

PART 1 - GENERAL

- 1.1 INTRODUCTION .1 This Section specifies the environmental procedures associated with the remediation of the PGWMF and offsite remediation areas (i.e., along Lakeshore Road, Nichols Road South and Townline Road) including the excavation of Low Level Radioactive Waste (LLRW) and Marginally Contaminated Soil (MCS), and the transportation and placement of the waste material in the Long-term Waste Management Facility (LTWMF).
- 1.2 MEASUREMENT AND PAYMENT .1 Payment for development and update of plans and implementation of all required environmental procedures and mitigation measures as described herein, otherwise viewed as incidental to the Work or as directed by the Departmental Representative shall be according to Lot Price. The Lot Price shall be full compensation for all labour, equipment, material and other costs incurred to do the Work.
- 1.3 DEFINITIONS .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which may adversely affect human health and welfare; unfavourably alter ecological balances; affect other species of importance; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption.
- .3 Reportable Spill: as defined in the Transportation of Dangerous Goods Act and the Classification and Exemption of Spills Regulation (O. Reg. 675/98).
- 1.4 REFERENCES .1 Compliance Program Plans and Documents:
- .1 Appendix A: WNSL Port Granby Long-Term Management Project.
- .2 Appendix B: PHAI Radiation Protection Plan (RP) 4500-508740-PLA-001.
- .3 Appendix D: PHAI Radioactive Material Transportation Plan (RAMT) (4500-508520-PLA-001).
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1.4 REFERENCES
(Cont'd)

- .1 (Cont'd)
 - .4 Appendix E: PHAI Emergency Plan
4500-508730-PLA-001.
 - .5 Appendix H: Port Granby Environmental
Management and Protection Plan
(4502-509200-PLA-001).
 - .6 Appendix I: Port Granby Environmental
Assessment Follow-up Program
(4502-509246-PLA-001).
 - .7 Appendix J: Socio-Economic Effects
Monitoring Plan (4502-509246-PLA-003).
 - .8 Appendix K: Port Granby Project
Bio-Physical Effects Monitoring Plan
(4502-509246-PLA-002 R1).
 - .9 Appendix L: Screening Report The Port
Hope Long-Term Low-Level Radioactive
Waste Management Project, December 2006.
 - .10 Appendix M: Port Granby Project
Environmental Monitoring Plan
4502-509247-PLA-001.
 - .11 Appendix N: Port Granby Project
Environmental Protection Plan
(2011-11-08-60154177-PL-RS4-100-EPP-RD).
 - .12 Appendix O: PWGSC Ontario Region
Halocarbon Information Sheet.
 - .13 Appendix V: PHAI Dust Management
Requirements and Plan
(4500-509200-PLA-001 R1).
 - .14 Appendix W: Designated Substance Survey.
 - .15 Appendix X: PHAI Protocols:
 - .1 Appendix X-1: Contaminated Soil
Management (4500-508520-REQ-001).
 - .2 Appendix X-2: Dust Management
(4500-509200-REQ-001).
 - .3 Appendix X-3: Fuels & Lubricants
Management (4500-509241-REQ-001).
 - .4 Appendix X-4: Noise Control
(4500-509241-REQ-002).
 - .5 Appendix X-5: Archaeological &
Forensic Discovery
(4500-509246-REQ-001).
 - .6 Appendix X-6: Erosion & Sediment
Control (4502-509241-REQ-001).
 - .7 Appendix X-7: Surface Water
Management (4502-509241-REQ-002).
 - .8 Appendix X-8: Terrestrial Habitat &
Vegetation Management
(4502-509241-REQ-004).
 - .2 Ontario Provincial Standard Specification
(OPSS):
 - .1 OPSS 506 (Nov 2011) - Construction
Specification for Dust Suppressants.
 - .2 OPSS 805 (Nov 2010) - Construction
Specification for Temporary Erosion and
Sediment Control Measures.
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1.4 REFERENCES
(Cont'd)

- .2 (Cont'd)
- .3 OPSS 1004 (Nov 2006) - Material Specification for Aggregates - Miscellaneous.
- .4 OPSS 1860 (Apr 2012) - Material Specification for Geotextiles.
- .5 OPSS 2501 (Nov 2011) - Material Specification for Calcium Chloride and Calcium Chloride Solution.
- .6 OPSS 2053 (Nov 2011) - Material Specification for Magnesium Chloride Solid and Magnesium Chloride Solution.
- .3 Ontario Provincial Standard Drawings (OPSD):
 - .1 OPSD 219.110 (Nov 2006) - Light Duty Silt Fence Barrier.
 - .2 OPSD 219.130 (Feb 1996) - Heavy Duty Silt Fence Barrier.
 - .3 OPSD 219.211 (Feb 1996) - Temporary Rock Flow Check Dam.
- .4 Ontario Water Resources Act R.R.O. 1990, Regulation 903, Wells Amended. O.Reg. 468/10.
- .5 Greater Golden Horseshoe Area Conservation Authorities, Erosion and Sediment Control Guidelines for Urban Construction, December 2006.
- .6 Ontario Regulation 214/01, Compressed Gas Ontario Regulation 220/01 Boilers and Pressure Vessels. Technical Standards and Safety Act, 2000.
- .7 Federal Halocarbon Regulations 2003.
- .8 Canadian Environmental Protection Act 1999.

1.5 RELATED
SECTIONS

- .1 Section 02 41 23: Selective Site Demolition.
 - .2 Section 02 61 00: Excavation and Transportation of Waste Material.
 - .3 Section 02 61 10: Placement of Waste Material.
 - .4 Section 31 11 00: Clearing and Grubbing.
 - .5 Section 31 14 13: Soil Stripping and Stockpiling.
 - .6 Section 31 22 13: General Earthwork and Rough Grading.
 - .7 Section 31 23 33.01: Containment Mound Final Cover and Berm.
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1.5 RELATED
SECTIONS
(Cont'd)

- .8 Section 32 01 90.33: Tree and Shrub Preservation.
- .9 Section 32 91 19.13: Topsoil Placement and Grading.
- .10 Section 32 92 19.16: Hydraulic Seeding.
- .11 Section 32 92 23: Sodding.
- .12 Section 32 93 10: Trees, Shrubs and Ground Cover Planting.
- .13 Section 32 93 43.01: Tree Pruning.

1.6 SUBMITTALS

- .1 The following submittals outlined shall be submitted within 20 working days of Notice of Award and prior to commencing construction activities or delivery of materials to site in accordance with Section 01 33 00:
 - .1 Submit proof of relevant Training and Professional Certification of employees and Subcontractors.
 - .2 Submit to Departmental Representative Environmental Awareness Training Program Outline for review by Departmental Representative. Environmental Awareness Training is to include:
 - .1 Communication protocol.
 - .2 Protocol for the retention of training records.
 - .3 Names and qualifications of persons responsible for training site personnel.
 - .4 Visitor training protocol.
 - .5 Description of environmental protection training curriculum for: Site and work description; Applicable environmental regulations; Documentation, roles, and reporting; Environmental impact prevention; Handling of hazardous materials; Hazard assessment and identification; Spill prevention, response, reporting, containment and clean-up; Emergency evacuation; Fire response roles and procedures; Environmental inspections.
 - .6 Community awareness training program: include: overview of designated transportation routes; Speed limits; Community hazards; Noise.

- 1.6 SUBMITTALS .1 (Cont'd)
- (Cont'd) .2 (Cont'd)
- .7 Historical/Archaeology/Forensic Awareness: to cover the actions to be taken in the event that an artifact of potential historical, archaeological or forensic significance may be exposed during excavation.
 - .8 Weather monitoring, dust prevention, erosion control and surface water management.
 - .9 A sign-off page as a record for proof of training to be submitted to the Departmental Representative.
- .3 Submit a detailed Contractor Environmental Protection Plan (CEPP): that complies with the reference documents outlined in article 1.4 and includes details of all specific environmental protection measures discussed within this Section or otherwise required to be implemented by the Contractor during construction for all phases and stages of the Work. CEPP to include but not be limited to the following headings:
- .1 Access Control and Security Management.
 - .2 Air Quality Monitoring and Protection.
 - .3 Historical, Archaeological and Cultural Resources Plan.
 - .4 Aquatic Habitat Management.
 - .5 Clearing and Grubbing.
 - .6 Construction Waste Management.
 - .7 Contaminated Soil Management.
 - .8 Water and Leachate Management Plan.
 - .9 Decontamination Protocols.
 - .10 Dust Prevention and Management Plan.
 - .11 Sediment and Erosion Control Plan.
 - .12 Equipment, Fuels and Lubricants Management.
 - .13 Monitoring Well Protection and Abandonment.
 - .14 Noise Control.
 - .15 Odour Control.
 - .16 Traffic Management.
 - .17 Vegetation, Avifauna, and Terrestrial Habitat Management.
 - .18 Emergency and Contingency Procedures.
- .4 Submit a Contractor Spill Prevention and Contingency Plan developed in accordance with O. Reg. 224/07.
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1.6 SUBMITTALS
(Cont'd)

- .2 The following submittals shall be submitted on an ongoing basis during construction activities in accordance with Section 01 33 00:
 - .1 Environmental Inspection Log (EIL)(daily): record qualitative reviews of the condition of general environmental mitigative measures, odour, and real-time quantitative measures for dust, noise and air quality as indicated in this Section:
 - .1 Include a summary of deficiencies observed and mitigative measures required and implemented.
 - .2 Submit a copy of the signed EIL to the Departmental Representative within 24 hours of the end of each working day along with a verbal account of daily activities.
 - .3 Retain copies of EILs on-site for duration of construction work.
 - .2 Weekly Summary Report: Record overall environmental performance for each week based on EILs and monitoring activities, submitted by email correspondence.
 - .3 Monthly Summary Report: Provide hard copy and electronic report summarizing all activities and monitoring results of the month.
 - .4 Follow-up Report: required when EIL identifies deficiency that will take longer than 36 hours to resolve, such that the actions implemented cannot be included on the same EIL form. Include: mitigation measures in place prior to incident, nature of incident or mitigation measure required, corrective action implemented, future incident prevention plan.
 - .1 Notify the Departmental Representative immediately of any incidents and record on EIL.
 - .2 Notify the Departmental Representative if Follow-up Report will not be provided within 5 business days of the EIL identifying the deficiency.
 - .3 Submit Follow-up Report to Departmental Representative when deficiency is resolved and ongoing preventative mitigative measures are implemented.
 - .3 Develop Compressed Gas Cylinder Waste Excavation Procedure for approval by the Departmental Representative.
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1.6 SUBMITTALS
(Cont'd)

- .4 Prior to monitoring well installation and decommissioning prepare a Monitoring Well Installation and Decommissioning Plan for approval of the Departmental Representative. The Monitoring Well Installation and Decommissioning Plan shall include a monitoring well inventory. Following installation and/or decommissioning prepare separate Monitoring Well Installation and Decommissioning Reports documenting monitoring well installation and decommissioning procedures, methodologies and well construction details as applicable. Written submission shall also include the locations of each existing, decommissioned and installed monitoring well.
- .5 Maintain records of identified non-conformances, cause analysis, and corrective actions taken and submit to the Departmental Representative.

1.7 RESPONSIBILITY

- .1 No requirement in this Section is to be construed as relieving Contractor of applicable Federal, Provincial, and Municipal environmental protection laws and regulations.
- .2 Retain Environmental Manager with the following qualifications:
 - .1 Minimum 5 years relevant environmental inspection experience on remediation and/or contaminated sites.
 - .2 Working knowledge and experience with implementation of erosion and sediment controls for large construction projects.
 - .3 Appropriate qualifications for working in a Nuclear Waste Management Facility construction environment.
 - .4 Working knowledge and experience with soil, groundwater, and air monitoring techniques.
 - .5 CV of proposed Environmental Manager to be included in the submitted CEPP to be reviewed and accepted by the Departmental Representative.

1.8 SEQUENCING AND SCHEDULING

- .1 Do not commence Work until applicable erosion and sedimentation controls are in place.
 - .2 Do not commence Work until associated water management controls are in place and operational.
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- 1.8 SEQUENCING AND SCHEDULING
(Cont'd)
- .3 Departmental Representative will monitor some portions of the project work and may require temporary stoppage of work to carry out site investigations as required.

PART 2 - PRODUCTS

- 2.1 SILT FENCE
- .1 Assembled, ready to install unit consisting of geotextile attached to driveable posts for Light Duty Fence and geotextile attached to drivable posts with control measure support for heavy duty fence.
- .2 Geotextile: Shall be according to OPSS 1860, Table 3. Minimum width 900 mm for Light Duty Silt Fence and for Heavy Duty Silt Fence.
- .3 Control Measure Support (Net Backing) for heavy duty fence: industrial polypropylene mesh joined to geotextile at both top and bottom with double stitching of heavy-duty cord, with minimum width of 700 mm and embedded 100 mm into the ground.
- .4 Posts: sharpened wood, approximately 50 mm square, protruding below bottom of geotextile to allow minimum embedment of 600 mm for Light Duty Silt Fence and 900 mm for Heavy Duty Silt Fence and extending to the top of the Woven Geotextile Fabric at a minimum. Posts are to be secured to Woven Geotextile with staples.
- .5 Post Spacing 2 m maximum for Heavy Duty Silt fence and 2.3 m maximum for Light Duty Silt Fence.
- 2.2 ROCK CHECK DAM
- .1 Geotextile: Shall be a woven, Class II geotextile according to OPSS 1860. The filtration opening size (FOS) shall be no greater than 300 µm.
- .2 Rock for rock flow check dams shall comply with the requirements for rip-rap and gabion stone according to OPSS 1004.
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2.3 CONSTRUCTION
MUD MATS

- .1 Geotextile: Shall be a woven, Class II geotextile according to OPSS 1860. The filtration opening size (FOS) shall be no greater than 300 µm.
- .2 Rock for construction mud mats shall comply with the requirements for rip-rap and gabion stone according to OPSS 1004.

2.4 DUST
SUPPRESSANTS

- .1 Dust suppressants shall comply with OPSS 506 (Nov 2011), OPSS 2501 (Nov 2011) and OPSS 2053 (Nov 2011) as approved by the Departmental Representative.

2.5 PGWMF AND LTWMF
DAILY COVER AND
PGWMF INTERIM COVER

- .1 PGWMF and LTWMF Daily Cover shall be a non-biodegradable material complying with the Contractor's Dust Management Plan, Sediment and Erosion Control Plan and approved by the Departmental Representative.
- .2 PGWMF Interim Cover shall be a non-biodegradable material complying with the Contractor's Dust Management Plan and Sediment, Erosion Control Plan and approved by the Departmental Representative. The material shall be capable of withstanding long term shut downs i.e. between construction seasons or otherwise required.
- .3 For LTWMF Intermediate, Interim and Final Cover refer to Specification Sections 02 61 00 Excavation and Transport of Waste Material, 02 61 10 Placement of Waste Material and 31 23 33.01 Containment Mound Final Cover and Berm.

PART 3 - EXECUTION

3.1 GENERAL
CONSTRUCTION

- .1 Accommodate Departmental Representative as required, including for the purposes of testing, inspections, surveillance and oversight.
 - .2 The Contractor will operate the existing on-site weather station and record site weather conditions. The Contractor shall:
 - .1 Maintain existing onsite weather stations in good working order and relocate as necessary to execute the Work.
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3.1 GENERAL
CONSTRUCTION
(Cont'd)

- .2 (Cont'd)
 - .2 Continue with collection of real-time local wind, temperature, rainfall, near surface wind conditions, and 10 m elevation wind conditions using existing on-site weather station and make all data available to the Departmental Representative on request.
 - .3 Continue with summarizing data collected from existing weather station in 10-minute intervals, uploaded automatically to an internet-based interface system for review and make available to the Departmental Representative.
 - .3 The Contractor may provide, maintain and operate an independent weather station to serve the Contractor's purposes while undertaking the work. Data from such an installation would not be considered as an alternative to the existing weather station unless accepted as such by the Departmental Representative.
 - .4 Monitor forecasted weather conditions including wind speed, precipitation, and temperature and adjust work activities as appropriate to address any weather limitations.
 - .5 Optimize off-site trucking activities through development of delivery timing windows, use of convoys and material stockpiling to minimize disruption of local residents and road closures.
 - .6 Reconcile trip tickets between PGWMF and LTWMF on a daily basis.
 - .7 If trespassers are identified as being on site, inspect all equipment, hazardous materials storage areas, erosion and sediment control structures, and water management structures for signs of damage and repair as required. If trespassers are discovered in Controlled Areas, provide decontamination facilities for the trespassers and notify Departmental Representative.
 - .8 Adhere to all requirements prescribed in the reference documents outlined in Article 1.4 of this Section.
 - .9 Definitions of Controlled and Uncontrolled Areas are discussed in the PHAI Radiation Protection Plan (RP) 4500-508740-PLA-001.
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3.2 VEGETATION
PROTECTION

- .1 Protect trees and plants on site and adjacent properties where indicated by demarcating designated Work Areas prior to start of clearing and grubbing activities.
- .2 Implement erosion and sediment control measures to ensure that no vegetation losses are experienced as a result of erosion.
- .3 Protect bluff and fen vegetation in all areas where bluff or fen vegetation removal is not required to access LLRW or MCS.

3.3 BIOTA

- .1 Undertake all reasonable measures to protect terrestrial resources.
- .2 If clearing and grubbing is to occur between March 30 and July 23, the Contractor must have a written clearance from a qualified avian biologist. Work may be required to be postponed if birds are nesting in the Work Area.
- .3 If a nesting survey identifies nesting migratory birds, a Mitigative Measures Plan shall be developed by the Departmental Representative and submitted to Environment Canada - Ontario Region for review prior to work commencing in identified areas.

3.4 SPECIES AT RISK

- .1 While none have been identified, if species at risk are encountered the Contractor shall cease all work and contact Departmental Representative for advice regarding mitigation measures.
- .2 Contractor shall protect and not disturb species at risk.

3.5 HISTORICAL/
ARCHAEOLOGICAL
CONTROL

- .1 Should historical, archaeological, and cultural resources be uncovered during work, stop work immediately and contact the Departmental Representative. Do not resume work until directed by Departmental Representative.
 - .2 Protect, document, and preserve all heritage or archaeological discoveries uncovered during the course of the work.
 - .1 Stop all work in the immediate area of the discovery.
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- 3.5 HISTORICAL/
ARCHAEOLOGICAL
CONTROL
(Cont'd)
- .2 (Cont'd)
 - .2 Fence or otherwise demark the discovery area and protect the resource until it is assessed by an archaeologist.
 - .3 Implement instructions issued by the archaeologist prior to initiating work in the area.
- 3.6 WASTE MATERIAL
MANAGEMENT
- .1 Avoid stockpiling and staging of waste materials at the site. Upon excavation place waste materials directly in haul vehicles for transport and placement within the Containment Mound unless pre-processing is required.
 - .2 Store waste materials overnight only if properly contained, covered and protected against forecasted weather conditions.
 - .3 Waste Material Pad(s) shall not be used for long-term storage and is designated for short-term storage during enabling works, for pre-processing of materials and where double-handling is required due to excavation restrictions.
 - .4 Manage all radioactive laboratory waste generated on-site with excavated waste materials.
- 3.7 EXISTING BURIED
COMPRESSED GAS
CYLINDERS
- .1 Proceed with caution with excavating waste materials in the vicinity of trenches where compressed gas cylinders are believed to be buried as outlined in Appendix U - Description of Waste Material Disposed of at PGWMF. If encountered, implement Compressed Gas Cylinder Waste Excavation Procedure and submit details of the type and contents of Compressed Gas Cylinders encountered.
- 3.8 WORK ADJACENT
TO WATERWAYS
- .1 No work is to be completed in an existing watercourse or water body.
- 3.9 DUST
- .1 Monitor continuously for any visible dust plumes and apply dust mitigation measures immediately if any visible dust is observed.
 - .2 Minimize area of exposed working surface containing contaminated materials.
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- 3.9 DUST
(Cont'd)
- .3 Cover exposed stockpiles to prevent dust generation.
 - .4 Cover areas of exposed waste or MCS overnight and for short term shut downs using daily cover as approved by the Departmental Representative.
 - .5 At the end of the construction season, cover exposed waste materials at the PGWMF using interim cover as approved by the Departmental Representative.
 - .6 Daily and interim cover applied at the PGWMF must be disposed of within the LTWMF if used in Controlled Areas.
 - .7 Enclose all trucks that are either carrying waste materials or empty with dust-tight tie-down tarps or covers promptly after loading and unloading or use fully-enclosed trucks.
 - .8 Implement appropriate means to control tracking of materials at Work site egress points. Conduct regular checks to ensure cargo boxes are leak-free, trucks are decontaminated appropriately prior to leaving the work area, and roadways near egress points are free of debris.
- 3.10 SEDIMENT AND
EROSION CONTROL
- .1 Adequate temporary erosion and sediment control measures shall be provided and maintained to prevent erosion of existing soil, Work completed and temporary covers.
 - .2 Plan and execute construction by methods to control surface drainage from cuts and fills, borrow and waste disposal areas, stockpiles, staging areas, and other work areas and to mitigate the potential for erosion and sedimentation.
 - .3 Minimize amount of bare soil exposed at one time. Stabilize disturbed soils as quickly as practical. Strip vegetation, re-grade, or otherwise in such a manner as to minimize erosion.
 - .4 Remove accumulated sediment resulting from construction activity from adjoining surfaces, drainage systems, and water courses, and repair damage caused by soil erosion and sedimentation.
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3.10 SEDIMENT AND
EROSION CONTROL
(Cont'd)

- .5 Provide and maintain temporary measures to prevent erosion and migration of silt, mud, sediment, and other debris off-site or to other areas of site where damage might result, or that might otherwise be required by applicable Laws and Regulations.
 - .6 Plan construction procedures to avoid damage to Work or equipment encroachment onto water bodies or drainage ditch banks. In event of damage, promptly take action to mitigate effects. Restore affected bank or water body to existing condition.
 - .7 Install and maintain temporary sedimentation erosion controls as required.
 - .8 Silt Fence:
 - .1 Utilize Light and/or Heavy Duty Silt Fence as required based on conditions observed at the site. At a minimum, Heavy Duty Silt Fence is to be used between Controlled and Uncontrolled Areas and outer perimeter of Regions 1 through 7 and Reservoir Areas at the PGWMF.
 - .2 Install Light Duty Silt Fence in accordance with OPSD 219.110 and Heavy Duty Silt Fence in Accordance with OPSD 219.130.
 - .3 Do not construct silt fence in flowing streams or in swales.
 - .4 Light Duty Silt Fence may be removed at beginning of the work day and replaced at end of work-day. Heavy duty Silt Fence may be modified with Departmental Representative Approval.
 - .5 Excavate sediment from behind fence when silt fence is one-third to one-half full, or if the fence is damaged.
 - .6 Avoid damage to silt fence when removing accumulated sediments.
 - .7 Maintain an adequate stand-by supply of prefabricated Light and Heavy Duty Silt Fence throughout the duration of the contract.
 - .8 Remove silt fence barriers when permanent stabilization measures have been implemented.
 - .9 Geotextile Mat:
 - .1 Install as temporary measure to protect exposed waste material in excavation areas overnight or on weekends where directed by the Departmental Representative.
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3.10 SEDIMENT AND
EROSION CONTROL
(Cont'd)

- .9 (Cont'd)
- .2 Install between waste material and rip-rap in areas where waste material may erode from beneath rip-rap due to runoff.
 - .3 Ensure geotextile is in firm, continuous contact with soil and anchor with pins or soil to prevent shifting.
 - .4 Use geotextiles that can be disposed of in the LTWMF mound that will not compromise the integrity of the mound.
- .10 Rock Check Dam:
- .1 Install in drainage ditches where velocity of flow causes invert erosion or when suspended sediments are entrained.
 - .2 Shall consist of clear stone core, geotextile and rip rap stone.
 - .3 Inspect throughout construction period and after significant rainfall events.
 - .4 Remove sediments when rock check dam is one-third to one-half full.
 - .5 Maintain rock check dams until permanent vegetative cover is restored.
- .11 Berms:
- .1 Install at the locations shown on the drawings, as well as around material storage areas or otherwise required.
 - .2 Clean soil shall be used for construction of berms.
 - .3 Waste material is not to be used in the construction of berms.
 - .4 Utilize sediment capture devices with berms where appropriate.
- .12 Sediment Trap:
- .1 Construct where required or as directed by the Departmental Representative in accordance with OPSS 805.
 - .2 Surround sediment traps with continuous fencing.
 - .3 Side slopes of sediment traps shall be 3:1 or flatter.
 - .4 Remove sediment from trap when sediment reaches one-third of the trap capacity.
 - .5 Install sediment traps to handle 1 in 5 year storm events.
 - .6 Monitor sediment traps prior to, during, and following a significant rain event (>20 mm in 24h) for signs of structural vulnerability and signs of damage.
 - .7 If standing water is not draining from sediment trap within 72 hours, implement corrective action measures.
 - .8 Ensure that water pumped from sediment trap is treated, if required.
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3.10 SEDIMENT AND
EROSION CONTROL
(Cont'd)

- .13 Construction Mud Mats:
 - .1 Install at entranceway to construction site and/or working area of construction site subject to grading and fill movement/placement activities in close proximity to the entrance to prevent transport of sediment in the form of mud and dirt onto pavement surfaces (granular and/or asphalt).
 - .2 Stone pad shall be a minimum 20 m in length and the full width of the entrance.
 - .3 Mud mat shall be a minimum of 300 mm thick and shall be underlain with geotextile.
 - .4 The granular material will require periodic removal and replacement as it becomes contaminated by vehicle traffic.
- .14 Unless otherwise directed by Departmental Representative, remove temporary erosion and sediment controls upon completion of Work once disturbed areas are stabilized sufficiently.
- .15 Dispose of accumulated sediments generated in Controlled Areas into the LTWMF mound. Drain as required prior to placement, and collect runoff and manage accordingly.
- .16 Do not disturb existing embankments or embankment protection.
- .17 Inspect earthworks daily to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- .18 If soil and debris from site accumulate in low areas, storm sewers, roadways, gutters, ditches, or other areas where in Departmental Representative's determination it is undesirable, remove accumulation and restore area to original condition.
- .19 Following the completion of work stabilize disturbed areas through re-vegetation and hydroseeding.

3.11 AIR QUALITY

- .1 Onsite and offsite air quality criteria (control and action levels) are detailed in the Port Granby Project Environmental Monitoring Plan 4502-509247-PLA-001 (Appendix M) and must be adhered to at all times.
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3.11 AIR QUALITY
(Cont'd)

- .2 Investigate any identified pollutant or general odour concerns that may be related to impacted soil and groundwater, construction equipment, haul vehicles or otherwise at the site.
- .3 Maintain all on-site construction equipment in good working order, outfit with catalytic converters and utilize low-sulphur fuel.
- .4 Minimize idling by developing idling time restrictions for delivery trucks, dump trucks and all internal combustion equipment.
- .5 Decontaminate and repair or remove from service all equipment that is not in proper working order.
- .6 Apply odour prevention to exposed waste materials, including excavations, the mound, and restricted waste pads, as appropriate. Submit proposed odour suppressant products to Departmental Representative for review and approval.

3.12 NOISE

- .1 Ensure all construction equipment complies with emission standards outlined in NPC-115 of the Ontario Model Municipal Noise Control By-law and have operable mufflers newer than 1981.
 - .2 Limit construction activities in accordance with the Municipality of Clarington Noise By-law 2007-071 and the Screening Report: The Port Hope Long-Term Low-Level Radioactive Waste Management Project, December 2006 (Appendix L).
 - .3 Avoid tailgate banging and secure banging tailgates.
 - .4 Comply with posted speed limits on local public roads and avoid generating excessive cargo box or tray noise.
 - .5 Outfit equipment with noise reduction features, as appropriate.
 - .6 Advise Departmental Representative of occasions where activities will cause higher than typical noise volumes at the fence line for a sustained period of time.
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3.12 NOISE
(Cont'd)

- .7 Adhere to on-site and off-site noise criteria levels as detailed in the Port Granby Project Environmental Monitoring Plan 4502-509247-PLA-001 (Appendix M).
- .8 Contractor noise monitoring and sampling responsibilities described in the Port Granby Project Environmental Monitoring Plan 4502-509247-PLA-001 (Appendix M).
 - .1 Contractor shall monitor noise levels using ambient sound level meter.
 - .2 Contractor shall set near-source monitoring limits at least 20% lower than administrative control level set by Departmental Representative.

3.13 WATER AND
LEACHATE MANAGEMENT

- .1 The Contractor shall be responsible for providing and maintaining all ditching, grading, berms, pumps, temporary storage tanks and associated appurtenances for the management and handling of storm water and groundwater at the PGWMF and LTWMF based on precipitation, the depth of excavation and the water levels at the time of construction including providing for and maintaining adequate measures to manage leachate within the Containment Mound and groundwater collected by the East Gorge Groundwater Collector during construction.
 - .2 Water from Controlled and Uncontrolled Areas shall be managed accordingly to prevent flooding and to allow for the Work to be undertaken in the dry.
 - .3 The surface runoff controls shall be adequate to control a 24-hour 1 in 100 year storm and contingency measures for larger storm to ensure that no runoff flows from Controlled Areas to Uncontrolled Areas.
 - .4 The Contractor shall construct dewatering sumps as required to facilitate water management activities. Details of the proposed sump construction shall be provided with the Water Management Plan. The Contractor may propose alternative mechanisms to facilitate water management in the Water Management Plan for approval by the Departmental Representative.
 - .5 Pumping shall be continuous where specified or directed, or as necessary to facilitate completion and protection of the Work and to maintain satisfactory progress.
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3.13 WATER AND
LEACHATE MANAGEMENT
(Cont'd)

- .6 Damage to existing facilities or new Work resulting from the failure of the Contractor to manage water as required to execute the Work shall be rectified by the Contractor.
 - .7 Prior to large precipitation or runoff events:
 - .1 Verify that storm water management ponds and reservoirs containing water for treatment have been drained to the lowest functional level, as appropriate, to increase the freeboard capacity and minimize risk of overflow.
 - .2 Maintain standby pumps to increase the pumping capacity if required.
 - .3 Limit work in areas with high sensitivity to erosion and implement additional erosion and sediment control measures, as appropriate.
 - .4 Set up additional containment in areas containing hazardous substances, as appropriate.
 - .5 Remove any ice build-up from pumps and equipment and ensure pumps and related equipment are in good working order.
 - .6 Review condition of drainage features prior to, during, and following the event to ensure proper working order.
 - .7 Adhere to discharge criteria levels detailed in the Port Granby Project Environmental Monitoring Plan 4502-509247-PLA-001 (Appendix M).
 - .8 Contractor water monitoring and sampling responsibilities described in the Port Granby Project Environmental Monitoring Plan 4502-509247-PLA-001 (Appendix M).
 - .8 Water Management within Uncontrolled Areas:
 - .1 Manage water within Uncontrolled Areas throughout work and divert precipitation/runoff away from waste removal areas where possible.
 - .2 Surface water within Uncontrolled Areas that does not come into contact with waste materials or that contains no impacted groundwater contributions shall be diverted through applicable erosion and sedimentation controls as required, before being conveyed to clean surface water drainage systems (existing natural or constructed).
 - .3 Do not pump water containing suspended materials into waterways, storm or sanitary sewer or drainage systems or on to adjacent properties.
-

3.13 WATER AND
LEACHATE MANAGEMENT
(Cont'd)

- .8 (Cont'd)
- .4 Manage water generated from dust prevention in Uncontrolled Areas accordingly.
 - .5 The Departmental Representative will perform routine representative surface water testing for compliance with CNSC licensing requirements. Should the results of testing reveal non-compliance, the Contractor will be required to stop work and implement mitigation measures/controls (i.e., possibly containing and redirect surface water runoff) to rectify the situation immediately. Surface water from Uncontrolled Areas will not be stored prior to testing and off-site discharge.
 - .6 Prior to construction of the LTWMF containment mound and placement of waste, testing of surface water from Uncontrolled Areas at the LTWMF will not be required. However, upon initiation of waste placement, testing will be undertaken in Uncontrolled Areas by the Departmental Representative.
 - .7 As areas of the PGWMF are sequentially remediated, verified and regraded these areas will be deemed Uncontrolled and surface water within these areas will be managed and tested, similar to other Uncontrolled Areas prior to being conveyed to clean surface water drainage systems. All groundwater however, generated at the PGWMF within the historic waste burial areas and in particular from installed components of the East Gorge Groundwater Collector System following remediation and verification will be deemed contaminated and shall be managed accordingly and diverted to the waste water treatment plant.
- .9 Water Management within Controlled Areas:
- .1 Manage water within Controlled Areas throughout Work and collect and convey impacted water to the on-site WWTP via pumping and conveyance piping to existing storm water management ponds, equalization basins and reservoirs.
 - .2 Contractor is limited by the design capacities, sediment load and influent water quality limitations of the storm water management ponds, equalization basins, reservoirs and onsite WWTP as applicable.
-

3.13 WATER AND
LEACHATE MANAGEMENT
(Cont'd)

- .9 (Cont'd)
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with CNSC License requirements.
 - .4 Surface water that comes into contact with waste material is to be deemed impacted and treated as such.
 - .5 Within the Containment mound a temporary sump is to be constructed by setting back the waste above each permanent leachate collection sump and shall have a storage capacity of at least 4,000m³. As a minimum, there shall be temporary pump of adequate capacity to remove runoff in the temporary sump of each cell, and pump to remove leachate in the leachate collection system.
 - .6 After placement of waste in Cell 1 and before completion of Cell 2 liner and leachate collection system, all leachate and surface runoff within Cell 1 shall be contained within Cell 1. Similarly, before waste is placed in Cell 2, clean surface runoff in Cell 2 shall not flow into Cell 1.
 - .7 The Contractor shall control groundwater, leachate and surface runoff and provide temporary measures as needed to ensure that all work and materials placed in the mound remain stable.
 - .8 When the Containment Mound or part of the Containment Mound reaches the final grade, runoff from the cover or part of the cover can only be diverted to a clean surface water pond after the water quality is demonstrated to meet CNSC license requirements.
 - .9 Impacted water originating from excavations at the PGWMF, completed sections of the East Gorge Groundwater Collector or otherwise shall be conveyed to the WWTP. The Contractor is required to manage impacted ground and surface water accordingly to prevent overflow of the East and West Reservoirs and the impacted Storm Water Management Pond.
 - .10 Transfer surface and groundwater from the excavation area to the East Reservoir, West Reservoir and/or applicable Storm Mater Management Ponds promptly to minimize waste material contact time.

3.14 WASTEWATER
FROM CONSTRUCTION
FACILITIES
(Cont'd)

- .8 The Contractor shall employ appropriate means and methods as required to convey collected wastewater to the WWTP.
- .9 Contractor shall use biodegradable, low phosphate soap only at the site, so as not to impact the wastewater treatment process.
- .10 The Contractor shall comply with applicable WWTP influent limitations and requirements.
- .11 Do not operate wastewater storage tanks until inspected and approved by Departmental Representative.
- .12 Notify Departmental Representative a minimum of 72 hours in advance of when wastewater storage tank is anticipated to be full.
- .13 Based on direction provided by the Departmental Representative, transport and dispose of applicable wastewaters from sanitary facilities at off-site disposal facility as identified by Contractor and approved by Departmental Representative.

3.15 SPILL RESPONSE

- .1 Contractor is responsible for all testing, documentation, clean-up, reporting, damages and associated costs and all other actions arising from a spills at the site.
 - .2 Spills of deleterious substances:
 - .1 Report immediately to Departmental Representative.
 - .2 Report immediately to Ontario Spills Action Centre: 1-800-268-6060 in accordance with Ontario regulations.
 - .3 If spill has occurred or migrated off-site or into a watercourse or water body, report immediately to Municipality or emergency services.
 - .4 Provide details of the spill to agencies: include: date, time, type of spill, quantity spilled, location of spill, and potential for spill to enter watercourse or water body.
 - .3 For a spill to a public roadway, wait for the police or fire department to direct traffic, unless:
 - .1 Spill poses immediate danger to the public or the environment.
-

- 3.15 SPILL RESPONSE .3 (Cont'd)
(Cont'd) .2 At least two (2) Contractor personnel shall direct traffic, and appropriate PPE and traffic control signs shall be utilized.
- .4 Document all spills in the EIL: include: date, time, material spilled, volume, location, underlying material, clean-up required and implemented, and any residual potential environmental impacts.
- 3.16 COMPRESSED GAS .1 Store compressed gas cylinders in accordance with all applicable storage and identification regulations and ensure gas cylinders are:
- .1 Clearly marked and in designated areas, protected from fall and corrosion hazards.
- .2 Upright and secured with an insulated chain or non-conductive belt.
- .3 In a well ventilated area where the temperature does not exceed 52 degrees Centigrade and away from operations producing excessive heat, flames or sparks.
- .4 Grouped with cylinders of the same type, with full and empty cylinders stored separately and appropriately marked.
- .2 Store oxygen 10 m from all flammable gases, including propane, butane and dissolved acetylene.
- .3 Transport gas cylinders with care. Do not roll, handle roughly, or lift gas cylinders with a lifting magnet. Secure in an upright position with protective cap securely in place.
- .4 Inspect and record condition of compressed gas storage area bimonthly.
- 3.17 EQUIPMENT .1 If utilizing a stationary AST, refuel
REFUELING AND equipment only in designated refueling area
MAINTENANCE where secondary containment is provided in the event of spills and maintain fire fighting agents in the vicinity.
- .2 If utilizing mobile fuel truck, refuel equipment over secondary containment and ensure preliminary fire-fighting equipment is nearby.
-

3.17 EQUIPMENT
REFUELING AND
MAINTENANCE
(Cont'd)

- .3 Fueling on-site only to be conducted by trained personnel.
- .4 Refuel equipment below full capacity to minimize risk of spills.
- .5 For stationary refueling stations:
 - .1 Maintain all stationary fuel ASTs in compliance with Federal and TSSA regulations and local fire codes.
 - .2 Delineate refueling and containment area from surrounding areas using appropriate visual and physical demarcation. Ensure all piping is appropriately labeled.
 - .3 Ensure ASTs are double-walled and elevated to protect against corrosion.
 - .4 Provide overfill protection and spill box around the fill pipe for AST and retain licensed fuel supplier to provide fuel.
 - .5 Inspect and record the condition of ASTs on a weekly basis. Look for signs of corrosion, cracks, punctures, releases or maintenance deficiencies to tank, piping, valve, pump or other tank equipment.
- .6 Report any leaks or signs of spills that were not contained to the Departmental Representative.
- .7 Fuel earth moving equipment used in Controlled Areas using mobile fuel truck or safety cans with automatic closures, as appropriate, wherever regular decontamination of equipment is not practicable.
- .8 Decontaminate mobile fuel trucks when transitioning from Controlled Areas to Uncontrolled Areas and complete verification monitoring if leaving the site.

3.18 DE-
CONTAMINATION

- .1 Potentially contaminated vehicles and equipment are not to use roads designated as "Uncontrolled". Travel is to be restricted to designated routes.
 - .2 Inspect and record condition of workforce decontamination unit trailer(s) on a daily basis and address any deficiencies that may result in contamination outside the appropriate control areas.
-

3.18 DE-
CONTAMINATION
(Cont'd)

- .3 Utilize wheel wash stations for gross removal of waste materials of trucks travelling between the PGWMF and LTWMF. Wheel wash stations may also be utilized to provide decontamination of equipment when moving from Controlled to Uncontrolled Areas. Contain wash and rinse water for re-use or treatment as applicable.
 - .1 Reuse final rinse wash water as main wash in the wheel wash station, or as secondary wash if station utilizes multiple wash cycles.
 - .2 Reuse wash water until turbidity meets recommended manufacturer water quality standard limit for the wheel wash station. Turbidity readings shall be collected daily.
 - .3 Use clean water (i.e., not previously used for washing) for final rinse.
 - .4 Keep and maintain a daily records log for tracking turbidity readings and monitoring information and maintenance items.
- .4 Oversized equipment is to be decontaminated at the Equipment Decontamination Pad. Refer to Specification Section 01 52 00. All decontamination fluids and residues maintained onsite and managed accordingly.
- .5 Equipment transferring from Uncontrolled Areas to Controlled Areas to be surveyed in accordance with PHAI Radiation Protection Plan (RP) 4500-508740-PLA-001 (Appendix B).

3.19 MONITORING
WELLS

- .1 Prior to the onset of Construction activities the Contractor is required to undertake and complete a monitoring well inventory to locate and document the location and current condition of all existing monitoring wells including any additional wells not included on the Drawings. The inventory shall also identify monitoring wells to be protected and/or decommissioned as required. A list of known monitoring wells within and in the vicinity of the project site and associated construction details is included in Table D-10 of the Port Granby Project Environmental Monitoring Plan (Appendix M). Note that 2012 AECOM monitoring well B4, B5, B7 and B8 are not included on Table D-10. Refer to Drawing PGWMF-X-03 for the location of these 4 wells.
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3.19 MONITORING
WELLS
(Cont'd)

- .2 The Contractor shall undertake the staged decommissioning of select monitoring wells within and in the vicinity of the project site as required.
 - .1 The proposed sequence of decommissioning activities shall be outlined in the Contractor's Monitoring Well Installation and Decommissioning Plan subject to review and approval by the Departmental Representative.
 - .2 A list of monitoring wells to be decommissioned and associated construction details where available are outlined in Table D-12 and D-13 of the Port Granby Project Environmental Monitoring Plan (Appendix M).
 - .3 The Contractor shall retain a licensed Well Contractor to decommission wells in accordance with O. Reg. 903 - Wells.
 - .4 A licensed Well Technician shall supervise the decommissioning of all wells, including those removed by sub-excavation.
 - .5 Confirm that the area in the vicinity of the well is clear of utilities prior to decommissioning.
 - .6 Provide well decommissioning documentation from the Well Technician, in accordance with O. Reg. 903.
 - .7 Grade surface of former well to prevent surface water pooling and use topsoil where appropriate to encourage the establishment of vegetation.
 - .3 The Contractor shall undertake the staged installation of additional monitoring wells within and in the vicinity of the project site as required.
 - .1 The proposed sequence of well installation activities shall be outlined in the Contractor's Monitoring Well Installation and Decommissioning Plan, subject to review and approval by the Departmental Representative.
 - .2 A list of monitoring wells to be installed and associated construction details are outlined in Table D-14 of the Port Granby Project Environmental Monitoring Plan (Appendix M). Final installation details including slot size, sand pack requirements, well diameter, etc. to be confirmed in the field by the Departmental Representative.
 - .3 The Contractor shall retain a licensed Well Contractor to install wells in accordance with O. Reg. 903 - Wells.
-

3.19 MONITORING
WELLS
(Cont'd)

- .3 (Cont'd)
- .4 Confirm that the area in the vicinity of the well is clear of utilities prior to undertaking drilling activities.
 - .5 Provide well installation documentation from the Well Technician, in accordance with O. Reg. 903.
 - .6 Grade surface in the vicinity of the new well to prevent surface water pooling and use topsoil where appropriate to encourage the establishment of vegetation.
 - .7 Each well identified in table D-14 of the Port Granby Project Environmental Monitoring Plan (Appendix M) corresponds to a separate well. For locations where multiple wells are required at the given location, each well will be a separate boring with its own well screen, riser, sand pack, protective casing, etc. Coordinates provided are approximate.
- .4 Functional monitoring wells that are not to be decommissioned are to be protected during construction activities and raised, lowered and/or repaired per the direction of the Departmental Representative as part of site restoration activities.
- .5 All existing and new monitoring wells are to be surveyed by the Contractor. Survey data shall be provided in x,y,z (easting, northing, elevation) format. For all surveys, the Contractor shall use and report data in the coordinate system and datum referenced on the Construction drawings.

3.20 HALOCARBONS

- .1 Comply with Federal Halocarbon Regulations 2003 under the Canadian Environmental Protection Act 1999, EPAM and PWGSC Ontario Region Halocarbon Information Sheet dated March 2010.

3.21 PROGRESS
CLEANING

- .1 Maintain cleanliness of Work and surrounding site to comply with federal, provincial, and local fire and safety laws, ordinances, codes and regulations.
- .2 Co-ordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials.
-

3.22 FIRES

- .1 Fires and burning of rubbish and waste materials on site is not permitted.

3.23 DISPOSAL OF
GARBAGE

- .1 Do not bury garbage (rubbish) generated from administrative operations, including lunchroom, office, and washroom waste into the LTWMF Containment Mound. Collect all garbage generated in Uncontrolled Areas and dispose or recycle off-site, as appropriate.
- .2 Dispose of garbage generated from activities in Controlled Areas, which may potentially be contaminated with radioactive waste, into the LTWMF mound.
- .3 Minimize garbage generated when possible. No potentially radioactive garbage (e.g. oily rags, PPE) shall be disposed of offsite.
- .4 Do not dispose of wastes, garbage or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
- .5 Dispose of the following materials at appropriate off-site facility identified by Contractor:
 - .1 Debris including excess construction material.
 - .2 Non-contaminated litter and rubbish.
 - .3 Disposable PPE worn during final cleaning.
 - .4 Lumber from decontamination pads.