

PWGSC Ontario
Region Project Number
R.090053.001

SPECIFICATION
TITLE SHEET

Section 00 00 00
Page 1
2017-07-07

Project Title MACKLIN ISLAND, GEORGIAN BAY, ONTARIO
POINTE AU BARIL REAR RANGE
DESIGNATED SUBSTANCES REMEDIATION AND REMOVAL

Project Number R.090053.001

Project Date 2017-07-07

END

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LIST OF DRAWINGS

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Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Area of Work Site
Figure 4	Tower Elevation & Site Photos

PART 1 - GENERAL

- 1.1 SECTION INCLUDES .1 Title and description of Work.
- 1.2 PRECEDENCE .1 For Federal Government projects, Division 01 Sections take precedence over technical specification sections in other Divisions of this Project Manual.
- 1.3 WORK COVERED BY CONTRACT DOCUMENTS .1 Work of this Contract comprises site remediation, located at Macklin Island, Georgian Bay, Ontario; and further identified as PWGSC Project Number R.090053.001 .
- .2 Contractor must be licensed and have the appropriate Ontario Ministry of the Environment Certificates of Approval to transport hazardous lead and contaminated materials and debris over water.
- .3 This contract includes:
.1 Obtaining any required permits.
- .4 Work of this contract includes the total performance of the work (plant and labour, materials and equipment), to the description and intent of the drawings and specifications listed in Sections 00 01 10 and 00 01 11.
.1 Hazardous Materials Abatement: the remediation components of the Work are generally, but not limited to, the following:
.1 The safe removal of lead-containing materials (paint) from the metal-frame tower structure and its concrete foundation assemblies.
.2 Removal of debris (garbage) and, if necessary, small amounts of soil that may be infiltrated with small particles of garbage.
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- 1.3 WORK COVERED BY CONTRACT DOCUMENTS (Cont'd) .4 (Cont'd)
- .1 Hazardous Materials Abatement:(Cont'd)
 - .3 Repainting lead-paint abated surfaces to match original colour.
 - .4 Ensuring that work is completed in compliance with all applicable regulations;
 - .5 Ensuring the work is sensitive to constraints which include:
 - .1 Minimizing disruption to neighboring cottage owners;
 - .2 Recognizing and being sensitive to features of natural or heritage importance;
 - .3 Ensuring safe travel in a marine environment.
 - .6 Ensuring that waste is disposed of in a safe, environmentally responsible manner and the Site is cleaner when finished than when construction began.
 - .7 Preparation of a safety communication plan, emergency procedures plan, site-specific safety plan.
 - .8 Provision of transportation to and from the site as required for the Departmental Representative.
- 1.4 CONTRACT FORM .1 Construct work under lump sum amount contract

PART 2 - PRODUCTS

- 2.1 NOT USED .1 Not used.
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SUMMARY OF WORK

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PART 3 - EXECUTION

3.1 NOT USED .1 Not used.

PART 1 - GENERAL

1.1 MEASUREMENT
PROCEDURES

.1 Work included in this section will be included as part of the lump sum price.

1.2 MINIMUM
STANDARDS

.1 Execute work to meet or exceed:

- .1 Rules and regulations of authorities having jurisdiction.
- .2 Occupational Health and Safety Act and Regulations for Construction Projects, Revised Statutes of Ontario 1990, Chapter O.1 as amended, Workplace Safety and Insurance Act and municipal statutes and authorities.
- .3 Environmental Protection Act, Revised Statutes of Ontario 1990, Chapter E19 as amended.
 - .1 O. Reg. 102/94, Waste Audits and Waste Reduction Work Plans.
 - .2 O. Reg. 103/94, Industrial, Commercial and Institutional Source Separation Programs.
 - .3 O. Reg. 153-04, Records of Site Condition Part XV.1 of the Act.
 - .4 O. Reg. 347-12, Registrations under Part 11.2 of the Act - Automotive Refinishing.
- .4 Ontario Water Resources Act (OWRA), R.S.O. 1990, c. O.40
 - .1 O. Reg. 387/04: Water Taking and Transfer.
- .5 CCME (Canadian Council of Ministers of the Environment) Contaminated Sites, Contaminated Soil and Groundwater, and Remediation of Contaminated Sites most current publications.
- .6 Canadian Environmental Assessment Act.
- .7 Canadian Environmental Protection Act (New Substance Notification Regulations).
- .8 Transportation of Dangerous Goods Act.
- .9 Fisheries Act.
- .10 Migratory Birds Convention Act.
- .11 Migratory Birds Regulations.

- 1.2 MINIMUM STANDARDS (Cont'd) .1 (Cont'd)
.12 Canada National Parks Act.
- 1.3 ROAD LOAD RESTRICTIONS .1 Comply with highway load restrictions.
.2 Comply with posted restrictions. Acquire and submit to Departmental Representative copies of all necessary permits.
- 1.4 TAXES .1 Pay applicable Federal, Provincial and Municipal taxes.
- 1.5 FEES, PERMITS, CERTIFICATES AND LETTERS .1 Provide authorities having jurisdiction with information requested.
.2 Pay fees and obtain certificates, permits and letters required.
.3 Furnish certificates, permits and letters when requested.
- 1.6 EXAMINATION .1 Examine existing conditions and determine conditions affecting work.
.2 Notify Departmental Representative in writing of any discrepancies between contract documents and site conditions.
- 1.7 DOCUMENTS .1 Keep one copy of contract documents and shop drawings on the site.
-

1.8 CONTRACTOR'S
AS-BUILT DRAWINGS,
SPECIFICATIONS

- .1 As work progresses, neatly record significant deviations from the Contract drawings, specifications using fine, red marker on full size white prints and specifications. Make the same changes on the electronic files.
 - .2 Neatly print lettering and numbers in size to match original. Lines may be drawn free-hand but shall be neat and accurate. Add at each title block note: "AS BUILT". Also circle on List of Drawings/Photographs each title and number of drawing/photograph marked with "AS-BUILT" information. Circle on Table of Contents each specification section number and title of specification sections marked with "AS-BUILT" information.
 - .3 Departmental Representative will provide one electronic set of drawings and specifications for as-built drawing and specification purposes.
 - .1 Drawings are in Autocad.
 - .2 Specifications are in pdf format.
 - .3 Amendments and addenda are in pdf format.
 - .4 Record following significant deviations:
 - .1 Field changes of dimension.
 - .2 Other significant deviations which are concealed in construction and can not be identified by visual inspection.
 - .3 Alternative materials and systems installed replacing original materials and systems specified by trade name.
 - .5 Turn paper copy and electronic copy, of AS-BUILT drawings, specifications over to Departmental Representative on completion of work.
 - .6 If project is completed without significant deviations from Contract drawings and specifications, submit to Departmental Representative one set of drawings and specifications marked "AS-BUILT".
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1.9 SHOP DRAWINGS
AND PRODUCT DATA
SHEETS

- .1 Prior to submission check and certify as correct, shop drawings and product data sheets. Issue to Departmental Representative each submission at least 14 days before dates reviewed submission will be needed.
 - .2 Where technical sections specify that shop drawings bear the stamp of a Registered Professional Engineer, the Engineer must be registered in the Province of Ontario.
 - .3 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
 - .4 Submit electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
 - .5 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept. 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 all requirements of construction and Contract Documents. 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 all sub-trades.
 - .6 Submit electronic of product data sheets for standard manufactured items. Indicate VOC's in g/l for adhesives, primers, sealants, paints, curing and sealing compounds, sealers,
-

1.9 SHOP DRAWINGS .6 (Cont'd)
AND PRODUCT DATA
SHEETS
(Cont'd) particleboard, plywood, preserved wood, and
any other product that emits more than 25 g/l
VOC during application, curing, initial off
gassing or end use.

.7 Responsibility for errors, omissions or
deviations from requirements of Contract
Documents is not relieved by Departmental
Representative's review of submittals.

1.10 CONSTRUCTION .1 Submit electronic and hard copy of colour
PHOTOGRAPHS digital photography in jpg format, standard
resolution.

.2 Identification: name and number of project
and date of exposure indicated.

.3 Number of viewpoints and location of
viewpoints determined by Departmental
Representative.

.4 Frequency: before work begins and at
completion and as directed by Departmental
Representative.

1.11 PROTECTION .1 Protect existing work from damage.

.2 Replace damaged existing work with material
and finish to match original.

.3 Protect existing trees and plants on site and
adjacent properties as directed by
Departmental Representative.

1.12 TEMPORARY
FACILITIES AND
SERVICES

- .1 Provide and maintain temporary facilities and services required to carry out work.
- .2 Remove temporary facilities and services on completion of work.
- .3 Provide and maintain temperature and enclosure required to prevent frost damage to work.

1.13 METRIC SIZED
MATERIALS

- .1 SI metric units of measurement are used exclusively on the drawings and in the specifications for this project.
 - .2 The Contractor is required to provide metric products in the sizes called for in the Contract Documents except where a valid claim can be made that a particular product is not available on the Canadian market.
 - .3 Claims for exemptions from use of metric sized products shall be in writing and fully substantiated with supportive documentation. Promptly submit application to Departmental Representative for consideration and ruling. Non-metric sized products may not be used unless Contractor's application has been approved in writing by the Departmental Representative.
 - .4 Difficulties caused by the Contractor's lack of planning and effort to obtain modular metric sized products which are available on the Canadian market will not be considered sufficient reasons for claiming that they cannot be provided.
 - .5 Claims for additional costs due to provision of specified modular metric sized products will not be considered.
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- 1.14 MATERIAL AND EQUIPMENT
- .1 Use new products unless otherwise specified.
 - .2 Deliver and store material and equipment to manufacturer's instructions with manufacturer's labels and seals intact.
 - .3 When material or equipment is specified by standard or performance specifications, upon request of Departmental Representative, obtain from manufacturer an independent testing laboratory report, stating that material or equipment meets or exceeds specified requirements.
- 1.15 CO-ORDINATION AND CO-OPERATION
- .1 Site will not be occupied during execution of work.
 - .2 Buildings will not be occupied during execution of work.
 - .3 Work areas will not be occupied during execution of work.
- 1.16 ALTERATIONS TO EXISTING SITE
- .1 Remove and recycle, compost, anaerobic digest or dispose of:
 - .1 Trees, shrubs and other plant material if instructed to do so by authorized Departmental Representative.
- 1.17 TEMPORARY SIGNS
- .1 No signs or advertisements, other than warning signs, are permitted on site.
- 1.18 INSPECTION AND TESTING
- .1 When initial tests and inspections reveal work not to contract requirements, pay for tests and inspections required by Departmental Representative on corrected work.
-

- 1.19 COST BREAKDOWN .1 Within 48 hours of notification of acceptance of bid furnish a cost breakdown by Section aggregating Contract Amount.
- .2 Within 48 hours of acceptance of bid submit a list of subcontractors.
- 1.20 SCHEDULING .1 On Award of Contract submit bar chart construction schedule for work in accordance with Section 01 32 16.
- .2 Carry out work Monday to Friday and statutory holidays from 7:00 to 17:30 hours.
- .3 Carry out noise generating work Monday to Friday from 7:00 to 17:30 hours.
- 1.21 CLEANING .1 Maintain project and surrounding site free of accumulated waste and rubbish. Comply with federal, provincial, local fire and safety laws, ordinances, codes and regulations.
- .2 Coordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish and waste materials.
- .3 Final cleaning:
.1 Remove temporary protection.
.2 Remove foreign matter from surfaces.
- 1.22 NON-CONTAMINATED CONSTRUCTION & DEMOLITION WASTE .1 Submit a waste reduction workplan indicating the non-contaminated materials and quantities of non-contaminated material that will be recycled and diverted from landfill.
.1 Indicate how non-contaminated material being removed from the site will be reused or recycled.
- .2 Submit proof that all non-contaminated waste is being disposed of at a licensed land fill
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- 1.22 NON-CONTAMINATED CONSTRUCTION & DEMOLITION WASTE (Cont'd) .2 (Cont'd)
site or waste transfer site. A copy of the disposal/waste transfer site's license and a letter verifying that said landfill site will accept the non-contaminated waste must be supplied to Departmental Representative prior to removal of non-contaminated waste from the site.
- 1.23 DESIGNATED SUBSTANCES .1 The project site has been surveyed for the presence of designated substances referred to in the Occupational Health and Safety Act and Regulations for Construction Projects, O.Reg. 213/91 as amended.
- .2 The list of designated substances present at the project site includes:
.1 Lead paint on the structure.
- .3 Provide copies of this list to each prospective subcontractor prior to entering into a contract with them.
- .4 Post prominent notices identifying and warning of the hazardous agent in the part of the workplace in which the agent is found or used. Notices shall be in English and other languages prescribed under the Act.
- 1.24 SPECIAL PROTECTION AND PRECAUTIONS .1 Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and the provision of material safety data sheets acceptable to ESDC - Labour Program.
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- 1.25 OPSS AND OPSD .1 OPSS Ontario Provincial Standard Specifications and OPSD Ontario Provincial Standard Drawings quoted in these specifications are available online at <http://www.raqsa.mto.gov.on.ca/techpubs/ops.nsf/OPSHomepage>.
- 1.26 PROJECT MEETINGS .1 Administrative:
.1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative.
.2 Prepare agenda for meetings.
.3 Distribute written notice of each meeting four days in advance of meeting date to Departmental Representative.
.4 Provide physical space and make arrangements for meetings.
.5 Preside at meetings.
.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
.7 Reproduce and distribute copies of minutes within two days after meetings and transmit to meeting participants and, affected parties not in attendance Departmental Representative.
.8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.
- .2 Preconstruction meeting:
.1 Within 5 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
.2 Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
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- 1.26 PROJECT MEETINGS
(Cont'd)
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- .2 Preconstruction meeting:(Cont'd)
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
- .1 Appointment of official representative of participants in the Work.
- .2 Schedule of Work: in accordance with Section 01 32 16.
- .3 Schedule of submission of shop drawings and samples.
- .4 Submittals.
- .5 Requirements for temporary facilities, site sign, offices, storage sheds, utilities and fences.
- .6 Site security.
- .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
- .8 Record drawings, specifications and aerial photographs.
- .9 Maintenance manuals.
- .10 Take-over procedures, acceptance, warranties.
- .11 Monthly progress claims, administrative procedures, photographs, hold backs.
- .12 Appointment of inspection and testing agencies or firms.
- .13 Insurances, transcript of policies.
- .3 Progress meetings:
- .1 During course of Work, progress meetings will be requested as required by the Departmental Representative.
- .2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.
- .3 Notify parties minimum 5 business days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 2 business days after meeting.
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- 1.26 PROJECT MEETINGS (Cont'd) .3 Progress meetings:(Cont'd)
- .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.
- 1.27 TRANSPORTATION .1 The Contractor shall provide transportation to and from the site on a minimum daily basis and in addition as may be required to perform tests or collect samples by the following:
 - .1 Departmental Representative.
 - .2 Consultant Representative.
 - .3 Testing consultant(s).
- .2 The Contractor shall make the necessary allowances for the transportation of the Departmental Representative's, Consultant Representative's and Testing consultant(s)' equipment to and from the site.
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1.28 WATER .1 The Contractor shall obtain a Permit to Take Water in accordance with O. Reg. 387/04 if using more than 50,000 L in any day.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not used.

PART 1 - GENERAL

1.1 ACCESS AND
EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, corridors, including stairs, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.
- .2 Refer to Appendix A for potential marine access options.

1.2 USE OF SITE AND
FACILITIES

- .1 Execute work with least possible interference or disturbance to site. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Provide for access by authorized persons during the work as required.
- .3 Where security is reduced by work, provide temporary means to maintain security.
- .4 Execute work with least possible interference or disturbance to adjacent property, building operations and normal use of site.

1.3 EXISTING
SERVICES

- .1 Notify Departmental Representative and utility provider 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 affected operations.
-

1.3 EXISTING
SERVICES
(Cont'd)

- .3 Provide alternative routes for contractors' personnel and public marine traffic if required.
- .4 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
- .5 Submit schedule to and obtain approval from Departmental Representative and utility provider for any shut-down or closure of active service or facility including water, power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .6 Provide temporary services when directed by Departmental Representative to maintain critical building systems.
- .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 in accordance with Section 01 56 00.

1.4 SPECIAL
REQUIREMENTS

- .1 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire and security regulations.
-

1.5 SECURITY .1 The site is not secure, and the Contractor shall provide security as necessary for equipment and materials delivered to, and stored at the site.

1.6 SMOKING ENVIRONMENT .1 Comply with smoking restrictions. Smoking is not permitted on private or Crown property, including docks and wharves.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

PART 1 - GENERAL

- 1.1 MEASUREMENT PROCEDURES .1 Work included in this section will be included as part of the lump sum amount.
- 1.2 DEFINITIONS .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major deliverable.
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- 1.2 DEFINITIONS (Cont'd)
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.
- 1.3 REQUIREMENTS
- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Limit activity durations to maximum of approximately 40 working days, to allow for progress reporting.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Certificate of Substantial Performance and Certificate of Completion as defined times of completion are of essence of this contract.
- 1.4 SUBMITTALS
- .1 Provide submittals in accordance with Section 01 11 06 and Section 01 33 00.
- .2 Submit to Departmental Representative within 5 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
-

- 1.4 SUBMITTALS (Cont'd) .3 Submit Project Schedule to Departmental Representative within 3 working days of receipt of acceptance of Master Plan.
- 1.5 PROJECT MILESTONES .1 Certificate of Substantial Performance within 40 working days of Award of Contract date.
- 1.6 MASTER PLAN .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 2 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.
- 1.7 PROJECT SCHEDULE .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
- .1 Award.
 - .2 Permits.
 - .3 Mobilization.
 - .4 Lead-based paint abatement.
 - .5 Waste and debris removal.
 - .6 Repainting.
 - .7 Final cleanup.
-

1.8 PROJECT SCHEDULE REPORTING .1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.9 PROJECT MEETINGS .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule in accordance with Section 01 11 06.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not used.

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 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.
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- 1.1 ADMINISTRATIVE (Cont'd)
- .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.
- .11 Submit number of electronic copies specified for each type and format of submittal and also submit in electronic format as pdf files. Forward pdf, NMSEdit Professional spp, MS Word, MS Excel, MS Project and Autocad dwg files on USB compatible with PWGSC encryption requirements or through email or alternate electronic file sharing service such as ftp, as directed by Departmental Representative.
- 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 Province of Ontario of Canada.
- .3 Indicate materials, 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 5 working days for Departmental Representative's review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended
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- 1.2 SHOP DRAWINGS .5 (Cont'd)
AND PRODUCT DATA
(Cont'd)
- .5 to change Contract Amount. 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, electronically, 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 shall include:
- .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 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 Performance characteristics.
 - .5 Standards.
 - .6 Schematic diagrams.
 - .7 Relationship to adjacent work.
-

- 1.2 SHOP DRAWINGS .9 After Departmental Representative's review,
AND PRODUCT DATA distribute electronic copies.
(Cont'd)
- .10 Submit electronic shop drawings for each
requirement requested in specification
Sections and as Departmental Representative
may reasonably request.
- .11 Submit electronic product data sheets or
brochures for requirements requested in
specification Sections and as requested by
Departmental Representative where shop
drawings will not be prepared due to
standardized manufacture of product.
- .12 Submit electronic test reports for
requirements requested in specification
Sections 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 3 years of
date of contract award for project.
- .13 Submit electronic certificates for
requirements requested in specification
Sections 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 electronic manufacturer's instructions
for requirements requested in specification
Sections and as requested by Departmental
Representative.
.1 Pre-printed material describing
installation of product, system or material,
-

- 1.2 SHOP DRAWINGS .14 (Cont'd)
AND PRODUCT DATA .1 (Cont'd)
(Cont'd)
-
- .14 (Cont'd)
.1 (Cont'd)
including special notices and Material Safety
Data Sheets concerning impedances, hazards and
safety precautions.
- .15 Submit electronic Manufacturer's Field
Reports for requirements requested in
specification Sections and as requested by
Departmental Representative.
- .16 Documentation of the testing and verification
actions taken by manufacturer's representative
to confirm compliance with manufacturer's
standards or instructions.
- .17 Submit electronic Operation and Maintenance
Data for requirements requested in
specification Sections and as requested by
Departmental Representative.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide
details applicable to project.
- .20 If upon review by Departmental
Representative, no errors or omissions are
discovered or if only minor corrections are
made, copies 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.
- .21 The review of shop drawings by Public Works
and Government Services Canada (PWGSC) 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
-

- 1.2 SHOP DRAWINGS .21 (Cont'd)
AND PRODUCT DATA .1 (Cont'd)
(Cont'd) 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.
- 1.3 PHOTOGRAPHIC .1 Submit as noted in Section 01 11 06.
DOCUMENTATION
- 1.4 CERTIFICATES .1 Immediately after award of Contract, submit
AND TRANSCRIPTS Workers' Safety and Insurance Board Experience Report.
.2 Submit transcription of insurance immediately after award of Contract.
- PART 2 - PRODUCTS
- 2.1 NOT USED .1 Not Used.
-

PWGSC Ontario Region
Project Number
R.090053.001

SUBMITTAL PROCEDURES

Section 01 33 00
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PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

PART 1 - GENERAL

- 1.1 REFERENCES .1 Province of Ontario:
- .1 Occupational Health and Safety Act Revised Statutes of Ontario 1990, Chapter O.1 as amended, and Regulations for Construction Projects, O. Reg. 213/91 as amended.
 - .2 Workplace Safety and Insurance Act, 1997.
 - .3 Municipal statutes and authorities.
 - .4 O. Reg. 490/09, Designated Substances.
- .2 Canadian Standards Association.
- .3 National Building Code of Canada, current edition.
- .4 National Fire Code of Canada, current edition.
- 1.2 MEASUREMENT PROCEDURES .1 Work included in this section will not be measured for payment and will be included as part of the lump sum price.
- 1.3 SUBMITTALS .1 Make submittals in accordance with Section 01 11 06 and Section 01 33 00.
- .2 Submit site-specific Health and Safety Plan: Within 5 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
- .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operations found in work plan.
 - .3 Contractor's and Sub-contractors' Safety Communication Plan.
 - .4 Fire Safety Plan.
-

1.3 SUBMITTALS
(Cont'd)

- .2 (Cont'd)
 - .5 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations including breakdown, spill or other problems.
 - .3 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 business days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 3 business days after receipt of comments from Departmental Representative.
 - .4 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
 - .5 Submit names of personnel and alternates responsible for site safety and health.
 - .6 Submit records of Contractor's Health and Safety meetings when requested.
 - .7 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, weekly.
 - .8 Submit copies of orders, directions or reports issued by health and safety inspectors of the authorities having jurisdiction.
 - .9 Submit copies of incident and accident reports.
 - .10 Submit Material Safety Data Sheets (MSDS).
 - .11 Submit Workplace Safety and Insurance Board (WSIB)- Experience Rating Report.
-

- 1.3 SUBMITTALS
(Cont'd)
- .12 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
- 1.4 FILING OF NOTICE
- .1 File Notice of Project with Provincial authorities prior to commencement of Work.
- 1.5 WORK PERMIT
- .1 Obtain permits related to project prior to commencement of Work.
- 1.6 SAFETY ASSESSMENT
- .1 Perform site specific safety hazard assessment related to project.
- 1.7 MEETINGS
- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- 1.8 REGULATORY REQUIREMENTS
- .1 Comply with the Acts and regulations of the Province of Ontario.
- .2 Comply with specified standards and regulations to ensure safe operations at site.
- 1.9 PROJECT/SITE CONDITIONS
- .1 Work at site will involve contact with:
.1 Lead (in paint)
.2 Loose debris (garbage) of various materials. See photos.
- .2 Access to site is by helicopter or boat only.
-

- 1.9 PROJECT/SITE CONDITIONS
(Cont'd)
- .3 Uneven rocky terrain with no established roads.
- .4 Work at site will involve work at height.
- .5 Environmental factors such as extreme temperatures, high winds and precipitation may affect working conditions.
- 1.10 GENERAL REQUIREMENTS
- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns either accepting or requesting improvements.
- .3 Relief from or substitution for any portion or provision of minimum Health and Safety standards specified herein or reviewed site-specific Health and Safety Plan shall be submitted to Departmental Representative in writing.
- 1.11 COMPLIANCE REQUIREMENTS
- .1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990 Chapter 0.1, as amended.
- 1.12 RESPONSIBILITY
- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
-

- 1.12 RESPONSIBILITY (Cont'd) .2 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 Health and Safety Plan.
- .3 Where applicable the Contractor shall be designated "Constructor", as defined by Occupational Health and Safety Act for the Province of Ontario.
- 1.13 UNFORESEEN HAZARDS .1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, immediately stop work and advise Departmental Representative verbally and in writing.
- .2 Follow procedures in place for Employees Right to Refuse Work as specified in the Occupational Health and Safety Act for the Province of Ontario.
- 1.14 HEALTH AND SAFETY CO-ORDINATOR .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
- .1 Have site-related working experience specific to activities associated with site remediation.
- .2 Have working knowledge of occupational safety and health regulations.
- .3 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 site to perform Work.
- .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
-

- 1.14 HEALTH AND SAFETY CO-ORDINATOR (Cont'd) .1 (Cont'd)
.5 Be on site during execution of Work and report directly to and be under direction of site supervisor.
- 1.15 POSTING OF DOCUMENTS .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province of Ontario, and in consultation with Departmental Representative.
.1 Contractor's Safety Policy.
.2 Constructor's Name.
.3 Notice of Project.
.4 Name, trade, and employer of Health and Safety Representative or Joint Health and Safety Committee members (if applicable).
.5 Ministry of Labour Orders and reports.
.6 Occupational Health and Safety Act and Regulations for Construction Projects for Province of Ontario.
.7 Address and phone number of nearest Ministry of Labour office.
.8 Material Safety Data Sheets.
.9 Written emergency Response Plan.
.10 Site Specific Safety Plan.
.11 Valid certificate of first aider on duty.
.12 WSIB "In Case of Injury At Work" poster.
.13 Location of toilet and cleanup facilities.
.14 Inspection card for first-aid box.
- 1.16 CORRECTION OF NON-COMPLIANCE .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
.2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
-

- 1.16 CORRECTION OF NON-COMPLIANCE (Cont'd) .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.
- 1.17 BLASTING .1 Explosives of any kind are prohibited, and may not be used.
- 1.18 WORK STOPPAGE .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.
- .2 Assign responsibility and obligation to Competent Supervisor to stop or start Work when, at Competent Supervisor's discretion, it is necessary or advisable for reasons of health or safety. Departmental Representative may also stop Work for health and safety considerations.

PART 2 - PRODUCTS

- 2.1 NOT USED .1 Not used.

PART 3 - EXECUTION

- 3.1 NOT USED .1 Not used.

PART 1 - GENERAL

- 1.1 DEFINITIONS .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.
- .3 Green Remediation: the application of technologies and approaches that enhance a cleanup project's environmental, social, and economic footprints, as defined by the California Department of Toxic Substances Control.
- 1.2 MEASUREMENT PROCEDURES .1 Work included in this section will be included as part of the lump sum amount.
- 1.3 SUBMITTALS .1 Submittals: in accordance with Section 01 11 06 and Section 01 33 00.
- .2 Prior to commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative
Environmental Protection Plan is to present
-

1.3 SUBMITTALS
(Cont'd)

- .2 (Cont'd)
comprehensive overview of known or potential environmental issues, including Green Remediation, which must be addressed during construction.
 - .3 Address topics at level of detail commensurate with environmental issue and required construction tasks.
 - .4 Environmental protection plan: include:
 - .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 which identifies 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.
 - .6 Drawings showing locations of proposed sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.
 - .7 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Plan to include measures for marking limits of use areas including methods for protection of features to be preserved within authorized work areas.
 - .8 Spill Control Plan: including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
-

1.3 SUBMITTALS
(Cont'd)

- .4 Environmental protection plan:(Cont'd)
- .9 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
 - .10 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, do not become air borne and travel off project site.
 - .11 Contaminant prevention plan that: identifies potentially hazardous substances to be used on job site; identifies intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
 - .12 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.
 - .13 Green Remediation Plan: to the extent practicable, explore and implement green remediation strategies and applications in the performance of the requirements of this work assignment to maximize sustainability, including Energy, Water, Air & Atmosphere, Materials & Waste, and Land & Ecosystems:
 - .1 Water management strategies to reduce water consumption, reuse treated water, and use efficient techniques to manage and protect surface water and groundwater.
 - .2 Air emission strategies to decrease emissions of harmful air pollutants from treatment processes and transportation of vehicles.
 - .3 Solid and liquid waste management strategies to reduce Contractor and Project materials consumption and waste generation.
 - .4 Land and ecosystems management strategies to protect ecosystems during site cleanup.
-

- 1.4 FIRES .1 Fires and burning of trees and rubbish on site not permitted.
- 1.5 DISPOSAL OF WASTES .1 Dispose of non-contaminated waste materials, litter, debris, and rubbish off site in accordance with Section 01 11 06.
- .2 Do not bury rubbish and waste materials on site.
- .3 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways.
- .4 Do not discharge wastes into waterways.
- .5 Separate and dispose of accumulated waste materials off-site in accordance with R.R.O. 1990, Reg. 347 General Waste Management, to MOE approved disposal facilities or approved transfer stations, including, but no limited to, the following:
- .1 Debris including excess construction material.
- .2 Non-contaminated litter and rubbish.
- .3 Disposable PPE worn during final cleaning.
- .4 Decontamination pad material.
- .6 Disposal/recycling of other waste generated during the project shall be done in compliance with Ontario Waste Regulations and the facilities used will be approved by the Departmental Representative.
- 1.6 VEHICLES AND EQUIPMENT .1 Vehicles/equipment shall be in good working order and not be leaking any fuel or fluids.
- .2 During construction designated fuelling area(s) will be established.
-

1.6 VEHICLES AND EQUIPMENT (Cont'd) .3 Vehicles/equipment shall be decontaminated at the end of each Work day and at the end of Work activities.

1.7 DRAINAGE .1 Provide erosion and sediment control plan that identifies type and location of erosion and sediment controls to be provided. Plan: 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.

.2 Do not allow water containing suspended materials to enter into waterways.

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

.4 Do not direct water flow in a manner which would cause erosion to existing areas.

.5 Prevent precipitation from infiltrating or from directly running off stockpiled remediated materials. Contain stockpiled materials in an impermeable container during periods of work stoppage including at end of each working day and as directed by Departmental Representative.

.6 Direct surface waters that have not contacted potentially contaminated materials away from areas of work or stockpiles.

1.8 SURFACE WATER AND GROUNDWATER QUALITY .1 Materials and equipment shall be operated and stored in a manner that prevents deleterious substances (e.g., petroleum products, silt, etc.) as defined by the Fisheries Act from entering surface water.

1.9 PLANT
PROTECTION

- .1 Protect trees and plants on site and adjacent properties as directed by the Departmental Representative.
- .2 Minimize stripping of topsoil and vegetation.
- .3 Minimize clearing of vegetation to only those areas necessary for completion of work.

1.10 WORK ADJACENT
TO WATERWAYS

- .1 Do not operate construction equipment in waterways.
- .2 Do not dump waste material or debris in waterways.
- .3 Do not use water from waterways.
- .4 Special care shall be exercised while working near water's edge including site-specific erosion and sediment control measures. Silt fences shall be used to minimize sediment transport as well as limit access to watercourses by site personnel.

1.11 POLLUTION
CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this contract.
 - .2 Vehicles and equipment must be maintained in good working condition, equipped with emission controls as applicable to local authorities' emission requirements.
 - .3 Implement dust abatement measures, as required to control dust.
 - .4 Control emissions from equipment and plant to local authorities' emission requirements.
 - .5 Ensure hazardous substances (including fuel) are stored, handled and applied in a manner to prevent release to the environment and in a
-

1.11 POLLUTION
CONTROL
(Cont'd)

- .5 (Cont'd)
legal manner in accordance with hazardous
waste regulations.
- .6 Secure all materials at non-productive times
(night and shut-down).
- .7 Vehicles and equipment shall be shut off when
not in use. No idling on-site.
- .8 Store hazardous or toxic substances in a
designated area.
- .9 Comply with requirements of WHMIS regarding
use, handling, storage and disposal of
hazardous materials; and regarding labelling
and provision of MSDS acceptable to Labour
Canada.

1.12 SPILLS OR
RELEASE OF
DELETERIOUS
SUBSTANCES

- .1 Immediately contain, limit spread and clean
up in accordance with provincial regulatory
requirements.
 - .2 All workers shall be fully aware of the spill
prevention and response procedures including
notification of Departmental Representative.
 - .3 The Ontario Ministry of Environment Spills
Action Centre must be notified immediately by
law at 1-800-268-6060.
 - .4 The Departmental Representative shall be
immediately informed of all spills that occur
onsite.
 - .5 Further information on dangerous goods
emergency cleanup and precautions including a
list of companies performing this work can be
obtained from the Transport Canada 24-hour
number (613) 996-6666 collect.
 - .6 Spill kits will be kept on-site during all
project phases.
-

1.12 SPILLS OR
RELEASE OF
DELETERIOUS
SUBSTANCES
(Cont'd)

- .7 Contractor shall take due care to ensure no deleterious materials including sediment-laden runoff leave the worksite, or enter any surface water at or near the worksite.
- .8 Equipment fuelling or lubricating shall occur in a designated area with proper controls to prevent the release of deleterious substances, and shall be conducted away from any surface water.
- .9 Any equipment remaining on site overnight shall have appropriately placed drip pans.
- .10 The rinse, cleaning water or solvents for glues, wood preservatives and other potentially harmful or toxic substances should be controlled so as to prevent leakage, loss or discharge into the marine environment.
- .11 Protect the site from tracking of debris throughout the work.
- .12 Prevent discharges containing waste materials from reaching the marine environment.

1.13 NOISE CONTROL

- .1 All construction equipment shall be operated with exhaust systems in good repair to minimize noise.
 - .2 Ensure that noise control devices (i.e. mufflers, silencers) on construction equipment are properly maintained.
 - .3 Construction activities that could create excessive noise shall be restricted to daylight hours and adhere to the municipal noise by-law.
-

1.14 HISTORICAL/
ARCHAEOLOGICAL
CONTROL

- .1 Provide historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in area are discovered during construction.
- .2 Plan: include methods to assure protection of known or discovered resources and identify lines of communication between Contractor personnel and Departmental Representative.
- .3 If archaeological deposits are discovered during the project work shall stop immediately and the Departmental Representative shall immediately be notified.
- .4 Archaeologically significant material, if found on the property, remains the property of the Crown and shall not be removed from the site.
- .5 Management of the archaeological materials will be coordinated through Departmental Representative.

1.15 NOTIFICATION

- .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.
-

- 1.15 NOTIFICATION (Cont'd)
- .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.
- 1.16 SPECIES AT RISK
- .1 Should a species or its critical habitat be encountered, measures are to be implemented to avoid destruction, injury or interference with the species, its residence and/or its habitat (e.g., through siting, timing or design changes). If the foregoing cannot be avoided Contractor should cease work and contact Departmental Representative for advice regarding mitigation measures.
 - .2 In the event that it is determined that the project likely may have unexpected adverse effects on species at risk (SAR), the Contractor shall notify the Department Representative immediately.
 - .3 Refer to Environmental Effects Evaluation, attached as Appendix E.
- 1.17 MIGRATORY BIRDS/WILDLIFE HABITAT
- .1 Ensure all works are in compliance with the Migratory Birds Convention Act.
 - .2 Restrict vehicle movements to construction areas and avoid harassment of animals.
- 1.18 FISH/ FISH HABITAT
- .1 All materials and equipment used will be operated and stored in a manner that prevents any deleterious substance (e.g., petroleum products, silt, etc.) as defined by the Fisheries Act from entering the surface water.
-

1.19 GREEN
REMEDICATION

- .1 Energy:
 - .1 Coordinate outside services and service providers to minimize transport of equipment.
 - .2 Evaluate and optimize energy efficiency of equipment with high energy demands periodically and adjust operations accordingly.
 - .3 Control nuisance odours associated with diesel emissions from construction equipment.
 - .4 Maintain engines to meet original standards and train operators to run equipment efficiently.

 - .2 Water:
 - .1 Minimize fresh water consumption and maximize use of non-potable water and water reuse during daily operations and treatment processes.

 - .3 Air Emissions:
 - .1 Reduce atmospheric release of toxic or priority pollutants and minimize dust export of contaminants.
 - .2 Consolidate onsite and offsite vehicular trips to reduce fuel consumption.
 - .3 Maintain engines of vehicles and machinery in accordance with manufacturer recommendations.
 - .4 Modify field operations through combined activity schedules, an idle reduction plan, and using machinery with automatic idle-shutdown devices.
 - .5 Minimize the use of heavy equipment that consumes high volumes of fuel and use cleaner fuels such as ultra-low sulphur diesel.

 - .4 Waste:
 - .1 Minimize waste generation and re-use materials whenever possible.
 - .2 Minimize natural resource extraction and disposal.
 - .3 Select the closest waste receiver.
 - .4 Use products with recycled and bio-based content and recycling potential.
-

1.19 GREEN
REMEDICATION
(Cont'd)

- .5 Land and Ecosystems:
.1 Ensure all equipment is clean prior to arrival on site to minimize potential of transporting invasive species.
.2 Minimize soil and habitat disturbance and reduce noise and lighting disturbance.
.3 Utilize environmentally friendly landscaping solutions to minimize environmental impacts at the site.
.4 Use environmentally friendly lubricants for engine maintenance.
.5 Place decontamination station away from environmentally sensitive areas.
.6 Use secondary containment to avoid cross-contamination.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

.2 Not Used.

PART 1 - GENERAL

- 1.1 REFERENCES .1 Canadian Standards Association (CSA International)
.1 CAN/CSA Z321-96(R2006), Signs and Symbols for the Occupational Environment.
.2 CAN/CSA Z797-09(R2014), Code of Practice for Access Scaffold.
- 1.2 ACTION AND INFORMATIONAL SUBMITTALS .1 Provide submittals in accordance with Section 01 11 06 and Section 01 33 00.
- 1.3 INSTALLATION AND REMOVAL .1 Prepare site plan indicating proposed location and dimensions of area to be used by Contractor, number of trailers to be used, avenues of ingress/egress to area of Work.
.2 Indicate use of supplemental or other staging area.
.3 Provide construction facilities in order to execute work expeditiously.
.4 Remove from site all such work after use.
- 1.4 SCAFFOLDING .1 Scaffolding in accordance with CAN/CSA S797.
.2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms and temporary stairs.
- 1.5 HOISTING .1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment.
-

- 1.5 HOISTING
(Cont'd) .2 Hoists and cranes to be operated by qualified operator.
- 1.6 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.
- 1.7 CONSTRUCTION
PARKING .1 Temporary construction vehicle docking will be permitted on site provided it does not disrupt performance of Work.
- .2 Provide and maintain adequate access to project site.
- 1.8 SECURITY .1 As required, provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.
- 1.9 EQUIPMENT,
TOOL AND MATERIALS
STORAGE .1 Provide and maintain, in clean and orderly condition, lockable weatherproof storage for tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof storage on site in manner to cause least interference with work activities.
- 1.10 SANITARY
FACILITIES .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
-

- 1.10 SANITARY FACILITIES (Cont'd) .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.
- 1.11 CONSTRUCTION SIGNAGE .1 Signs and notices for safety and instruction in English. Graphic symbols to CSA Z321.
- .2 Maintain approved sign and safety notices in good condition for duration of project, and dispose of off site on completion of project.
- .3 No other signs or advertisements, other than warning signs, are permitted on site.
- 1.12 PROTECTION AND MAINTENANCE OF TRAFFIC .1 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .2 Verify adequacy of existing roads and allowable load limits. Contractor is responsible for repair of damage to roads caused by construction operations.
- .3 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .4 Dust control: adequate to ensure safe operation at all times.
- 1.13 CLEAN-UP .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material.
-

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CONSTRUCTION
FACILITIES

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PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

PART 1 - GENERAL

- 1.1 INSTALLATION AND REMOVAL .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.
- 1.2 HOARDING .1 Provide barriers around vegetation designated to remain. Protect from damage by equipment and construction procedures.
- 1.3 GUARD RAILS AND BARRICADES .1 Provide as required by governing authorities.
- .2 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stairs, and open edges in area(s) of work.
- 1.4 PROTECTION FOR PROPERTY .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.
- 1.5 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 Be responsible for damage incurred due to lack of or improper protection.
-

1.6 DUST-TIGHT
SCREENS .1 Provide dust-tight screens or partitions to
localize dust-generating activities, and for
protection of workers, finished areas of Work,
and site visitors.

.2 Maintain and relocate protection until such
Work is complete.

1.7 WASTE
MANAGEMENT AND
DISPOSAL .1 Separate waste materials.

1.8 ACCESS TO SITE .1 Provide and maintain access as required for
access to Work.

1.9 FIRE ROUTES .1 Maintain access to property including
overhead clearances for use by emergency
response vehicles.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

PART 1 - GENERAL

1.1 INSPECTION AND
DECLARATION

- .1 Contractor's Inspection: Contractor and Subcontractors: 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 that corrections have been made.
 - .2 Request Departmental Representative's Inspection.
 - .2 Departmental Representative's Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.
 - .3 Completion: submit written certificate that following have been performed:
 - .1 Work has been completed and inspected for compliance with Contract Documents.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 Certificates required by all authorities having jurisdiction have been submitted.
 - .4 Operation of systems affected by work have been demonstrated to Departmental Representative's personnel.
 - .5 Work is complete and ready for final inspection.
 - .4 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request reinspection.
-

1.2 CLEANING .1 Remove waste and surplus materials, rubbish
and construction facilities from the site.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

PART 1 - GENERAL

- 1.1 SUMMARY
- .1 Section includes removal of debris and offsite disposal.
 - .2 Site debris removal work includes:
 - .1 Provide equipment required for debris removal.
 - .2 Transportation of all equipment, staff, debris, to and from site as required.
 - .3 Co-ordination, supervision and preparation for removal of debris. Departmental Representative requires 2 weeks notice previous to the commencement of site work for provision of site supervision.
 - .4 Specification of final debris removal design and facilities required.
 - .5 Provision and installation of materials and equipment necessary for debris removal.
 - .6 Implementation of safety work zones, temporary barriers, site Health and Safety Plans and Emergency Response Plans.
 - .7 Removal of debris as directed by Departmental Representative.
 - .8 Management of debris and minimal amounts of contaminated soil associated with debris removal. Assume a maximum volume of 1 m³ of contaminated soil to be removed during course of Work.
- 1.2 MEASUREMENT PROCEDURES
- .1 Removal of debris materials from site shall be measured in metric tonnes of the actual weight of materials removed. Measurement shall be based on the net weight of materials removed from the site and substantiated by certified weigh bills from the landfill sites.
 - .1 Remove and dispose of debris material to the extent and limits as directed on site by Departmental Representative.
 - .2 Price shall include: preparatory work including obtaining the required permits and certificates; quality control/quality
-

1.2 MEASUREMENT
PROCEDURES
(Cont'd)

- .1 (Cont'd)
- .2 Price shall include:(Cont'd)
assurance; other required equipment;
implementation of safety work zones; removal;
loading; required storage and delivery of
waste to landfill site and/or recycling
facility.
- .2 Mobilization to and demobilization from the
site will be measured as part of the lump sum
price. The site does not currently include a
functioning dock for Contractor use.
- .3 Locating and protecting buried and
aboveground utilities, structures, and
features will be measured as part of the lump
sum price.
- .4 Waste present at the site includes metals,
plastics, fishnet floats, lawn chairs, and
general waste for disposal.
- .5 Loose rock intermixed with waste is to be
sorted out and remain onsite.
- .6 Soil mixed with waste is to be sorted out and
to remain onsite to extent possible, at
direction of Departmental Representative.

1.3 SUBMITTALS

- .1 Provide quality assurance and quality control
submittals in accordance with Section 01 11 06
as follows:
 - .1 Description of emergency plans in case
of breakdown, spill or other problem.
 - .2 Waste management plan and complete list
of wastes, including waste registration
numbers as required by provincial regulations,
that will be generated by activities.
 - .3 Copies of transport manifests, trip
tickets, and landfill waybill receipts for
waste materials removed from work area.
-

- 1.3 SUBMITTALS .2 Provide closeout submittals as follows:
(Cont'd) .1 Provide written proof that waste and debris have been sent to site authorized by MOE for Province of Ontario.
- 1.4 QUALITY .1 Regulatory requirements: perform work in
ASSURANCE accordance with:
.1 Acts, Regulations, Laws, guidelines codes of practice, directives and policies of government authorities pertaining to: environment; noise; water supply; waste water; air quality; health and safety; transportation; and waste management.
.2 WHMIS.
.3 Canadian Environmental Assessment Act.
.4 Canadian Environmental Protection Act (New Substance Notification Regulations).
.5 Transportation of Dangerous Goods Act.
.6 National Building Code of Canada.
.7 National Fire Code of Canada.
.8 The Fisheries Act.
.9 Migratory Birds Convention Act.
.10 Migratory Birds Regulations.
.11 Environmental Protection Act (Ontario) O. Reg. 153/4.
.12 Species at Risk Act (SARA).
- 1.5 DELIVERY, .1 Debris:
STORAGE, AND .1 Store excavated debris as determined by
HANDLING Departmental Representative. Debris may be excavated from areas that have existing soil contamination, movement of debris mixed with contaminated soils to be directed by Departmental Representative. Prevent cross contamination soils. Limit movement of contaminated soils.
.2 Store excavated debris mixed with contaminated soil in drums or water-tight temporary storage cells. Cover debris mixed with contaminated soil with cap to minimize volatilization and underlay contaminated soil with flexible membrane to minimize or prevent
-

- 1.5 DELIVERY, STORAGE, AND HANDLING (Cont'd)
- .1 Debris:(Cont'd)
 - .2 (Cont'd)
leaching losses. Analyze, transport and dispose of contaminated soil according to current provincial regulations.
 - .2 New materials and equipment:
 - .1 Ship, store and preserve in original packaging with manufacturer's seal and label remain intact.
 - .2 Ensure materials and equipment are not damaged, altered or soiled during shipment, handling and storage.
 - .3 Transport rejected equipment and materials from work site immediately.
 - .4 Store materials and equipment according to manufacturer's and supplier's instructions.
 - .5 Establish quality management system for materials and equipment.
- 1.6 PROJECT/SITE CONDITIONS
- .1 Environmental Requirements:
 - .1 Refer to Environmental Effects Evaluation, attached as Appendix E.
- 1.7 SEQUENCING
- .1 Decontaminate equipment used in debris removal before removing equipment from job site.
- 1.8 MAINTENANCE OF ACCESS ROADS
- .1 Unless otherwise directed maintain access as follows:
 - .1 Maintain and clean roads/paths for duration of Work.
 - .2 Repair damage incurred from use of roads/paths.
 - .3 Provide photographic documentation of roads/paths used by construction vehicles before, during and after Work.
-

PART 2 - PRODUCTS

2.1 NOT USED .1 Not used.

PART 3 - EXECUTION

3.1 EQUIPMENT .1 Trucks:
.1 Clean meticulously at end of Work.
.2 Cover truck bodies with tarpaulins during transportation.
.2 Marine equipment: prevent any spillage of debris materials during all transfers over water or land.

3.2 PREPARATION .1 Provide safety measures to ensure worker and public safety.
.2 Protect buried services that are required to remain undisturbed.

3.3 APPLICATION .1 Debris Management:
.1 Store, transport, and dispose off-site in accordance with applicable provincial standards, requirements and regulations.

3.4 METHOD OF REMEDIATION .1 Contaminated/volatile waste: store in covered metal containers.
.2 Hazardous waste: dispose of in accordance with regulations.
.3 Site debris removal and off-site disposal.
.1 Remove refuse debris as directed by Departmental Representative. Recyclable items

- 3.4 METHOD OF
REMEDICATION
(Cont'd) .3 (Cont'd)
.1 (Cont'd)
shall be separated from non-recyclable items where possible. Refuse removal and offsite disposal shall be completed by Contractor and supervised by Departmental Representative.
.2 Remove soils mixed with refuse below and around debris at the discretion of the Departmental Representative. These soils are to be handled as contaminated soils.
- .4 Removal and off-site disposal of debris and waste in accordance with applicable federal and provincial regulations.
- 3.5 FIELD QUALITY
CONTROL .1 Remove and replace non-compliant equipment.
- 3.6 EQUIPMENT
DECONTAMINATION .1 Decontaminate equipment used in abatement and debris removal process and remove from site at end of Work activities.
- 3.7 ENVIRONMENTAL
PROTECTION .1 Work to be done in accordance with Contractor Environmental Protection Plan. Refer to Section 01 35 43.

PART 1 - GENERAL

1.1 REFERENCES

- .1 Canadian Environmental Protection Act, 1999 (CEPA)
 - .1 Export and Import of Hazardous Waste Regulations SOR/2002-300.
- .2 National Research Council (NRC)
 - .1 National Fire Code of Canada 2015.
- .3 Transportation Canada (TC)
 - .1 Transportation of Dangerous Goods Act (TDG Act) 1999, (c. 34).
 - .2 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2003-400).
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.2 DEFINITIONS

- .1 Dangerous Goods: product, substance, or organism that is specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.
 - .2 Hazardous Material: product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.
 - .3 Hazardous Waste: any hazardous material that is no longer used for its original purpose and that is intended for recycling, treatment or disposal.
 - .4 Workplace Hazardous Materials Information System (WHMIS): a Canada-wide system designed to give employers and workers information about hazardous materials used in workplace.
-

- 1.2 DEFINITIONS (Cont'd) .4 (Cont'd)
Under WHMIS, information on hazardous materials is provided on container labels, material safety data sheets (MSDS), and worker education programs. WHMIS is put into effect by combination of federal and provincial laws.
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS .1 Submit product data in accordance with Section 01 33 00.
- .2 Submit to Departmental Representative current Material Safety Data Sheet (MSDS) for each hazardous material required prior to bringing hazardous material on site.
- .3 Provide originals of shipping documents and waste manifests to Departmental Representative.
- 1.4 STORAGE AND HANDLING .1 Co-ordinate storage of hazardous materials with Departmental Representative and abide by internal requirements for labelling and storage of materials and wastes.
- .2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.
- .3 Store and handle flammable and combustible materials in accordance with current National Fire Code of Canada requirements.
- .4 Keep no more than 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use.
- .1 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval.
- .2 Storage of quantities of flammable and combustible liquids exceeding 45 litres for
-

1.4 STORAGE AND
HANDLING
(Cont'd)

- .4 (Cont'd)
 - .2 (Cont'd)

work purposes requires the written approval of the Departmental Representative.
 - .5 Transfer of flammable and combustible liquids is prohibited within buildings.
 - .6 Do not transfer flammable and combustible liquids in vicinity of open flames or heat-producing devices.
 - .7 Do not use flammable liquids having flash point below 38 degrees C, such as naphtha or gasoline as solvents or cleaning agents.
 - .8 Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.
 - .9 Smoking is not permitted.
 - .10 Storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:
 - .1 Store hazardous materials and wastes in closed and sealed containers.
 - .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
 - .3 Store hazardous materials and wastes in containers compatible with that material or waste.
 - .4 Segregate incompatible materials and wastes.
 - .5 Ensure that different hazardous materials or hazardous wastes are not mixed.
 - .6 Store hazardous materials and wastes in secure storage area with controlled access.
 - .7 Maintain clear egress from storage area.
 - .8 Store hazardous materials and wastes in location that will prevent them from spilling into environment.
 - .9 Have appropriate emergency spill response equipment available near storage area, including personal protective equipment.
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1.4 STORAGE AND
HANDLING
(Cont'd)

- .10 (Cont'd)
 - .10 Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.
- .11 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
- .12 Report spills or accidents immediately to Departmental Representative. Submit a written spill report to Departmental Representative within 24 hours of incident.

1.5 TRANSPORTATION

- .1 Transport hazardous materials and wastes in accordance with federal Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
 - .2 If hazardous waste is generated on site:
 - .1 Co-ordinate transportation and disposal with Departmental Representative.
 - .2 Ensure compliance with applicable federal, provincial and municipal laws and regulations for generators of hazardous waste.
 - .3 Use licensed carrier authorized by provincial authorities to accept subject material.
 - .4 Prior to shipping material obtain written notice from intended hazardous waste treatment or disposal facility that it will accept material and that it is licensed to accept this material.
 - .5 Label container with legible, visible safety marks as prescribed by federal and provincial regulations.
 - .6 Ensure that trained personnel handle, offer for transport, or transport dangerous goods.
 - .7 Provide copy of shipping documents and waste manifests to Departmental Representative.
-

- 1.5 TRANSPORTATION .2 (Cont'd)
(Cont'd)
- .8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide a copy of completed manifest to Departmental Representative.
 - .9 Report discharge, emission, or escape of hazardous materials immediately to Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.

PART 2 - PRODUCTS

- 2.1 MATERIALS .1 Only bring on site quantity of hazardous materials required to perform work.
- .2 Maintain MSDSs in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

PART 3 - EXECUTION

- 3.1 DISPOSAL .1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.
- .2 Send hazardous wastes to authorized hazardous waste disposal or treatment facilities.
 - .3 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
 - .4 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.
 - .5 Dispose of hazardous wastes in timely fashion in accordance with applicable provincial regulations.
-

3.1 DISPOSAL
(Cont'd)

- .6 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.

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PART 1 - GENERAL

- 1.1 SUMMARY
- .1 Comply with requirements of this Section when performing following Work: Type 1 Operation.
 - .1 Removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap.
 - .2 Removal of lead-containing coatings or materials using a power tool with an effective dust collection system equipped with a HEPA filter.
 - .3 Removal of lead-containing coatings or materials with non-powered hand tool, other than manual scraping and sanding.
 - .4 Abatement will be carried out on all painted surfaces on the tower, including wood, metal and concrete.
- 1.2 REFERENCES
- .1 Ontario Ministry of Labour
 - .1 Occupational Health and Safety Branch, Guideline Lead On Construction Projects, September 2004, and O. Reg. 490/09 respecting Designated Substances - Lead made under the Occupational Health and Safety Act as amended by O. Reg. 148/12 and O. Reg. 149/12.
 - .2 Department of Justice Canada
 - .1 Canadian Environmental Protection Act, 1999 (CEPA).
 - .3 Health Canada
 - .1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).
 - .4 Human Resources and Social Development Canada (HRSDC)
 - .1 Canada Labour Code Part II, - SOR 86-304 - Occupational Health and Safety Regulations.

1.2 REFERENCES
(Cont'd)

- .5 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1999 c.34 (TDGA).
- .6 Underwriters' Laboratories of Canada (ULC)

1.3 DEFINITIONS

- .1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.
 - .2 Authorized Visitors: Departmental Representative or designated representative[s].
 - .3 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects over cuts and tears, and elsewhere as required to provide protection and isolation. For protection of underlying surfaces from damage and to prevent lead dust entering in clean area.
 - .4 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.
 - .5 Action level: employee exposure, without regard to use of respirators, to airborne concentration of lead of 50 micrograms per cubic meter of air (50 ug/m³) calculated as 8-hour time-weighted average (TWA). Minimum precautions for lead abatement are based on airborne lead concentrations less than 0.05 milligrams per cubic meter of air for removal of lead based paint by methods noted in paragraph 1.1.
 - .6 Competent person: individuals or Departmental Representative capable of identifying existing
-

- 1.3 DEFINITIONS (Cont'd)
- .6 Competent person: (Cont'd)
lead hazards in workplace taking corrective measures to eliminate them.
 - .7 Lead dust: wipe sampling on vertical surfaces and/or horizontal surfaces, dust and debris is considered to be lead contaminated if it contains more than 40 micrograms of lead in dust per square foot.
- 1.4 SUBMITTALS
- .1 Provide submittals in accordance with Section 01 11 06 and 01 33 00.
 - .2 Provide proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction.
 - .3 Provide proof of Contractor's General and Environmental Liability Insurance.
 - .4 Quality Control:
 - .1 Provide Departmental Representative necessary permits for transportation and disposal of lead based paint waste and proof that lead based paint waste has been received and properly disposed.
 - .2 Provide proof satisfactory to Departmental Representative that employees have had instruction on hazards of lead exposure, respirator use, dress, and aspects of work procedures and protective measures.
- 1.5 QUALITY ASSURANCE
- .1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to lead paint, provided that in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.
-

1.5 QUALITY
ASSURANCE
(Cont'd)

- .2 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.
 - .2 Safety Requirements: worker and visitor protection.
 - .1 Protective equipment and clothing to be worn by workers and visitors in work Area include:
 - .1 Respirator NIOSH approved and equipped with replaceable HEPA filter cartridges with an assigned protection factor of 10, acceptable to Authority having jurisdiction. Suitable for type of lead and level of lead dust exposure. Provide sufficient amount of filters.
 - .2 Half mask respirator: half-mask particulate respirator with N - series filter, and 99% efficiency could be provided.
 - .2 Eating, drinking, chewing, and smoking are not permitted in work area.
 - .3 Ensure workers wash hands and face when leaving work area. Facilities for washing shall be provided by Contractor.
 - .4 Visitor Protection:
 - .1 Provide approved respirators to Authorized Visitors to work areas.
 - .2 Instruct Authorized Visitors procedures to be followed in entering and exiting work area.

1.6 WASTE
MANAGEMENT AND
DISPOSAL

- .1 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.
 - .2 Disposal of lead waste generated by removal activities must comply with Federal, Provincial, Territorial and Municipal regulations. Dispose of lead waste in sealed double thickness 0.152 mm thick bags or leak-proof drums. Label containers with appropriate warning labels.
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- 1.6 WASTE MANAGEMENT AND DISPOSAL
(Cont'd)
-
- 1.7 SCHEDULING
-
- 1.8 PERSONNEL TRAINING
-
- .3 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

 - .1 Not later than two days before beginning Work on this Project notify following in writing:
 - .1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.
 - .2 Provincial Ministry of Labour.
 - .3 Disposal Authority.
 - .2 Inform sub trades of presence of lead-containing materials identified in Existing Conditions.
 - .3 Provide Departmental Representative copy of notifications prior to start of Work.

 - .1 Provide Departmental Representative satisfactory proof that every worker has had instruction and training in hazards of lead exposure, in personal hygiene, in aspects of work procedures, and in use, cleaning, and disposal of respirators.
 - .2 Instruction and training related to respirators includes, at minimum:
 - .1 Proper fitting of equipment.
 - .2 Inspection and maintenance of equipment.
 - .3 Disinfecting of equipment.
 - .4 Limitations of equipment.
 - .3 Instruction and training must be provided by competent, qualified person.
 - .4 Supervisory personnel to complete required training.
-

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PART 2 - PRODUCTS

- 2.1 MATERIALS
- .1 Polyethylene 0.15 mm thick unless otherwise specified; in sheet size to minimize joints.
 - .2 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.
 - .3 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual lead paint residue.
 - .4 Lead waste containers: metal type acceptable to dump operator with tightly fitting covers and 0.15 mm thickness sealable polyethylene liners.
 - .1 Label containers with pre-printed bilingual cautionary Warning Lead clearly visible when ready for removal to disposal site.

PART 3 - EXECUTION

- 3.1 SUPERVISION
- .1 One Supervisor for every ten workers is required.
 - .2 Supervisor must remain within work area during disturbance, removal, or handling of lead based paints.
- 3.2 PREPARATION
- .1 Remove and store items to be salvaged or reused.
 - .1 Protect and wrap items and transport and store in area specified by Departmental Representative.

3.2 PREPARATION
(Cont'd)

- .2 Work Area:
- .1 Clean work area using HEPA vacuum. If not practicable, use wet cleaning method. Do not raise dust.
 - .2 Seal off openings with polyethylene sheeting and seal with tape.
 - .3 Protect floor surfaces covered from wall to wall with polyethylene sheets.
 - .4 Maintain emergency fire exits or establish alternatives satisfactory to Authority having jurisdiction.
 - .5 Where water application is required for wetting lead containing materials, provide temporary water supply appropriately sized for application of water as required.
 - .6 Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical cables and equipment.
- .3 Do not start work until:
- .1 Arrangements have been made for disposal of waste.
 - .2 Tools, equipment, and materials waste containers are on site.
 - .3 Arrangements have been made for building security.
 - .4 Notifications have been completed and preparatory steps have been taken.

3.3 LEAD ABATEMENT

- .1 Removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap; or removal equipped with HEPA filters; or removal with using power tools, non-powered hand tool, other than manual scraping and sanding.
- .2 Remove lead based paint in small sections and pack as it is being removed in sealable
-

- 3.3 LEAD ABATEMENT (Cont'd) .2 (Cont'd)
0.15 mm plastic bags and place in labelled containers for transport.
- .3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to staging area. Clean external surfaces thoroughly again by wet sponging. Wash containers thoroughly pending removal to outside. Ensure containers are removed by workers who have entered from uncontaminated areas dressed in clean coveralls.
- .4 After completion of stripping work, wire brush and wet sponge surface from which lead based paint has been removed to remove visible material. During this work keep surfaces wet.
- .5 After wire brushing and wet sponging to remove visible lead based paint, and after encapsulating lead containing material impossible to remove, wet clean entire work area, and equipment used in process. After inspection by Departmental Representative apply continuous coat of slow drying sealer to surfaces of work area. Do not disturb work area for 8 hours no entry, activity, ventilation, or disturbance during this period.
- 3.4 INSPECTION .1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from these requirements not approved in writing by Departmental Representative will result in work stoppage, at no additional cost to Departmental Representative.
- .2 Departmental Representative will inspect work for:
- .1 Adherence to specific procedures and materials.
 - .2 Final cleanliness and completion.
-

- 3.4 INSPECTION .2 (Cont'd)
(Cont'd) .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.
- 3.5 LEAD SURFACE .1 Final lead surface sampling to be conducted
SAMPLING - WORK as follows:
AREAS .1 After work area has passed a visual inspection for cleanliness approved and accepted by Departmental Representative. Apply coat of lock-down agent to surfaces within enclosure, and appropriate setting period of 8 hours has passed, Departmental Representative will perform lead wipe sampling.
.1 Final lead wipe sampling results from horizontal and vertical surfaces must show lead levels of less than 40 micrograms of lead in dust per square foot. Samples collected and analyzed in accordance with EPA 747-R-95-007.
.2 If wipe sampling results show levels of lead in excess of 40 micrograms per square foot, re-clean work area at contractor's expense and apply another acceptable coat of lock-down agent to surfaces.
.3 Repeat as necessary until fibre levels are less than 40 micrograms per square foot.
- 3.6 FINAL CLEANUP .1 Following cleaning and when lead wipe surfaces sampling are below acceptable concentrations, proceed with final cleanup.
.2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum.
-

- 3.6 FINAL CLEANUP (Cont'd)
- .3 Place polyethylene sheets, tape, cleaning material, clothing, and contaminated waste in plastic bags and sealed labelled waste containers for transport.
 - .4 Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.
- 3.7 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS
- .1 Repair or replace objects damaged in course of work to their original state or better, as directed by Departmental Representative.

PART 1 - GENERAL

1.1 REFERENCES

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .2 The Master Painters Institute (MPI)
 - .1 Maintenance Repainting Manual [2004], Master Painters Institute (MPI), including Identifiers, Evaluation, Systems, Preparation and Approved Product List.
- .3 National Fire Code of Canada, 2015 (NFC).
- .4 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings) of the Environmental Protection Agency (EPA).

1.2 QUALITY ASSURANCE

- .1 Conform to latest MPI requirements for exterior repainting work including cleaning, preparation and priming.
 - .2 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, and solvents) to be in accordance with the latest edition of the MPI Approved Product List and to be from a single manufacturer for each system used.
 - .3 Paint materials such as linseed oil, shellac, and turpentine, to be the highest quality product of an approved manufacturer listed in MPI Maintenance Repainting Manual and shall be compatible with other coating materials as required.
 - .4 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.
-

- 1.3 PERFORMANCE REQUIREMENTS
- .1 Environmental Performance Requirements:
 - .2 Provide paint products meeting MPI "Environmentally Friendly" E3 ratings based on VOC (EPA Method 24) content levels.
- 1.4 SCHEDULING
- .1 Submit work schedule of painting to Departmental Representative for review. Submit schedule minimum of 48 hours in advance of proposed operations.
 - .2 Obtain written authorization from Departmental Representative for changes in work schedule.
 - .3 Schedule repainting operations to prevent disruption to other site occupants.
- 1.5 SUBMITTALS
- .1 Provide submittals and samples in accordance with Sections 01 33 00 and 01 11 06.
 - .2 Provide product data and manufacturer's installation/application instructions for paints and coating products to be used.
 - .1 Submit full range of colour sample chips for review and selection. Indicate where availability is restricted.
 - .2 Submit two 18 cm x 25 cm colour sample chips for each colour proposed to Departmental Representative for approval prior to application of paint to structures.
 - .3 Maintain one 18 cm x 25 cm colour sample chip for each colour used in Contractor's records.
 - .3 Provide WHMIS Material Safety Data Sheets (MSDS) in accordance with Section 02 81 01 for paints and coating materials to be used.
 - .4 Quality Assurance Submittals:
 - .1 Manufacturer's Instructions: manufacturer's installation instructions.
-

- 1.5 SUBMITTALS .5 Closeout Submittals:
(Cont'd) .1 Provide records of products used. List products in relation to finish system and include following:
.1 Product name, type and use (i.e. materials and location).
.2 Manufacturer's product number.
.3 Colour code numbers.
.4 MPI Environmentally Friendly classification system rating.
.5 Manufacturer's Material Safety Data Sheets.
- 1.6 MAINTENANCE .1 Extra Materials are not required.
- 1.7 DELIVERY, .1 Packing, shipping, handling and unloading:
STORAGE AND .1 Deliver, store and handle materials in
HANDLING accordance with Section 01 11 06, supplemented as follows:
.1 Deliver and store materials in original containers, sealed, with labels intact.
.2 Labels to indicate:
.1 Manufacturer's name and address.
.2 Type of paint or coating.
.3 Compliance with applicable standard.
.3 Remove damaged, opened and rejected materials from site.
.4 Store and handle in accordance with manufacturer's recommendations.
.5 Store materials and equipment in secure, dry, well-ventilated area with temperature range between 7 degrees C to 30 degrees C. Store materials and supplies away from heat generating devices and sensitive products above minimum temperature as recommended by manufacturer.
.6 Keep areas used for storage, cleaning and preparation, clean and
-

- 1.7 DELIVERY, STORAGE AND HANDLING
(Cont'd)
- .1 (Cont'd)
- .1 (Cont'd)
- .6 (Cont'd)
- orderly to approval of Departmental Representative. Upon completion of operations, return areas to clean condition to approval of Departmental Representative.
- .7 Remove paint materials from storage in quantities required for same day use.
- .8 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
- .9 Fire Safety Requirements:
- .1 Provide one 9 kg Type ABC fire extinguisher in a conspicuous area onsite.
- .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site daily.
- .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada.
- .2 Waste Management and Disposal:
- .1 Separate waste materials for reuse and recycling.
- .2 Paint, stain and wood preservative finishes and related materials are hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
- .3 Materials that cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
- .4 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
-

1.7 DELIVERY,
STORAGE AND
HANDLING
(Cont'd)

- .2 Waste Management and Disposal:(Cont'd)
- .5 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into the ground the following procedures shall be strictly adhered to:
- .1 Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.
- .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
- .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
- .4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
- .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
- .6 Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.
- .6 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

1.8 AMBIENT
CONDITIONS

- .1 Temperature, Humidity and Substrate Moisture Content Levels:
- .1 Unless specifically pre-approved by specifying body, Paint Inspection Agency and, applied product manufacturer.
- .2 Do not perform repainting work when:
- .1 Ambient air and substrate temperatures are below 10 degrees C.
- .2 Substrate temperature is over 32 degrees C unless paint is specifically formulated for application at high temperatures.
-

1.8 AMBIENT
CONDITIONS
(Cont'd)

- .1 (Cont'd)
 - .2 (Cont'd)
 - .3 Substrate and ambient air temperatures are expected to fall outside MPI and paint manufacturer's prescribed limits.
 - .4 Relative humidity is above 85% or when dew point is less than 3 degrees C variance between air/surface temperature.
 - .5 Rain or snow is forecast to occur before paint has thoroughly cured.
 - .6 It is foggy, misty, raining or snowing at site.
 - .3 Conduct moisture tests using properly calibrated electronic Moisture Meter, except test existing painted concrete floors for moisture using simple "cover patch test" on failed areas.
 - .4 Do not perform repainting work when maximum moisture content of substrate exceeds:
 - .1 12% for concrete.
 - .2 15% for wood.
 - .5 Test painted concrete, masonry and plaster surfaces for alkalinity as required.
 - .2 Application Requirements:
 - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind conditions are such that airborne particles will affect quality of finished surface.
 - .2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits noted.
 - .3 Apply paint when previous coat of paint is dry or adequately cured, unless otherwise pre-approved by specific coating manufacturer.
 - .4 Apply paint finishes when conditions forecast for entire period of application fall within manufacturer's recommendations.
 - .5 Do not apply paint when:
 - .1 Temperature is expected to drop below 10 degrees C before paint has thoroughly cured.
-

1.8 AMBIENT
CONDITIONS
(Cont'd)

- .2 Application Requirements:(Cont'd)
 - .5 Do not apply paint when:(Cont'd)
 - .2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.
 - .3 Surface to be painted is wet, damp or frosted.
 - .6 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.
 - .7 Schedule repainting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.
 - .8 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Paint materials listed in latest edition of MPI Approved Product List (APL) are acceptable for use on this project.
 - .2 Paint materials for repaint systems: products of single manufacturer.
 - .3 Only qualified products with E3 MPI "Environmentally Friendly" rating are acceptable for use on this project.
 - .4 Paints and coatings must be manufactured and transported in a manner that steps of processes, including disposal of waste products, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).
-

- 2.1 MATERIALS
(Cont'd)
- .5 Paints and coatings must not be formulated or manufactured with formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.
- .6 Use paints appropriate for the various types of surfaces to be repainted.
- 2.2 COLOURS
- .1 Colour: paint pigment to match existing.
- 2.3 MIXING AND TINTING
- .1 Perform colour tinting operations prior to delivery of paint to site.
- .2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.
- .3 Where thinner is used, addition not to exceed paint manufacturer's recommendations. Do not use kerosene or such organic solvents to thin water-based paints.
- .4 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.
- 2.4 GLOSS/SHEEN RATINGS
- .1 Paint gloss: defined as sheen rating of applied paint, in accordance with following MPI gloss/sheen standard values:
- | Gloss Level Category | Units @ 60 Degrees | Units @ 85 Degrees |
|----------------------|--------------------|--------------------|
| G1 - matte finish | 0 to 5 | maximum 10 |
| G2 - velvet finish | 0 to 10 | 10 to 35 |
| G3 - eggshell finish | 10 to 25 | 10 to 35 |

2.4 GLOSS/SHEEN RATINGS
(Cont'd)

- .1 Paint gloss:(Cont'd)
- | Gloss Level
Category | Units @ 60
Degrees | Units @ 85
Degrees |
|------------------------------|-----------------------|-----------------------|
| G4 - satin
finish | 20 to 35 | minimum 35 |
| G5 -
semi-gloss
finish | 35 to 70 | |
| G6 - gloss
finish | 70 to 85 | |
| G7 - high
gloss finish | > 85 | |
- .2 Gloss level ratings of repainted surfaces: G4 satin on wood and G6 gloss on metal and concrete.

2.5 EXTERIOR
PAINTING SYSTEMS

- .1 REX 3.1 - Concrete Surfaces: as recommended by manufacturer's Technical Representative for exterior application.
- .2 REX 5.1 - Structural Steel and Metal Fabrications: as recommended by manufacturer's Technical Representative for exterior application.
- .3 REX 6.2 - Dimension Lumber: as recommended by manufacturer's Technical representative for exterior application.
- .4 REX 6.3 - Dressed Lumber: as recommended by manufacturer's Technical Representative for exterior application.
-

PART 3 - EXECUTION

- 3.1 MANUFACTURER'S INSTRUCTIONS .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.
- 3.2 EXAMINATION .1 Exterior surfaces requiring repainting: inspected by Departmental Representative, prior to commencing repainting work, or after surface preparation if unseen substrate damage is discovered.

APPENDIX A
POINTE AU BARIL REAR RANGE REMEDIATION
MACKLIN ISLAND MARINE ACCESS ASSESSMENT

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DEFINITIONS

AFW	Amec Foster Wheeler
CD	Chart Datum
CHS	Canadian Hydrographic Service
DFO	Department of Fisheries and Oceans
IGLD'85	The International Great Lakes Datum of 1985
PWGSC	Public Works and Government Services Canada
m	Metre
Mob/Demob	Mobilization and demobilization
t	Metric tonne
TBSC	Treasury Board of Canada Secretariat

1.0 INTRODUCTION

This report summarizes the results of a marine access assessment for the remediation of the Pointe au Baril Rear Range located on Macklin Island within the Pointe au Baril Channel on the East side of Georgian Bay. The marine access assessment was part of a larger scope of services undertaken by Amec Foster Wheeler (AFW) for Public Works and Government Services Canada (PWGSC) including a number of work items comprised of the following key tasks:

- A designated substances and hazardous materials survey;
- A structural condition evaluation; and
- Development of plans and specifications for remedial work.

The emphasis of the marine access assessment was the evaluation of construction access options for the proposed remedial works required at the Point au Baril Rear Range project site, for which the preferred option is excavation and off-site disposal.

1.1 Scope of Services

The scope of work for the marine access assessment consisted of the following six tasks:

1. Completion of a one-day site visit (bathymetric survey not included);
2. Review of available Canadian Hydrographic Service (CHS) charts;
3. Evaluation of access options for Macklin Island and recommendation of the most feasible and cost effective alternative;
4. Determination of vessel options for the remediation work; and
5. Reporting and development of conceptual level costing.

In addition to these specific tasks, two extra tasks were also completed as part of the assessment, namely:

- A brief analysis of the seasonality of favourable wind and water level conditions for marine operations; and

- Acquisition of the best available CHS digital sounding data for the Pointe au Baril area and approaches.

1.2 Remediation Work

Based on information listed on the Treasury Board of Canada Secretariat (TBCS) website and discussions with AFW, it is anticipated that the proposed remediation work would consist of the principal tasks summarized in Table 1.1.

Table 1.1 Anticipated Tasks for the Proposed Rear Range Remediation Work (TBCS, AFW)

No.	Description	Estimated Quantity	Notes/Details
1.	Mobilize & demobilize construction equipment	Assume backhoe, wheel loader, and dump truck (3 pieces)	-
2.	Excavation of contaminated soil	500 m ³ (maximum, based on TBCS estimates)	Quantity potentially much less
3.	Remove used building material and construction debris	0 m ³ (approximately, based on field investigations conducted by AFW))	Includes Scrap Timber, sheet metal, and peeling paint
4.	Off-site disposal of all material	500 m ³ (maximum, based on TBCS estimates)	Includes contaminated soil and used building material

With respect to mobilization of construction equipment, an initial estimate of remediation equipment operating weights is shown in Table 1.2. The purpose of the estimate is to quantify equipment weights for comparison to the total carrying capacity of the chosen access method (particularly where the disposal of soil might be combined with demobilization of construction equipment in a single trip, or where the total carrying capacity of the chosen transport method is limited).

Considering the potential for a small excavation quantity, two scenarios are presented, the first using conventional (full-size) equipment mobilized to the site using a tug and barge, and the second using “small-scale” equipment mobilized to the site using a smaller “lift-in” vessel.

Table 1.2 Weight Estimate for Representative Equipment (data taken from Caterpillar, 2016)

	Conventional/Full-size		Small-scale	
	Model	Operating Weight (t)	Model	Operating Weight (t)
Tracked Excavator	320D ^{ab}	20	303.5	4
Wheel Loader	914G	8	246C ^c	3.5
Dump Truck	725	22.5	Pickup truck Dump trailer	3.5 ^d 2 ^e
Total (estimated)		50		13

^a Conservative estimate using excavator weight; 450E backhoe-loader is approximately 50 percent light (11 tonnes).
^b Weight of wheeled excavator similar to tracked excavator (e.g. M318D weight is also 20 tonnes).
^c Skid steer in lieu of wheel loader.
^d e.g. Ford F350 Super Duty dual rear wheel with up to 19,000 lb towing capacity
^e e.g. 6.5 tonne cargo capacity, 8.5 tonne gross weight when loaded.

Table 1.2 suggests that approximately 50 tonnes of equipment might be transported to the project site in a conventional operation (the largest individual piece might weigh approximately 20 tonnes). For a small-scale operation, it is envisioned that individual pieces of equipment would be transported separately, in multiple trips.

Note that Table 1.2 assumes specific equipment from a particular manufacturer. Construction contractors would almost certainly use different makes and models than those shown in this preliminary assessment. Nevertheless, the weight estimate presented in Table 1.2 are considered to be representative, and appropriate for planning purposes.

2.0 SITE VISIT

A site visit was completed with AMF and PWGSC staff on October 13th, 2016.

Access to Macklin Island was provided via a recreational power boat leaving from the Desmasdons Boatworks Marina (see Figure 2.1). Photographs and visual observations were taken to document the site conditions. In general, Macklin Island is characterized as rocky and developed with seasonal cottages, with shallow water depths adjacent to much of the shore. Photographs of the marine access point for the field site and Rear Range work area are shown in Figure 2.1 and 2.2.



Figure 2.1 Macklin Island & Private Cottage Dock



Figure 2.2: Rear Range & Rocky Shoreline (facing West)

GPS waypoints were also collected at various locations around the island to document the water's edge on the day of the site visit, and to record possible candidate mooring locations for construction access. The waypoints and field notes are shown overlaid on a satellite image of the island in Figure 2.3. A limited number of water depth measurements (soundings) were also collected around the island using a Line and Lead Chain, as shown in Figure 2.3.

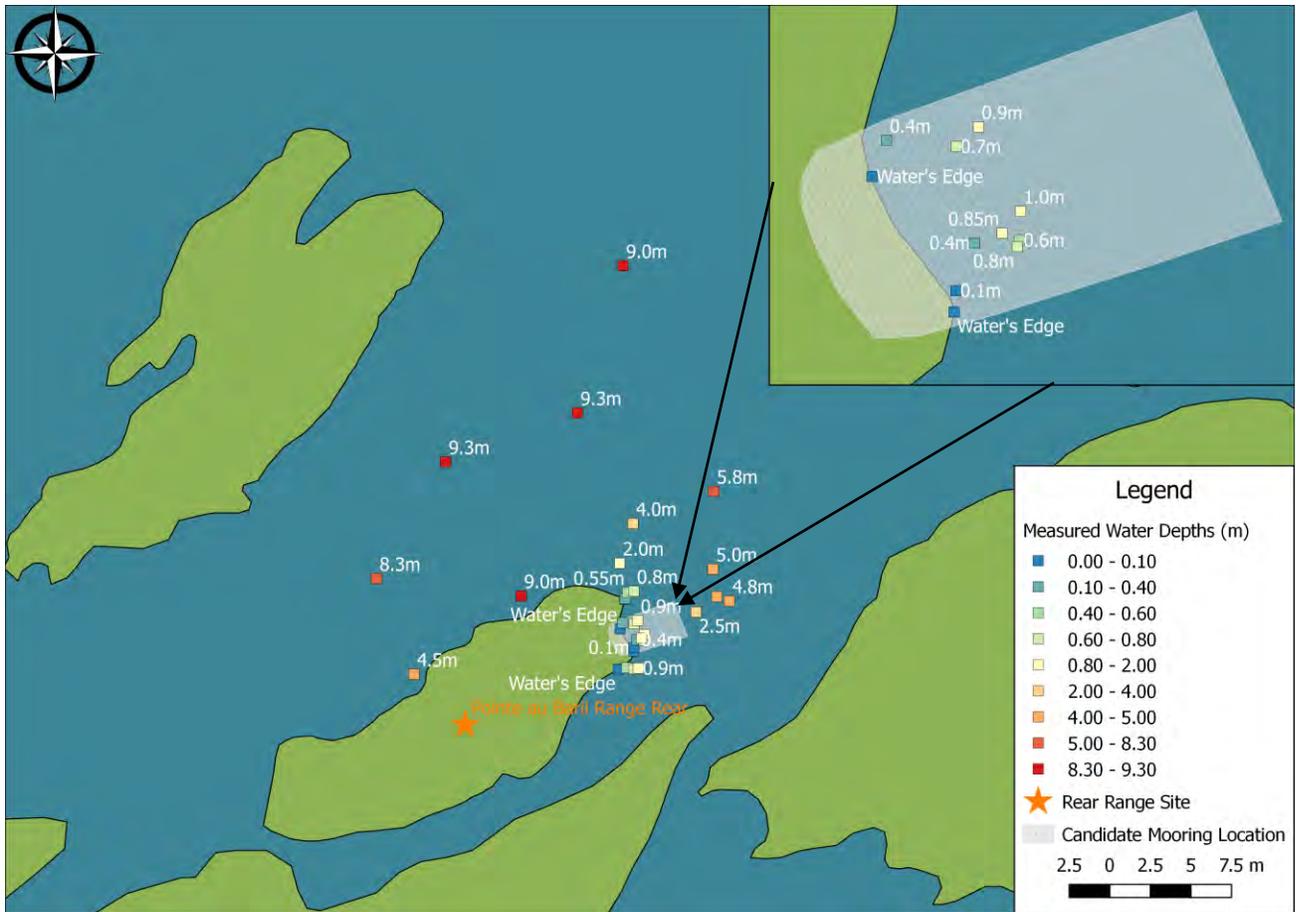


Figure 2.3: Recorded Field Notes recorded on Macklin Island (top) and Measured Water Depths around Macklin Island (bottom). (Not for Navigation)

A possible mooring location was identified on the east side of Macklin Island – with this location considered to provided relatively easy access to the Rear Range work area. This location is highlighted in Figure 2.3, while location is shown in Figure 2.4



Figure 2.4: Proposed Access Location (view looking North-East)

3.0 SITE CONDITIONS

A brief investigation of the site conditions is presented below based on readily available information. In particular, water depths and the seasonality of favourable water levels and wind conditions are discussed.

An analysis of wave conditions and ice coverage is beyond the scope of the present work.

3.1 Available Sounding Data

Existing soundings surrounding Macklin Island are presented in Figure 3.1 (taken from CHS field sheet 1200397 & 3068, from echo sounder surveys conducted in 1963 and 1964).

Based on the available data, the recorded water depth at the preferred mooring location refer to Figure 2.3 and Figure 2.4) is 1.6 m below Chart Datum and extends to within approximately 15 – 20m from shore. An alternate access location on the north-east side of the island has a deeper recorded depth of 2.0 m, but is farther from the Rear Range and is separated from the work area by what was observed to be fairly dense vegetation and a small ledge approximately 1m high.

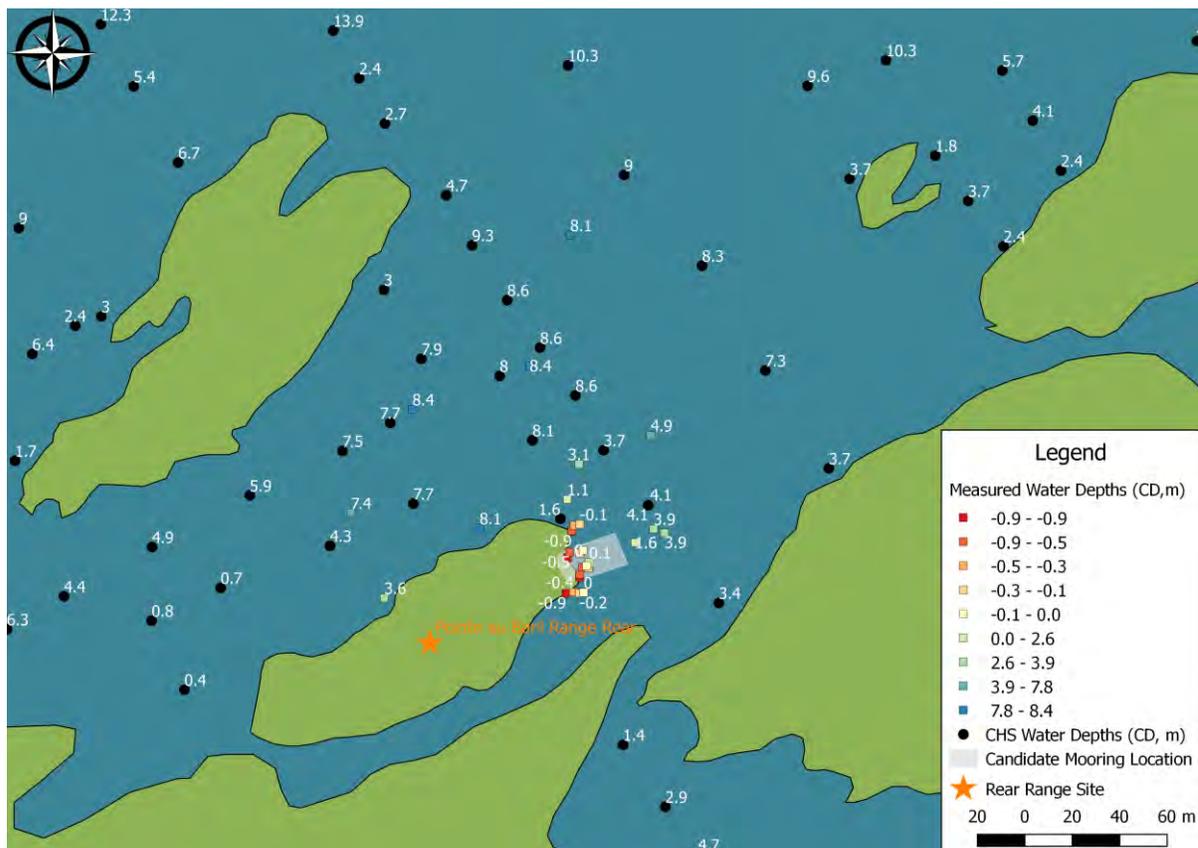


Figure 3.1 Pointe au Baril Rear Range – CHS Field Sheet 1200397 & 3068, and measured water depths in CD (Not for Navigation). [Product produced by Baird based on CHS Direct User License No. DG 2016-0923-1260-W]

3.2 Water Levels

Historic water levels from the latest CHS monthly bulletin are shown below in Figure 3.2 (note that water levels are typically higher in summer months than in winter months). In particular, lake levels in July are, on average, approximately +0.6m above Chart Datum (CD, a low water datum used on all CHS navigation charts).

If marine access is used, it is recommended that the proposed remediation work be planned in the summer (if possible), in order to benefit from anticipated higher lake levels (and so greater water depths for marine access). The disadvantage of this time frame is that it coincides with peak cottage season.

In Figure 3.2 CHS also include a forecast for the probable range of future levels for 2016/2017. It can be seen that the prediction for 2016 is that lake levels are expected to be above the historical average, which is also favourable.

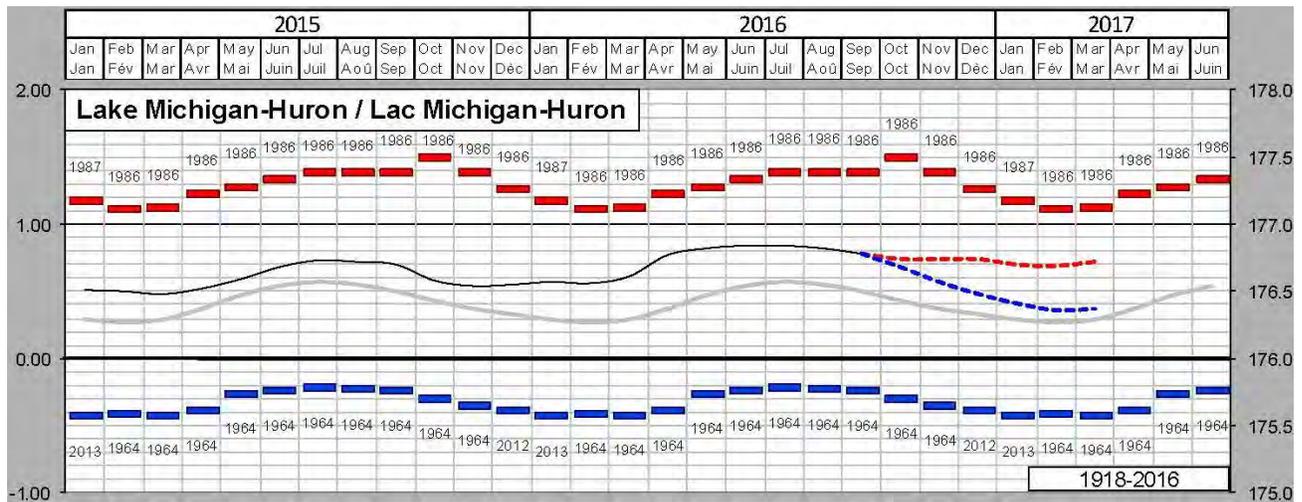


Figure 3.2: CHS Water Level Advisory for October 2016, Water Levels in Metres
(Left axis relative to Chart Datum, right axis relative to IGLD '85)

3.3 Wind

Wind Statistics from the Britt Radar station are shown Figure 3.3. As was observed for water levels (and as might be expected), there is a seasonality to wind speeds in which lower average speeds occur in summer months and higher average speeds occur in winter months. Maximum wind speeds follow a similar trend although there is more variability in the recorded extremes than in the mean values.

Note that strong winds can create waves and water level seiches within Point au Barile channel, and difficult mooring conditions. As such, the occurrence of lower wind speeds in summer months

reinforces the previous recommendation that the proposed remediation work be planned for the summer, if possible. The work may be done at any other time during the open water season, although early season and late season storms increase the probability for weather induced downtime. Quantification of weather delays and downtime is beyond the scope of the present work.

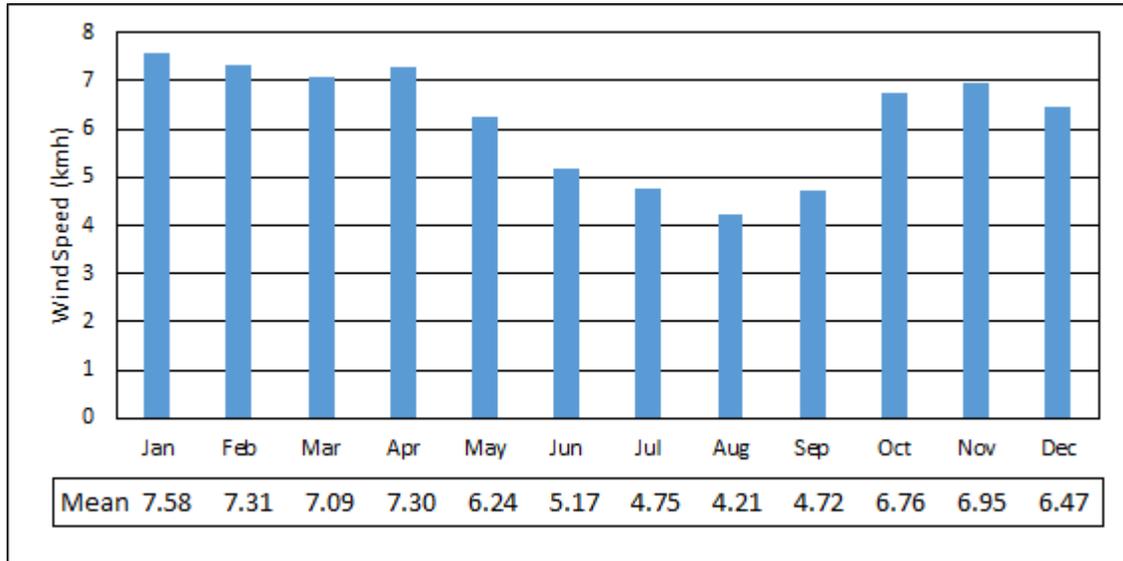


Figure 3.3 Monthly Variation in Wind Speed (km/h) at Britt Radar station

4.0 ACCESS OPTIONS

4.1 General

There are no roads connecting Macklin Island to the mainland. As such, access to the work area is either by water or air. The Rear Range is located approximately 9 km from Pointe au Baril Station, which is the only available landfall site from the mainland in the area. Pointe au Barile Channel is relatively shallow, with a number of reefs, shoals and submerged rocks, as shown on CHS Chart 2201 (see Figure 4.1).

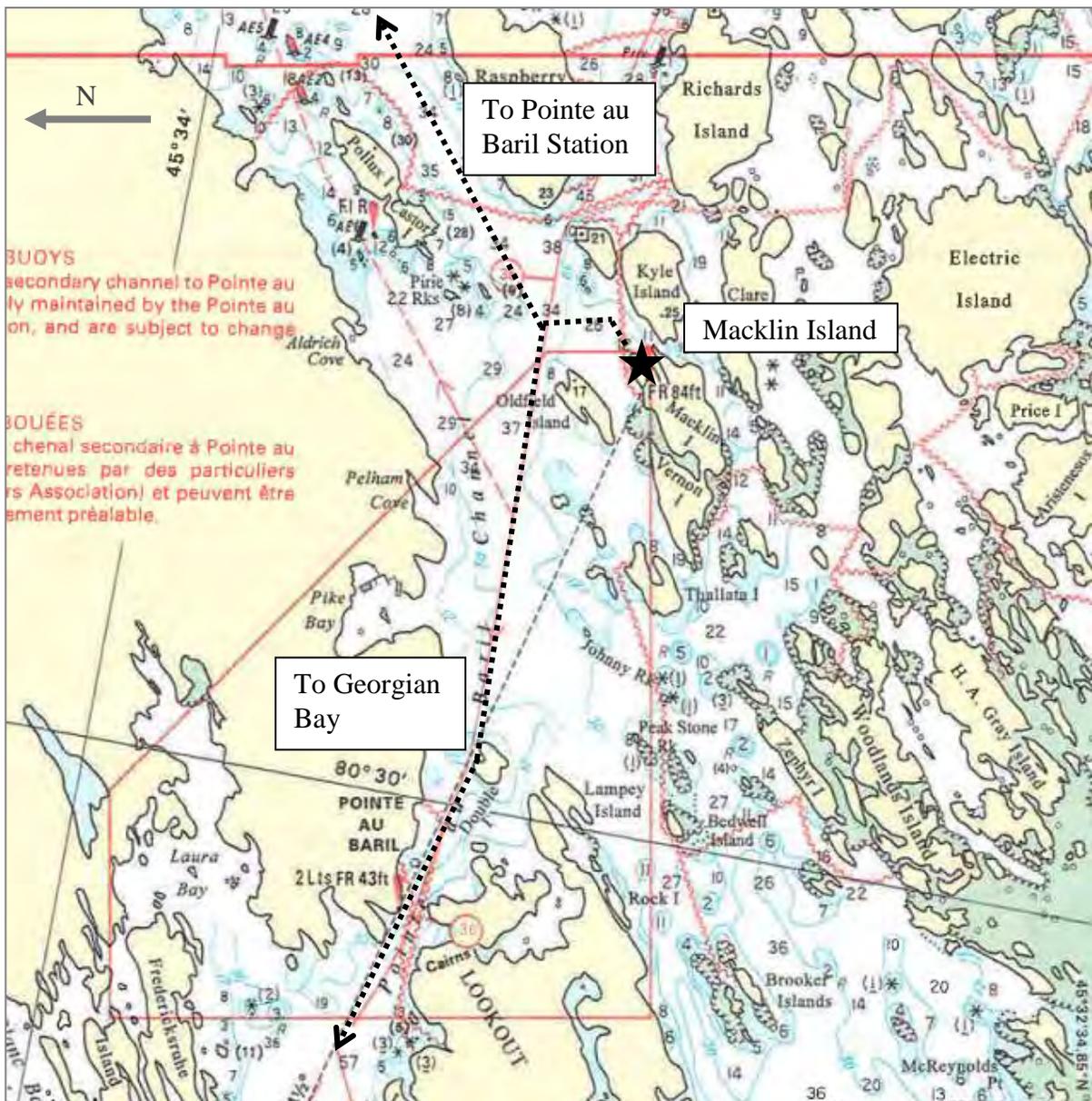


Figure 4.1 Navigation Chart for Pointe au Barile
(Portion of CHS Chart 2203, soundings in feet, 3.3 feet = 1 m)

4.2 Equipment Options

Access options were developed using four different types of equipment for two different access methods, namely:

- **Marine access** – float-in using a tug and deck barge or a smaller self-propelled landing craft truck (assuming local contractors within a range of a few hundred kilometres; e.g. Parry Sound, Port Severn etc.);
- **Air access** – using a heavy-lift construction helicopter (as was used in 2009 for relocation of the Stokes Bay rear range); and
- **Ice access** – using conventional trucking and lowboy-trailers for equipment transport.

The ice access option was considered to be unfeasible due to schedule constraints imposed by a potentially short and unpredictable ice season, probable snow cover of the material to be excavated, and potential safety hazards associated with the uncertainty and variability of ice characteristics where a strong and continuous ice thickness is required to support construction equipment.

The aerial access option was considered to be unfeasible due to the high cost to remove the large quantities of contaminated soil from the site. It may be a viable alternative to remove small quantities of material.

Specific details for the remaining two options are summarized in Table 4.1 according to the following main headings:

- Access approach and specific mobilization/demobilization method;
- Typical equipment particulars and payload capacity;
- Number of round trips required to transport 500 cubic metres assumed of contaminated material off the island (i.e. off-site disposal of contaminated soil);
- Additional notes are provided as to specific benefits and challenges of each option.

Table 4.1 Summary of Equipment Options
(dimensions and capacities are representative and approximate)

	Marine		Air
Equipment	Tug and Barge 	Landing Craft 	Construction Helicopter 
Typical Particulars	20 m length 8 m breadth 2.4 m depth	11 m length 3.7 breadth 1.8 m depth	Airbus Super Puma AS332 L1
Typical Capacity	285 t at 2.2m full load draft 230 t at 1.8 m part load draft	8.5 t including dump trailer (0.9 m full load draft) 6.5 t material capacity	4 t including trailer and tether (full fuel) 3 t material capacity
Round Trips (for 500 m³)	6	154	334
Mob/Demob	Float-in through Pointe au Baril Channel	Truck to marine launch and lift-in with crane	Lifts delivered to nearby staging area
Notes	<ul style="list-style-type: none"> • Tug draft similar (1.8m) • Roll-on/roll-off equipment using bow/stern ramps • Spud pile mooring • Reserve capacity for construction equipment • Temporary causeway to shore may be required 	<ul style="list-style-type: none"> • Truckable • Lift-in/lift-out crane required • Limited to small equipment • Roll-on/roll-off dump trailer and equipment at bow gate • Lift-on/lift-off dump trailer at Point au Barile 	<ul style="list-style-type: none"> • 4 t lift less suited to large quantities • Limited to small equipment • Limited number of operators

4.3 Marine Access

Marine access options from the mainland to Macklin Island include two principal locations as shown in Figure 4.2 and described below.



Figure 4.2: Macklin Island Access Options (depth contours in metres, relative to Chart Datum)

4.3.1 Description of Marine Access Options

The two principal options for marine access from the mainland to Macklin Island are described as follows:

1. Pointe au Baril Channel (see Figure 4.1 and Figure 4.2)
 - Entered between Lookout Island and Pointe au Baril Lighthouse
 - Marked by the Point au Baril Entrance Channel light buoy and additional lateral marks
 - Depths of 5.0 m CD are reported throughout the Pointe au Baril Channel en route to anchorages west of Macklin Island (CHS, 2016)
2. Existing Boat Ramps
 - Three small craft boat ramps are located 10km east of Macklin Island in Pointe au Baril Station
 - Water depths are reported to be approximately 1.5 m CD

Marine access to Macklin Island from Pointe au Baril Station is the simplest for conventional construction equipment. It was shown previously in the analysis of equipment options (Table 4.1) that using a conventional deck barge for transporting equipment and material is well matched to the excavation quantities and the weight of these vessels is such that float-in (rather than lift-in) is normal practice. Moreover, barges are more common with local construction contractors in the region, whereas landing craft are speciality items operated by either a select few or by larger operations which are generally located farther from the project site (and therefore incur potentially greater mobilization and demobilization costs than local operators).

A review of available sounding data for Macklin Island is presented below in order to identify a preferred approach to the Rear Range work area and define limiting drafts for construction vessels.

4.3.2 Estimate of Maximum Vessel Draft

A preliminary estimate of the maximum draft for construction vessels is presented in Table 4.1 using an assumed minimum under keel clearance allowance of 0.3 m. Based on these preliminary assumptions, it is anticipated that contractors may limit vessel drafts to approximately to 1.9 m. It was shown in the analysis of equipment options (Table 4.1) that this is a reasonable value for local marine plants which typically consists of a small tug and barge.

Table 4.2 Preliminary Estimate of Maximum Vessel Draft (assuming remediation undertaken in summer)

	Jul-Aug	Sep-Oct
Estimated July/August Water Level (above Chart Datum)	+0.6	+0.4
Minimum Depth (relative to Chart Datum)	-1.6	-1.6
Total Water Depth (m)	2.2	2.0
Under Keel Clearance Allowance (approx. 15% of draft)	0.3	0.3
Maximum Draft (m)	1.9	1.7

6.0 SUMMARY & RECOMMENDATIONS

A marine assessment was completed for the proposed Pointe au Baril Rear Range remediation at Macklin Island on the eastern shore of Georgian Bay. The proposed remediation work is anticipated to include the following main tasks:

- Mobilization and demobilization of construction equipment; and
- Excavation and off-site disposal of up to 500 m³ of contaminated soil (potentially less) and building materials.

A possible marine access and mooring location was identified at the east side of Macklin Island, preferred both for its close proximity to the Rear Range work area and slightly deeper water depths than other locations around the island.

The preferred least cost marine access option was estimated to be achieved through float-in of a small tug and deck barge through the Pointe au Baril main channel. Based on available sounding data, it is recommended that this option include a temporary access causeway to extend from the barge mooring to shore. Other options considered, but estimated to have substantially higher costs, included a lift-in shallow-draft landing craft option, and the use of a heavy-lift construction helicopter.

These latter two options involve specialty equipment that are less common in the region. It is anticipated that market forces may elicit competitive tenders from local contractors using more conventional tug and barge operations. Nevertheless, it is recommended that PWGSC not restrict contractors to a prescribed methodology or particular equipment, and that tenderers be permitted to propose the means and methods best suited to their particular operation.

It is recommended that the remediation work be planned to be completed in the summer (if possible), in order to benefit from higher summer lake levels and lower wind speeds. If the work proceeds in July or August, the maximum draft for construction vessels is estimated to be approximately 1.9m which is anticipated to provide approximately 230 tonnes of deadweight carrying capacity for material and equipment on a 20 m long deck barge. Should the work proceed in September or October, the maximum draft might be restricted to 1.7 m (215 tonnes deadweight) and there is an increased possibility for fall storms and weather induced downtime. Quantification of weather delays and downtime is beyond the scope of the present work.

7.0 REFERENCES

Caterpillar (2010). Performance Handbook, 40th Edition.

CHS (2000). Sailing Directions: Lake Huron, St. Marys River, Lake Superior – Booklet CEN 305. Hydrographic Chart Distribution Office, Fisheries and Oceans Canada.

APPENDIX B
SITE STRUCTURE FOR PAINT ABATEMENT
AND REPAINTING













APPENDIX C
DEBRIS REMOVAL – IDENTIFIED ITEMS









APPENDIX D
GENERAL ENVIRONMENT AND CONTEXT













APPENDIX E
ENVIRONMENTAL EFFECTS EVALUATION

Environmental Effects Evaluation (EEE) Report

Environmental Component	Reference	Mitigation Measures	Phase	Responsibility
Fish (<i>Fisheries Act</i>)	Part C, Table 4	<ul style="list-style-type: none"> · Development of a Site-specific Environmental Protection Plan (to be developed by the Contractor) shall include directions for the installation of ESC measures (e.g., temporary matting, geotextile filter fabric, and silt fencing). · ESC measures are to be installed prior to commence of construction and shall ensure Site drainage conditions are accounted for. These structures are to be left in place until vegetation is re-established and/or all exposed soils are stabilized. · The completion of hydrographic survey prior to project commencement is recommended to check for hazards along the route between the mainland and Macklin Island, and to confirm the extent of navigable water and near shore water depths the Site. · Soil remediation should be completed at a time of year (e.g., during periods of dry weather) that will minimize the potential for sediment, debris, and/or other contaminants to enter the lake. · All waste materials must be disposed of in accordance with the applicable regulatory agency guidelines. One toxicity characteristic leachate procedure (TCLP) sample was submitted for analysis. The results indicate that soils may be disposed of as non-hazardous under Ontario Regulation 347 and 558 (Amec Foster Wheeler 2017). · If any construction debris/material, (e.g., plastic, food scraps, etc.) enter the aquatic environments, they must be removed immediately and disposed of in accordance with the applicable regulatory agency guidelines. · Work must be scheduled to avoid periods of heavy precipitation. · Exposed soil areas must be minimized by limiting the area that is exposed at one time and by limiting the time that any one area is exposed. All stockpiled soil should be covered and/or diked as feasible to prevent erosion and release of sediment laden water during precipitation events. · Development of a Site-specific Spill Response Plan (to be developed by the Contractor) which shall include a log book and detail the course of action to be taken in case a spill. This Plan and all necessary materials shall be available on Site at all times. · Basic petroleum spill clean-up equipment must be on Site at all times. All spills or leaks must be promptly contained, cleaned up, and reported to Ontario Spills Action Centre at 1-800-268-6060. · Appropriate measures should be adopted to minimize any impacts of accidental spill during transport, staging and maintenance activities. · Machinery must be checked for leakage of lubricants/fuel and must be in good working order. Any washing, refueling or servicing to equipment in use on the island is to take place at the maximum possible distance from the shore and within a flat, impermeable, stable surface to prevent any deleterious substances from entering the water. · Keep all materials securely locked up to avoid vandalism and accidental spills. 	Construction / Remediation Works	Contractor(s)

Environmental Effects Evaluation (EEE) Report

Environmental Component	Reference	Mitigation Measures	Phase	Responsibility
		<ul style="list-style-type: none"> · Transportation of the contaminated soil, lead abatement materials, and debris via barge to the mainland must be properly contained and secured so that wind does not blow contaminated soil particles into the water. Transportation across the water during storms with heavy rainfall or high winds should be avoided to minimize risk. · In the scenario that a barge and ramp are used for transport of equipment and sediment/soils, deleterious substances must be transported in appropriate containers and be properly secured at all times. · Minimize vehicle traffic on exposed soils and stabilize high traffic areas. · Cover and contain loose materials to avoid air transportation and sedimentation in nearby water. · Undertake earthworks using construction techniques designed to prevent sedimentation. · Ensure that hazardous substances (including fuel) are handled and applied in a manner to prevent release into the environment. All deleterious substances should be stored in secure areas on impermeable pads at least 30 m from the water. · Construction machinery and equipment (including ramping structures) are to arrive on-site in a clean condition and be maintained free of fluid leaks. 		
Birds (MBCA and FWCA)	Part C, Table 4	<ul style="list-style-type: none"> · A detailed Paint Management Plan should be developed prior to the commencement of paint abatement. This Plan shall ensure that isolation of the work area, if necessary, will not impact birds. · All work is to be undertaken in compliance with the <i>Migratory Birds Convention Act, 1994</i>. · In the case that a protected bird species is nesting on the Site when work is scheduled to commence, or paint abatement works require the work area to be tented during the regional breeding bird window, a qualified biologist should be consulted to ensure activities are conducted in compliance with the MBCA. · In order to minimize the potential for incidental take of nesting migratory birds, vegetation clearing and any proposed work activities in migratory bird habitat should be undertaken outside of the regional nesting period (April 12 through August 28). However, working outside of nesting periods does not mean no birds or nests will be encountered; it only reduces this risk. · If works are to be conducted during the regional nesting period, a breeding bird survey must be conducted by a qualified avian biologist in the areas flagged for vegetation removal immediately (i.e., within 2 days) prior to commencement of the work to identify and locate evidence of breeding birds protected by the MBCA. If breeding evidence or nests are found through non-intrusive survey methods, an adaptive mitigation plan (which will include establishing appropriate buffers around assumed breeding/nesting areas) should then be developed to address any potential impacts on migratory birds or their active nests, and should be reviewed by ECCC prior to implementation. Appropriate buffers and setback distances can be found on ECCC's website under "Buffer zones and setback distances" here: http://ec.gc.ca/paom-itmb/default.asp?lang=En&n=8D910CAC-1#_004. · If at any time during construction a bird protected under the MBCA is found to be using the Site for 	Site Preparation Construction / Remediation Works	Contractor(s) and qualified biologist on site

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Environmental Component	Reference	Mitigation Measures	Phase	Responsibility
		<p>breeding or nesting, all work must be stopped and ECCC must be contacted for further guidance prior to work resuming.</p> <ul style="list-style-type: none"> · Similarly, construction timing for soil remediation will be influenced by the breeding bird window. No vegetation removal shall occur between April 12 and August 28 unless a nest search is conducted by a qualified biologist in order to ensure compliance with the MBCA. · Make use of engineering controls to modify equipment/machinery or the work area to make it quieter e.g., substitute existing equipment with quieter equipment; retro-fit existing equipment with damping materials, mufflers, or enclosures; erect barriers; maintain equipment; etc. · Contractors should avoid excess and unnecessary noise. · To minimize vegetation/habitat disturbance, the remediation area should be clearly demarcated and kept as small as possible. 		
Health and Socio-economic	Part C, Table 4	<ul style="list-style-type: none"> · All workers must review and be familiar with the Site-Specific Health and Safety Plan. · All workers must have the appropriate training for the task(s) they are to perform and the machinery, equipment, and tools they are required to use, including but not limited to spill response training. · While on Site, all workers must wear appropriate personal protective equipment as dictated by the Site-Specific Health and Safety Plan and in accordance with the <i>Occupational Health and Safety Act, 1990</i> (OHSA) and regulations. · Site access will be restricted to authorized personnel. · Due to the risks associated with Massasauga Rattlesnake (a venomous reptile), it is highly recommended that a biologist trained in identification and handling of snakes be present on site for the duration of the Project. · During construction, the Contractor(s) will be responsible for the safe performance of the work and the safety of all personnel engaged in the work, at the Site and on the mainland. · Immediately suspend all work in the vicinity of a discovery, should human remains be found during project activities. Notify the Ontario Provincial Police, or local police, and allow police to conduct a site investigation and contact the district coroner. The Contractor will be responsible for notifying the Ontario Ministry of Tourism, Culture and Sport at 1-800-461-7629. · Should any un-recorded cultural heritage values (archaeological or historical features) be identified during project activities, suspend all activities in the vicinity of the discovery and contact DFO and the Ontario Ministry of Tourism, Culture and Sport. · Use adequate safety barriers and signs to provide a safe environment for workers and employees of the Site. · Only authorized personnel shall be allow on Site during project activities. 	All Phases	Contractor(s) and qualified biologist on site

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Environmental Component	Reference	Mitigation Measures	Phase	Responsibility
		<ul style="list-style-type: none"> · The Contractor is required to submit proof that a licensed waste hauler is transporting the waste to a facility certified to accept the material. A copy of waste disposal/transfer site's Certificate of Approval and a letter verifying that the said disposal/transfer site will accept the waste must be supplied to the proponent prior to removal of waste from Site. · Potentially hazardous wastes will be separated from normal waste through segregation of storage areas and proper labeling of containers. All registered waste will be removed from the site by licensed waste contractors and disposed at approved facilities. · The Project will implement a solid waste management program for typical debris handling and disposal. · The disposal of designated substances is regulated under the <i>Ontario Environmental Protection Act</i> specifically O.Reg. 347, General – Waste Management (most recently amended by O.Reg. 395/07). · Protocols for management of hazardous materials (e.g., responsibilities, emission control, safe storage practices, refueling protocols, spill containment, emergency response, regulatory compliance, accident/incident reporting) should be in place. · Maintain safe ingress and egress to work area. · Make medical provisions prior to Project's start for prompt medical aid in the event of serious injury. 		
<p>Birds (not protected by legislation) and Wildlife and their Habitat (FWCA)</p>	<p>Part C, Table 4</p>	<ul style="list-style-type: none"> · A detailed Paint Management Plan should be developed prior to the commencement of paint abatement. This Plan shall ensure that isolation of the work area, if necessary, will not impact birds. · Work activities should be restricted to daylight hours to the extent practicable to avoid disturbance during prime periods for wildlife movement (i.e. dawn and dusk). · Site surveys should be conducted daily to determine the presence of wildlife trapped within the exclusion fencing. · Minimize duration and extent of disturbance to existing vegetation and natural areas serving as habitat. · Minimize the frequency of dust-generating construction activities during prolonged periods of dry weather. To reduce dust generation apply mitigation measures as per the "Air Quality" VEC. · Topsoil shall be placed to a maximum depth of 0.3 m to match pre-remediation soil depths at the Site and shall be restored to locations where soil was previously found. Over-application to areas that were previously bare may negatively impact wildlife access to habitat in cracks and crevices of rocks and/or bedrock. · Restore disturbed areas with native vegetation upon completion of construction to promote long-term naturalization to the original vegetation condition or better. · Proponents and Contractors must ensure that food scraps and garbage are not left at or near the Site. · Make use of engineering controls to modify equipment/machinery or the work area to make it quieter 	<p>Site Preparation</p> <p>Construction / Remediation Works</p> <p>Site Rehabilitation</p>	<p>Contractor(s)</p>

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Environmental Component	Reference	Mitigation Measures	Phase	Responsibility
		<p>e.g., substitute existing equipment with quieter equipment; retro-fit existing equipment with damping materials, mufflers, or enclosures; erect barriers; maintain equipment; etc.</p> <ul style="list-style-type: none"> · Contractors should avoid excess and unnecessary noise. · To minimize vegetation/habitat disturbance, the remediation area should be clearly demarcated and kept as small as possible. 		
Terrestrial SAR and their habitat (SARA and ESA)	Part C, Table 4	<ul style="list-style-type: none"> · A detailed Paint Management Plan should be developed prior to the commencement of paint abatement. This Plan shall ensure that isolation of the work area, if necessary, will not impact SAR. · All work is to be undertaken in compliance with the <i>Species at Risk Act, 2002</i> and the <i>Endangered Species Act, 2007</i>. · In the case that a protected bird species is nesting on the Site when work is scheduled to commence, or paint abatement works require the work area to be tented during the regional breeding bird window, a qualified biologist should be consulted to ensure activities are conducted in compliance with SARA and the ESA. · In order to minimize the potential for incidental disturbance to protected birds, vegetation clearing and any proposed work activities should be undertaken outside of the regional nesting period (April 12 through August 28). · If works are to be conducted during the regional nesting period, a breeding bird survey must be conducted by a qualified avian biologist in the areas flagged for vegetation removal immediately (i.e., within 2 days) prior to commencement of the work to identify and locate evidence of breeding birds protected by SARA and/or the ESA. If breeding evidence or nests are observed, ECCC or MNRF must be contacted prior to implementation to ensure any process-related requirements under the SARA and/or ESA are followed. · If at any time during construction a species protected under SARA or the ESA is found to be using the Site all work must be stopped and the appropriate agency (ECCC or MNRF) must be contacted for further guidance prior to work resuming. · Confirmatory surveys for SAR (specifically Eastern Foxsnake and Massasauga Rattlesnake which have High probability of occurrence on Site) should be conducted by a qualified biologist prior to any remedial activities. · Contact ECCC CWS to gain further direction relative to any technical and process requirements under SARA with respect to Eastern Foxsnake and Massasauga Rattlesnake and their critical habitat. · Prior to the use of machinery on Site, a qualified biologist shall inform all staff of the potential presence of SAR and provide SAR training including the following information: <ul style="list-style-type: none"> - How to identify SAR which may be present. - Associated risks of contact with SAR (both health and safety, and those related to legislation). 	All Phases	Contractor(s) and qualified biologist on Site

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Environmental Component	Reference	Mitigation Measures	Phase	Responsibility
		<ul style="list-style-type: none"> - Procedures to be followed in the case of a SAR sighting. · Pre-work SAR surveys should be conducted daily during each project phase by a qualified biologist. These surveys will include inspection of all machinery to be used that day, inspection along the entire length(s) of the ESC fencing, and a cursory search of specific areas where work is to be conducted on that day. · Prior to Project commencement, confirmatory inventory for Massasauga Rattlesnake should be undertaken in April/early May by a qualified snake biologist to determine the presence or absence of the species on the Site. The survey should be conducted during optimum sun-basking time (sunny and warm). · Due to the risks associated with Massasauga Rattlesnake (a venomous snake), it is highly recommended that a biologist trained in identification and handling of snakes be present on Site for the duration of the Project. · Should any SARA- or ESA-protected species, or its habitat (e.g., snake hibernacula) be encountered at any time during the Project, measures are to be implemented to avoid destruction, injury, or interference with the species, its residence and/or its habitat (e.g., through sitting, timing, or design changes). Work shall cease and the Project Manager should contact ECCC for advice on how to proceed and MNRF for notification of the sighting (see Part A for contact information). · In the case that a snake hibernaculum is found on Site care should be taken to ensure the hibernaculum, and access to the hibernaculum, is maintained over the course of the project, and that both are restored if they are disturbed by project activities. · If an injured/deceased SAR is found, the specimen should be placed in a non-airtight, fully labelled container and kept at a temperature so as to not worsen its condition. For additional guidance, MNRF and ECCC staff must be contacted immediately (see Part A for contact information). · All equipment/machinery that is left idle on the Site for over one hour shall be visually examined prior to (re)ignition to ensure SAR are not present. This visual examination shall include all lower components of the machinery, including operation extensions and running gear. · Spotters shall be used for all traffic moving on Site. · Silt fencing should be used as exclusion fencing to keep reptiles out of the Project footprint. For the purpose of reptile exclusion fencing, the following criteria should be met for maximum effectiveness: <ul style="list-style-type: none"> - Avoid use of silt fencing with nylon mesh netting reinforcing the regular, woven plastic strand material. Large-bodied snakes become entangled in this mesh and perish. - Fencing must be at least 50 cm above ground level with a minimum of 10 cm trenched into the ground. - Fencing should be installed with stakes on the construction side of the fence (contrary to normal installation) to prevent animals from using the stakes to maneuver over the fencing. 		

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Environmental Component	Reference	Mitigation Measures	Phase	Responsibility
		<ul style="list-style-type: none"> - Under the supervision of a qualified biologist, installation should occur during when both Massasauga Rattlesnake and Eastern Foxsnake have emerged from hibernation and are active (after mid-May until October 31; COSEWIC 2008c; COSEWIC 2012) and a minimum of one week prior to commencement of project work. - In the case that work is to commence during the window encompassing the Massasauga Rattlesnake and Eastern Foxsnake hibernation periods (November 1 to mid-May; COSEWIC 2008c; COSEWIC 2012) exclusion fencing should be installed a minimum of two weeks prior to the hibernation season (i.e., no later than October 18). - In the case that trenching is not possible due to Site conditions (e.g., rocks, bedrock, tree roots, etc.), sand bags or other anchors may be used. - Fencing should be installed with turn-arounds at the ends to redirect animals away from openings. - Access openings should be tightly secured with hay bales when construction-related activities are not occurring. · Site surveys should be conducted daily to determine the presence of SAR trapped within the exclusion fencing. In the event that a non-SAR species is found trapped, the wildlife shall be freed by a qualified biologist (if deemed safe to do so). If deemed unsafe, or the species trapped is a SAR, MNRF and ECCC staff must be contacted immediately for further guidance (see Part A for contact information). · To the extent feasible, complete all vegetation and soil <i>removal</i> work while soil temperatures are above 10°C (Massasauga Rattlesnake active period; COSEWIC 2012) <i>or</i> during the window encompassing the Massasauga Rattlesnake and Eastern Foxsnake hibernation periods (November 1 to mid-May; COSEWIC 2008c; COSEWIC 2012), and complete all <i>placement</i> of fill while ground temperatures are above 10°C <i>and</i> during the window encompassing the Massasauga Rattlesnake and Eastern Foxsnake active periods (mid-May to October 31) to ensure hibernating snakes are not entombed. · Make use of engineering controls to modify equipment/machinery or the work area to make it quieter e.g., substitute existing equipment with quieter equipment; retro-fit existing equipment with damping materials, mufflers, or enclosures; erect barriers; maintain equipment; etc. · Contractors should avoid excess and unnecessary noise. · To minimize vegetation/habitat disturbance, the remediation area should be clearly demarcated and kept as small as possible. 		
Vegetation	Part C, Table 4	<ul style="list-style-type: none"> · Minimize duration and extent of disturbance to existing vegetation and natural areas serving as habitat. · Restore disturbed areas with native vegetation upon completion of construction to promote long term naturalization to original condition. · Follow project completion, landscape the Site to match pre-existing condition - including Site grading, soil reinstatement, and revegetation. · Vegetation shall be restored upon completion of remediation works using native species typical of the locality and soils as detailed by the Revegetation Plan (to be developed by the Contractor). The 	Site Preparation Construction / Remediation Works Site Rehabilitation	Contractor(s)

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Environmental Component	Reference	Mitigation Measures	Phase	Responsibility
		<p>Revegetation Plan will specify appropriate native seed mix(es) to be used during the Site rehabilitation phase, the rate of application, and monitoring details.</p> <ul style="list-style-type: none"> · Any seeding should commence as soon as possible, in conjunction with planting works. Scheduling of work shall be such that exposed and disturbed areas can be seeded during the growing season and are not left exposed during the spring period. · Topsoil shall be placed to a maximum depth of 0.3 m to match pre-remediation soil depths at the Site and shall be restored to locations where soil was previously found. Over-application to areas that were previously bare may negatively impact wildlife access to habitat in cracks and crevices of rocks and/or bedrock. · Compliance with the MBCA regulations and guidelines for vegetation clearing recommended by ECCC in order to minimize the potential for incidental take of nesting migratory birds. · Vegetation clearing is to be avoided from April 12 to August 28 for the protection of breeding birds and it should be avoided from November 1 to mid-May for the protection of Massasauga Rattlesnakes. This leaves a preferred vegetation clearing / construction window of August 29 to October 31. · Ensure hazardous substances, if required, are stored, handled and applied in accordance with local regulations and in a manner which prevents re-release into the environment. · Any hazardous substances stored within the stockpile areas will be properly contained to prevent its re-release into the environment. · Ensure a contingency plan is developed and implemented in the event of an accidental spill from construction vehicle, machinery or equipment. · To minimize vegetation/habitat disturbance, the remediation area should be clearly demarcated and kept as small as possible. 		
Water (drainage and nearby surface water)	Part C, Table 4	<ul style="list-style-type: none"> · A high-density polyethylene (HDPE) liner is required to be placed at any temporary storage site prior to placement of contaminated soil and at machinery/equipment refueling sites. · Minimize and avoid discharge into nearby water and groundwater. · Apply mitigation measures as per the “Fish (<i>Fisheries Act</i>)” valued ecosystem component. 	Site Preparation Construction / Remediation Works Site Rehabilitation	Contractor(s)
Soil Quality	Part C, Table 4	<ul style="list-style-type: none"> · Contaminated soil that is in excess must be stored on Site for the shortest time possible, remain covered, and be disposed of at an approved facility on the mainland. · Work must be scheduled to avoid periods of heavy precipitation. ESC measures (temporary matting, geotextile filter fabric) are to be used, as appropriate, to prevent erosion and release of sediments and/or sediment laden water during the construction phase. These structures are to be left in place until 	Environmental Assessment Construction / Remediation Works	Contractor(s)

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Environmental Component	Reference	Mitigation Measures	Phase	Responsibility
		<p>vegetation is re-established and/or all exposed soils are stabilized.</p> <ul style="list-style-type: none"> · Exposed soil areas must be minimized by limiting the area that is exposed at one time and by limiting the time that any one area is exposed. All stockpiled soil should be covered and/or diked as feasible to prevent erosion and release of sediment laden water. · Development of a Site-specific Spill Response Plan (to be developed by the Contractor) which shall include a log book and detail the course of action to be taken in case a spill. This Plan and all necessary materials shall be available on Site at all times. · Basic petroleum spill clean-up equipment must be on Site at all times. All spills or leaks must be promptly contained, cleaned up, and reported to Ontario Spills Action Centre at 1-800-268-6060. · Appropriate measures should be adopted to minimize any impacts of accidental spill during transport, staging and maintenance activities. · All waste materials must be disposed of in accordance with the applicable regulatory agency guidelines. One toxicity characteristic leachate procedure (TCLP) sample was submitted for analysis. The results indicate that soils may be disposed of as non-hazardous under Ontario Regulation 347 and 558 (Amec Foster Wheeler 2017). · Cover and contain loose materials to avoid air transportation. · When restoring soil on the Site, clean fill and/or topsoil shall be distributed over the remediated area (to a maximum depth of 0.3 m) consistent with pre-remediation conditions. · Minimize vehicle traffic and reduce compaction of reinstated soils, and stabilize high traffic areas as necessary. · Revegetation of the reinstated soil shall be in accordance with the Contractor's Site-specific Revegetation Plan. · Undertake earthworks using construction techniques designed to prevent sedimentation. · Ensure that hazardous substances (including fuel) are handled and applied in a manner to prevent release into the environment. All deleterious substances should be stored at least 30 m from the water. · Construction machinery and equipment (including ramping structures) are to arrive on-site in a clean condition and be maintained free of fluid leaks. · Store all oils, lubricants, fuels, and chemicals in secure areas on impermeable pads a minimum of 30 m from water. · Keep all materials securely locked up to avoid vandalism and accidental spills. · To minimize land disturbance, the remediation area should be clearly demarcated and kept as small as possible. 	<p align="center">Site Rehabilitation</p>	

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Environmental Component	Reference	Mitigation Measures	Phase	Responsibility
Air Quality	Part C, Table 4	<ul style="list-style-type: none"> · Maintain vehicles, machinery and equipment in good repair, equipped with emission controls, as applicable, and operate them within regulatory requirements. · Comply with operating specifications for heavy equipment and machinery. · Minimize operation and idling of gas-powered equipment and vehicles. · No burning of waste or excess materials is permitted. · Suppress releases of dust using water mist or other appropriate methods of control during Site preparation, remediation, and loading and unloading of materials. · Soils and debris will only be transported in secure holdings to limit loss of contaminated soils as dust. · Use controlled work procedures in order to eliminate release of dust from construction works including: <ol style="list-style-type: none"> 1. Stabilize areas of stockpiled or exposed soils using tarps or other similar covers; and 2. Avoid activities with potential to release airborne particulates during windy and prolonged dry periods. · While on Site, all workers must wear appropriate personal protective equipment as dictated by the Site-Specific Health and Safety Plan and in accordance with the <i>Occupational Health and Safety Act, 1990</i> (OHSA) and regulations. · Paint abatement and soil remediation work shall be carried out in compliance with the <i>Canadian Environmental Protection Act, 1999</i> (CEPA), and applicable air emission regulations and by-laws. 	Construction / Remediation Works Site Rehabilitation	Contractor(s)

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Mitigation Table – to be forwarded to proponent

It is reasonable to conclude that with appropriate mitigation in place and good work practices, significant adverse environmental effects will be of short duration and the potential zone of influence will be confined to the immediate vicinity if the work.

Mitigation

- Please refer to mitigation measures above (EEE Appendix F).
- Any and all stipulations of federal, provincial, or municipal authorities and/or their officers must be strictly followed. As a best practice the most stringent standards must be used where applicable. Any discrepancies must be successfully resolved before the pertinent work may begin.

Site monitoring (accuracy and compliance monitoring) may be conducted to verify whether required mitigation measures were implemented. The proponent must provide site access to Responsible Authority officials and/or its agents upon request