	411	<2.0		<2.0		2.0	1916334
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable										

Dossier Maxxam: B828106
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam					FN1086			
Date d'échantillonnage					2018/06/26			
# Bordereau					933433			
	Unités	A	B	C	WK-TP-18-8-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	1.8		N/A	N/A
VOLATILS								
Benzène	mg/kg	0.2	0.5	5	<0.0050		0.0050	1917211
Toluène	mg/kg	0.2	3	30	<0.020		0.020	1917211
Éthylbenzène	mg/kg	0.2	5	50	<0.010		0.010	1917211
o-Xylène	mg/kg	-	-	-	<0.020		0.020	1917211
p+m-Xylène	mg/kg	-	-	-	<0.040		0.040	1917211
Xylènes (o,m,p) †	mg/kg	0.4	5	50	<0.040		0.040	1917211
F1 (C6-C10) †	mg/kg	-	-	-	<10		10	1917211
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	<10		10	1917211
Récupération des Surrogates (%)								
1,4-Difluorobenzène	%	-	-	-	100		N/A	1917211
4-Bromofluorobenzène	%	-	-	-	99		N/A	1917211
D10-Ethylbenzène	%	-	-	-	96		N/A	1917211
D4-1,2-Dichloroéthane	%	-	-	-	95		N/A	1917211
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre								

Dossier Maxxam: B828106
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam					FN1085			
Date d'échantillonnage					2018/06/26			
# Bordereau					933433			
	Unités	A	B	C	WK-TP-18-8-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	2.7		N/A	N/A
HAP								
Acénaphène	mg/kg	0.1	10	100	<0.10		0.10	1916832
Acénaphylène	mg/kg	0.1	10	100	<0.10		0.10	1916832
Anthracène	mg/kg	0.1	10	100	<0.10		0.10	1916832
Benzo(a)anthracène	mg/kg	0.1	1	10	<0.050		0.050	1916832
Benzo(a)pyrène	mg/kg	0.1	1	10	<0.050		0.050	1916832
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	<0.050		0.050	1916832
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	<0.050		0.050	1916832
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	<0.050		0.050	1916832
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	<0.050		0.050	1916832
Benzo(c)phénanthrène	mg/kg	0.1	1	10	<0.10		0.10	1916832
Benzo(ghi)pérylène	mg/kg	0.1	1	10	<0.050		0.050	1916832
Chrysène	mg/kg	0.1	1	10	<0.050		0.050	1916832
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	<0.050		0.050	1916832
Dibenzo(a,i)pyrène	mg/kg	0.1	1	10	<0.10		0.10	1916832
Dibenzo(a,h)pyrène	mg/kg	0.1	1	10	<0.10		0.10	1916832
Dibenzo(a,l)pyrène	mg/kg	0.1	1	10	<0.10		0.10	1916832
7,12-Diméthylbenzanthracène	mg/kg	0.1	1	10	<0.10		0.10	1916832
Fluoranthène	mg/kg	0.1	10	100	<0.10		0.10	1916832
Fluorène	mg/kg	0.1	10	100	<0.10		0.10	1916832
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	<0.050		0.050	1916832
3-Méthylcholanthrène	mg/kg	0.1	1	10	<0.10		0.10	1916832
Naphtalène	mg/kg	0.1	5	50	<0.010		0.010	1916832
Phénanthrène	mg/kg	0.1	5	50	<0.040		0.040	1916832
Pyrène	mg/kg	0.1	10	100	<0.10		0.10	1916832
2-Méthylnaphtalène	mg/kg	0.1	1	10	<0.10		0.10	1916832
1-Méthylnaphtalène	mg/kg	0.1	1	10	<0.10		0.10	1916832
1,3-Diméthylnaphtalène	mg/kg	0.1	1	10	<0.10		0.10	1916832
2,3,5-Triméthylnaphtalène	mg/kg	0.1	1	10	<0.10		0.10	1916832
Récupération des Surrogates (%)								
D10-Anthracène	%	-	-	-	70		N/A	1916832
D12-Benzo(a)pyrène	%	-	-	-	72		N/A	1916832
D14-Terphenyl	%	-	-	-	76		N/A	1916832
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre								

Dossier Maxxam: B828106
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam					FN1085			
Date d'échantillonnage					2018/06/26			
# Bordereau					933433			
	Unités	A	B	C	WK-TP-18-8-A	CR	LDR	Lot CQ
D8-Acenaphthylene	%	-	-	-	75		N/A	1916832
D8-Naphtalène	%	-	-	-	80		N/A	1916832
LDR = Limite de détection rapportée								
Lot CQ = Lot contrôle qualité								
N/A = Non Applicable								

Dossier Maxxam: B828106
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam					FN1085			FN1086			
Date d'échantillonnage					2018/06/26			2018/06/26			
# Bordereau					933433			933433			
	Unités	A	B	C	WK-TP-18-8-A	CR	Lot CQ	WK-TP-18-8-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	2.7		N/A	1.8		N/A	N/A
HYDROCARBURES PÉTROLIERS											
Hydrocarbures pétroliers (C10-C50)	mg/kg	300	700	3500	190	<A	1916831	<100		100	1917284
F2 (C10-C16) †	mg/kg	-	-	-	N/A		N/A	<10		10	1917474
F3 (C16-C34) †	mg/kg	-	-	-	N/A		N/A	<50		50	1917474
F4 (C34-C50) †	mg/kg	-	-	-	N/A		N/A	<50		50	1917474
Ligne de base atteinte à C50 †	mg/kg	-	-	-	N/A		N/A	OUI		N/A	1917474
Récupération des Surrogates (%)											
1-Chlorooctadécane	%	-	-	-	99		1916831	72		N/A	1917284
O-Terphenyl	%	-	-	-	N/A		N/A	81		N/A	1917474
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828106
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (SOL)

ID Maxxam					FN1085			FN1094		FN1096			
Date d'échantillonnage					2018/06/26			2018/06/26		2018/06/26			
# Bordereau					933433			933433		933434			
	Unités	A	B	C	WK-TP-18-8-A	CR	Lot CQ	WK-TP-18-4-E	CR	WK-TP-18-4-F	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	2.7		N/A	30		23		N/A	N/A
VOLATILS													
Benzène	mg/kg	0.2	0.5	5	<0.10		1916781	<0.10		<0.10		0.10	1916540
Chlorobenzène	mg/kg	0.2	1	10	<0.20		1916781	<0.20		<0.20		0.20	1916540
Dichloro-1,2 benzène	mg/kg	0.2	1	10	<0.20		1916781	<0.20		<0.20		0.20	1916540
Dichloro-1,3 benzène	mg/kg	0.2	1	10	<0.20		1916781	<0.20		<0.20		0.20	1916540
Dichloro-1,4 benzène	mg/kg	0.2	1	10	<0.20		1916781	<0.20		<0.20		0.20	1916540
Éthylbenzène	mg/kg	0.2	5	50	<0.20		1916781	<0.20		<0.20		0.20	1916540
Styrène	mg/kg	0.2	5	50	<0.20		1916781	<0.20		<0.20		0.20	1916540
Toluène	mg/kg	0.2	3	30	<0.20		1916781	0.30	A-B	<0.20		0.20	1916540
Xylènes (o,m,p) †	mg/kg	0.4	5	50	<0.20		1916781	<0.20		<0.20		0.20	1916540
Récupération des Surrogates (%)													
4-Bromofluorobenzène	%	-	-	-	93		1916781	99		92		N/A	1916540
D10-Ethylbenzène	%	-	-	-	99		1916781	94		86		N/A	1916540
D4-1,2-Dichloroéthane	%	-	-	-	96		1916781	91		98		N/A	1916540
D8-Toluène	%	-	-	-	95		1916781	90		96		N/A	1916540
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre													

Dossier Maxxam: B828106
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

INTERPRETATION QUALITATIVE
Hydrocarbures pétroliers (C10-C50)

Échantillon	Interpretation Qualitative
WK-TP-18-8-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.

Dossier Maxxam: B828106
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

REMARQUES GÉNÉRALES

Tous les résultats sont calculés sur une base sèche excepté lorsque non-applicable.

Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1085

HAP (CCME): Échantillon reçu congelé.: FN1085

Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1086

Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1086

Éthylène glycol par colorimétrie: Échantillon reçu congelé.: FN1097, FN1100

A,B,C,CR: Les critères des sols proviennent de l'Annexe 2 du « Guide d'intervention-Protection des sols et réhabilitation des terrains contaminés. MDDELCC, 2016. » et intitulé « Grille des critères génériques pour les sols ». Les critères des sols sont ceux de la province géologique des Basses-Terres du Saint-Laurent.

Les critères A et B pour l'eau souterraine proviennent de l'annexe 7 intitulé « Grille des critères de qualité des eaux souterraines » du guide d'intervention mentionné plus haut. A=Eau de consommation; B=Résurgence dans l'eau de surface

Ces références ne sont rapportées qu'à titre indicatif et ne doivent être interprétées dans aucun autre contexte.

- = Ce composé ne fait pas partie de la réglementation.

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

L'extraction a été faite à délai de conservation dépassé pour les échantillons FN1086.

Noter que les résultats totaux sont arrondis à deux chiffres significatifs.

Veuillez noter que les résultats ci-dessus ont été corrigés pour le blanc d'instrument.

HAP PAR GCMS (SOL)

Les résultats bruts non-arrondis sont utilisés dans le calcul du benzo(b+j+k)fluoranthène. Ce résultat total est alors arrondi à deux chiffres significatifs.

HYDROCARBURES PAR GCFID (SOL)

La similitude des hydrocarbures rapportés est obtenue par une comparaison visuelle du chromatogramme de l'échantillon avec la bibliothèque des chromatogrammes des produits de référence. Comme certaines variables tels que les multiproduits, le degré et le type de dégradation et la présence d'hydrocarbures non pétrogénétiques qui ne peuvent pas être reproduites dans les spectres de référence, l'information doit être vue comme qualitative et, en conséquence, Maxxam ne peut aucunement être tenu responsable des conclusions formulées pour ces données.

HAM PAR GC/MS (SOL)

Veuillez noter que les échantillons sont analysés par Headspace GC/MS.

Les résultats ne se rapportent qu'aux échantillons soumis pour analyse

Dossier Maxxam: B828106
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1916334	LAR	Blanc fortifié	Éthylène glycol	2018/07/13		104	%
1916334	LAR	Blanc de méthode	Éthylène glycol	2018/07/13	<2.0		mg/kg
1916540	VLP	Blanc fortifié	4-Bromofluorobenzène	2018/07/17		99	%
			D10-Ethylbenzène	2018/07/17		91	%
			D4-1,2-Dichloroéthane	2018/07/17		97	%
			D8-Toluène	2018/07/17		93	%
			Benzène	2018/07/17		92	%
			Chlorobenzène	2018/07/17		93	%
			Dichloro-1,2 benzène	2018/07/17		86	%
			Dichloro-1,3 benzène	2018/07/17		91	%
			Dichloro-1,4 benzène	2018/07/17		88	%
			Éthylbenzène	2018/07/17		86	%
			Styrène	2018/07/17		87	%
			Toluène	2018/07/17		89	%
			Xylènes (o,m,p)	2018/07/17		111	%
1916540	VLP	Blanc de méthode	4-Bromofluorobenzène	2018/07/17		94	%
			D10-Ethylbenzène	2018/07/17		90	%
			D4-1,2-Dichloroéthane	2018/07/17		95	%
			D8-Toluène	2018/07/17		96	%
			Benzène	2018/07/17	<0.10		mg/kg
			Chlorobenzène	2018/07/17	<0.20		mg/kg
			Dichloro-1,2 benzène	2018/07/17	<0.20		mg/kg
			Dichloro-1,3 benzène	2018/07/17	<0.20		mg/kg
			Dichloro-1,4 benzène	2018/07/17	<0.20		mg/kg
			Éthylbenzène	2018/07/17	<0.20		mg/kg
			Styrène	2018/07/17	<0.20		mg/kg
			Toluène	2018/07/17	<0.20		mg/kg
			Xylènes (o,m,p)	2018/07/17	<0.20		mg/kg
1916781	MEP	Blanc fortifié	4-Bromofluorobenzène	2018/07/17		91	%
			D10-Ethylbenzène	2018/07/17		94	%
			D4-1,2-Dichloroéthane	2018/07/17		103	%
			D8-Toluène	2018/07/17		103	%
			Benzène	2018/07/17		87	%
			Chlorobenzène	2018/07/17		85	%
			Dichloro-1,2 benzène	2018/07/17		76	%
			Dichloro-1,3 benzène	2018/07/17		78	%
			Dichloro-1,4 benzène	2018/07/17		74	%
			Éthylbenzène	2018/07/17		83	%
			Styrène	2018/07/17		83	%
			Toluène	2018/07/17		87	%
			Xylènes (o,m,p)	2018/07/17		81	%
1916781	MEP	Blanc de méthode	4-Bromofluorobenzène	2018/07/17		94	%
			D10-Ethylbenzène	2018/07/17		99	%
			D4-1,2-Dichloroéthane	2018/07/17		101	%
			D8-Toluène	2018/07/17		100	%
			Benzène	2018/07/17	<0.10		mg/kg
			Chlorobenzène	2018/07/17	<0.20		mg/kg
			Dichloro-1,2 benzène	2018/07/17	<0.20		mg/kg
			Dichloro-1,3 benzène	2018/07/17	<0.20		mg/kg
			Dichloro-1,4 benzène	2018/07/17	<0.20		mg/kg
			Éthylbenzène	2018/07/17	<0.20		mg/kg

Dossier Maxxam: B828106
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			Styrène	2018/07/17	<0.20		mg/kg
			Toluène	2018/07/17	<0.20		mg/kg
			Xylènes (o,m,p)	2018/07/17	<0.20		mg/kg
1916831	DF4	Blanc fortifié	1-Chlorooctadécane	2018/07/17		99	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/17		86	%
1916831	DF4	Blanc de méthode	1-Chlorooctadécane	2018/07/17		102	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/17	<100		mg/kg
1916832	ADE	Blanc fortifié	D10-Anthracène	2018/07/17		69	%
			D12-Benzo(a)pyrène	2018/07/17		80	%
			D14-Terphenyl	2018/07/17		79	%
			D8-Acenaphthylene	2018/07/17		77	%
			D8-Naphtalène	2018/07/17		79	%
			Acénaphène	2018/07/17		73	%
			Acénaphthylène	2018/07/17		73	%
			Anthracène	2018/07/17		69	%
			Benzo(a)anthracène	2018/07/17		59	%
			Benzo(a)pyrène	2018/07/17		79	%
			Benzo(b)fluoranthène	2018/07/17		73	%
			Benzo(j)fluoranthène	2018/07/17		87	%
			Benzo(k)fluoranthène	2018/07/17		69	%
			Benzo(b+j+k)fluoranthène	2018/07/17		76	%
			Benzo(c)phénanthrène	2018/07/17		69	%
			Benzo(ghi)pérylène	2018/07/17		70	%
			Chrysène	2018/07/17		62	%
			Dibenzo(a,h)anthracène	2018/07/17		67	%
			Dibenzo(a,i)pyrène	2018/07/17		52	%
			Dibenzo(a,h)pyrène	2018/07/17		65	%
			Dibenzo(a,l)pyrène	2018/07/17		77	%
			7,12-Diméthylbenzanthracène	2018/07/17		76	%
			Fluoranthène	2018/07/17		74	%
			Fluorène	2018/07/17		70	%
			Indéno(1,2,3-cd)pyrène	2018/07/17		68	%
			3-Méthylcholanthrène	2018/07/17		79	%
			Naphtalène	2018/07/17		76	%
			Phénanthrène	2018/07/17		65	%
			Pyrène	2018/07/17		75	%
			2-Méthylnaphtalène	2018/07/17		75	%
			1-Méthylnaphtalène	2018/07/17		73	%
			1,3-Diméthylnaphtalène	2018/07/17		73	%
			2,3,5-Triméthylnaphtalène	2018/07/17		75	%
1916832	ADE	Blanc de méthode	D10-Anthracène	2018/07/17		81	%
			D12-Benzo(a)pyrène	2018/07/17		81	%
			D14-Terphenyl	2018/07/17		83	%
			D8-Acenaphthylene	2018/07/17		84	%
			D8-Naphtalène	2018/07/17		88	%
			Acénaphène	2018/07/17	<0.10		mg/kg
			Acénaphthylène	2018/07/17	<0.10		mg/kg
			Anthracène	2018/07/17	<0.10		mg/kg
			Benzo(a)anthracène	2018/07/17	<0.050		mg/kg
			Benzo(a)pyrène	2018/07/17	<0.050		mg/kg
			Benzo(b)fluoranthène	2018/07/17	<0.050		mg/kg

Dossier Maxxam: B828106
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			Benzo(j)fluoranthène	2018/07/17	<0.050		mg/kg
			Benzo(k)fluoranthène	2018/07/17	<0.050		mg/kg
			Benzo(b+j+k)fluoranthène	2018/07/17	<0.050		mg/kg
			Benzo(c)phénanthrène	2018/07/17	<0.10		mg/kg
			Benzo(ghi)pérylène	2018/07/17	<0.050		mg/kg
			Chrysène	2018/07/17	<0.050		mg/kg
			Dibenzo(a,h)anthracène	2018/07/17	<0.050		mg/kg
			Dibenzo(a,i)pyrène	2018/07/17	<0.10		mg/kg
			Dibenzo(a,h)pyrène	2018/07/17	<0.10		mg/kg
			Dibenzo(a,l)pyrène	2018/07/17	<0.10		mg/kg
			7,12-Diméthylbenzanthracène	2018/07/17	<0.10		mg/kg
			Fluoranthène	2018/07/17	<0.10		mg/kg
			Fluorène	2018/07/17	<0.10		mg/kg
			Indéno(1,2,3-cd)pyrène	2018/07/17	<0.050		mg/kg
			3-Méthylcholanthrène	2018/07/17	<0.10		mg/kg
			Naphtalène	2018/07/17	<0.010		mg/kg
			Phénanthrène	2018/07/17	<0.040		mg/kg
			Pyrène	2018/07/17	<0.10		mg/kg
			2-Méthylnaphtalène	2018/07/17	<0.10		mg/kg
			1-Méthylnaphtalène	2018/07/17	<0.10		mg/kg
			1,3-Diméthylnaphtalène	2018/07/17	<0.10		mg/kg
			2,3,5-Triméthylnaphtalène	2018/07/17	<0.10		mg/kg
1917211	NTD	Blanc fortifié	1,4-Difluorobenzène	2018/07/19		105	%
			4-Bromofluorobenzène	2018/07/19		100	%
			D10-Ethylbenzène	2018/07/19		90	%
			D4-1,2-Dichloroéthane	2018/07/19		105	%
			Benzène	2018/07/19		107	%
			Toluène	2018/07/19		90	%
			Éthylbenzène	2018/07/19		94	%
			o-Xylène	2018/07/19		88	%
			p+m-Xylène	2018/07/19		86	%
			Xylènes (o,m,p)	2018/07/19		87	%
			F1 (C6-C10)	2018/07/19		94	%
1917211	NTD	Blanc de méthode	1,4-Difluorobenzène	2018/07/19		102	%
			4-Bromofluorobenzène	2018/07/19		101	%
			D10-Ethylbenzène	2018/07/19		92	%
			D4-1,2-Dichloroéthane	2018/07/19		98	%
			Benzène	2018/07/19	<0.0050		mg/kg
			Toluène	2018/07/19	<0.020		mg/kg
			Éthylbenzène	2018/07/19	<0.010		mg/kg
			o-Xylène	2018/07/19	<0.020		mg/kg
			p+m-Xylène	2018/07/19	<0.040		mg/kg
			Xylènes (o,m,p)	2018/07/19	<0.040		mg/kg
			F1 (C6-C10)	2018/07/19	<10		mg/kg
			F1 (C6-C10) - BTEX	2018/07/19	<10		mg/kg
1917284	RDH	Blanc fortifié	1-Chlorooctadécane	2018/07/18		74	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/18		76	%
1917284	RDH	Blanc de méthode	1-Chlorooctadécane	2018/07/18		85	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/18	<100		mg/kg
1917474	KHO	Blanc fortifié	O-Terphenyl	2018/07/18		75	%
			F2 (C10-C16)	2018/07/18		93	%

Dossier Maxxam: B828106
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1917474	KHO	Blanc de méthode	F3 (C16-C34)	2018/07/18		93	%
			F4 (C34-C50)	2018/07/18		93	%
			O-Terphenyl	2018/07/18		87	%
			F2 (C10-C16)	2018/07/18	<10		mg/kg
			F3 (C16-C34)	2018/07/18	<50		mg/kg
			F4 (C34-C50)	2018/07/18	<50		mg/kg

Blanc fortifié: Un blanc, d'une matrice exempte de contaminants, auquel a été ajouté une quantité connue d'analyte provenant généralement d'une deuxième source. Utilisé pour évaluer la précision de la méthode.

Blanc de méthode: Une partie aliquote de matrice pure soumise au même processus analytique que les échantillons, du prétraitement au dosage. Sert à évaluer toutes contaminations du laboratoire.

Surrogate: Composé se comportant de façon similaire aux composés analysés et ajouté à l'échantillon avant l'analyse. Sert à évaluer la qualité de l'extraction.

Réc = Récupération

Dossier Maxxam: B828106
Date du rapport: 2018/07/19

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

PAGE DES SIGNATURES DE VALIDATION

Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:

Corina Tue



Corina Tue, B.Sc. Chimiste

François Faucher



François Faucher, B.Sc., Chimiste

Mathieu Letourneau



Mathieu Letourneau, B.Sc., Chimiste, Spécialiste scientifique

Michel Poulin



Michel Poulin, B.Sc., Chimiste

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Votre # du projet: P-0014860-0-00-100-04
 Adresse du site: WASKAGANISH
 Votre # Bordereau: 944312, 944313, 933432

Attention: Christine Gervais

Englobe Corp.
 QUÉBEC - PARC TECHNOLOGIQUE
 505 boul. du Parc Technologique
 Bureau 200
 Québec, QC
 CANADA G1P 4S9

Date du rapport: 2018/07/18
 # Rapport: R2383624
 Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B828164

Reçu: 2018/07/09, 14:00

Matrice: SOL
 Nombre d'échantillons reçus: 24

Analyses	Quantité	Date de l'	Date	Méthode de laboratoire	Référence Primaire
		extraction	Analysé		
Hydrocarbures pétroliers (C10-C50)	2	2018/07/16	2018/07/16	QUE SOP-00210	MA400-HYD 1.1 R3 m
Hydrocarbures pétroliers (C10-C50)	22	2018/07/16	2018/07/17	QUE SOP-00210	MA400-HYD 1.1 R3 m
CCME F1/BTEX-MeOH sur le terrain (1, 2)	10	N/A	2018/07/17	STL SOP-00131	CCME PHC-CWS m
Hydrocarbures pétroliers (F2-F4) (1, 2)	10	2018/07/16	2018/07/17	STL SOP-00170	CCME PHC-CWS m
Éthylène glycol par colorimétrie	2	2018/07/13	2018/07/13	QUE SOP-00154	MA.400-Eth-Gly1.0R4m
Interprétation des produits pétroliers	24	N/A	2018/07/17		MA408-IdePet 1.0 R1m
HAM-Conservation au MeOH sur le terrain (3)	8	N/A	2018/07/14	QUE SOP-00202	MA.400-COV 2.0 R4 m
Métaux extractibles totaux par ICP-MS	1	2018/07/17	2018/07/17	QUE SOP-00132	MA.200-Mét. 1.2 R5 m
HAP (CCME)	10	2018/07/16	2018/07/16	QUE SOP-00208	MA.400-HAP 1.1 R5 m

Remarques:

Les laboratoires Maxxam sont accrédités ISO/IEC 17025:2005. Sauf indication contraire, les méthodes d'analyses utilisées par Maxxam s'inspirent des méthodes de référence d'organismes provinciaux, fédéraux et américains, tel que le CCME, le MDDELCC, l'EPA et l'APHA.

Toutes les analyses présentées ont été réalisées conformément aux procédures et aux pratiques relatives à la méthodologie, à l'assurance qualité et au contrôle de la qualité généralement appliquées par les employés de Maxxam (sauf s'il en a été convenu autrement par écrit entre le client et Maxxam). Toutes les données de laboratoire rencontrent les contrôles statistiques et respectent tous les critères du CQ et les critères de performance des méthodes, sauf s'il en a été signalé autrement. Tous les blancs de méthode sont rapportés, toutefois, les données des échantillons correspondants ne sont pas corrigées pour la valeur du blanc, sauf indication contraire.

Les responsabilités de Maxxam sont restreintes au coût réel de l'analyse, sauf s'il en a été convenu autrement par écrit. Il n'existe aucune autre garantie, explicite ou implicite. Le client a fait appel à Maxxam pour l'analyse de ses échantillons conformément aux méthodes de référence mentionnées dans ce rapport. L'interprétation et l'utilisation des résultats sont sous l'entière responsabilité du client et ne font pas partie des services offerts par Maxxam, sauf si convenu autrement par écrit.

Les résultats des échantillons solides, sauf les biotes, sont rapportés en fonction de la masse sèche, sauf indication contraire. Les analyses organiques ne sont pas corrigées en fonction de la récupération, sauf pour les méthodes de dilution isotopique.

Les résultats s'appliquent seulement aux échantillons analysés.

Le présent rapport ne doit pas être reproduit, sinon dans son intégralité, sans le consentement écrit du laboratoire.

Lorsque la méthode de référence comprend un suffixe « m », cela signifie que la méthode d'analyse du laboratoire contient des modifications validées et appliquées afin d'améliorer la performance de la méthode de référence.

Votre # du projet: P-0014860-0-00-100-04

Adresse du site: WASKAGANISH

Votre # Bordereau: 944312, 944313, 933432

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/18

Rapport: R2383624

Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B828164

Reçu: 2018/07/09, 14:00

Notez: Les données brutes sont utilisées pour le calcul du RPD (% d'écart relatif). L'arrondissement des résultats finaux peut expliquer la variation apparente.

(1) Cette analyse a été effectuée par Maxxam -Ville St. Laurent

(2) Tous les résultats pour le CCME répondent aux critères exigés, sauf indication contraire dans le rapport. Les méthodes du SP-HCP utilisées par Maxxam respectent tous les éléments imposés par la méthode de référence et les éléments se rapportant à la performance ont été validés. Toutes les modifications ont été validées et jugées équivalentes d'après l'Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods, September 2003. La documentation est fournie sur demande. Différence par rapport à la Méthode de référence pour le standard pancanadien relatif aux hydrocarbures pétroliers dans le sol – méthode du 1er volet : les résultats pour les fractions F2/F3/F4 sont rapportés à l'aide d'une extraction à froid par solvant au lieu d'une extraction avec un appareil Soxhlet.

(3) Aucune date d'extraction n'est fournie pour les analyses de F1/BTEX et COV lorsque les sols sont conservés dans le méthanol sur le terrain. La date d'extraction correspond à la date d'échantillonnage à moins d'indication contraire.

Note : Les paramètres inclus dans le présent certificat sont accrédités par le MDDELCC, à moins d'indication contraire.

clé de cryptage

Veillez adresser toute question concernant ce certificat d'analyse à votre chargé(e) de projets

Alain Lemieux, Chargé de projets

Courriel: ALemieux@maxxam.ca

Téléphone (418)658-5784 Ext:7066451

=====
Ce rapport a été produit et distribué en utilisant une procédure automatisée sécuritaire.

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

ÉTHYLÈNE GLYCOL PAR COLORIMÉTRIE (SOL)

ID Maxxam						FN1310		FN1313			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						933432		933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-13-A	CR	WK-MA-18-14-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.2		3.6		N/A	N/A
GLYCOLS											
Éthylène glycol	mg/kg	960	960	960	960	<2.0		<2.0		2.0	1916334
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam						FN1279		FN1281			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944312		944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-4-B	CR	WK-MA-18-3-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.2		1.9		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.0050		<0.0050		0.0050	1916720
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.020		<0.020		0.020	1916720
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.010		<0.010		0.010	1916720
o-Xylène	mg/kg	-	-	-	-	<0.020		<0.020		0.020	1916720
p+m-Xylène	mg/kg	-	-	-	-	<0.040		<0.040		0.040	1916720
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.040		<0.040		0.040	1916720
F1 (C6-C10) †	mg/kg	-	-	-	-	<10		<10		10	1916720
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	-	<10		<10		10	1916720
Récupération des Surrogates (%)											
1,4-Difluorobenzène	%	-	-	-	-	100		99		N/A	1916720
4-Bromofluorobenzène	%	-	-	-	-	109		107		N/A	1916720
D10-Ethylbenzène	%	-	-	-	-	115		105		N/A	1916720
D4-1,2-Dichloroéthane	%	-	-	-	-	103		104		N/A	1916720
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam						FN1284			FN1286			
Date d'échantillonnage						2018/06/26			2018/06/26			
# Bordereau						944312			944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-1-A	CR	Lot CQ	WK-MA-18-8-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.7		N/A	2.8		N/A	N/A
VOLATILS												
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.0050		1916720	<0.0050		0.0050	1916797
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.020		1916720	<0.020		0.020	1916797
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.010		1916720	<0.010		0.010	1916797
o-Xylène	mg/kg	-	-	-	-	<0.020		1916720	<0.020		0.020	1916797
p+m-Xylène	mg/kg	-	-	-	-	<0.040		1916720	<0.040		0.040	1916797
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.040		1916720	<0.040		0.040	1916797
F1 (C6-C10) †	mg/kg	-	-	-	-	<10		1916720	<10		10	1916797
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	-	<10		1916720	<10		10	1916797
Récupération des Surrogates (%)												
1,4-Difluorobenzène	%	-	-	-	-	99		1916720	97		N/A	1916797
4-Bromofluorobenzène	%	-	-	-	-	111		1916720	110		N/A	1916797
D10-Ethylbenzène	%	-	-	-	-	103		1916720	104		N/A	1916797
D4-1,2-Dichloroéthane	%	-	-	-	-	104		1916720	104		N/A	1916797
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam						FN1301		FN1302			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-12-B	CR	WK-MA-18-11-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.2		2.3		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.0050		<0.0050		0.0050	1916720
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.020		<0.020		0.020	1916720
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.010		<0.010		0.010	1916720
o-Xylène	mg/kg	-	-	-	-	<0.020		<0.020		0.020	1916720
p+m-Xylène	mg/kg	-	-	-	-	<0.040		<0.040		0.040	1916720
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.040		<0.040		0.040	1916720
F1 (C6-C10) †	mg/kg	-	-	-	-	<10		<10		10	1916720
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	-	<10		<10		10	1916720
Récupération des Surrogates (%)											
1,4-Difluorobenzène	%	-	-	-	-	98		99		N/A	1916720
4-Bromofluorobenzène	%	-	-	-	-	108		110		N/A	1916720
D10-Ethylbenzène	%	-	-	-	-	106		107		N/A	1916720
D4-1,2-Dichloroéthane	%	-	-	-	-	104		109		N/A	1916720
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam						FN1305		FN1307			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-5-B	CR	WK-MA-18-6-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	3.7		3.8		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.0050		<0.0050		0.0050	1916720
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.020		<0.020		0.020	1916720
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.010		<0.010		0.010	1916720
o-Xylène	mg/kg	-	-	-	-	<0.020		<0.020		0.020	1916720
p+m-Xylène	mg/kg	-	-	-	-	<0.040		<0.040		0.040	1916720
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.040		<0.040		0.040	1916720
F1 (C6-C10) †	mg/kg	-	-	-	-	<10		<10		10	1916720
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	-	<10		<10		10	1916720
Récupération des Surrogates (%)											
1,4-Difluorobenzène	%	-	-	-	-	100		97		N/A	1916720
4-Bromofluorobenzène	%	-	-	-	-	111		112		N/A	1916720
D10-Ethylbenzène	%	-	-	-	-	113		107		N/A	1916720
D4-1,2-Dichloroéthane	%	-	-	-	-	106		108		N/A	1916720
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam						FN1311		FN1313			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						933432		933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-13-B	CR	WK-MA-18-14-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	3.9		3.6		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.0050		<0.0050		0.0050	1916720
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.020		<0.020		0.020	1916720
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.010		<0.010		0.010	1916720
o-Xylène	mg/kg	-	-	-	-	<0.020		<0.020		0.020	1916720
p+m-Xylène	mg/kg	-	-	-	-	<0.040		<0.040		0.040	1916720
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.040		<0.040		0.040	1916720
F1 (C6-C10) †	mg/kg	-	-	-	-	<10		<10		10	1916720
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	-	<10		<10		10	1916720
Récupération des Surrogates (%)											
1,4-Difluorobenzène	%	-	-	-	-	100		101		N/A	1916720
4-Bromofluorobenzène	%	-	-	-	-	109		112		N/A	1916720
D10-Ethylbenzène	%	-	-	-	-	109		113		N/A	1916720
D4-1,2-Dichloroéthane	%	-	-	-	-	104		103		N/A	1916720
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1279		FN1281		FN1284			
Date d'échantillonnage						2018/06/26		2018/06/26		2018/06/26			
# Bordereau						944312		944312		944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-4-B	CR	WK-MA-18-3-B	CR	WK-MA-18-1-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.2		1.9		2.7		N/A	N/A
HAP													
Acénaphène	mg/kg	0.28	0.28	0.28	0.28	<0.10		<0.10		<0.10		0.10	1916472
Acénaphylène	mg/kg	320	320	320	320	<0.10		<0.10		<0.10		0.10	1916472
Anthracène	mg/kg	2.5	2.5	32	32	<0.10		<0.10		<0.10		0.10	1916472
Benzo(a)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		<0.050		0.050	1916472
Benzo(a)pyrène	mg/kg	0.7	0.7	1.4	1.4	<0.050		<0.050		<0.050		0.050	1916472
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		<0.050		0.050	1916472
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		<0.050		0.050	1916472
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		<0.050		0.050	1916472
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	-	<0.050		<0.050		<0.050		0.050	1916472
Benzo(c)phénanthrène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
Benzo(ghi)pérylène	mg/kg	-	-	-	-	<0.050		<0.050		<0.050		0.050	1916472
Chrysène	mg/kg	-	-	-	-	<0.050		<0.050		<0.050		0.050	1916472
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		<0.050		0.050	1916472
Dibenzo(a,i)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
Dibenzo(a,h)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
Dibenzo(a,l)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
7,12-Diméthylbenzanthracène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
Fluoranthène	mg/kg	50	50	180	180	<0.10		<0.10		<0.10		0.10	1916472
Fluorène	mg/kg	0.25	0.25	0.25	0.25	<0.10		<0.10		<0.10		0.10	1916472
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	10	<0.050		<0.050		<0.050		0.050	1916472
3-Méthylcholanthrène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
Naphtalène	mg/kg	0.013	0.013	0.013	0.013	<0.010		<0.010		<0.010		0.010	1916472
Phénanthrène	mg/kg	0.046	0.046	0.046	0.046	<0.040		<0.040		<0.040		0.040	1916472
Pyrène	mg/kg	0.1	10	100	100	<0.10		<0.10		<0.10		0.10	1916472
2-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
1-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
1,3-Diméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
2,3,5-Triméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
Récupération des Surrogates (%)													
D10-Anthracène	%	-	-	-	-	62		59		61		N/A	1916472
D12-Benzo(a)pyrène	%	-	-	-	-	64		62		63		N/A	1916472
D14-Terphenyl	%	-	-	-	-	67		63		62		N/A	1916472
LDR = Limite de détection rapportée													
Lot CQ = Lot contrôle qualité													
N/A = Non Applicable													
† Accréditation non existante pour ce paramètre													

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1279		FN1281		FN1284			
Date d'échantillonnage						2018/06/26		2018/06/26		2018/06/26			
# Bordereau						944312		944312		944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-4-B	CR	WK-MA-18-3-B	CR	WK-MA-18-1-A	CR	LDR	Lot CQ
D8-Acenaphthylene	%	-	-	-	-	69		65		66		N/A	1916472
D8-Naphtalène	%	-	-	-	-	67		67		67		N/A	1916472

LDR = Limite de détection rapportée

Lot CQ = Lot contrôle qualité

N/A = Non Applicable

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1299		FN1301			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-7-B	CR	WK-MA-18-12-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	4.0		2.2		N/A	N/A
HAP											
Acénaphtène	mg/kg	0.28	0.28	0.28	0.28	<0.10		<0.10		0.10	1916472
Acénaphthylène	mg/kg	320	320	320	320	<0.10		<0.10		0.10	1916472
Anthracène	mg/kg	2.5	2.5	32	32	<0.10		<0.10		0.10	1916472
Benzo(a)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(a)pyrène	mg/kg	0.7	0.7	1.4	1.4	<0.050		<0.050		0.050	1916472
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Benzo(c)phénanthrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Benzo(ghi)pérylène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Chrysène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Dibenzo(a,i)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Dibenzo(a,h)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Dibenzo(a,l)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
7,12-Diméthylbenzanthracène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Fluoranthène	mg/kg	50	50	180	180	<0.10		<0.10		0.10	1916472
Fluorène	mg/kg	0.25	0.25	0.25	0.25	<0.10		<0.10		0.10	1916472
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
3-Méthylcholanthrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Naphtalène	mg/kg	0.013	0.013	0.013	0.013	<0.010		<0.010		0.010	1916472
Phénanthrène	mg/kg	0.046	0.046	0.046	0.046	<0.040		<0.040		0.040	1916472
Pyrène	mg/kg	0.1	10	100	100	<0.10		<0.10		0.10	1916472
2-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
1-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
1,3-Diméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
2,3,5-Triméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Récupération des Surrogates (%)											
D10-Anthracène	%	-	-	-	-	59		63		N/A	1916472
D12-Benzo(a)pyrène	%	-	-	-	-	65		65		N/A	1916472
D14-Terphenyl	%	-	-	-	-	65		65		N/A	1916472
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											
† Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1299		FN1301			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-7-B	CR	WK-MA-18-12-B	CR	LDR	Lot CQ
D8-Acenaphthylene	%	-	-	-	-	66		62		N/A	1916472
D8-Naphtalène	%	-	-	-	-	69		70		N/A	1916472
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1302		FN1305			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-11-A	CR	WK-MA-18-5-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.3		3.7		N/A	N/A
HAP											
Acénaphtène	mg/kg	0.28	0.28	0.28	0.28	<0.10		<0.10		0.10	1916472
Acénaphtylène	mg/kg	320	320	320	320	<0.10		<0.10		0.10	1916472
Anthracène	mg/kg	2.5	2.5	32	32	<0.10		<0.10		0.10	1916472
Benzo(a)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(a)pyrène	mg/kg	0.7	0.7	1.4	1.4	<0.050		<0.050		0.050	1916472
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Benzo(c)phénanthrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Benzo(ghi)pérylène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Chrysène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Dibenzo(a,i)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Dibenzo(a,h)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Dibenzo(a,l)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
7,12-Diméthylbenzanthracène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Fluoranthène	mg/kg	50	50	180	180	<0.10		<0.10		0.10	1916472
Fluorène	mg/kg	0.25	0.25	0.25	0.25	<0.10		<0.10		0.10	1916472
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
3-Méthylcholanthrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Naphtalène	mg/kg	0.013	0.013	0.013	0.013	<0.010		<0.010		0.010	1916472
Phénanthrène	mg/kg	0.046	0.046	0.046	0.046	<0.040		<0.040		0.040	1916472
Pyrène	mg/kg	0.1	10	100	100	<0.10		<0.10		0.10	1916472
2-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
1-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
1,3-Diméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
2,3,5-Triméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Récupération des Surrogates (%)											
D10-Anthracène	%	-	-	-	-	64		61		N/A	1916472
D12-Benzo(a)pyrène	%	-	-	-	-	67		63		N/A	1916472
D14-Terphenyl	%	-	-	-	-	70		67		N/A	1916472
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											
† Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1302		FN1305			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-11-A	CR	WK-MA-18-5-B	CR	LDR	Lot CQ
D8-Acenaphthylene	%	-	-	-	-	72		68		N/A	1916472
D8-Naphtalène	%	-	-	-	-	71		65		N/A	1916472
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1306		FN1311			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-6-A	CR	WK-MA-18-13-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	3.8		3.9		N/A	N/A
HAP											
Acénaphtène	mg/kg	0.28	0.28	0.28	0.28	<0.10		<0.10		0.10	1916472
Acénaphtylène	mg/kg	320	320	320	320	<0.10		<0.10		0.10	1916472
Anthracène	mg/kg	2.5	2.5	32	32	<0.10		<0.10		0.10	1916472
Benzo(a)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(a)pyrène	mg/kg	0.7	0.7	1.4	1.4	<0.050		<0.050		0.050	1916472
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Benzo(c)phénanthrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Benzo(ghi)pérylène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Chrysène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Dibenzo(a,i)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Dibenzo(a,h)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Dibenzo(a,l)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
7,12-Diméthylbenzanthracène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Fluoranthène	mg/kg	50	50	180	180	<0.10		<0.10		0.10	1916472
Fluorène	mg/kg	0.25	0.25	0.25	0.25	<0.10		<0.10		0.10	1916472
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
3-Méthylcholanthrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Naphtalène	mg/kg	0.013	0.013	0.013	0.013	<0.010		<0.010		0.010	1916472
Phénanthrène	mg/kg	0.046	0.046	0.046	0.046	<0.040		<0.040		0.040	1916472
Pyrène	mg/kg	0.1	10	100	100	<0.10		<0.10		0.10	1916472
2-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
1-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
1,3-Diméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
2,3,5-Triméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Récupération des Surrogates (%)											
D10-Anthracène	%	-	-	-	-	60		69		N/A	1916472
D12-Benzo(a)pyrène	%	-	-	-	-	62		72		N/A	1916472
D14-Terphenyl	%	-	-	-	-	63		73		N/A	1916472
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											
† Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
 Date du rapport: 2018/07/18

Englobe Corp.
 Votre # du projet: P-0014860-0-00-100-04
 Adresse du site: WASKAGANISH
 Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1306		FN1311			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-6-A	CR	WK-MA-18-13-B	CR	LDR	Lot CQ
D8-Acenaphthylene	%	-	-	-	-	67		76		N/A	1916472
D8-Naphtalène	%	-	-	-	-	68		76		N/A	1916472
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1312			
Date d'échantillonnage						2018/06/26			
# Bordereau						933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-14-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.8		N/A	N/A
HAP									
Acénaphène	mg/kg	0.28	0.28	0.28	0.28	<0.10		0.10	1916472
Acénaphylène	mg/kg	320	320	320	320	<0.10		0.10	1916472
Anthracène	mg/kg	2.5	2.5	32	32	<0.10		0.10	1916472
Benzo(a)anthracène	mg/kg	0.1	1	10	10	<0.050		0.050	1916472
Benzo(a)pyrène	mg/kg	0.7	0.7	1.4	1.4	<0.050		0.050	1916472
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		0.050	1916472
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		0.050	1916472
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		0.050	1916472
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	-	<0.050		0.050	1916472
Benzo(c)phénanthrène	mg/kg	-	-	-	-	<0.10		0.10	1916472
Benzo(ghi)peryène	mg/kg	-	-	-	-	<0.050		0.050	1916472
Chrysène	mg/kg	-	-	-	-	<0.050		0.050	1916472
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	10	<0.050		0.050	1916472
Dibenzo(a,i)pyrène	mg/kg	-	-	-	-	<0.10		0.10	1916472
Dibenzo(a,h)pyrène	mg/kg	-	-	-	-	<0.10		0.10	1916472
Dibenzo(a,l)pyrène	mg/kg	-	-	-	-	<0.10		0.10	1916472
7,12-Diméthylbenzanthracène	mg/kg	-	-	-	-	<0.10		0.10	1916472
Fluoranthène	mg/kg	50	50	180	180	<0.10		0.10	1916472
Fluorène	mg/kg	0.25	0.25	0.25	0.25	<0.10		0.10	1916472
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	10	<0.050		0.050	1916472
3-Méthylcholanthrène	mg/kg	-	-	-	-	<0.10		0.10	1916472
Naphtalène	mg/kg	0.013	0.013	0.013	0.013	<0.010		0.010	1916472
Phénanthrène	mg/kg	0.046	0.046	0.046	0.046	<0.040		0.040	1916472
Pyrene	mg/kg	0.1	10	100	100	<0.10		0.10	1916472
2-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		0.10	1916472
1-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		0.10	1916472
1,3-Diméthylnaphtalène	mg/kg	-	-	-	-	<0.10		0.10	1916472
2,3,5-Triméthylnaphtalène	mg/kg	-	-	-	-	<0.10		0.10	1916472
Récupération des Surrogates (%)									
D10-Anthracène	%	-	-	-	-	68		N/A	1916472
D12-Benzo(a)pyrène	%	-	-	-	-	72		N/A	1916472
D14-Terphenyl	%	-	-	-	-	74		N/A	1916472
LDR = Limite de détection rapportée									
Lot CQ = Lot contrôle qualité									
N/A = Non Applicable									
† Accréditation non existante pour ce paramètre									

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1312			
Date d'échantillonnage						2018/06/26			
# Bordereau						933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-14-A	CR	LDR	Lot CQ
D8-Acenaphthylene	%	-	-	-	-	77		N/A	1916472
D8-Naphtalène	%	-	-	-	-	76		N/A	1916472
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable									

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam						FN1278		FN1279				
Date d'échantillonnage						2018/06/26		2018/06/26				
# Bordereau						944312		944312				
	Unités	Agr	Res	Com	Ind	WK-MA-18-4-A	CR	WK-MA-18-4-B	CR	LDR	Lot CQ	
% HUMIDITÉ	%	-	-	-	-	1.7		2.2		N/A	N/A	
HYDROCARBURES PÉTROLIERS												
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	820		380		100	1916469	
F2 (C10-C16) †	mg/kg	150	150	260	260	N/A		<10		10	1916800	
F3 (C16-C34) †	mg/kg	300	300	1700	1700	N/A		410	Res-Com	50	1916800	
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	N/A		<50		50	1916800	
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	N/A		OUI		N/A	1916800	
Récupération des Surrogates (%)												
1-Chlorooctadécane	%	-	-	-	-	92		96		N/A	1916469	
O-Terphenyl	%	-	-	-	-	N/A		74		N/A	1916800	
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

ID Maxxam						FN1279		FN1280		FN1281			
Date d'échantillonnage						2018/06/26		2018/06/26		2018/06/26			
# Bordereau						944312		944312		944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-4-B	CR	WK-MA-18-3-A	CR	WK-MA-18-3-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.2		1.7		1.9		N/A	N/A
HYDROCARBURES PÉTROLIERS													
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	390		570		<100		100	1916469
F2 (C10-C16) †	mg/kg	150	150	260	260	N/A		N/A		<10		10	1916800
F3 (C16-C34) †	mg/kg	300	300	1700	1700	N/A		N/A		<50		50	1916800
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	N/A		N/A		<50		50	1916800
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	N/A		N/A		OUI		N/A	1916800
Récupération des Surrogates (%)													
1-Chlorooctadécane	%	-	-	-	-	95		92		95		N/A	1916469
O-Terphenyl	%	-	-	-	-	N/A		N/A		76		N/A	1916800
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité Duplicata de laboratoire N/A = Non Applicable † Accréditation non existante pour ce paramètre													

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam						FN1282		FN1283		FN1283			
Date d'échantillonnage						2018/06/26		2018/06/26		2018/06/26			
# Bordereau						944312		944312		944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-2-A	CR	WK-MA-18-2-B	CR	WK-MA-18-2-B Dup. de Lab.	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.6		2.3		2.3		N/A	N/A
HYDROCARBURES PÉTROLIERS													
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	<100		<100		<100		100	1916469
Récupération des Surrogates (%)													
1-Chlorooctadécane	%	-	-	-	-	94		95		97		N/A	1916469
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité Duplicata de laboratoire N/A = Non Applicable													

ID Maxxam						FN1284		FN1285					
Date d'échantillonnage						2018/06/26		2018/06/26					
# Bordereau						944312		944312					
	Unités	Agr	Res	Com	Ind	WK-MA-18-1-A	CR	WK-MA-18-1-B	CR	LDR	Lot CQ		
% HUMIDITÉ	%	-	-	-	-	2.7		3.5		N/A	N/A		
HYDROCARBURES PÉTROLIERS													
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	<100		520		100	1916469		
F2 (C10-C16) †	mg/kg	150	150	260	260	<10		N/A		10	1916800		
F3 (C16-C34) †	mg/kg	300	300	1700	1700	<50		N/A		50	1916800		
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	<50		N/A		50	1916800		
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	OUI		N/A		N/A	1916800		
Récupération des Surrogates (%)													
1-Chlorooctadécane	%	-	-	-	-	94		92		N/A	1916469		
O-Terphenyl	%	-	-	-	-	73		N/A		N/A	1916800		
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre													

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam						FN1286		FN1287					
Date d'échantillonnage						2018/06/26		2018/06/26					
# Bordereau						944312		944312					
	Unités	Agr	Res	Com	Ind	WK-MA-18-8-A	CR	WK-MA-18-8-B	CR	LDR	Lot CQ		
% HUMIDITÉ	%	-	-	-	-	2.8		3.4		N/A	N/A		
HYDROCARBURES PÉTROLIERS													
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	300		400		100	1916469		
F2 (C10-C16) †	mg/kg	150	150	260	260	<10		N/A		10	1916800		
F3 (C16-C34) †	mg/kg	300	300	1700	1700	1300	Res-Com	N/A		50	1916800		
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	<50		N/A		50	1916800		
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	OUI		N/A		N/A	1916800		
Récupération des Surrogates (%)													
1-Chlorooctadécane	%	-	-	-	-	96		95		N/A	1916469		
O-Terphenyl	%	-	-	-	-	69		N/A		N/A	1916800		
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre													

ID Maxxam						FN1298		FN1299		FN1300			
Date d'échantillonnage						2018/06/26		2018/06/26		2018/06/26			
# Bordereau						944313		944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-7-A	CR	WK-MA-18-7-B	CR	WK-MA-18-12-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	4.6		4.0		2.3		N/A	N/A
HYDROCARBURES PÉTROLIERS													
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	170		<100		220		100	1916469
Récupération des Surrogates (%)													
1-Chlorooctadécane	%	-	-	-	-	98		103		98		N/A	1916469
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable													

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam						FN1300		FN1301				
Date d'échantillonnage						2018/06/26		2018/06/26				
# Bordereau						944313		944313				
	Unités	Agr	Res	Com	Ind	WK-MA-18-12-A Dup. de Lab.	CR	WK-MA-18-12-B	CR	LDR	Lot CQ	
% HUMIDITÉ	%	-	-	-	-	2.3		2.2		N/A	N/A	
HYDROCARBURES PÉTROLIERS												
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	200		<100		100	1916469	
F2 (C10-C16) †	mg/kg	150	150	260	260	N/A		<10		10	1916800	
F3 (C16-C34) †	mg/kg	300	300	1700	1700	N/A		120	<Agr	50	1916800	
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	N/A		<50		50	1916800	
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	N/A		OUI		N/A	1916800	
Récupération des Surrogates (%)												
1-Chlorooctadécane	%	-	-	-	-	101		101		N/A	1916469	
O-Terphenyl	%	-	-	-	-	N/A		84		N/A	1916800	
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité Duplicata de laboratoire N/A = Non Applicable † Accréditation non existante pour ce paramètre												

ID Maxxam						FN1302		FN1303				
Date d'échantillonnage						2018/06/26		2018/06/26				
# Bordereau						944313		944313				
	Unités	Agr	Res	Com	Ind	WK-MA-18-11-A	CR	WK-MA-18-11-B	CR	LDR	Lot CQ	
% HUMIDITÉ	%	-	-	-	-	2.3		2.2		N/A	N/A	
HYDROCARBURES PÉTROLIERS												
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	360		340		100	1916469	
F2 (C10-C16) †	mg/kg	150	150	260	260	<10		N/A		10	1916800	
F3 (C16-C34) †	mg/kg	300	300	1700	1700	240	<Agr	N/A		50	1916800	
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	<50		N/A		50	1916800	
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	OUI		N/A		N/A	1916800	
Récupération des Surrogates (%)												
1-Chlorooctadécane	%	-	-	-	-	98		95		N/A	1916469	
O-Terphenyl	%	-	-	-	-	84		N/A		N/A	1916800	
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam						FN1304		FN1305		FN1306			
Date d'échantillonnage						2018/06/26		2018/06/26		2018/06/26			
# Bordereau						944313		944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-5-A	CR	WK-MA-18-5-B	CR	WK-MA-18-6-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	3.5		3.7		3.8		N/A	N/A
HYDROCARBURES PÉTROLIERS													
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	370		2700		190		100	1916469
F2 (C10-C16) †	mg/kg	150	150	260	260	N/A		<10		N/A		10	1916800
F3 (C16-C34) †	mg/kg	300	300	1700	1700	N/A		170	<Agr	N/A		50	1916800
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	N/A		<50		N/A		50	1916800
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	N/A		OUI		N/A		N/A	1916800
Récupération des Surrogates (%)													
1-Chlorooctadécane	%	-	-	-	-	99		91		100		N/A	1916469
O-Terphenyl	%	-	-	-	-	N/A		89		N/A		N/A	1916800
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre													

ID Maxxam						FN1307		FN1310					
Date d'échantillonnage						2018/06/26		2018/06/26					
# Bordereau						944313		933432					
	Unités	Agr	Res	Com	Ind	WK-MA-18-6-B	CR	WK-MA-18-13-A	CR	LDR	Lot CQ		
% HUMIDITÉ	%	-	-	-	-	3.8		2.2		N/A		N/A	
HYDROCARBURES PÉTROLIERS													
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	960		430		100		1916469	
F2 (C10-C16) †	mg/kg	150	150	260	260	<10		N/A		10		1916800	
F3 (C16-C34) †	mg/kg	300	300	1700	1700	260	<Agr	N/A		50		1916800	
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	<50		N/A		50		1916800	
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	OUI		N/A		N/A		1916800	
Récupération des Surrogates (%)													
1-Chlorooctadécane	%	-	-	-	-	94		98		N/A		1916469	
O-Terphenyl	%	-	-	-	-	79		N/A		N/A		1916800	
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre													

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam						FN1311		FN1312			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						933432		933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-13-B	CR	WK-MA-18-14-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	3.9		2.8		N/A	N/A
HYDROCARBURES PÉTROLIERS											
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	330		380		100	1916469
F2 (C10-C16) †	mg/kg	150	150	260	260	<10		N/A		10	1916800
F3 (C16-C34) †	mg/kg	300	300	1700	1700	80	<Agr	N/A		50	1916800
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	<50		N/A		50	1916800
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	OUI		N/A		N/A	1916800
Récupération des Surrogates (%)											
1-Chlorooctadécane	%	-	-	-	-	97		98		N/A	1916469
O-Terphenyl	%	-	-	-	-	76		N/A		N/A	1916800
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

ID Maxxam						FN1313					
Date d'échantillonnage						2018/06/26					
# Bordereau						933432					
	Unités	Agr	Res	Com	Ind	WK-MA-18-14-B	CR	LDR	Lot CQ		
% HUMIDITÉ	%	-	-	-	-	3.6		N/A		N/A	
HYDROCARBURES PÉTROLIERS											
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	<100		100		1916469	
F2 (C10-C16) †	mg/kg	150	150	260	260	<10		10		1916800	
F3 (C16-C34) †	mg/kg	300	300	1700	1700	210	<Agr	50		1916800	
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	<50		50		1916800	
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	OUI		N/A		1916800	
Récupération des Surrogates (%)											
1-Chlorooctadécane	%	-	-	-	-	93		N/A		1916469	
O-Terphenyl	%	-	-	-	-	75		N/A		1916800	
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (SOL)

ID Maxxam						FN1278		FN1280			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944312		944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-4-A	CR	WK-MA-18-3-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	1.7		1.7		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.10		<0.10		0.10	1916337
Chlorobenzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,2 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,3 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,4 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.20		<0.20		0.20	1916337
Styrène	mg/kg	0.1	5	50	50	<0.20		<0.20		0.20	1916337
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.20		<0.20		0.20	1916337
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.20		<0.20		0.20	1916337
Récupération des Surrogates (%)											
4-Bromofluorobenzène	%	-	-	-	-	97		97		N/A	1916337
D10-Ethylbenzène	%	-	-	-	-	112		110		N/A	1916337
D4-1,2-Dichloroéthane	%	-	-	-	-	99		99		N/A	1916337
D8-Toluène	%	-	-	-	-	100		100		N/A	1916337
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (SOL)

ID Maxxam						FN1287		FN1299			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944312		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-8-B	CR	WK-MA-18-7-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	3.4		4.0		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.10		<0.10		0.10	1916337
Chlorobenzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,2 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,3 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,4 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.20		<0.20		0.20	1916337
Styrène	mg/kg	0.1	5	50	50	<0.20		<0.20		0.20	1916337
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.20		<0.20		0.20	1916337
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.20		<0.20		0.20	1916337
Récupération des Surrogates (%)											
4-Bromofluorobenzène	%	-	-	-	-	99		97		N/A	1916337
D10-Ethylbenzène	%	-	-	-	-	116		114		N/A	1916337
D4-1,2-Dichloroéthane	%	-	-	-	-	96		99		N/A	1916337
D8-Toluène	%	-	-	-	-	99		100		N/A	1916337
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											
† Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (SOL)

ID Maxxam						FN1304		FN1306			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-5-A	CR	WK-MA-18-6-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	3.5		3.8		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.10		<0.10		0.10	1916337
Chlorobenzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,2 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,3 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,4 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.20		<0.20		0.20	1916337
Styrène	mg/kg	0.1	5	50	50	<0.20		<0.20		0.20	1916337
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.20		<0.20		0.20	1916337
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.20		<0.20		0.20	1916337
Récupération des Surrogates (%)											
4-Bromofluorobenzène	%	-	-	-	-	96		97		N/A	1916337
D10-Ethylbenzène	%	-	-	-	-	110		116		N/A	1916337
D4-1,2-Dichloroéthane	%	-	-	-	-	101		100		N/A	1916337
D8-Toluène	%	-	-	-	-	101		100		N/A	1916337
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											
† Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (SOL)

ID Maxxam						FN1310		FN1310			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						933432		933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-13-A	CR	WK-MA-18-13-A Dup. de Lab.	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.2		2.2		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.10		<0.10		0.10	1916337
Chlorobenzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,2 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,3 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,4 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.20		<0.20		0.20	1916337
Styrène	mg/kg	0.1	5	50	50	<0.20		<0.20		0.20	1916337
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.20		<0.20		0.20	1916337
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.20		<0.20		0.20	1916337
Récupération des Surrogates (%)											
4-Bromofluorobenzène	%	-	-	-	-	98		97		N/A	1916337
D10-Ethylbenzène	%	-	-	-	-	109		111		N/A	1916337
D4-1,2-Dichloroéthane	%	-	-	-	-	98		100		N/A	1916337
D8-Toluène	%	-	-	-	-	100		100		N/A	1916337
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité Duplicata de laboratoire N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (SOL)

ID Maxxam						FN1312		FN1312			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						933432		933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-14-A	CR	WK-MA-18-14-A Dup. de Lab.	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.8		2.8		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.10		<0.10		0.10	1916337
Chlorobenzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,2 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,3 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,4 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.20		<0.20		0.20	1916337
Styrène	mg/kg	0.1	5	50	50	<0.20		<0.20		0.20	1916337
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.20		<0.20		0.20	1916337
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.20		<0.20		0.20	1916337
Récupération des Surrogates (%)											
4-Bromofluorobenzène	%	-	-	-	-	99		99		N/A	1916337
D10-Ethylbenzène	%	-	-	-	-	109		106		N/A	1916337
D4-1,2-Dichloroéthane	%	-	-	-	-	100		99		N/A	1916337
D8-Toluène	%	-	-	-	-	99		98		N/A	1916337
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité Duplicata de laboratoire N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

MÉTAUX EXTRACTIBLES TOTAUX (SOL)

ID Maxxam						FN1284			
Date d'échantillonnage						2018/06/26			
# Bordereau						944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-1-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.7		N/A	N/A
MÉTAUX									
Cadmium (Cd)	mg/kg	1.4	10	22	22	<0.10		0.10	1916976
Chrome (Cr)	mg/kg	64	64	87	87	4.9	<Agr	1.0	1916976
Cuivre (Cu)	mg/kg	63	63	94	94	5.7	<Agr	1.0	1916976
Nickel (Ni)	mg/kg	45	45	89	89	5.6	<Agr	0.50	1916976
Plomb (Pb)	mg/kg	70	140	260	600	2.2	<Agr	1.0	1916976
Zinc (Zn)	mg/kg	200	200	200	200	12	<Agr	5.0	1916976
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable									

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

INTERPRETATION QUALITATIVE
Hydrocarbures pétroliers (C10-C50)

Échantillon	Interpretation Qualitative
WK-MA-18-4-A	Voir section des commentaires.
WK-MA-18-4-B	Voir section des commentaires.
WK-MA-18-4-B	Voir section des commentaires.
WK-MA-18-3-A	Voir section des commentaires.
WK-MA-18-3-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-2-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-2-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-2-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-1-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-1-B	Voir section des commentaires.
WK-MA-18-8-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-8-B	Voir section des commentaires.
WK-MA-18-7-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-7-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-12-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-12-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-12-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-11-A	Voir section des commentaires.
WK-MA-18-11-B	Voir section des commentaires.
WK-MA-18-5-A	Voir section des commentaires.
WK-MA-18-5-B	Voir section des commentaires.
WK-MA-18-6-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-6-B	Voir section des commentaires.
WK-MA-18-13-A	Voir section des commentaires.
WK-MA-18-13-B	Voir section des commentaires.
WK-MA-18-14-A	Voir section des commentaires.
WK-MA-18-14-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

REMARQUES GÉNÉRALES

Tous les résultats sont calculés sur une base sèche excepté lorsque non-applicable.

Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1278, FN1279
HAP (CCME): Échantillon reçu congelé.: FN1279
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1279
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1280, FN1281
HAP (CCME): Échantillon reçu congelé.: FN1281
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1281
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1282, FN1283, FN1284
Métaux extractibles totaux par ICP-MS: Échantillon reçu congelé.: FN1284
HAP (CCME): Échantillon reçu congelé.: FN1284
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1284
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1285, FN1286
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1286
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1287, FN1298, FN1299
HAP (CCME): Échantillon reçu congelé.: FN1299
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1300, FN1301
HAP (CCME): Échantillon reçu congelé.: FN1301
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1301
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1302
HAP (CCME): Échantillon reçu congelé.: FN1302
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1302
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1303, FN1304, FN1305
HAP (CCME): Échantillon reçu congelé.: FN1305
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1305
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1306
HAP (CCME): Échantillon reçu congelé.: FN1306
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1307
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1307
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1310
Éthylène glycol par colorimétrie: Échantillon reçu congelé.: FN1310
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1311
HAP (CCME): Échantillon reçu congelé.: FN1311
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1311
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1312
HAP (CCME): Échantillon reçu congelé.: FN1312
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1313
Éthylène glycol par colorimétrie: Échantillon reçu congelé.: FN1313
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1313

Agr,Res,Com,Ind,CR: Recommandations canadiennes pour la qualité des sols: environnement et santé humaine

Veillez noter que nous présentons les critères se rapportant à un sol grossier.

Ces références ne sont rapportées qu'à titre indicatif et ne doivent être interprétées dans aucun autre contexte.

- = Ce composé ne fait pas partie de la réglementation.

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

Noter que les résultats totaux sont arrondis à deux chiffres significatifs.

Veillez noter que les résultats ci-dessus ont été corrigés pour le blanc d'instrument.

L'extraction a été faite à délai de conservation dépassé pour les échantillons FN1279-03, FN1281-03, FN1284-03, FN1301-03, FN1302-03, FN1305-03, FN1307-03, FN1311-03, FN1313-03 et FN1286-03.

HAP PAR GCMS (SOL)

Les résultats bruts non-arrondis sont utilisés dans le calcul du benzo(b+j+k)fluoranthène. Ce résultat total est alors arrondi à deux chiffres significatifs.

HYDROCARBURES PAR GCFID (SOL)

La similitude des hydrocarbures rapportés est obtenue par une comparaison visuelle du chromatogramme de l'échantillon avec la bibliothèque des chromatogrammes des produits de référence. Comme certaines variables tels que les multiproduits, le degré et le type de dégradation et la présence d'hydrocarbures non pétrogénétiques qui ne peuvent pas être reproduites dans les spectres de référence, l'information doit être vue comme qualitative et, en conséquence, Maxxam ne peut aucunement être tenu responsable des conclusions formulées pour ces données.

IPP FN1278, FN1279, FN1280, FN1285, FN1287, FN1302, FN1303, FN1304, FN1305, FN1307, FN1310, FN1311, FN1312 : C14 - C40 : Même région chromatographique que l'huile hydraulique, l'huile à transformateur, l'huile à transmission et l'huile à moteur.

HAM PAR GC/MS (SOL)

Veillez noter que les échantillons sont analysés par Headspace GC/MS.

Les résultats ne se rapportent qu'aux échantillons soumis pour analyse

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1916334	LAR	Blanc fortifié	Éthylène glycol	2018/07/13		104	%
1916334	LAR	Blanc de méthode	Éthylène glycol	2018/07/13	<2.0		mg/kg
1916337	VLP	Blanc fortifié	4-Bromofluorobenzène	2018/07/13		98	%
			D10-Ethylbenzène	2018/07/13		105	%
			D4-1,2-Dichloroéthane	2018/07/13		99	%
			D8-Toluène	2018/07/13		98	%
			Benzène	2018/07/13		104	%
			Chlorobenzène	2018/07/13		100	%
			Dichloro-1,2 benzène	2018/07/13		95	%
			Dichloro-1,3 benzène	2018/07/13		99	%
			Dichloro-1,4 benzène	2018/07/13		95	%
			Éthylbenzène	2018/07/13		100	%
			Styrène	2018/07/13		104	%
			Toluène	2018/07/13		101	%
			Xylènes (o,m,p)	2018/07/13		97	%
1916337	VLP	Blanc de méthode	4-Bromofluorobenzène	2018/07/13		98	%
			D10-Ethylbenzène	2018/07/13		110	%
			D4-1,2-Dichloroéthane	2018/07/13		91	%
			D8-Toluène	2018/07/13		99	%
			Benzène	2018/07/13	<0.20		mg/kg
			Chlorobenzène	2018/07/13	<0.40		mg/kg
			Dichloro-1,2 benzène	2018/07/13	<0.40		mg/kg
			Dichloro-1,3 benzène	2018/07/13	<0.40		mg/kg
			Dichloro-1,4 benzène	2018/07/13	<0.40		mg/kg
			Éthylbenzène	2018/07/13	<0.40		mg/kg
			Styrène	2018/07/13	<0.40		mg/kg
			Toluène	2018/07/13	<0.40		mg/kg
			Xylènes (o,m,p)	2018/07/13	<0.40		mg/kg
1916469	VLP	Blanc fortifié	1-Chlorooctadécane	2018/07/16		96	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/16		81	%
1916469	VLP	Blanc de méthode	1-Chlorooctadécane	2018/07/16		101	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/16	<100		mg/kg
1916472	ADE	Blanc fortifié	D10-Anthracène	2018/07/16		71	%
			D12-Benzo(a)pyrène	2018/07/16		81	%
			D14-Terphenyl	2018/07/16		81	%
			D8-Acenaphthylene	2018/07/16		81	%
			D8-Naphtalène	2018/07/16		80	%
			Acénaphène	2018/07/16		70	%
			Acénaphtylène	2018/07/16		72	%
			Anthracène	2018/07/16		68	%
			Benzo(a)anthracène	2018/07/16		59	%
			Benzo(a)pyrène	2018/07/16		75	%
			Benzo(b)fluoranthène	2018/07/16		67	%
			Benzo(j)fluoranthène	2018/07/16		78	%
			Benzo(k)fluoranthène	2018/07/16		63	%
			Benzo(b+j+k)fluoranthène	2018/07/16		69	%
			Benzo(c)phénanthrène	2018/07/16		67	%
			Benzo(ghi)pérylène	2018/07/16		68	%
			Chrysène	2018/07/16		61	%
			Dibenzo(a,h)anthracène	2018/07/16		65	%
			Dibenzo(a,i)pyrène	2018/07/16		60	%

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			Dibenzo(a,h)pyrène	2018/07/16		69	%
			Dibenzo(a,l)pyrène	2018/07/16		77	%
			7,12-Diméthylbenzanthracène	2018/07/16		68	%
			Fluoranthène	2018/07/16		72	%
			Fluorène	2018/07/16		70	%
			Indéno(1,2,3-cd)pyrène	2018/07/16		65	%
			3-Méthylcholanthrène	2018/07/16		74	%
			Naphtalène	2018/07/16		74	%
			Phénanthrène	2018/07/16		64	%
			Pyrène	2018/07/16		72	%
			2-Méthylnaphtalène	2018/07/16		73	%
			1-Méthylnaphtalène	2018/07/16		70	%
			1,3-Diméthylnaphtalène	2018/07/16		70	%
			2,3,5-Triméthylnaphtalène	2018/07/16		73	%
1916472	ADE	Blanc de méthode	D10-Anthracène	2018/07/16		66	%
			D12-Benzo(a)pyrène	2018/07/16		70	%
			D14-Terphenyl	2018/07/16		70	%
			D8-Acenaphthylene	2018/07/16		73	%
			D8-Naphtalène	2018/07/16		74	%
			Acénaphène	2018/07/16	<0.10		mg/kg
			Acénaphthylène	2018/07/16	<0.10		mg/kg
			Anthracène	2018/07/16	<0.10		mg/kg
			Benzo(a)anthracène	2018/07/16	<0.050		mg/kg
			Benzo(a)pyrène	2018/07/16	<0.050		mg/kg
			Benzo(b)fluoranthène	2018/07/16	<0.050		mg/kg
			Benzo(j)fluoranthène	2018/07/16	<0.050		mg/kg
			Benzo(k)fluoranthène	2018/07/16	<0.050		mg/kg
			Benzo(b+j+k)fluoranthène	2018/07/16	<0.050		mg/kg
			Benzo(c)phénanthrène	2018/07/16	<0.10		mg/kg
			Benzo(ghi)pérylène	2018/07/16	<0.050		mg/kg
			Chrysène	2018/07/16	<0.050		mg/kg
			Dibenzo(a,h)anthracène	2018/07/16	<0.050		mg/kg
			Dibenzo(a,i)pyrène	2018/07/16	<0.10		mg/kg
			Dibenzo(a,h)pyrène	2018/07/16	<0.10		mg/kg
			Dibenzo(a,l)pyrène	2018/07/16	<0.10		mg/kg
			7,12-Diméthylbenzanthracène	2018/07/16	<0.10		mg/kg
			Fluoranthène	2018/07/16	<0.10		mg/kg
			Fluorène	2018/07/16	<0.10		mg/kg
			Indéno(1,2,3-cd)pyrène	2018/07/16	<0.050		mg/kg
			3-Méthylcholanthrène	2018/07/16	<0.10		mg/kg
			Naphtalène	2018/07/16	<0.010		mg/kg
			Phénanthrène	2018/07/16	<0.040		mg/kg
			Pyrène	2018/07/16	<0.10		mg/kg
			2-Méthylnaphtalène	2018/07/16	<0.10		mg/kg
			1-Méthylnaphtalène	2018/07/16	<0.10		mg/kg
			1,3-Diméthylnaphtalène	2018/07/16	<0.10		mg/kg
			2,3,5-Triméthylnaphtalène	2018/07/16	<0.10		mg/kg
1916720	FF	Blanc fortifié	1,4-Difluorobenzène	2018/07/17		99	%
			4-Bromofluorobenzène	2018/07/17		108	%
			D10-Ethylbenzène	2018/07/17		101	%
			D4-1,2-Dichloroéthane	2018/07/17		115	%

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			Benzène	2018/07/17		96	%
			Toluène	2018/07/17		86	%
			Éthylbenzène	2018/07/17		92	%
			o-Xylène	2018/07/17		88	%
			p+m-Xylène	2018/07/17		83	%
			Xylènes (o,m,p)	2018/07/17		86	%
1916720	FF	Blanc de méthode	F1 (C6-C10)	2018/07/17		112	%
			1,4-Difluorobenzène	2018/07/17		99	%
			4-Bromofluorobenzène	2018/07/17		106	%
			D10-Ethylbenzène	2018/07/17		112	%
			D4-1,2-Dichloroéthane	2018/07/17		111	%
			Benzène	2018/07/17	<0.0050		mg/kg
			Toluène	2018/07/17	<0.020		mg/kg
			Éthylbenzène	2018/07/17	<0.010		mg/kg
			o-Xylène	2018/07/17	<0.020		mg/kg
			p+m-Xylène	2018/07/17	<0.040		mg/kg
			Xylènes (o,m,p)	2018/07/17	<0.040		mg/kg
			F1 (C6-C10)	2018/07/17	<10		mg/kg
			F1 (C6-C10) - BTEX	2018/07/17	<10		mg/kg
1916797	FF	Blanc fortifié	1,4-Difluorobenzène	2018/07/17		101	%
			4-Bromofluorobenzène	2018/07/17		110	%
			D10-Ethylbenzène	2018/07/17		113	%
			D4-1,2-Dichloroéthane	2018/07/17		104	%
			Benzène	2018/07/17		108	%
			Toluène	2018/07/17		96	%
			Éthylbenzène	2018/07/17		103	%
			o-Xylène	2018/07/17		97	%
			p+m-Xylène	2018/07/17		93	%
			Xylènes (o,m,p)	2018/07/17		95	%
			F1 (C6-C10)	2018/07/17		124	%
1916797	FF	Blanc de méthode	1,4-Difluorobenzène	2018/07/17		98	%
			4-Bromofluorobenzène	2018/07/17		108	%
			D10-Ethylbenzène	2018/07/17		108	%
			D4-1,2-Dichloroéthane	2018/07/17		102	%
			Benzène	2018/07/17	<0.0050		mg/kg
			Toluène	2018/07/17	<0.020		mg/kg
			Éthylbenzène	2018/07/17	<0.010		mg/kg
			o-Xylène	2018/07/17	<0.020		mg/kg
			p+m-Xylène	2018/07/17	<0.040		mg/kg
			Xylènes (o,m,p)	2018/07/17	<0.040		mg/kg
			F1 (C6-C10)	2018/07/17	<10		mg/kg
			F1 (C6-C10) - BTEX	2018/07/17	<10		mg/kg
1916800	MP	Blanc fortifié	O-Terphenyl	2018/07/17		72	%
			F2 (C10-C16)	2018/07/17		95	%
			F3 (C16-C34)	2018/07/17		95	%
			F4 (C34-C50)	2018/07/17		95	%
1916800	MP	Blanc de méthode	O-Terphenyl	2018/07/17		79	%
			F2 (C10-C16)	2018/07/17	<10		mg/kg
			F3 (C16-C34)	2018/07/17	<50		mg/kg
			F4 (C34-C50)	2018/07/17	<50		mg/kg
1916976	JRC	MRC	Cadmium (Cd)	2018/07/17		113	%

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1916976	JRC	Blanc fortifié	Chrome (Cr)	2018/07/17		113	%
			Cuivre (Cu)	2018/07/17		119	%
			Nickel (Ni)	2018/07/17		119	%
			Plomb (Pb)	2018/07/17		111	%
			Zinc (Zn)	2018/07/17		118	%
			Cadmium (Cd)	2018/07/17		100	%
			Chrome (Cr)	2018/07/17		102	%
			Cuivre (Cu)	2018/07/17		105	%
			Nickel (Ni)	2018/07/17		105	%
			Plomb (Pb)	2018/07/17		100	%
1916976	JRC	Blanc de méthode	Zinc (Zn)	2018/07/17		105	%
			Cadmium (Cd)	2018/07/17	<0.10		mg/kg
			Chrome (Cr)	2018/07/17	<1.0		mg/kg
			Cuivre (Cu)	2018/07/17	<1.0		mg/kg
			Nickel (Ni)	2018/07/17	<0.50		mg/kg
			Plomb (Pb)	2018/07/17	<1.0		mg/kg
			Zinc (Zn)	2018/07/17	<5.0		mg/kg

MRC: Un échantillon de concentration connue préparé dans des conditions rigoureuses par un organisme externe. Utilisé pour vérifier la justesse de la méthode.

Blanc fortifié: Un blanc, d'une matrice exempte de contaminants, auquel a été ajouté une quantité connue d'analyte provenant généralement d'une deuxième source. Utilisé pour évaluer la précision de la méthode.

Blanc de méthode: Une partie aliquote de matrice pure soumise au même processus analytique que les échantillons, du prétraitement au dosage. Sert à évaluer toutes contaminations du laboratoire.

Surrogate: Composé se comportant de façon similaire aux composés analysés et ajouté à l'échantillon avant l'analyse. Sert à évaluer la qualité de l'extraction.

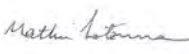

Réc = Récupération

Dossier Maxxam: B828164
Date du rapport: 2018/07/18

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

PAGE DES SIGNATURES DE VALIDATION



Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:

Mathieu Letourneau, B.Sc., Chimiste, Spécialiste scientifique




Michel Poulin, B.Sc., Chimiste

Ngoc-Thuy Do, B.Sc., Chimiste

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Votre # du projet: P-0014860-0-00-100-04
 Adresse du site: WASKAGANISH
 Votre # Bordereau: 944312, 944313, 933432

Attention: Christine Gervais

Englobe Corp.
 QUÉBEC - PARC TECHNOLOGIQUE
 505 boul. du Parc Technologique
 Bureau 200
 Québec, QC
 CANADA G1P 4S9

Date du rapport: 2018/07/30
 # Rapport: R2386436
 Version: 2 - Révisé

CERTIFICAT D'ANALYSE – RÉVISÉ

DE DOSSIER MAXXAM: B828164

Reçu: 2018/07/09, 14:00

Matrice: SOL
 Nombre d'échantillons reçus: 24

Analyses	Quantité	Date de l'	Date	Méthode de laboratoire	Référence Primaire
		extraction	Analysé		
Hydrocarbures pétroliers (C10-C50)	2	2018/07/16	2018/07/16	QUE SOP-00210	MA400-HYD 1.1 R3 m
Hydrocarbures pétroliers (C10-C50)	21	2018/07/16	2018/07/17	QUE SOP-00210	MA400-HYD 1.1 R3 m
Hydrocarbures pétroliers (C10-C50)	1	2018/07/20	2018/07/21	QUE SOP-00210	MA400-HYD 1.1 R3 m
CCME F1/BTEX-MeOH sur le terrain (1, 2)	10	N/A	2018/07/17	STL SOP-00131	CCME PHC-CWS m
Hydrocarbures pétroliers (F2-F4) (1, 2)	10	2018/07/16	2018/07/17	STL SOP-00170	CCME PHC-CWS m
Éthylène glycol par colorimétrie	2	2018/07/13	2018/07/13	QUE SOP-00154	MA.400-Eth-Gly1.0R4m
Interprétation des produits pétroliers	24	N/A	2018/07/17		MA408-IdePet 1.0 R1m
HAM-Conservation au MeOH sur le terrain (3)	8	N/A	2018/07/14	QUE SOP-00202	MA.400-COV 2.0 R4 m
Métaux extractibles totaux par ICP-MS	1	2018/07/17	2018/07/17	QUE SOP-00132	MA.200-Mét. 1.2 R5 m
HAP (CCME)	10	2018/07/16	2018/07/16	QUE SOP-00208	MA.400-HAP 1.1 R5 m

Remarques:

Les laboratoires Maxxam sont accrédités ISO/IEC 17025:2005. Sauf indication contraire, les méthodes d'analyses utilisées par Maxxam s'inspirent des méthodes de référence d'organismes provinciaux, fédéraux et américains, tel que le CCME, le MDDELCC, l'EPA et l'APHA.

Toutes les analyses présentées ont été réalisées conformément aux procédures et aux pratiques relatives à la méthodologie, à l'assurance qualité et au contrôle de la qualité généralement appliquées par les employés de Maxxam (sauf s'il en a été convenu autrement par écrit entre le client et Maxxam). Toutes les données de laboratoire rencontrent les contrôles statistiques et respectent tous les critères du CQ et les critères de performance des méthodes, sauf s'il en a été signalé autrement. Tous les blancs de méthode sont rapportés, toutefois, les données des échantillons correspondants ne sont pas corrigées pour la valeur du blanc, sauf indication contraire.

Les responsabilités de Maxxam sont restreintes au coût réel de l'analyse, sauf s'il en a été convenu autrement par écrit. Il n'existe aucune autre garantie, explicite ou implicite. Le client a fait appel à Maxxam pour l'analyse de ses échantillons conformément aux méthodes de référence mentionnées dans ce rapport. L'interprétation et l'utilisation des résultats sont sous l'entière responsabilité du client et ne font pas partie des services offerts par Maxxam, sauf si convenu autrement par écrit.

Les résultats des échantillons solides, sauf les biotes, sont rapportés en fonction de la masse sèche, sauf indication contraire. Les analyses organiques ne sont pas corrigées en fonction de la récupération, sauf pour les méthodes de dilution isotopique.

Les résultats s'appliquent seulement aux échantillons analysés.

Le présent rapport ne doit pas être reproduit, sinon dans son intégralité, sans le consentement écrit du laboratoire.

Lorsque la méthode de référence comprend un suffixe « m », cela signifie que la méthode d'analyse du laboratoire contient des modifications validées et appliquées afin

Votre # du projet: P-0014860-0-00-100-04

Adresse du site: WASKAGANISH

Votre # Bordereau: 944312, 944313, 933432

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/30

Rapport: R2386436

Version: 2 - Révisé

CERTIFICAT D'ANALYSE – RÉVISÉ

DE DOSSIER MAXXAM: B828164

Reçu: 2018/07/09, 14:00

d'améliorer la performance de la méthode de référence.

Notez: Les données brutes sont utilisées pour le calcul du RPD (% d'écart relatif). L'arrondissement des résultats finaux peut expliquer la variation apparente.

(1) Cette analyse a été effectuée par Maxxam -Ville St. Laurent

(2) Tous les résultats pour le CCME répondent aux critères exigés, sauf indication contraire dans le rapport. Les méthodes du SP-HCP utilisées par Maxxam respectent tous les éléments imposés par la méthode de référence et les éléments se rapportant à la performance ont été validés. Toutes les modifications ont été validées et jugées équivalentes d'après l'Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods, September 2003. La documentation est fournie sur demande. Différence par rapport à la Méthode de référence pour le standard pancanadien relatif aux hydrocarbures pétroliers dans le sol – méthode du 1er volet : les résultats pour les fractions F2/F3/F4 sont rapportés à l'aide d'une extraction à froid par solvant au lieu d'une extraction avec un appareil Soxhlet.

(3) Aucune date d'extraction n'est fournie pour les analyses de F1/BTEX et COV lorsque les sols sont conservés dans le méthanol sur le terrain. La date d'extraction correspond à la date d'échantillonnage à moins d'indication contraire.

Note : Les paramètres inclus dans le présent certificat sont accrédités par le MDDELCC, à moins d'indication contraire.

clé de cryptage

Veillez adresser toute question concernant ce certificat d'analyse à votre chargé(e) de projets

Alain Lemieux, Chargé de projets

Courriel: ALemieux@maxxam.ca

Téléphone (418)658-5784 Ext:7066451

=====
Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

ÉTHYLÈNE GLYCOL PAR COLORIMÉTRIE (SOL)

ID Maxxam						FN1310		FN1313			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						933432		933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-13-A	CR	WK-MA-18-14-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.2		3.6		N/A	N/A
GLYCOLS											
Éthylène glycol	mg/kg	960	960	960	960	<2.0		<2.0		2.0	1916334
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam						FN1279		FN1281			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944312		944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-4-B	CR	WK-MA-18-3-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.2		1.9		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.0050		<0.0050		0.0050	1916720
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.020		<0.020		0.020	1916720
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.010		<0.010		0.010	1916720
o-Xylène	mg/kg	-	-	-	-	<0.020		<0.020		0.020	1916720
p+m-Xylène	mg/kg	-	-	-	-	<0.040		<0.040		0.040	1916720
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.040		<0.040		0.040	1916720
F1 (C6-C10) †	mg/kg	-	-	-	-	<10		<10		10	1916720
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	-	<10		<10		10	1916720
Récupération des Surrogates (%)											
1,4-Difluorobenzène	%	-	-	-	-	100		99		N/A	1916720
4-Bromofluorobenzène	%	-	-	-	-	109		107		N/A	1916720
D10-Ethylbenzène	%	-	-	-	-	115		105		N/A	1916720
D4-1,2-Dichloroéthane	%	-	-	-	-	103		104		N/A	1916720
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam						FN1284			FN1286			
Date d'échantillonnage						2018/06/26			2018/06/26			
# Bordereau						944312			944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-1-A	CR	Lot CQ	WK-MA-18-8-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.7		N/A	2.8		N/A	N/A
VOLATILS												
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.0050		1916720	<0.0050		0.0050	1916797
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.020		1916720	<0.020		0.020	1916797
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.010		1916720	<0.010		0.010	1916797
o-Xylène	mg/kg	-	-	-	-	<0.020		1916720	<0.020		0.020	1916797
p+m-Xylène	mg/kg	-	-	-	-	<0.040		1916720	<0.040		0.040	1916797
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.040		1916720	<0.040		0.040	1916797
F1 (C6-C10) †	mg/kg	-	-	-	-	<10		1916720	<10		10	1916797
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	-	<10		1916720	<10		10	1916797
Récupération des Surrogates (%)												
1,4-Difluorobenzène	%	-	-	-	-	99		1916720	97		N/A	1916797
4-Bromofluorobenzène	%	-	-	-	-	111		1916720	110		N/A	1916797
D10-Ethylbenzène	%	-	-	-	-	103		1916720	104		N/A	1916797
D4-1,2-Dichloroéthane	%	-	-	-	-	104		1916720	104		N/A	1916797
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam						FN1301		FN1302			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-12-B	CR	WK-MA-18-11-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.2		2.3		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.0050		<0.0050		0.0050	1916720
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.020		<0.020		0.020	1916720
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.010		<0.010		0.010	1916720
o-Xylène	mg/kg	-	-	-	-	<0.020		<0.020		0.020	1916720
p+m-Xylène	mg/kg	-	-	-	-	<0.040		<0.040		0.040	1916720
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.040		<0.040		0.040	1916720
F1 (C6-C10) †	mg/kg	-	-	-	-	<10		<10		10	1916720
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	-	<10		<10		10	1916720
Récupération des Surrogates (%)											
1,4-Difluorobenzène	%	-	-	-	-	98		99		N/A	1916720
4-Bromofluorobenzène	%	-	-	-	-	108		110		N/A	1916720
D10-Ethylbenzène	%	-	-	-	-	106		107		N/A	1916720
D4-1,2-Dichloroéthane	%	-	-	-	-	104		109		N/A	1916720
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam						FN1305		FN1307			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-5-B	CR	WK-MA-18-6-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	3.7		3.8		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.0050		<0.0050		0.0050	1916720
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.020		<0.020		0.020	1916720
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.010		<0.010		0.010	1916720
o-Xylène	mg/kg	-	-	-	-	<0.020		<0.020		0.020	1916720
p+m-Xylène	mg/kg	-	-	-	-	<0.040		<0.040		0.040	1916720
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.040		<0.040		0.040	1916720
F1 (C6-C10) †	mg/kg	-	-	-	-	<10		<10		10	1916720
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	-	<10		<10		10	1916720
Récupération des Surrogates (%)											
1,4-Difluorobenzène	%	-	-	-	-	100		97		N/A	1916720
4-Bromofluorobenzène	%	-	-	-	-	111		112		N/A	1916720
D10-Ethylbenzène	%	-	-	-	-	113		107		N/A	1916720
D4-1,2-Dichloroéthane	%	-	-	-	-	106		108		N/A	1916720
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam						FN1311		FN1313			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						933432		933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-13-B	CR	WK-MA-18-14-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	3.9		3.6		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.0050		<0.0050		0.0050	1916720
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.020		<0.020		0.020	1916720
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.010		<0.010		0.010	1916720
o-Xylène	mg/kg	-	-	-	-	<0.020		<0.020		0.020	1916720
p+m-Xylène	mg/kg	-	-	-	-	<0.040		<0.040		0.040	1916720
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.040		<0.040		0.040	1916720
F1 (C6-C10) †	mg/kg	-	-	-	-	<10		<10		10	1916720
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	-	<10		<10		10	1916720
Récupération des Surrogates (%)											
1,4-Difluorobenzène	%	-	-	-	-	100		101		N/A	1916720
4-Bromofluorobenzène	%	-	-	-	-	109		112		N/A	1916720
D10-Ethylbenzène	%	-	-	-	-	109		113		N/A	1916720
D4-1,2-Dichloroéthane	%	-	-	-	-	104		103		N/A	1916720
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1279		FN1281		FN1284			
Date d'échantillonnage						2018/06/26		2018/06/26		2018/06/26			
# Bordereau						944312		944312		944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-4-B	CR	WK-MA-18-3-B	CR	WK-MA-18-1-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.2		1.9		2.7		N/A	N/A
HAP													
Acénaphène	mg/kg	0.28	0.28	0.28	0.28	<0.10		<0.10		<0.10		0.10	1916472
Acénaphylène	mg/kg	320	320	320	320	<0.10		<0.10		<0.10		0.10	1916472
Anthracène	mg/kg	2.5	2.5	32	32	<0.10		<0.10		<0.10		0.10	1916472
Benzo(a)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		<0.050		0.050	1916472
Benzo(a)pyrène	mg/kg	0.7	0.7	1.4	1.4	<0.050		<0.050		<0.050		0.050	1916472
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		<0.050		0.050	1916472
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		<0.050		0.050	1916472
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		<0.050		0.050	1916472
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	-	<0.050		<0.050		<0.050		0.050	1916472
Benzo(c)phénanthrène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
Benzo(ghi)pérylène	mg/kg	-	-	-	-	<0.050		<0.050		<0.050		0.050	1916472
Chrysène	mg/kg	-	-	-	-	<0.050		<0.050		<0.050		0.050	1916472
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		<0.050		0.050	1916472
Dibenzo(a,i)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
Dibenzo(a,h)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
Dibenzo(a,l)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
7,12-Diméthylbenzanthracène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
Fluoranthène	mg/kg	50	50	180	180	<0.10		<0.10		<0.10		0.10	1916472
Fluorène	mg/kg	0.25	0.25	0.25	0.25	<0.10		<0.10		<0.10		0.10	1916472
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	10	<0.050		<0.050		<0.050		0.050	1916472
3-Méthylcholanthrène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
Naphtalène	mg/kg	0.013	0.013	0.013	0.013	<0.010		<0.010		<0.010		0.010	1916472
Phénanthrène	mg/kg	0.046	0.046	0.046	0.046	<0.040		<0.040		<0.040		0.040	1916472
Pyrène	mg/kg	0.1	10	100	100	<0.10		<0.10		<0.10		0.10	1916472
2-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
1-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
1,3-Diméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
2,3,5-Triméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		<0.10		0.10	1916472
Récupération des Surrogates (%)													
D10-Anthracène	%	-	-	-	-	62		59		61		N/A	1916472
D12-Benzo(a)pyrène	%	-	-	-	-	64		62		63		N/A	1916472
D14-Terphenyl	%	-	-	-	-	67		63		62		N/A	1916472
LDR = Limite de détection rapportée													
Lot CQ = Lot contrôle qualité													
N/A = Non Applicable													
† Accréditation non existante pour ce paramètre													

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1279		FN1281		FN1284			
Date d'échantillonnage						2018/06/26		2018/06/26		2018/06/26			
# Bordereau						944312		944312		944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-4-B	CR	WK-MA-18-3-B	CR	WK-MA-18-1-A	CR	LDR	Lot CQ
D8-Acenaphthylene	%	-	-	-	-	69		65		66		N/A	1916472
D8-Naphtalène	%	-	-	-	-	67		67		67		N/A	1916472

LDR = Limite de détection rapportée

Lot CQ = Lot contrôle qualité

N/A = Non Applicable

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1299		FN1301			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-7-B	CR	WK-MA-18-12-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	4.0		2.2		N/A	N/A
HAP											
Acénaphtène	mg/kg	0.28	0.28	0.28	0.28	<0.10		<0.10		0.10	1916472
Acénaphtylène	mg/kg	320	320	320	320	<0.10		<0.10		0.10	1916472
Anthracène	mg/kg	2.5	2.5	32	32	<0.10		<0.10		0.10	1916472
Benzo(a)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(a)pyrène	mg/kg	0.7	0.7	1.4	1.4	<0.050		<0.050		0.050	1916472
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Benzo(c)phénanthrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Benzo(ghi)pérylène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Chrysène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Dibenzo(a,i)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Dibenzo(a,h)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Dibenzo(a,l)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
7,12-Diméthylbenzanthracène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Fluoranthène	mg/kg	50	50	180	180	<0.10		<0.10		0.10	1916472
Fluorène	mg/kg	0.25	0.25	0.25	0.25	<0.10		<0.10		0.10	1916472
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
3-Méthylcholanthrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Naphtalène	mg/kg	0.013	0.013	0.013	0.013	<0.010		<0.010		0.010	1916472
Phénanthrène	mg/kg	0.046	0.046	0.046	0.046	<0.040		<0.040		0.040	1916472
Pyrène	mg/kg	0.1	10	100	100	<0.10		<0.10		0.10	1916472
2-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
1-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
1,3-Diméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
2,3,5-Triméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Récupération des Surrogates (%)											
D10-Anthracène	%	-	-	-	-	59		63		N/A	1916472
D12-Benzo(a)pyrène	%	-	-	-	-	65		65		N/A	1916472
D14-Terphenyl	%	-	-	-	-	65		65		N/A	1916472
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											
† Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1299		FN1301			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-7-B	CR	WK-MA-18-12-B	CR	LDR	Lot CQ
D8-Acenaphthylene	%	-	-	-	-	66		62		N/A	1916472
D8-Naphtalène	%	-	-	-	-	69		70		N/A	1916472
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1302		FN1305			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-11-A	CR	WK-MA-18-5-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.3		3.7		N/A	N/A
HAP											
Acénaphtène	mg/kg	0.28	0.28	0.28	0.28	<0.10		<0.10		0.10	1916472
Acénaphtylène	mg/kg	320	320	320	320	<0.10		<0.10		0.10	1916472
Anthracène	mg/kg	2.5	2.5	32	32	<0.10		<0.10		0.10	1916472
Benzo(a)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(a)pyrène	mg/kg	0.7	0.7	1.4	1.4	<0.050		<0.050		0.050	1916472
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Benzo(c)phénanthrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Benzo(ghi)pérylène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Chrysène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Dibenzo(a,i)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Dibenzo(a,h)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Dibenzo(a,l)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
7,12-Diméthylbenzanthracène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Fluoranthène	mg/kg	50	50	180	180	<0.10		<0.10		0.10	1916472
Fluorène	mg/kg	0.25	0.25	0.25	0.25	<0.10		<0.10		0.10	1916472
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
3-Méthylcholanthrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Naphtalène	mg/kg	0.013	0.013	0.013	0.013	<0.010		<0.010		0.010	1916472
Phénanthrène	mg/kg	0.046	0.046	0.046	0.046	<0.040		<0.040		0.040	1916472
Pyrène	mg/kg	0.1	10	100	100	<0.10		<0.10		0.10	1916472
2-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
1-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
1,3-Diméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
2,3,5-Triméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Récupération des Surrogates (%)											
D10-Anthracène	%	-	-	-	-	64		61		N/A	1916472
D12-Benzo(a)pyrène	%	-	-	-	-	67		63		N/A	1916472
D14-Terphenyl	%	-	-	-	-	70		67		N/A	1916472
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											
† Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1302		FN1305			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-11-A	CR	WK-MA-18-5-B	CR	LDR	Lot CQ
D8-Acenaphthylene	%	-	-	-	-	72		68		N/A	1916472
D8-Naphtalène	%	-	-	-	-	71		65		N/A	1916472
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1306		FN1311			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-6-A	CR	WK-MA-18-13-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	3.8		3.9		N/A	N/A
HAP											
Acénaphtène	mg/kg	0.28	0.28	0.28	0.28	<0.10		<0.10		0.10	1916472
Acénaphthylène	mg/kg	320	320	320	320	<0.10		<0.10		0.10	1916472
Anthracène	mg/kg	2.5	2.5	32	32	<0.10		<0.10		0.10	1916472
Benzo(a)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(a)pyrène	mg/kg	0.7	0.7	1.4	1.4	<0.050		<0.050		0.050	1916472
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Benzo(c)phénanthrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Benzo(ghi)pérylène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Chrysène	mg/kg	-	-	-	-	<0.050		<0.050		0.050	1916472
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
Dibenzo(a,i)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Dibenzo(a,h)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Dibenzo(a,l)pyrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
7,12-Diméthylbenzanthracène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Fluoranthène	mg/kg	50	50	180	180	<0.10		<0.10		0.10	1916472
Fluorène	mg/kg	0.25	0.25	0.25	0.25	<0.10		<0.10		0.10	1916472
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	10	<0.050		<0.050		0.050	1916472
3-Méthylcholanthrène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Naphtalène	mg/kg	0.013	0.013	0.013	0.013	<0.010		<0.010		0.010	1916472
Phénanthrène	mg/kg	0.046	0.046	0.046	0.046	<0.040		<0.040		0.040	1916472
Pyrène	mg/kg	0.1	10	100	100	<0.10		<0.10		0.10	1916472
2-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
1-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
1,3-Diméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
2,3,5-Triméthylnaphtalène	mg/kg	-	-	-	-	<0.10		<0.10		0.10	1916472
Récupération des Surrogates (%)											
D10-Anthracène	%	-	-	-	-	60		69		N/A	1916472
D12-Benzo(a)pyrène	%	-	-	-	-	62		72		N/A	1916472
D14-Terphenyl	%	-	-	-	-	63		73		N/A	1916472
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											
† Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1306		FN1311			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-6-A	CR	WK-MA-18-13-B	CR	LDR	Lot CQ
D8-Acenaphthylene	%	-	-	-	-	67		76		N/A	1916472
D8-Naphtalène	%	-	-	-	-	68		76		N/A	1916472
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1312			
Date d'échantillonnage						2018/06/26			
# Bordereau						933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-14-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.8		N/A	N/A
HAP									
Acénaphène	mg/kg	0.28	0.28	0.28	0.28	<0.10		0.10	1916472
Acénaphylène	mg/kg	320	320	320	320	<0.10		0.10	1916472
Anthracène	mg/kg	2.5	2.5	32	32	<0.10		0.10	1916472
Benzo(a)anthracène	mg/kg	0.1	1	10	10	<0.050		0.050	1916472
Benzo(a)pyrène	mg/kg	0.7	0.7	1.4	1.4	<0.050		0.050	1916472
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		0.050	1916472
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		0.050	1916472
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	10	<0.050		0.050	1916472
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	-	<0.050		0.050	1916472
Benzo(c)phénanthrène	mg/kg	-	-	-	-	<0.10		0.10	1916472
Benzo(ghi)pérylène	mg/kg	-	-	-	-	<0.050		0.050	1916472
Chrysène	mg/kg	-	-	-	-	<0.050		0.050	1916472
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	10	<0.050		0.050	1916472
Dibenzo(a,i)pyrène	mg/kg	-	-	-	-	<0.10		0.10	1916472
Dibenzo(a,h)pyrène	mg/kg	-	-	-	-	<0.10		0.10	1916472
Dibenzo(a,l)pyrène	mg/kg	-	-	-	-	<0.10		0.10	1916472
7,12-Diméthylbenzanthracène	mg/kg	-	-	-	-	<0.10		0.10	1916472
Fluoranthène	mg/kg	50	50	180	180	<0.10		0.10	1916472
Fluorène	mg/kg	0.25	0.25	0.25	0.25	<0.10		0.10	1916472
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	10	<0.050		0.050	1916472
3-Méthylcholanthrène	mg/kg	-	-	-	-	<0.10		0.10	1916472
Naphtalène	mg/kg	0.013	0.013	0.013	0.013	<0.010		0.010	1916472
Phénanthrène	mg/kg	0.046	0.046	0.046	0.046	<0.040		0.040	1916472
Pyrène	mg/kg	0.1	10	100	100	<0.10		0.10	1916472
2-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		0.10	1916472
1-Méthylnaphtalène	mg/kg	-	-	-	-	<0.10		0.10	1916472
1,3-Diméthylnaphtalène	mg/kg	-	-	-	-	<0.10		0.10	1916472
2,3,5-Triméthylnaphtalène	mg/kg	-	-	-	-	<0.10		0.10	1916472
Récupération des Surrogates (%)									
D10-Anthracène	%	-	-	-	-	68		N/A	1916472
D12-Benzo(a)pyrène	%	-	-	-	-	72		N/A	1916472
D14-Terphenyl	%	-	-	-	-	74		N/A	1916472
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre									

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAP PAR GCMS (SOL)

ID Maxxam						FN1312			
Date d'échantillonnage						2018/06/26			
# Bordereau						933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-14-A	CR	LDR	Lot CQ
D8-Acenaphthylene	%	-	-	-	-	77		N/A	1916472
D8-Naphtalène	%	-	-	-	-	76		N/A	1916472
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable									

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam						FN1278		FN1279				
Date d'échantillonnage						2018/06/26		2018/06/26				
# Bordereau						944312		944312				
	Unités	Agr	Res	Com	Ind	WK-MA-18-4-A	CR	WK-MA-18-4-B	CR	LDR	Lot CQ	
% HUMIDITÉ	%	-	-	-	-	1.7		2.2		N/A	N/A	
HYDROCARBURES PÉTROLIERS												
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	820		380		100	1916469	
F2 (C10-C16) †	mg/kg	150	150	260	260	N/A		<10		10	1916800	
F3 (C16-C34) †	mg/kg	300	300	1700	1700	N/A		410	Res-Com	50	1916800	
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	N/A		<50		50	1916800	
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	N/A		OUI		N/A	1916800	
Récupération des Surrogates (%)												
1-Chlorooctadécane	%	-	-	-	-	92		96		N/A	1916469	
O-Terphenyl	%	-	-	-	-	N/A		74		N/A	1916800	
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

ID Maxxam						FN1279		FN1280		FN1281			
Date d'échantillonnage						2018/06/26		2018/06/26		2018/06/26			
# Bordereau						944312		944312		944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-4-B	CR	WK-MA-18-3-A	CR	WK-MA-18-3-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.2		1.7		1.9		N/A	N/A
HYDROCARBURES PÉTROLIERS													
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	390		570		<100		100	1916469
F2 (C10-C16) †	mg/kg	150	150	260	260	N/A		N/A		<10		10	1916800
F3 (C16-C34) †	mg/kg	300	300	1700	1700	N/A		N/A		<50		50	1916800
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	N/A		N/A		<50		50	1916800
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	N/A		N/A		OUI		N/A	1916800
Récupération des Surrogates (%)													
1-Chlorooctadécane	%	-	-	-	-	95		92		95		N/A	1916469
O-Terphenyl	%	-	-	-	-	N/A		N/A		76		N/A	1916800
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité Duplicata de laboratoire N/A = Non Applicable † Accréditation non existante pour ce paramètre													

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam						FN1282		FN1283		FN1283			
Date d'échantillonnage						2018/06/26		2018/06/26		2018/06/26			
# Bordereau						944312		944312		944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-2-A	CR	WK-MA-18-2-B	CR	WK-MA-18-2-B Dup. de Lab.	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.6		2.3		2.3		N/A	N/A
HYDROCARBURES PÉTROLIERS													
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	<100		<100		<100		100	1916469
Récupération des Surrogates (%)													
1-Chlorooctadécane	%	-	-	-	-	94		95		97		N/A	1916469
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité Duplicata de laboratoire N/A = Non Applicable													

ID Maxxam						FN1284		FN1285					
Date d'échantillonnage						2018/06/26		2018/06/26					
# Bordereau						944312		944312					
	Unités	Agr	Res	Com	Ind	WK-MA-18-1-A	CR	WK-MA-18-1-B	CR	LDR	Lot CQ		
% HUMIDITÉ	%	-	-	-	-	2.7		3.5		N/A	N/A		
HYDROCARBURES PÉTROLIERS													
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	<100		520		100	1916469		
F2 (C10-C16) †	mg/kg	150	150	260	260	<10		N/A		10	1916800		
F3 (C16-C34) †	mg/kg	300	300	1700	1700	<50		N/A		50	1916800		
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	<50		N/A		50	1916800		
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	OUI		N/A		N/A	1916800		
Récupération des Surrogates (%)													
1-Chlorooctadécane	%	-	-	-	-	94		92		N/A	1916469		
O-Terphenyl	%	-	-	-	-	73		N/A		N/A	1916800		
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre													

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam						FN1286			FN1287			
Date d'échantillonnage						2018/06/26			2018/06/26			
# Bordereau						944312			944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-8-A	CR	Lot CQ	WK-MA-18-8-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.8		N/A	3.4		N/A	N/A
HYDROCARBURES PÉTROLIERS												
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	1200		1919716	400		100	1916469
F2 (C10-C16) †	mg/kg	150	150	260	260	<10		1916800	N/A		10	N/A
F3 (C16-C34) †	mg/kg	300	300	1700	1700	1300	Res-Com	1916800	N/A		50	N/A
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	<50		1916800	N/A		50	N/A
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	OUI		1916800	N/A		N/A	N/A
Récupération des Surrogates (%)												
1-Chlorooctadécane	%	-	-	-	-	78		1919716	95		N/A	1916469
O-Terphenyl	%	-	-	-	-	69		1916800	N/A		N/A	N/A
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

ID Maxxam						FN1298		FN1299		FN1300			
Date d'échantillonnage						2018/06/26		2018/06/26		2018/06/26			
# Bordereau						944313		944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-7-A	CR	WK-MA-18-7-B	CR	WK-MA-18-12-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	4.6		4.0		2.3		N/A	N/A
HYDROCARBURES PÉTROLIERS													
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	170		<100		220		100	1916469
Récupération des Surrogates (%)													
1-Chlorooctadécane	%	-	-	-	-	98		103		98		N/A	1916469
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable													

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam						FN1300		FN1301				
Date d'échantillonnage						2018/06/26		2018/06/26				
# Bordereau						944313		944313				
	Unités	Agr	Res	Com	Ind	WK-MA-18-12-A Dup. de Lab.	CR	WK-MA-18-12-B	CR	LDR	Lot CQ	
% HUMIDITÉ	%	-	-	-	-	2.3		2.2		N/A	N/A	
HYDROCARBURES PÉTROLIERS												
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	200		<100		100	1916469	
F2 (C10-C16) †	mg/kg	150	150	260	260	N/A		<10		10	1916800	
F3 (C16-C34) †	mg/kg	300	300	1700	1700	N/A		120	<Agr	50	1916800	
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	N/A		<50		50	1916800	
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	N/A		OUI		N/A	1916800	
Récupération des Surrogates (%)												
1-Chlorooctadécane	%	-	-	-	-	101		101		N/A	1916469	
O-Terphenyl	%	-	-	-	-	N/A		84		N/A	1916800	
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité Duplicata de laboratoire N/A = Non Applicable † Accréditation non existante pour ce paramètre												

ID Maxxam						FN1302		FN1303				
Date d'échantillonnage						2018/06/26		2018/06/26				
# Bordereau						944313		944313				
	Unités	Agr	Res	Com	Ind	WK-MA-18-11-A	CR	WK-MA-18-11-B	CR	LDR	Lot CQ	
% HUMIDITÉ	%	-	-	-	-	2.3		2.2		N/A	N/A	
HYDROCARBURES PÉTROLIERS												
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	360		340		100	1916469	
F2 (C10-C16) †	mg/kg	150	150	260	260	<10		N/A		10	1916800	
F3 (C16-C34) †	mg/kg	300	300	1700	1700	240	<Agr	N/A		50	1916800	
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	<50		N/A		50	1916800	
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	OUI		N/A		N/A	1916800	
Récupération des Surrogates (%)												
1-Chlorooctadécane	%	-	-	-	-	98		95		N/A	1916469	
O-Terphenyl	%	-	-	-	-	84		N/A		N/A	1916800	
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam							FN1304		FN1305		FN1306			
Date d'échantillonnage							2018/06/26		2018/06/26		2018/06/26			
# Bordereau							944313		944313		944313			
	Unités	Agr	Res	Com	Ind		WK-MA-18-5-A	CR	WK-MA-18-5-B	CR	WK-MA-18-6-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-		3.5		3.7		3.8		N/A	N/A
HYDROCARBURES PÉTROLIERS														
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-		370		2700		190		100	1916469
F2 (C10-C16) †	mg/kg	150	150	260	260		N/A		<10		N/A		10	1916800
F3 (C16-C34) †	mg/kg	300	300	1700	1700		N/A		170	<Agr	N/A		50	1916800
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300		N/A		<50		N/A		50	1916800
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-		N/A		OUI		N/A		N/A	1916800
Récupération des Surrogates (%)														
1-Chlorooctadécane	%	-	-	-	-		99		91		100		N/A	1916469
O-Terphenyl	%	-	-	-	-		N/A		89		N/A		N/A	1916800
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre														

ID Maxxam							FN1307		FN1310					
Date d'échantillonnage							2018/06/26		2018/06/26					
# Bordereau							944313		933432					
	Unités	Agr	Res	Com	Ind		WK-MA-18-6-B	CR	WK-MA-18-13-A	CR	LDR	Lot CQ		
% HUMIDITÉ	%	-	-	-	-		3.8		2.2		N/A	N/A		
HYDROCARBURES PÉTROLIERS														
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-		960		430		100	1916469		
F2 (C10-C16) †	mg/kg	150	150	260	260		<10		N/A		10	1916800		
F3 (C16-C34) †	mg/kg	300	300	1700	1700		260	<Agr	N/A		50	1916800		
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300		<50		N/A		50	1916800		
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-		OUI		N/A		N/A	1916800		
Récupération des Surrogates (%)														
1-Chlorooctadécane	%	-	-	-	-		94		98		N/A	1916469		
O-Terphenyl	%	-	-	-	-		79		N/A		N/A	1916800		
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre														

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam						FN1311		FN1312			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						933432		933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-13-B	CR	WK-MA-18-14-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	3.9		2.8		N/A	N/A
HYDROCARBURES PÉTROLIERS											
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	330		380		100	1916469
F2 (C10-C16) †	mg/kg	150	150	260	260	<10		N/A		10	1916800
F3 (C16-C34) †	mg/kg	300	300	1700	1700	80	<Agr	N/A		50	1916800
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	<50		N/A		50	1916800
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	OUI		N/A		N/A	1916800
Récupération des Surrogates (%)											
1-Chlorooctadécane	%	-	-	-	-	97		98		N/A	1916469
O-Terphenyl	%	-	-	-	-	76		N/A		N/A	1916800
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

ID Maxxam						FN1313					
Date d'échantillonnage						2018/06/26					
# Bordereau						933432					
	Unités	Agr	Res	Com	Ind	WK-MA-18-14-B	CR	LDR	Lot CQ		
% HUMIDITÉ	%	-	-	-	-	3.6		N/A		N/A	
HYDROCARBURES PÉTROLIERS											
Hydrocarbures pétroliers (C10-C50)	mg/kg	-	-	-	-	<100		100		1916469	
F2 (C10-C16) †	mg/kg	150	150	260	260	<10		10		1916800	
F3 (C16-C34) †	mg/kg	300	300	1700	1700	210	<Agr	50		1916800	
F4 (C34-C50) †	mg/kg	2800	2800	3300	3300	<50		50		1916800	
Ligne de base atteinte à C50 †	mg/kg	-	-	-	-	OUI		N/A		1916800	
Récupération des Surrogates (%)											
1-Chlorooctadécane	%	-	-	-	-	93		N/A		1916469	
O-Terphenyl	%	-	-	-	-	75		N/A		1916800	
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (SOL)

ID Maxxam						FN1278		FN1280			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944312		944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-4-A	CR	WK-MA-18-3-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	1.7		1.7		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.10		<0.10		0.10	1916337
Chlorobenzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,2 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,3 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,4 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.20		<0.20		0.20	1916337
Styrène	mg/kg	0.1	5	50	50	<0.20		<0.20		0.20	1916337
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.20		<0.20		0.20	1916337
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.20		<0.20		0.20	1916337
Récupération des Surrogates (%)											
4-Bromofluorobenzène	%	-	-	-	-	97		97		N/A	1916337
D10-Ethylbenzène	%	-	-	-	-	112		110		N/A	1916337
D4-1,2-Dichloroéthane	%	-	-	-	-	99		99		N/A	1916337
D8-Toluène	%	-	-	-	-	100		100		N/A	1916337
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											
† Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (SOL)

ID Maxxam						FN1287		FN1299			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944312		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-8-B	CR	WK-MA-18-7-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	3.4		4.0		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.10		<0.10		0.10	1916337
Chlorobenzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,2 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,3 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,4 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.20		<0.20		0.20	1916337
Styrène	mg/kg	0.1	5	50	50	<0.20		<0.20		0.20	1916337
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.20		<0.20		0.20	1916337
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.20		<0.20		0.20	1916337
Récupération des Surrogates (%)											
4-Bromofluorobenzène	%	-	-	-	-	99		97		N/A	1916337
D10-Ethylbenzène	%	-	-	-	-	116		114		N/A	1916337
D4-1,2-Dichloroéthane	%	-	-	-	-	96		99		N/A	1916337
D8-Toluène	%	-	-	-	-	99		100		N/A	1916337
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											
† Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (SOL)

ID Maxxam						FN1304		FN1306			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						944313		944313			
	Unités	Agr	Res	Com	Ind	WK-MA-18-5-A	CR	WK-MA-18-6-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	3.5		3.8		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.10		<0.10		0.10	1916337
Chlorobenzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,2 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,3 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,4 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.20		<0.20		0.20	1916337
Styrène	mg/kg	0.1	5	50	50	<0.20		<0.20		0.20	1916337
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.20		<0.20		0.20	1916337
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.20		<0.20		0.20	1916337
Récupération des Surrogates (%)											
4-Bromofluorobenzène	%	-	-	-	-	96		97		N/A	1916337
D10-Ethylbenzène	%	-	-	-	-	110		116		N/A	1916337
D4-1,2-Dichloroéthane	%	-	-	-	-	101		100		N/A	1916337
D8-Toluène	%	-	-	-	-	101		100		N/A	1916337
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
N/A = Non Applicable											
† Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (SOL)

ID Maxxam						FN1310		FN1310			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						933432		933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-13-A	CR	WK-MA-18-13-A Dup. de Lab.	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.2		2.2		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.10		<0.10		0.10	1916337
Chlorobenzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,2 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,3 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,4 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.20		<0.20		0.20	1916337
Styrène	mg/kg	0.1	5	50	50	<0.20		<0.20		0.20	1916337
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.20		<0.20		0.20	1916337
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.20		<0.20		0.20	1916337
Récupération des Surrogates (%)											
4-Bromofluorobenzène	%	-	-	-	-	98		97		N/A	1916337
D10-Ethylbenzène	%	-	-	-	-	109		111		N/A	1916337
D4-1,2-Dichloroéthane	%	-	-	-	-	98		100		N/A	1916337
D8-Toluène	%	-	-	-	-	100		100		N/A	1916337
LDR = Limite de détection rapportée											
Lot CQ = Lot contrôle qualité											
Duplicata de laboratoire											
N/A = Non Applicable											
† Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (SOL)

ID Maxxam						FN1312		FN1312			
Date d'échantillonnage						2018/06/26		2018/06/26			
# Bordereau						933432		933432			
	Unités	Agr	Res	Com	Ind	WK-MA-18-14-A	CR	WK-MA-18-14-A Dup. de Lab.	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.8		2.8		N/A	N/A
VOLATILS											
Benzène	mg/kg	0.0095	0.0095	0.030	0.030	<0.10		<0.10		0.10	1916337
Chlorobenzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,2 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,3 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Dichloro-1,4 benzène	mg/kg	0.1	1	10	10	<0.20		<0.20		0.20	1916337
Éthylbenzène	mg/kg	0.082	0.082	0.082	0.082	<0.20		<0.20		0.20	1916337
Styrène	mg/kg	0.1	5	50	50	<0.20		<0.20		0.20	1916337
Toluène	mg/kg	0.37	0.37	0.37	0.37	<0.20		<0.20		0.20	1916337
Xylènes (o,m,p) †	mg/kg	11	11	11	11	<0.20		<0.20		0.20	1916337
Récupération des Surrogates (%)											
4-Bromofluorobenzène	%	-	-	-	-	99		99		N/A	1916337
D10-Ethylbenzène	%	-	-	-	-	109		106		N/A	1916337
D4-1,2-Dichloroéthane	%	-	-	-	-	100		99		N/A	1916337
D8-Toluène	%	-	-	-	-	99		98		N/A	1916337
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité Duplicata de laboratoire N/A = Non Applicable † Accréditation non existante pour ce paramètre											

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

MÉTAUX EXTRACTIBLES TOTAUX (SOL)

ID Maxxam						FN1284			
Date d'échantillonnage						2018/06/26			
# Bordereau						944312			
	Unités	Agr	Res	Com	Ind	WK-MA-18-1-A	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	-	2.7		N/A	N/A
MÉTAUX									
Cadmium (Cd)	mg/kg	1.4	10	22	22	<0.10		0.10	1916976
Chrome (Cr)	mg/kg	64	64	87	87	4.9	<Agr	1.0	1916976
Cuivre (Cu)	mg/kg	63	63	94	94	5.7	<Agr	1.0	1916976
Nickel (Ni)	mg/kg	45	45	89	89	5.6	<Agr	0.50	1916976
Plomb (Pb)	mg/kg	70	140	260	600	2.2	<Agr	1.0	1916976
Zinc (Zn)	mg/kg	200	200	200	200	12	<Agr	5.0	1916976
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable									

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

INTERPRETATION QUALITATIVE
Hydrocarbures pétroliers (C10-C50)

Échantillon	Interpretation Qualitative
WK-MA-18-4-A	Voir section des commentaires.
WK-MA-18-4-B	Voir section des commentaires.
WK-MA-18-4-B	Voir section des commentaires.
WK-MA-18-3-A	Voir section des commentaires.
WK-MA-18-3-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-2-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-2-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-2-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-1-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-1-B	Voir section des commentaires.
WK-MA-18-8-B	Voir section des commentaires.
WK-MA-18-7-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-7-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-12-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-12-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-12-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-11-A	Voir section des commentaires.
WK-MA-18-11-B	Voir section des commentaires.
WK-MA-18-5-A	Voir section des commentaires.
WK-MA-18-5-B	Voir section des commentaires.
WK-MA-18-6-A	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-6-B	Voir section des commentaires.
WK-MA-18-13-A	Voir section des commentaires.
WK-MA-18-13-B	Voir section des commentaires.
WK-MA-18-14-A	Voir section des commentaires.
WK-MA-18-14-B	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

REMARQUES GÉNÉRALES

Tous les résultats sont calculés sur une base sèche excepté lorsque non-applicable.

Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1278, FN1279
HAP (CCME): Échantillon reçu congelé.: FN1279
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1279
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1280, FN1281
HAP (CCME): Échantillon reçu congelé.: FN1281
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1281
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1282, FN1283, FN1284
Métaux extractibles totaux par ICP-MS: Échantillon reçu congelé.: FN1284
HAP (CCME): Échantillon reçu congelé.: FN1284
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1284
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1285, FN1286
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1286
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1287, FN1298, FN1299
HAP (CCME): Échantillon reçu congelé.: FN1299
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1300, FN1301
HAP (CCME): Échantillon reçu congelé.: FN1301
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1301
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1302
HAP (CCME): Échantillon reçu congelé.: FN1302
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1302
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1303, FN1304, FN1305
HAP (CCME): Échantillon reçu congelé.: FN1305
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1305
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1306
HAP (CCME): Échantillon reçu congelé.: FN1306
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1307
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1307
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1310
Éthylène glycol par colorimétrie: Échantillon reçu congelé.: FN1310
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1311
HAP (CCME): Échantillon reçu congelé.: FN1311
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1311
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1312
HAP (CCME): Échantillon reçu congelé.: FN1312
Hydrocarbures pétroliers (C10-C50): Échantillon reçu congelé.: FN1313
Éthylène glycol par colorimétrie: Échantillon reçu congelé.: FN1313
Hydrocarbures pétroliers (F2-F4): Échantillon reçu congelé.: FN1313

V2. Résultats de F2F4 et C10-C50 modifiés.

Agr,Res,Com,Ind,CR: Recommandations canadiennes pour la qualité des sols: environnement et santé humaine

Veillez noter que nous présentons les critères se rapportant à un sol grossier.

Ces références ne sont rapportées qu'à titre indicatif et ne doivent être interprétées dans aucun autre contexte.

- = Ce composé ne fait pas partie de la réglementation.

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

Noter que les résultats totaux sont arrondis à deux chiffres significatifs.

Veillez noter que les résultats ci-dessus ont été corrigés pour le blanc d'instrument.

L'extraction a été faite à délai de conservation dépassé pour les échantillons FN1279-03, FN1281-03, FN1284-03, FN1301-03, FN1302-03, FN1305-03, FN1307-03, FN1311-03, FN1313-03 et FN1286-03.

HAP PAR GCMS (SOL)

Les résultats bruts non-arrondis sont utilisés dans le calcul du benzo(b+j+k)fluoranthène. Ce résultat total est alors arrondi à deux chiffres significatifs.

HYDROCARBURES PAR GCFID (SOL)

La similitude des hydrocarbures rapportés est obtenue par une comparaison visuelle du chromatogramme de l'échantillon avec la bibliothèque des chromatogrammes des produits de référence. Comme certaines variables tels que les multiproduits, le degré et le type de dégradation et la présence d'hydrocarbures non pétrogénétiques qui ne peuvent pas être reproduites dans les spectres de référence, l'information doit être vue comme qualitative et, en conséquence, Maxxam ne peut aucunement être tenu responsable des conclusions formulées pour ces données.

IPP FN1278, FN1279, FN1280, FN1285, FN1286, FN1287, FN1302, FN1303, FN1304, FN1305, FN1307, FN1310, FN1311, FN1312 : C14 - C40 : Même région chromatographique que l'huile hydraulique, l'huile à transformateur, l'huile à transmission et l'huile à moteur.

Veillez noter que pour FN1286 l'extraction a été faite sur la partie -02 mais rapportée sur la partie -01.

HAM PAR GC/MS (SOL)

Veillez noter que les échantillons sont analysés par Headspace GC/MS.

Les résultats ne se rapportent qu'aux échantillons soumis pour analyse

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1916334	LAR	Blanc fortifié	Éthylène glycol	2018/07/13		104	%
1916334	LAR	Blanc de méthode	Éthylène glycol	2018/07/13	<2.0		mg/kg
1916337	VLP	Blanc fortifié	4-Bromofluorobenzène	2018/07/13		98	%
			D10-Ethylbenzène	2018/07/13		105	%
			D4-1,2-Dichloroéthane	2018/07/13		99	%
			D8-Toluène	2018/07/13		98	%
			Benzène	2018/07/13		104	%
			Chlorobenzène	2018/07/13		100	%
			Dichloro-1,2 benzène	2018/07/13		95	%
			Dichloro-1,3 benzène	2018/07/13		99	%
			Dichloro-1,4 benzène	2018/07/13		95	%
			Éthylbenzène	2018/07/13		100	%
			Styrène	2018/07/13		104	%
			Toluène	2018/07/13		101	%
			Xylènes (o,m,p)	2018/07/13		97	%
1916337	VLP	Blanc de méthode	4-Bromofluorobenzène	2018/07/13		98	%
			D10-Ethylbenzène	2018/07/13		110	%
			D4-1,2-Dichloroéthane	2018/07/13		91	%
			D8-Toluène	2018/07/13		99	%
			Benzène	2018/07/13	<0.20		mg/kg
			Chlorobenzène	2018/07/13	<0.40		mg/kg
			Dichloro-1,2 benzène	2018/07/13	<0.40		mg/kg
			Dichloro-1,3 benzène	2018/07/13	<0.40		mg/kg
			Dichloro-1,4 benzène	2018/07/13	<0.40		mg/kg
			Éthylbenzène	2018/07/13	<0.40		mg/kg
			Styrène	2018/07/13	<0.40		mg/kg
			Toluène	2018/07/13	<0.40		mg/kg
			Xylènes (o,m,p)	2018/07/13	<0.40		mg/kg
1916469	VLP	Blanc fortifié	1-Chlorooctadécane	2018/07/17		96	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/17		81	%
1916469	VLP	Blanc de méthode	1-Chlorooctadécane	2018/07/16		101	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/16	<100		mg/kg
1916472	ADE	Blanc fortifié	D10-Anthracène	2018/07/16		71	%
			D12-Benzo(a)pyrène	2018/07/16		81	%
			D14-Terphenyl	2018/07/16		81	%
			D8-Acenaphthylene	2018/07/16		81	%
			D8-Naphtalène	2018/07/16		80	%
			Acénaphène	2018/07/16		70	%
			Acénaphtylène	2018/07/16		72	%
			Anthracène	2018/07/16		68	%
			Benzo(a)anthracène	2018/07/16		59	%
			Benzo(a)pyrène	2018/07/16		75	%
			Benzo(b)fluoranthène	2018/07/16		67	%
			Benzo(j)fluoranthène	2018/07/16		78	%
			Benzo(k)fluoranthène	2018/07/16		63	%
			Benzo(b+j+k)fluoranthène	2018/07/16		69	%
			Benzo(c)phénanthrène	2018/07/16		67	%
			Benzo(ghi)pérylène	2018/07/16		68	%
			Chrysène	2018/07/16		61	%
			Dibenzo(a,h)anthracène	2018/07/16		65	%
			Dibenzo(a,i)pyrène	2018/07/16		60	%

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			Dibenzo(a,h)pyrène	2018/07/16		69	%
			Dibenzo(a,l)pyrène	2018/07/16		77	%
			7,12-Diméthylbenzanthracène	2018/07/16		68	%
			Fluoranthène	2018/07/16		72	%
			Fluorène	2018/07/16		70	%
			Indéno(1,2,3-cd)pyrène	2018/07/16		65	%
			3-Méthylcholanthrène	2018/07/16		74	%
			Naphtalène	2018/07/16		74	%
			Phénanthrène	2018/07/16		64	%
			Pyrène	2018/07/16		72	%
			2-Méthylnaphtalène	2018/07/16		73	%
			1-Méthylnaphtalène	2018/07/16		70	%
			1,3-Diméthylnaphtalène	2018/07/16		70	%
			2,3,5-Triméthylnaphtalène	2018/07/16		73	%
1916472	ADE	Blanc de méthode	D10-Anthracène	2018/07/16		66	%
			D12-Benzo(a)pyrène	2018/07/16		70	%
			D14-Terphenyl	2018/07/16		70	%
			D8-Acenaphthylene	2018/07/16		73	%
			D8-Naphtalène	2018/07/16		74	%
			Acénaphène	2018/07/16	<0.10		mg/kg
			Acénaphthylène	2018/07/16	<0.10		mg/kg
			Anthracène	2018/07/16	<0.10		mg/kg
			Benzo(a)anthracène	2018/07/16	<0.050		mg/kg
			Benzo(a)pyrène	2018/07/16	<0.050		mg/kg
			Benzo(b)fluoranthène	2018/07/16	<0.050		mg/kg
			Benzo(j)fluoranthène	2018/07/16	<0.050		mg/kg
			Benzo(k)fluoranthène	2018/07/16	<0.050		mg/kg
			Benzo(b+j+k)fluoranthène	2018/07/16	<0.050		mg/kg
			Benzo(c)phénanthrène	2018/07/16	<0.10		mg/kg
			Benzo(ghi)pérylène	2018/07/16	<0.050		mg/kg
			Chrysène	2018/07/16	<0.050		mg/kg
			Dibenzo(a,h)anthracène	2018/07/16	<0.050		mg/kg
			Dibenzo(a,i)pyrène	2018/07/16	<0.10		mg/kg
			Dibenzo(a,h)pyrène	2018/07/16	<0.10		mg/kg
			Dibenzo(a,l)pyrène	2018/07/16	<0.10		mg/kg
			7,12-Diméthylbenzanthracène	2018/07/16	<0.10		mg/kg
			Fluoranthène	2018/07/16	<0.10		mg/kg
			Fluorène	2018/07/16	<0.10		mg/kg
			Indéno(1,2,3-cd)pyrène	2018/07/16	<0.050		mg/kg
			3-Méthylcholanthrène	2018/07/16	<0.10		mg/kg
			Naphtalène	2018/07/16	<0.010		mg/kg
			Phénanthrène	2018/07/16	<0.040		mg/kg
			Pyrène	2018/07/16	<0.10		mg/kg
			2-Méthylnaphtalène	2018/07/16	<0.10		mg/kg
			1-Méthylnaphtalène	2018/07/16	<0.10		mg/kg
			1,3-Diméthylnaphtalène	2018/07/16	<0.10		mg/kg
			2,3,5-Triméthylnaphtalène	2018/07/16	<0.10		mg/kg
1916720	FF	Blanc fortifié	1,4-Difluorobenzène	2018/07/17		99	%
			4-Bromofluorobenzène	2018/07/17		108	%
			D10-Ethylbenzène	2018/07/17		101	%
			D4-1,2-Dichloroéthane	2018/07/17		115	%

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			Benzène	2018/07/17		96	%
			Toluène	2018/07/17		86	%
			Éthylbenzène	2018/07/17		92	%
			o-Xylène	2018/07/17		88	%
			p+m-Xylène	2018/07/17		83	%
			Xylènes (o,m,p)	2018/07/17		86	%
1916720	FF	Blanc de méthode	F1 (C6-C10)	2018/07/17		112	%
			1,4-Difluorobenzène	2018/07/17		99	%
			4-Bromofluorobenzène	2018/07/17		106	%
			D10-Ethylbenzène	2018/07/17		112	%
			D4-1,2-Dichloroéthane	2018/07/17		111	%
			Benzène	2018/07/17	<0.0050		mg/kg
			Toluène	2018/07/17	<0.020		mg/kg
			Éthylbenzène	2018/07/17	<0.010		mg/kg
			o-Xylène	2018/07/17	<0.020		mg/kg
			p+m-Xylène	2018/07/17	<0.040		mg/kg
			Xylènes (o,m,p)	2018/07/17	<0.040		mg/kg
			F1 (C6-C10)	2018/07/17	<10		mg/kg
			F1 (C6-C10) - BTEX	2018/07/17	<10		mg/kg
1916797	FF	Blanc fortifié	1,4-Difluorobenzène	2018/07/17		101	%
			4-Bromofluorobenzène	2018/07/17		110	%
			D10-Ethylbenzène	2018/07/17		113	%
			D4-1,2-Dichloroéthane	2018/07/17		104	%
			Benzène	2018/07/17		108	%
			Toluène	2018/07/17		96	%
			Éthylbenzène	2018/07/17		103	%
			o-Xylène	2018/07/17		97	%
			p+m-Xylène	2018/07/17		93	%
			Xylènes (o,m,p)	2018/07/17		95	%
			F1 (C6-C10)	2018/07/17		124	%
1916797	FF	Blanc de méthode	1,4-Difluorobenzène	2018/07/17		98	%
			4-Bromofluorobenzène	2018/07/17		108	%
			D10-Ethylbenzène	2018/07/17		108	%
			D4-1,2-Dichloroéthane	2018/07/17		102	%
			Benzène	2018/07/17	<0.0050		mg/kg
			Toluène	2018/07/17	<0.020		mg/kg
			Éthylbenzène	2018/07/17	<0.010		mg/kg
			o-Xylène	2018/07/17	<0.020		mg/kg
			p+m-Xylène	2018/07/17	<0.040		mg/kg
			Xylènes (o,m,p)	2018/07/17	<0.040		mg/kg
			F1 (C6-C10)	2018/07/17	<10		mg/kg
			F1 (C6-C10) - BTEX	2018/07/17	<10		mg/kg
1916800	MP	Blanc fortifié	O-Terphenyl	2018/07/17		72	%
			F2 (C10-C16)	2018/07/17		95	%
			F3 (C16-C34)	2018/07/17		95	%
			F4 (C34-C50)	2018/07/17		95	%
1916800	MP	Blanc de méthode	O-Terphenyl	2018/07/17		79	%
			F2 (C10-C16)	2018/07/17	<10		mg/kg
			F3 (C16-C34)	2018/07/17	<50		mg/kg
			F4 (C34-C50)	2018/07/17	<50		mg/kg
1916976	JRC	MRC	Cadmium (Cd)	2018/07/17		113	%

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1916976	JRC	Blanc fortifié	Chrome (Cr)	2018/07/17		113	%
			Cuivre (Cu)	2018/07/17		119	%
			Nickel (Ni)	2018/07/17		119	%
			Plomb (Pb)	2018/07/17		111	%
			Zinc (Zn)	2018/07/17		118	%
			Cadmium (Cd)	2018/07/17		100	%
			Chrome (Cr)	2018/07/17		102	%
			Cuivre (Cu)	2018/07/17		105	%
			Nickel (Ni)	2018/07/17		105	%
			Plomb (Pb)	2018/07/17		100	%
1916976	JRC	Blanc de méthode	Zinc (Zn)	2018/07/17		105	%
			Cadmium (Cd)	2018/07/17	<0.10		mg/kg
			Chrome (Cr)	2018/07/17	<1.0		mg/kg
			Cuivre (Cu)	2018/07/17	<1.0		mg/kg
			Nickel (Ni)	2018/07/17	<0.50		mg/kg
			Plomb (Pb)	2018/07/17	<1.0		mg/kg
			Zinc (Zn)	2018/07/17	<5.0		mg/kg
1919716	RDH	Blanc fortifié	1-Chlorooctadécane	2018/07/21		76	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/21		90	%
1919716	RDH	Blanc de méthode	1-Chlorooctadécane	2018/07/21		78	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/21	<100		mg/kg

MRC: Un échantillon de concentration connue préparé dans des conditions rigoureuses par un organisme externe. Utilisé pour vérifier la justesse de la méthode.

Blanc fortifié: Un blanc, d'une matrice exempte de contaminants, auquel a été ajouté une quantité connue d'analyte provenant généralement d'une deuxième source. Utilisé pour évaluer la précision de la méthode.

Blanc de méthode: Une partie aliquote de matrice pure soumise au même processus analytique que les échantillons, du prétraitement au dosage. Sert à évaluer toutes contaminations du laboratoire.

Surrogate: Composé se comportant de façon similaire aux composés analysés et ajouté à l'échantillon avant l'analyse. Sert à évaluer la qualité de l'extraction.

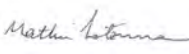

Réc = Récupération

Dossier Maxxam: B828164
Date du rapport: 2018/07/30

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

PAGE DES SIGNATURES DE VALIDATION



Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:

Mathieu Letourneau, B.Sc., Chimiste, Spécialiste scientifique




Michel Poulin, B.Sc., Chimiste

Ngoc-Thuy Do, B.Sc., Chimiste

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Votre # du projet: P-0014860-0-00-100-04

Adresse du site: WASKAGANISH

Votre # Bordereau: E-915935

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/25

Rapport: R2385409

Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B829904

Reçu: 2018/07/09, 14:00

Matrice: SOL
Nombre d'échantillons reçus: 5

Analyses	Quantité	Date de l'		Méthode de laboratoire	Référence Primaire
		extraction	Date Analysé		
Hydrocarbures pétroliers (C10-C50)	2	2018/07/20	2018/07/21	QUE SOP-00210	MA400-HYD 1.1 R3 m
Hydrocarbures pétroliers (F2-F4) (1, 2)	3	2018/07/23	2018/07/23	STL SOP-00170	CCME PHC-CWS m
Interprétation des produits pétroliers	2	N/A	2018/07/20		MA408-IdePet 1.0 R1m
HAM-Conservation au MeOH sur le terrain (3)	2	N/A	2018/07/21	QUE SOP-00202	MA.400-COV 2.0 R4 m

Remarques:

Les laboratoires Maxxam sont accrédités ISO/IEC 17025:2005. Sauf indication contraire, les méthodes d'analyses utilisées par Maxxam s'inspirent des méthodes de référence d'organismes provinciaux, fédéraux et américains, tel que le CCME, le MDDELCC, l'EPA et l'APHA.

Toutes les analyses présentées ont été réalisées conformément aux procédures et aux pratiques relatives à la méthodologie, à l'assurance qualité et au contrôle de la qualité généralement appliquées par les employés de Maxxam (sauf s'il en a été convenu autrement par écrit entre le client et Maxxam). Toutes les données de laboratoire rencontrent les contrôles statistiques et respectent tous les critères du CQ et les critères de performance des méthodes, sauf s'il en a été signalé autrement. Tous les blancs de méthode sont rapportés, toutefois, les données des échantillons correspondants ne sont pas corrigées pour la valeur du blanc, sauf indication contraire.

Les responsabilités de Maxxam sont restreintes au coût réel de l'analyse, sauf s'il en a été convenu autrement par écrit. Il n'existe aucune autre garantie, explicite ou implicite. Le client a fait appel à Maxxam pour l'analyse de ses échantillons conformément aux méthodes de référence mentionnées dans ce rapport. L'interprétation et l'utilisation des résultats sont sous l'entière responsabilité du client et ne font pas partie des services offerts par Maxxam, sauf si convenu autrement par écrit.

Les résultats des échantillons solides, sauf les biotes, sont rapportés en fonction de la masse sèche, sauf indication contraire. Les analyses organiques ne sont pas corrigées en fonction de la récupération, sauf pour les méthodes de dilution isotopique.

Les résultats s'appliquent seulement aux échantillons analysés.

Le présent rapport ne doit pas être reproduit, sinon dans son intégralité, sans le consentement écrit du laboratoire.

Lorsque la méthode de référence comprend un suffixe « m », cela signifie que la méthode d'analyse du laboratoire contient des modifications validées et appliquées afin d'améliorer la performance de la méthode de référence.

Notez: Les données brutes sont utilisées pour le calcul du RPD (% d'écart relatif). L'arrondissement des résultats finaux peut expliquer la variation apparente.

Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Votre # Bordereau: E-915935

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/25
Rapport: R2385409
Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B829904

Reçu: 2018/07/09, 14:00

- (1) Cette analyse a été effectuée par Maxxam -Ville St. Laurent
- (2) Tous les résultats pour le CCME répondent aux critères exigés, sauf indication contraire dans le rapport. Les méthodes du SP-HCP utilisées par Maxxam respectent tous les éléments imposés par la méthode de référence et les éléments se rapportant à la performance ont été validés. Toutes les modifications ont été validées et jugées équivalentes d'après l'Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods, September 2003. La documentation est fournie sur demande. Différence par rapport à la Méthode de référence pour le standard pancanadien relatif aux hydrocarbures pétroliers dans le sol – méthode du 1er volet : les résultats pour les fractions F2/F3/F4 sont rapportés à l'aide d'une extraction à froid par solvant au lieu d'une extraction avec un appareil Soxhlet.
- (3) Aucune date d'extraction n'est fournie pour les analyses de F1/BTEX et COV lorsque les sols sont conservés dans le méthanol sur le terrain. La date d'extraction correspond à la date d'échantillonnage à moins d'indication contraire.

Note : Les paramètres inclus dans le présent certificat sont accrédités par le MDDELCC, à moins d'indication contraire.

clé de cryptage

Veillez adresser toute question concernant ce certificat d'analyse à votre chargé(e) de projets
Alain Lemieux, Chargé de projets
Courriel: ALemieux@maxxam.ca
Téléphone (418)658-5784 Ext:7066451

=====
Ce rapport a été produit et distribué en utilisant une procédure automatisée sécuritaire.

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les « signataires » requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Dossier Maxxam: B829904
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam					FO0005		FO0007		FO0008			
Date d'échantillonnage					2018/06/27		2018/06/27		2018/06/27			
# Bordereau					E-915935		E-915935		E-915935			
	Unités	A	B	C	WK-TP-18-7-D	CR	WK-TP-18-6-C	CR	WK-TP-18-6-E	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	6.7		4.2		10		N/A	N/A
HYDROCARBURES PÉTROLIERS												
Hydrocarbures pétroliers (C10-C50)	mg/kg	300	700	3500	<100		N/A		1400	B-C	100	1918461
F2 (C10-C16) †	mg/kg	-	-	-	<10		15		1800		10	1918915
F3 (C16-C34) †	mg/kg	-	-	-	<50		<50		760		50	1918915
F4 (C34-C50) †	mg/kg	-	-	-	<50		<50		<50		50	1918915
Ligne de base atteinte à C50 †	mg/kg	-	-	-	OUI		OUI		OUI		N/A	1918915
Récupération des Surrogates (%)												
1-Chlorooctadécane	%	-	-	-	88		N/A		91		N/A	1918461
O-Terphenyl	%	-	-	-	108		112		98		N/A	1918915
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre												

Dossier Maxxam: B829904
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

HAM PAR GC/MS (SOL)

ID Maxxam					FO0004		FO0006			
Date d'échantillonnage					2018/06/27		2018/06/27			
# Bordereau					E-915935		E-915935			
	Unités	A	B	C	WK-TP-18-7-C	CR	WK-TP-18-6-B	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	4.5		4.3		N/A	N/A
VOLATILS										
Benzène	mg/kg	0.2	0.5	5	<0.10		<0.10		0.10	1918406
Chlorobenzène	mg/kg	0.2	1	10	<0.20		<0.20		0.20	1918406
Dichloro-1,2 benzène	mg/kg	0.2	1	10	<0.20		<0.20		0.20	1918406
Dichloro-1,3 benzène	mg/kg	0.2	1	10	<0.20		<0.20		0.20	1918406
Dichloro-1,4 benzène	mg/kg	0.2	1	10	<0.20		<0.20		0.20	1918406
Éthylbenzène	mg/kg	0.2	5	50	<0.20		<0.20		0.20	1918406
Styrène	mg/kg	0.2	5	50	<0.20		<0.20		0.20	1918406
Toluène	mg/kg	0.2	3	30	<0.20		<0.20		0.20	1918406
Xylènes (o,m,p) †	mg/kg	0.4	5	50	<0.20		<0.20		0.20	1918406
Récupération des Surrogates (%)										
4-Bromofluorobenzène	%	-	-	-	100		98		N/A	1918406
D10-Ethylbenzène	%	-	-	-	118		130		N/A	1918406
D4-1,2-Dichloroéthane	%	-	-	-	87		90		N/A	1918406
D8-Toluène	%	-	-	-	102		100		N/A	1918406
LDR = Limite de détection rapportée										
Lot CQ = Lot contrôle qualité										
N/A = Non Applicable										
† Accréditation non existante pour ce paramètre										

Dossier Maxxam: B829904
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

INTERPRETATION QUALITATIVE
Hydrocarbures pétroliers (C10-C50)

Échantillon	Interpretation Qualitative
WK-TP-18-7-D	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-TP-18-6-E	C8 – C30 : Même région chromatographique que l'huile à chauffage et le diesel #2.

Dossier Maxxam: B829904
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

REMARQUES GÉNÉRALES

Tous les résultats sont calculés sur une base sèche excepté lorsque non-applicable.

HAM-Conservation au MeOH sur le terrain: Analyses demandées avec délai de conservation dépassé: FO0004

Hydrocarbures pétroliers (C10-C50): Analyses demandées avec délai de conservation dépassé: FO0005

Hydrocarbures pétroliers (F2-F4): Analyses demandées avec délai de conservation dépassé: FO0005

HAM-Conservation au MeOH sur le terrain: Analyses demandées avec délai de conservation dépassé: FO0006

Hydrocarbures pétroliers (F2-F4): Analyses demandées avec délai de conservation dépassé: FO0007

Hydrocarbures pétroliers (C10-C50): Analyses demandées avec délai de conservation dépassé: FO0008

Hydrocarbures pétroliers (F2-F4): Analyses demandées avec délai de conservation dépassé: FO0008

A,B,C,CR: Les critères des sols proviennent de l'Annexe 2 du « Guide d'intervention-Protection des sols et réhabilitation des terrains contaminés. MDDELCC, 2016. » et intitulé « Grille des critères génériques pour les sols ». Les critères des sols sont ceux de la province géologique des Basses-Terres du Saint-Laurent.

Les critères A et B pour l'eau souterraine proviennent de l'annexe 7 intitulé « Grille des critères de qualité des eaux souterraines » du guide d'intervention mentionné plus haut. A=Eau de consommation; B=Résurgence dans l'eau de surface

Ces références ne sont rapportées qu'à titre indicatif et ne doivent être interprétées dans aucun autre contexte.

- = Ce composé ne fait pas partie de la réglementation.

HYDROCARBURES PAR GCFID (SOL)

La similitude des hydrocarbures rapportés est obtenue par une comparaison visuelle du chromatogramme de l'échantillon avec la bibliothèque des chromatogrammes des produits de référence. Comme certaines variables tels que les multiproduits, le degré et le type de dégradation et la présence d'hydrocarbures non pétrogénétiques qui ne peuvent pas être reproduites dans les spectres de référence, l'information doit être vue comme qualitative et, en conséquence, Maxxam ne peut aucunement être tenu responsable des conclusions formulées pour ces données.

Les résultats ne se rapportent qu'aux échantillons soumis pour analyse

Dossier Maxxam: B829904
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

RAPPORT ASSURANCE QUALITÉ

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1918406	VLP	Blanc fortifié	4-Bromofluorobenzène	2018/07/20		99	%
			D10-Ethylbenzène	2018/07/20		90	%
			D4-1,2-Dichloroéthane	2018/07/20		90	%
			D8-Toluène	2018/07/20		100	%
			Benzène	2018/07/20		89	%
			Chlorobenzène	2018/07/20		88	%
			Dichloro-1,2 benzène	2018/07/20		82	%
			Dichloro-1,3 benzène	2018/07/20		87	%
			Dichloro-1,4 benzène	2018/07/20		83	%
			Éthylbenzène	2018/07/20		91	%
			Styrène	2018/07/20		89	%
			Toluène	2018/07/20		91	%
			Xylènes (o,m,p)	2018/07/20		88	%
1918406	VLP	Blanc de méthode	4-Bromofluorobenzène	2018/07/20		100	%
			D10-Ethylbenzène	2018/07/20		121	%
			D4-1,2-Dichloroéthane	2018/07/20		88	%
			D8-Toluène	2018/07/20		99	%
			Benzène	2018/07/20	<0.10		mg/kg
			Chlorobenzène	2018/07/20	<0.20		mg/kg
			Dichloro-1,2 benzène	2018/07/20	<0.20		mg/kg
			Dichloro-1,3 benzène	2018/07/20	<0.20		mg/kg
			Dichloro-1,4 benzène	2018/07/20	<0.20		mg/kg
			Éthylbenzène	2018/07/20	<0.20		mg/kg
			Styrène	2018/07/20	<0.20		mg/kg
			Toluène	2018/07/20	<0.20		mg/kg
			Xylènes (o,m,p)	2018/07/20	<0.20		mg/kg
1918461	VLP	Blanc fortifié	1-Chlorooctadécane	2018/07/21		104	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/21		124	%
1918461	VLP	Blanc de méthode	1-Chlorooctadécane	2018/07/21		99	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/21	<100		mg/kg
1918915	MP	Blanc fortifié	O-Terphenyl	2018/07/23		95	%
			F2 (C10-C16)	2018/07/23		102	%
			F3 (C16-C34)	2018/07/23		102	%
			F4 (C34-C50)	2018/07/23		102	%
1918915	MP	Blanc de méthode	O-Terphenyl	2018/07/23		111	%
			F2 (C10-C16)	2018/07/23	<10		mg/kg
			F3 (C16-C34)	2018/07/23	<50		mg/kg
			F4 (C34-C50)	2018/07/23	<50		mg/kg

Blanc fortifié: Un blanc, d'une matrice exempte de contaminants, auquel a été ajouté une quantité connue d'analyte provenant généralement d'une deuxième source. Utilisé pour évaluer la précision de la méthode.

Blanc de méthode: Une partie aliquote de matrice pure soumise au même processus analytique que les échantillons, du prétraitement au dosage. Sert à évaluer toutes contaminations du laboratoire.

Surrogate: Composé se comportant de façon similaire aux composés analysés et ajouté à l'échantillon avant l'analyse. Sert à évaluer la qualité de l'extraction.

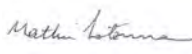

Réc = Récupération

Dossier Maxxam: B829904
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Adresse du site: WASKAGANISH
Initiales du préleveur: YM

PAGE DES SIGNATURES DE VALIDATION

Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:

Mathieu Letourneau, B.Sc., Chimiste, Spécialiste scientifique




Michel Poulin, B.Sc., Chimiste

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Votre # du projet: P-0014860-0-00-100-04
Votre # Bordereau: 12067

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/25
Rapport: R2385410
Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B829913

Reçu: 2018/07/19, 09:30

Matrice: SOL
Nombre d'échantillons reçus: 2

Analyses	Quantité	Date de l'		Méthode de laboratoire	Référence Primaire
		extraction	Date Analysé		
Hydrocarbures pétroliers (C10-C50)	2	2018/07/20	2018/07/21	QUE SOP-00210	MA400-HYD 1.1 R3 m
CCME F1/BTEX-MeOH sur le terrain (1, 2)	1	N/A	2018/07/24	STL SOP-00131	CCME PHC-CWS m
Hydrocarbures pétroliers (F2-F4) (1, 2)	1	2018/07/23	2018/07/23	STL SOP-00170	CCME PHC-CWS m
Hydrocarbures pétroliers (F2-F4) (1, 2)	1	2018/07/23	2018/07/24	STL SOP-00170	CCME PHC-CWS m
Interprétation des produits pétroliers	2	N/A	2018/07/23		MA408-IdePet 1.0 R1m
HAP (CCME)	1	2018/07/20	2018/07/20	QUE SOP-00208	MA.400-HAP 1.1 R5 m

Remarques:

Les laboratoires Maxxam sont accrédités ISO/IEC 17025:2005. Sauf indication contraire, les méthodes d'analyses utilisées par Maxxam s'inspirent des méthodes de référence d'organismes provinciaux, fédéraux et américains, tel que le CCME, le MDDELCC, l'EPA et l'APHA.

Toutes les analyses présentées ont été réalisées conformément aux procédures et aux pratiques relatives à la méthodologie, à l'assurance qualité et au contrôle de la qualité généralement appliquées par les employés de Maxxam (sauf s'il en a été convenu autrement par écrit entre le client et Maxxam). Toutes les données de laboratoire rencontrent les contrôles statistiques et respectent tous les critères du CQ et les critères de performance des méthodes, sauf s'il en a été signalé autrement. Tous les blancs de méthode sont rapportés, toutefois, les données des échantillons correspondants ne sont pas corrigées pour la valeur du blanc, sauf indication contraire.

Les responsabilités de Maxxam sont restreintes au coût réel de l'analyse, sauf s'il en a été convenu autrement par écrit. Il n'existe aucune autre garantie, explicite ou implicite. Le client a fait appel à Maxxam pour l'analyse de ses échantillons conformément aux méthodes de référence mentionnées dans ce rapport. L'interprétation et l'utilisation des résultats sont sous l'entière responsabilité du client et ne font pas partie des services offerts par Maxxam, sauf si convenu autrement par écrit.

Les résultats des échantillons solides, sauf les biotes, sont rapportés en fonction de la masse sèche, sauf indication contraire. Les analyses organiques ne sont pas corrigées en fonction de la récupération, sauf pour les méthodes de dilution isotopique.

Les résultats s'appliquent seulement aux échantillons analysés.

Le présent rapport ne doit pas être reproduit, sinon dans son intégralité, sans le consentement écrit du laboratoire.

Lorsque la méthode de référence comprend un suffixe « m », cela signifie que la méthode d'analyse du laboratoire contient des modifications validées et appliquées afin d'améliorer la performance de la méthode de référence.

Notez: Les données brutes sont utilisées pour le calcul du RPD (% d'écart relatif). L'arrondissement des résultats finaux peut expliquer la variation apparente.

Votre # du projet: P-0014860-0-00-100-04
Votre # Bordereau: 12067

Attention: Christine Gervais

Englobe Corp.
QUÉBEC - PARC TECHNOLOGIQUE
505 boul. du Parc Technologique
Bureau 200
Québec, QC
CANADA G1P 4S9

Date du rapport: 2018/07/25
Rapport: R2385410
Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER MAXXAM: B829913

Reçu: 2018/07/19, 09:30

- (1) Cette analyse a été effectuée par Maxxam -Ville St. Laurent
(2) Tous les résultats pour le CCME répondent aux critères exigés, sauf indication contraire dans le rapport. Les méthodes du SP-HCP utilisées par Maxxam respectent tous les éléments imposés par la méthode de référence et les éléments se rapportant à la performance ont été validés. Toutes les modifications ont été validées et jugées équivalentes d'après l'Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods, September 2003. La documentation est fournie sur demande. Différence par rapport à la Méthode de référence pour le standard pancanadien relatif aux hydrocarbures pétroliers dans le sol – méthode du 1er volet : les résultats pour les fractions F2/F3/F4 sont rapportés à l'aide d'une extraction à froid par solvant au lieu d'une extraction avec un appareil Soxhlet.

Note : Les paramètres inclus dans le présent certificat sont accrédités par le MDDELCC, à moins d'indication contraire.

clé de cryptage

Veillez adresser toute question concernant ce certificat d'analyse à votre chargé(e) de projets
Alain Lemieux, Chargé de projets
Courriel: ALemieux@maxxam.ca
Téléphone (418)658-5784 Ext:7066451

=====
Ce rapport a été produit et distribué en utilisant une procédure automatisée sécuritaire.

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.

Dossier Maxxam: B829913
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Initiales du préleveur: GP

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

ID Maxxam					FO0090			
Date d'échantillonnage					2018/06/26			
# Bordereau					12067			
	Unités	A	B	C	WK-MA-18-15-1	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	2.5		N/A	N/A
VOLATILS								
Benzène	mg/kg	0.2	0.5	5	<0.0050		0.0050	1919214
Toluène	mg/kg	0.2	3	30	<0.020		0.020	1919214
Éthylbenzène	mg/kg	0.2	5	50	<0.010		0.010	1919214
o-Xylène	mg/kg	-	-	-	<0.020		0.020	1919214
p+m-Xylène	mg/kg	-	-	-	<0.040		0.040	1919214
Xylènes (o,m,p) †	mg/kg	0.4	5	50	<0.040		0.040	1919214
F1 (C6-C10) †	mg/kg	-	-	-	<10		10	1919214
F1 (C6-C10) - BTEX †	mg/kg	-	-	-	<10		10	1919214
Récupération des Surrogates (%)								
1,4-Difluorobenzène	%	-	-	-	100		N/A	1919214
4-Bromofluorobenzène	%	-	-	-	102		N/A	1919214
D10-Ethylbenzène	%	-	-	-	90		N/A	1919214
D4-1,2-Dichloroéthane	%	-	-	-	104		N/A	1919214
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre								

Dossier Maxxam: B829913
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Initiales du préleveur: GP

HAP PAR GCMS (SOL)

ID Maxxam					FO0090			
Date d'échantillonnage					2018/06/26			
# Bordereau					12067			
	Unités	A	B	C	WK-MA-18-15-1	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	2.5		N/A	N/A
HAP								
Acénaphène	mg/kg	0.1	10	100	<0.10		0.10	1918494
Acénaphylène	mg/kg	0.1	10	100	<0.10		0.10	1918494
Anthracène	mg/kg	0.1	10	100	<0.10		0.10	1918494
Benzo(a)anthracène	mg/kg	0.1	1	10	<0.050		0.050	1918494
Benzo(a)pyrène	mg/kg	0.1	1	10	<0.050		0.050	1918494
Benzo(b)fluoranthène †	mg/kg	0.1	1	10	<0.050		0.050	1918494
Benzo(j)fluoranthène †	mg/kg	0.1	1	10	<0.050		0.050	1918494
Benzo(k)fluoranthène †	mg/kg	0.1	1	10	<0.050		0.050	1918494
Benzo(b+j+k)fluoranthène	mg/kg	-	-	-	<0.050		0.050	1918494
Benzo(c)phénanthrène	mg/kg	0.1	1	10	<0.10		0.10	1918494
Benzo(ghi)pérylène	mg/kg	0.1	1	10	<0.050		0.050	1918494
Chrysène	mg/kg	0.1	1	10	<0.050		0.050	1918494
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	<0.050		0.050	1918494
Dibenzo(a,i)pyrène	mg/kg	0.1	1	10	<0.10		0.10	1918494
Dibenzo(a,h)pyrène	mg/kg	0.1	1	10	<0.10		0.10	1918494
Dibenzo(a,l)pyrène	mg/kg	0.1	1	10	<0.10		0.10	1918494
7,12-Diméthylbenzanthracène	mg/kg	0.1	1	10	<0.10		0.10	1918494
Fluoranthène	mg/kg	0.1	10	100	<0.10		0.10	1918494
Fluorène	mg/kg	0.1	10	100	<0.10		0.10	1918494
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	<0.050		0.050	1918494
3-Méthylcholanthrène	mg/kg	0.1	1	10	<0.10		0.10	1918494
Naphtalène	mg/kg	0.1	5	50	<0.010		0.010	1918494
Phénanthrène	mg/kg	0.1	5	50	<0.040		0.040	1918494
Pyrène	mg/kg	0.1	10	100	<0.10		0.10	1918494
2-Méthylnaphtalène	mg/kg	0.1	1	10	<0.10		0.10	1918494
1-Méthylnaphtalène	mg/kg	0.1	1	10	<0.10		0.10	1918494
1,3-Diméthylnaphtalène	mg/kg	0.1	1	10	<0.10		0.10	1918494
2,3,5-Triméthylnaphtalène	mg/kg	0.1	1	10	<0.10		0.10	1918494
Récupération des Surrogates (%)								
D10-Anthracène	%	-	-	-	77		N/A	1918494
D12-Benzo(a)pyrène	%	-	-	-	73		N/A	1918494
D14-Terphenyl	%	-	-	-	86		N/A	1918494
D8-Acenaphthylene	%	-	-	-	78		N/A	1918494
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre								

Dossier Maxxam: B829913
 Date du rapport: 2018/07/25

Englobe Corp.
 Votre # du projet: P-0014860-0-00-100-04
 Initiales du préleveur: GP

HAP PAR GCMS (SOL)

ID Maxxam					FO0090			
Date d'échantillonnage					2018/06/26			
# Bordereau					12067			
	Unités	A	B	C	WK-MA-18-15-1	CR	LDR	Lot CQ
D8-Naphtalène	%	-	-	-	73		N/A	1918494
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable								

Dossier Maxxam: B829913
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Initiales du préleveur: GP

HYDROCARBURES PAR GCFID (SOL)

ID Maxxam					FO0089		FO0090			
Date d'échantillonnage					2018/06/26		2018/06/26			
# Bordereau					12067		12067			
	Unités	A	B	C	WK-18-2-4-TT	CR	WK-MA-18-15-1	CR	LDR	Lot CQ
% HUMIDITÉ	%	-	-	-	20		2.5		N/A	N/A
HYDROCARBURES PÉTROLIERS										
Hydrocarbures pétroliers (C10-C50)	mg/kg	300	700	3500	<100		<100		100	1918481
F2 (C10-C16) †	mg/kg	-	-	-	<10		<10		10	1918915
F3 (C16-C34) †	mg/kg	-	-	-	<50		<50		50	1918915
F4 (C34-C50) †	mg/kg	-	-	-	<50		<50		50	1918915
Ligne de base atteinte à C50 †	mg/kg	-	-	-	OUI		OUI		N/A	1918915
Récupération des Surrogates (%)										
1-Chlorooctadécane	%	-	-	-	92		89		N/A	1918481
O-Terphenyl	%	-	-	-	113		108		N/A	1918915
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité N/A = Non Applicable † Accréditation non existante pour ce paramètre										

Dossier Maxxam: B829913
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Initiales du préleveur: GP

INTERPRETATION QUALITATIVE
Hydrocarbures pétroliers (C10-C50)

Échantillon	Interpretation Qualitative
WK-18-2-4-TT	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.
WK-MA-18-15-1	Concentration d'hydrocarbures insuffisante pour interprétation qualitative.

Dossier Maxxam: B829913
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Initiales du préleveur: GP

REMARQUES GÉNÉRALES

Tous les résultats sont calculés sur une base sèche excepté lorsque non-applicable.

Hydrocarbures pétroliers (C10-C50): Analyses demandées avec délai de conservation dépassé: FO0089

Hydrocarbures pétroliers (F2-F4): Analyses demandées avec délai de conservation dépassé: FO0089

Hydrocarbures pétroliers (C10-C50): Analyses demandées avec délai de conservation dépassé: FO0090

HAP (CCME): Analyses demandées avec délai de conservation dépassé: FO0090

Hydrocarbures pétroliers (F2-F4): Analyses demandées avec délai de conservation dépassé: FO0090

CCME F1/BTEX-MeOH sur le terrain: Analyses demandées avec délai de conservation dépassé: FO0090

A,B,C,CR: Les critères des sols proviennent de l'Annexe 2 du « Guide d'intervention-Protection des sols et réhabilitation des terrains contaminés. MDDELCC, 2016. » et intitulé « Grille des critères génériques pour les sols ». Les critères des sols sont ceux de la province géologique des Basses-Terres du Saint-Laurent.

Les critères A et B pour l'eau souterraine proviennent de l'annexe 7 intitulé « Grille des critères de qualité des eaux souterraines » du guide d'intervention mentionné plus haut. A=Eau de consommation; B=Résurgence dans l'eau de surface

Ces références ne sont rapportées qu'à titre indicatif et ne doivent être interprétées dans aucun autre contexte.

- = Ce composé ne fait pas partie de la réglementation.

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

Veillez noter que les résultats ci-dessus ont été corrigés pour le blanc d'instrument.

HAP PAR GCMS (SOL)

Les résultats bruts non-arrondis sont utilisés dans le calcul du benzo(b+j+k)fluoranthène. Ce résultat total est alors arrondi à deux chiffres significatifs.

HYDROCARBURES PAR GCFID (SOL)

La similitude des hydrocarbures rapportés est obtenue par une comparaison visuelle du chromatogramme de l'échantillon avec la bibliothèque des chromatogrammes des produits de référence. Comme certaines variables tels que les multiproduits, le degré et le type de dégradation et la présence d'hydrocarbures non pétrogénétiques qui ne peuvent pas être reproduites dans les spectres de référence, l'information doit être vue comme qualitative et, en conséquence, Maxxam ne peut aucunement être tenu responsable des conclusions formulées pour ces données.

Les résultats ne se rapportent qu'aux échantillons soumis pour analyse

Dossier Maxxam: B829913
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Initiales du préleveur: GP

RAPPORT ASSURANCE QUALITÉ

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
1918481	VLP	Blanc fortifié	1-Chlorooctadécane	2018/07/20		92	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/20		84	%
1918481	VLP	Blanc de méthode	1-Chlorooctadécane	2018/07/23		93	%
			Hydrocarbures pétroliers (C10-C50)	2018/07/23	<100		mg/kg
1918494	VLP	Blanc fortifié	D10-Anthracène	2018/07/20		88	%
			D12-Benzo(a)pyrène	2018/07/20		84	%
			D14-Terphenyl	2018/07/20		101	%
			D8-Acenaphthylene	2018/07/20		89	%
			D8-Naphtalène	2018/07/20		82	%
			Acénaphène	2018/07/20		75	%
			Acénaphthylène	2018/07/20		80	%
			Anthracène	2018/07/20		81	%
			Benzo(a)anthracène	2018/07/20		69	%
			Benzo(a)pyrène	2018/07/20		80	%
			Benzo(b)fluoranthène	2018/07/20		81	%
			Benzo(j)fluoranthène	2018/07/20		75	%
			Benzo(k)fluoranthène	2018/07/20		69	%
			Benzo(b+j+k)fluoranthène	2018/07/20		75	%
			Benzo(c)phénanthrène	2018/07/20		70	%
			Benzo(ghi)pérylène	2018/07/20		77	%
			Chrysène	2018/07/20		70	%
			Dibenzo(a,h)anthracène	2018/07/20		80	%
			Dibenzo(a,i)pyrène	2018/07/20		87	%
			Dibenzo(a,h)pyrène	2018/07/20		84	%
			Dibenzo(a,l)pyrène	2018/07/20		93	%
			7,12-Diméthylbenzanthracène	2018/07/20		70	%
			Fluoranthène	2018/07/20		72	%
			Fluorène	2018/07/20		80	%
			Indéno(1,2,3-cd)pyrène	2018/07/20		73	%
			3-Méthylcholanthrène	2018/07/20		83	%
			Naphtalène	2018/07/20		80	%
			Phénanthrène	2018/07/20		75	%
			Pyrène	2018/07/20		73	%
			2-Méthylnaphtalène	2018/07/20		79	%
			1-Méthylnaphtalène	2018/07/20		75	%
			1,3-Diméthylnaphtalène	2018/07/20		78	%
			2,3,5-Triméthylnaphtalène	2018/07/20		78	%
1918494	VLP	Blanc de méthode	D10-Anthracène	2018/07/20		85	%
			D12-Benzo(a)pyrène	2018/07/20		81	%
			D14-Terphenyl	2018/07/20		95	%
			D8-Acenaphthylene	2018/07/20		86	%
			D8-Naphtalène	2018/07/20		80	%
			Acénaphène	2018/07/20	<0.10		mg/kg
			Acénaphthylène	2018/07/20	<0.10		mg/kg
			Anthracène	2018/07/20	<0.10		mg/kg
			Benzo(a)anthracène	2018/07/20	<0.050		mg/kg
			Benzo(a)pyrène	2018/07/20	<0.050		mg/kg
			Benzo(b)fluoranthène	2018/07/20	<0.050		mg/kg
			Benzo(j)fluoranthène	2018/07/20	<0.050		mg/kg
			Benzo(k)fluoranthène	2018/07/20	<0.050		mg/kg
			Benzo(b+j+k)fluoranthène	2018/07/20	<0.050		mg/kg
			Benzo(c)phénanthrène	2018/07/20	<0.10		mg/kg

Dossier Maxxam: B829913
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Initiales du préleveur: GP

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			Benzo(ghi)pérylène	2018/07/20	<0.050		mg/kg
			Chrysène	2018/07/20	<0.050		mg/kg
			Dibenzo(a,h)anthracène	2018/07/20	<0.050		mg/kg
			Dibenzo(a,i)pyrène	2018/07/20	<0.10		mg/kg
			Dibenzo(a,h)pyrène	2018/07/20	<0.10		mg/kg
			Dibenzo(a,l)pyrène	2018/07/20	<0.10		mg/kg
			7,12-Diméthylbenzanthracène	2018/07/20	<0.10		mg/kg
			Fluoranthène	2018/07/20	<0.10		mg/kg
			Fluorène	2018/07/20	<0.10		mg/kg
			Indéno(1,2,3-cd)pyrène	2018/07/20	<0.050		mg/kg
			3-Méthylcholanthrène	2018/07/20	<0.10		mg/kg
			Naphtalène	2018/07/20	<0.010		mg/kg
			Phénanthrène	2018/07/20	<0.040		mg/kg
			Pyrène	2018/07/20	<0.10		mg/kg
			2-Méthylnaphtalène	2018/07/20	<0.10		mg/kg
			1-Méthylnaphtalène	2018/07/20	<0.10		mg/kg
			1,3-Diméthylnaphtalène	2018/07/20	<0.10		mg/kg
			2,3,5-Triméthylnaphtalène	2018/07/20	<0.10		mg/kg
1918915	MP	Blanc fortifié	O-Terphenyl	2018/07/23		95	%
			F2 (C10-C16)	2018/07/23		102	%
			F3 (C16-C34)	2018/07/23		102	%
			F4 (C34-C50)	2018/07/23		102	%
1918915	MP	Blanc de méthode	O-Terphenyl	2018/07/23		111	%
			F2 (C10-C16)	2018/07/23	<10		mg/kg
			F3 (C16-C34)	2018/07/23	<50		mg/kg
			F4 (C34-C50)	2018/07/23	<50		mg/kg
1919214	ABE	Blanc fortifié	1,4-Difluorobenzène	2018/07/24		99	%
			4-Bromofluorobenzène	2018/07/24		104	%
			D10-Ethylbenzène	2018/07/24		90	%
			D4-1,2-Dichloroéthane	2018/07/24		104	%
			Benzène	2018/07/24		106	%
			Toluène	2018/07/24		91	%
			Éthylbenzène	2018/07/24		105	%
			o-Xylène	2018/07/24		98	%
			p+m-Xylène	2018/07/24		92	%
			Xylènes (o,m,p)	2018/07/24		95	%
			F1 (C6-C10)	2018/07/24		109	%
1919214	ABE	Blanc de méthode	1,4-Difluorobenzène	2018/07/24		99	%
			4-Bromofluorobenzène	2018/07/24		103	%
			D10-Ethylbenzène	2018/07/24		88	%
			D4-1,2-Dichloroéthane	2018/07/24		104	%
			Benzène	2018/07/24	<0.0050		mg/kg
			Toluène	2018/07/24	<0.020		mg/kg
			Éthylbenzène	2018/07/24	<0.010		mg/kg
			o-Xylène	2018/07/24	<0.020		mg/kg
			p+m-Xylène	2018/07/24	<0.040		mg/kg
			Xylènes (o,m,p)	2018/07/24	<0.040		mg/kg
			F1 (C6-C10)	2018/07/24	<10		mg/kg

Dossier Maxxam: B829913
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Initiales du préleveur: GP

RAPPORT ASSURANCE QUALITÉ (SUITE)

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
			F1 (C6-C10) - BTEX	2018/07/24	<10		mg/kg
<p>Blanc fortifié: Un blanc, d'une matrice exempte de contaminants, auquel a été ajouté une quantité connue d'analyte provenant généralement d'une deuxième source. Utilisé pour évaluer la précision de la méthode.</p> <p>Blanc de méthode: Une partie aliquote de matrice pure soumise au même processus analytique que les échantillons, du prétraitement au dosage. Sert à évaluer toutes contaminations du laboratoire.</p> <p>Surrogate: Composé se comportant de façon similaire aux composés analysés et ajouté à l'échantillon avant l'analyse. Sert à évaluer la qualité de l'extraction.</p> <p>Réc = Récupération</p>							

Dossier Maxxam: B829913
Date du rapport: 2018/07/25

Englobe Corp.
Votre # du projet: P-0014860-0-00-100-04
Initiales du préleveur: GP

PAGE DES SIGNATURES DE VALIDATION

Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:



Julie ll

Julie Lacroix-Labonte



Mathieu Letourneau

Mathieu Letourneau, B.Sc., Chimiste, Spécialiste scientifique



Michel Poulin

Michel Poulin, B.Sc., Chimiste

Maxxam a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à la section 5.10.2 de la norme ISO/CEI 17025:2005(E). Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.



Appendix 1 Permeability Tests



**Slug Test - Water Level Data**

Project: Caractérisation env. de site Phase 2

Number: P-0014860-0-00-100-03

Client: TPSGC

Location: Aéroport Cri de Waskaganish

Slug Test: WK-MW-18-1_Essai 1

Test Well: WK-MW-18-1

Test Conducted by: YM

Test Date: 2018-06-27

Water level at t=0 [m]: 1,77

Static Water Level [m]: 1,36

Water level change at t=0 [m]: 0,41

	Time [s]	Water Level [m]	WL Change [m]
1	0	1,775	0,414
2	5	1,756	0,395
3	10	1,743	0,382
4	15	1,735	0,374
5	20	1,726	0,365
6	25	1,717	0,356
7	30	1,708	0,347
8	35	1,699	0,338
9	40	1,693	0,332
10	45	1,684	0,323
11	50	1,676	0,315
12	60	1,67	0,309
13	120	1,601	0,24
14	180	1,551	0,19
15	240	1,508	0,147
16	300	1,478	0,117
17	360	1,452	0,091
18	420	1,435	0,074
19	480	1,419	0,058
20	540	1,405	0,044
21	600	1,399	0,038
22	900	1,375	0,014
23	1200	1,369	0,008
24	1500	1,361	0,00



Slug Test Analysis Report

Project: Caractérisation env. de site Phase 2

Number: P-0014860-0-00-100-03

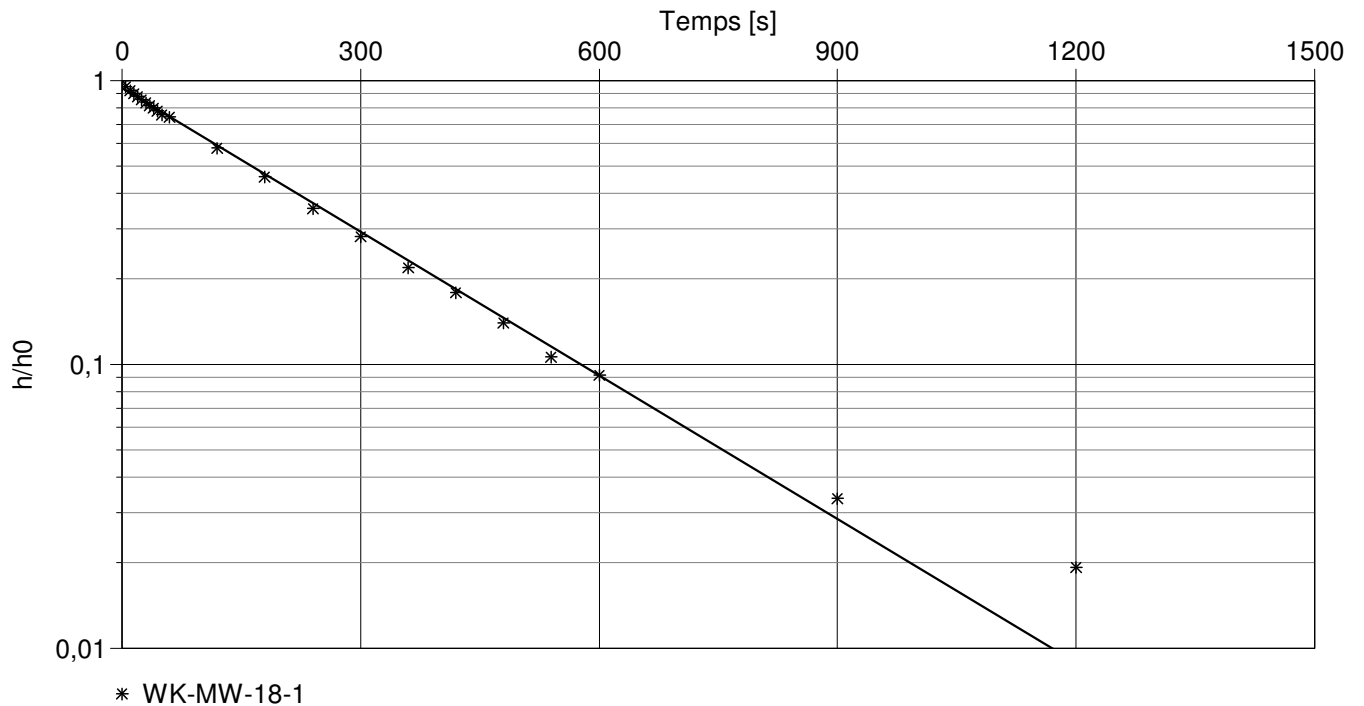
Client: TPSGC

Location: Aéroport Cri de Waskaganish | Slug Test: WK-MW-18-1_Essai 1 | Test Well: WK-MW-18-1

Test Conducted by: YM | Test Date: 2018-06-27

Analysis Performed by: PL | Analyse 1 | Analysis Date: 2018-09-28

Aquifer Thickness: 3,00 m



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]
WK-MW-18-1	$2,10 \times 10^{-6}$

- Type d'essai de conductivité hydraulique in-situ : remontée
- Méthode utilisée pour faire varier la charge : écope à bille
- Volume d'eau retiré du puits : ± 950mL
- Rayon du trou de forage : 0.1016 m
- Rayon du tubage et crépine : 0.0254 m
- Rayon effectif du puits considéré avec un massif filtrant d'une porosité de 25 %
- Longueur de la crépine saturée (L) : 1.5 m
- Hauteur de la colonne d'eau (base puits/toit aquifère) (b) : 2.2 m
- Épaisseur saturée de l'aquifère (D) : 3.0 m
- Variation initiale du niveau d'eau : 0.41 m

**Slug Test - Water Level Data**

Project: Caractérisation env. de site Phase 2

Number: P-0014860-0-00-100-03

Client: TPSGC

Location: Aéroport Cri de Waskaganish

Slug Test: WK-MW-18-1_Essai 2

Test Well: WK-MW-18-1

Test Conducted by: YM

Test Date: 2018-06-27

Water level at t=0 [m]: 1,76

Static Water Level [m]: 1,36

Water level change at t=0 [m]: 0,40

	Time [s]	Water Level [m]	WL Change [m]
1	0	1,76	0,399
2	5	1,731	0,37
3	10	1,719	0,358
4	15	1,709	0,348
5	20	1,698	0,337
6	25	1,689	0,328
7	30	1,683	0,322
8	35	1,675	0,314
9	40	1,665	0,304
10	45	1,661	0,30
11	50	1,656	0,295
12	60	1,649	0,288
13	120	1,594	0,233
14	180	1,543	0,182
15	240	1,504	0,143
16	300	1,474	0,113
17	360	1,448	0,087
18	420	1,433	0,072
19	480	1,417	0,056
20	540	1,406	0,045
21	600	1,399	0,038
22	900	1,376	0,015
23	1200	1,369	0,008
24	1500	1,361	0,00