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Code of Practice for Hydrovac Facilities

Made under the *Environmental Protection and Enhancement Act*,
RSA 2000, c.E-12 and the Waste Control Regulation (192/96, as
amended)

(June 2021)

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DEFINITIONS

- 1(1) All definitions in the *Environmental Protection and Enhancement Act* and associated regulations shall apply, except where expressly defined in this Code of Practice.
- (2) For the purpose of this Code of Practice,
- (a) “Act” means the *Environmental Protection and Enhancement Act*, R.S.A. 2000 c. E-12, as amended,
 - (b) “active area” means the physical locations at a hydrovac facility that are used for receiving, processing, handling or storing hydrovac waste, hydrovac solids, hydrovac wastewater, run-off, other wastes, amendments, chemicals or fuels, and includes the:
 - (c) “Alberta Tier 1 Guidelines” means Alberta Tier 1 Soil and Groundwater Remediation Guidelines, published by Alberta Environment and Parks, January 2019, as amended or replaced from time to time,
 - (d) “Alberta Tier 2 Guidelines” means Alberta Tier 2 Soil and Groundwater Remediation Guidelines, published by Alberta Environment and Parks, January 2019, as amended or replaced from time to time,
 - (e) “amendment” means a product or other material that is mixed with hydrovac waste during treatment,
 - (f) “amendment storage area” means the physical locations at a hydrovac facility that is used to store amendments,
 - (g) “baseline groundwater quality” means the quality of groundwater, in a particular groundwater zone, that is representative of the groundwater prior to the start of operations at a hydrovac facility,
 - (h) “Code of Practice” means the *Code of Practice for Hydrovac Facilities*, as amended,
 - (i) “composite sample” means a sample that is taken by collecting and combining a number of discrete samples into one homogenized sample in order to represent the average concentration of the material from which the discrete samples were taken,
 - (j) “day” means any period of 24 consecutive hours,
 - (k) “design capacity” means the total maximum volume (in cubic meters) of all wastes and amendments that a hydrovac facility is capable of receiving, processing and storing at any point in time,
 - (l) “final closure” means the period after a hydrovac facility has permanently stopped accepting and processing waste,

- (m) “grab sample” means a discrete individual sample of a substance that is representative of the substance that is being sampled, but does not include composite sampling,
- (n) “groundwater” means groundwater as defined in the *Water Act*, RSA 2000, c W-3, as amended from time to time,
- (o) “groundwater monitoring well” means a water well as defined in the *Water Act*, that is used by a hydrovac facility to measure groundwater levels and collect groundwater samples for the purpose of physical, chemical, or biological analysis,
- (p) “groundwater parameter” means any of the parameters listed in Schedule A to this Code of Practice,
- (q) “groundwater quality control limit” means an established level for a groundwater parameter,
- (r) “hydrovac” means an excavation process to create an opening in the ground surface and through the subsurface wherein pressurized liquid is used to loosen surface or subsurface material, which is then vacuumed and removed from the excavation open that is created,
- (s) “hydrovac facility” means a waste management facility that accepts any of the following, individually or in any combination:
 - (i) hydrovac waste, for disposal or treatment,
 - (ii) hydrovac wastewater, for disposal, treatment or use,
 - (iii) hydrovac solids, for disposal, treatment or use.
- (t) “hydrovac solids” means solid materials that have been separated from hydrovac waste,
- (u) “hydrovac solids storage area” means the physical location at a hydrovac facility that is used to store hydrovac solids,
- (v) “hydrovac waste” means solid material, liquid material, or any combination of solid and liquid material, that has been generated from a hydrovac process,
- (w) “hydrovac waste storage area” means the physical location at a hydrovac facility that is used to store hydrovac waste,
- (x) “hydrovac wastewater” means liquid materials that have been separated from hydrovac waste,
- (y) “hydrovac wastewater storage area” means the physical location at a hydrovac facility that is used to store hydrovac wastewater,

- (z) “ISO/IEC 17025” means the international standard developed and published by International Organization for Standardization (ISO), International Electrotechnical Commission (IEC) specifying the management and technical requirements for laboratories, as amended,
- (aa) “liner” means a continuous layer constructed of natural or man-made materials beneath and on the sides of a structure or facility that restricts the downward or lateral migration of the contents from the structure or facility,
- (bb) “NORM” means naturally occurring radioactive materials,
- (cc) “NORM waste” means any waste with concentrations of NORM above the limits specified in Tables 5.1, 5.2, or 5.3 of the *Canadian Guidelines for the Management of Naturally Occurring Radioactive Materials, April 2014*, published by Health Canada, as amended or replaced from time to time,
- (dd) “person responsible” for a hydrovac facility means a person responsible as defined in the Waste Control Regulation,
- (ee) “processing area” means the physical locations at a hydrovac facility that is used to process hydrovac waste and includes:
- (i) treatment area,
 - (ii) areas for unassisted gravity separation or gravity separation using only a centrifuge,
 - (iii) hydrovac waste storage area,
 - (iv) hydrovac wastewater storage area,
 - (v) hydrovac solids storage area,
 - (vi) areas for the storage of chemicals, amendments or fuels,
 - (vii) areas used for the management of run-off, and
 - (viii) areas for the storage of other waste, generated at a hydrovac facility,
- but does not include:
- (A) the receiving area
 - (B) physical locations at a hydrovac facility that are used for the management of run-on.
- (ff) “wastewater” means any or any combination of:
- (i) equipment wash down water, or

- (ii) other wastewater, other than hydrovac wastewater, generated at a hydrovac facility,
- (gg) "qualified professional" means a person who:
 - (i) is registered in good standing in Alberta with a professional association and is subject to that professional association's code of ethics and disciplinary action, and
 - (ii) has acquired the relevant education, work experience, accreditation, and expertise to provide technical advice pertaining to this Code of Practice,
- (hh) "receiving area" means the physical location at a hydrovac facility that is used to receive and temporarily store hydrovac waste prior to processing,
- (ii) "retention pond" means a pond that is designed to store hydrovac wastewater or run-off,
- (jj) "run-off" means any precipitation that drains as surface flow from the active area of a hydrovac facility,
- (kk) "run-on" means any precipitation that drains as surface flow from outside the active area of a hydrovac facility,
- (ll) "subsoil" means the layer of soil directly below topsoil, to a maximum depth of 1.2 metres below the topsoil surface, that consists of the B and C horizons as defined in *The System of Soil Classification for Canada, Third Edition*, published by Agriculture and Agri-Food Canada, as amended or replaced from time to time,
- (a) "topsoil" means the uppermost layers of soil that consist of:
 - (i) the A-horizons and all organic horizons as defined in *The System of Soil Classification for Canada, Third Edition*, published by Agriculture and Agri-Food Canada, as amended or replaced from time to time, and
 - (ii) the soil ordinarily moved during tillage,
- (mm) "treat" means to apply a method, technique, or process, including without limitation, neutralization and stabilization, that is designed to change the physical, chemical, or biological character or composition of a substance, but does not include:
 - (i) unassisted gravity separation, or
 - (ii) gravity separation using only a centrifuge,

- (nn) “treatment area” means the physical location at a hydrovac facility that is used to treat hydrovac waste, hydrovac solids, or hydrovac wastewater,
- (oo) “water well” means a water well as defined in the *Water Act*, as amended,
- (pp) “working surface” means a surface that has been designed to withstand the wear and tear of the equipment upon it, and provides a protective layer over a liner, and
- (qq) “year” means a calendar year.

COMPLIANCE WITH THIS CODE

- 2(1) This Code of Practice applies to:
 - (a) a hydrovac facility that treats, as defined in this code, of 50,000 tonnes per year or less of hydrovac waste, or
 - (b) a hydrovac facility that stores hydrovac waste for phase separation and for hydrovac solids or hydrovac wastewater use.
- (2) Subject to subsection (1) an existing hydrovac facility must register and comply with this Code of Practice within 12 months of the date this Code of Practice comes into force.
- (3) An existing hydrovac facility that holds an approval, issued in accordance with the Act, must comply with the approval for that facility unless or until a Registration for the facility is issued by the Director.

REGISTRATION REQUIREMENTS

- 3(1) In addition to any information required by the Director under the Approvals and Registration Procedure Regulation (A.R. 113/93), the person responsible shall complete the registration form attached to this Code as set out in Schedule B, and submit the completed form with the following additional required information to the Director, prior to commencing construction of a hydrovac facility:
 - (a) a completed registration application form, in the form prescribed in Schedule B to this Code of Practice,
 - (b) a facility design plan and specifications, prepared in accordance with section 4,
 - (c) a soil conservation plan, prepared in accordance with section 5,
 - (d) an operations plan, prepared in accordance with section 6,
 - (e) a groundwater monitoring program, prepared in accordance with section 7, and

- (f) any financial security calculations, as required under Part 4 the Waste Control Regulation.
- (2) See section 8 for any changes related to an existing registration for a hydrovac facility.

FACILITY DESIGN PLAN AND SPECIFICATIONS

- 4 (1) The facility design plan and specifications, must include:
 - (a) a description of the processing method that will be used at the hydrovac facility, including:
 - (i) the technology that will be used,
 - (ii) a block process flow diagram showing all inputs, outputs and waste streams for and connections between each of the processes and units,
 - (iii) a Safety Data Sheets for each chemical and for each amendment that will be used,
 - (iv) prevention of tracking of mud onto the public road surface,
 - (v) impacts on the use of the hydrovac solids or hydrovac wastewater based on the type of amendment(s) or chemicals used,
 - (vi) the design capacity (tonnes per year) of the hydrovac facility, including:
 - (i) the maximum vertical and lateral dimensions of each of the following, measured in metres:
 - (A) receiving area,
 - (B) amendment storage area, where applicable,
 - (C) treatment area, where applicable,
 - (D) areas for unassisted gravity separation or gravity separation using only a centrifuge,
 - (E) hydrovac waste storage area,
 - (F) hydrovac wastewater storage area, and
 - (G) hydrovac solids storage area,
 - (ii) the maximum volume, measured in cubic metres, of each of the:
 - (A) receiving area,
 - (B) amendment storage area,

- (C) treatment area, where applicable,
 - (D) areas for unassisted gravity separation or gravity separation using only a centrifuge,
 - (E) hydrovac waste storage area,
 - (F) hydrovac wastewater storage area,
 - (G) hydrovac solids storage area,
 - (H) areas for run-off management, and
 - (I) tanks, bins processing equipment, where applicable,
- (b) designs for the working surface used to protect the liner(s) in subsection (2), as applicable,
 - (c) designs for the containment system for hydrovac waste, hydrovac solids, hydrovac wastewater and run-off, consistent with subsection (2),
 - (d) a detailed process flow diagram along with a mass balance based on the design capacity consistent with subsection (2),
 - (e) designs for a run-on control system that is, at a minimum, capable of preventing the flow of water, that is not less than the peak discharge from a 1-in-25 year storm event lasting 24 hours in duration, onto active areas of the hydrovac facility,
 - (f) Designs for a run-off control system that is, at a minimum, capable of collecting and containing the volume of run-off expected from a 1-in-25 year storm event lasting 24 hours in duration,
 - (g) design of a groundwater monitoring system that, at a minimum, provides for:
 - (i) at least one groundwater monitoring well up-gradient of the hydrovac facility,
 - (ii) at least two groundwater monitoring wells down-gradient of the hydrovac facility,
 - (iii) use of a type of groundwater monitoring well that is appropriate to monitor for groundwater contaminants,
 - (iv) if one of the down-gradient wells is a nested pair, to monitor for different vertical layers of groundwater flow, then at least one additional groundwater monitoring well is needed down-gradient of the hydrovac facility,
 - (v) a description of the relationship between the site operations, hydrogeologic setting and potential contaminant pathways to receptors, and interpretation of groundwater elevations, flow, patterns and composition,
 - (h) a site plan, drawn to scale in metric units, showing:

- (i) the location of the hydrovac facility relative to adjacent developments, including residences, potable water sources, public roadways, wetlands and permanent waterbodies,
 - (ii) topographic site plans showing the overall site development and setbacks from property lines,
 - (iii) facility drainage plan showing catchment areas and collection ditches/pipes leading to the run-off control system,
 - (iv) all buildings/structures within the facility boundary, and
 - (v) cross-sections showing grades and elevations of working surfaces in the active areas and retention ponds,
 - (i) a description of site restoration procedures, and
 - (j) a description of the final end use of the site once final closure as required in section 17.
- (2) The designs for the containment system referred to in subsection (1)(c) must conform to the following:
- (a) for the containment hydrovac waste, hydrovac solids, hydrovac wastewater, run-off, and wastewater be comprised of a tank or bin that is constructed of non-earthen material and provides containment and structural support, or
 - (b) for the containment of hydrovac solids use a liner system that has a separation of at least 1 metre between the seasonally high water table and the bottom of the liner, and is constructed of:
 - (i) a clay material with:
 - (A) a thickness of at least 0.5 metres measured perpendicular to the liner surface, and
 - (B) a hydraulic conductivity of 1×10^{-9} metres per second or less, or
 - (ii) an alternative liner that will achieve performance equivalent to the requirements set out in subsection (2)(b)(i),
 - (c) for the containment hydrovac waste, hydrovac wastewater, run-off, and wastewater, a retention pond liner system that has a separation of at least 1 metre between the seasonally high water table and the bottom of the liner is constructed of:
 - (i) a clay material with:
 - (A) a thickness of at least 1.0 metres measured perpendicular to the liner surface, and
 - (B) a hydraulic conductivity of 1×10^{-9} metres per second or less, or

- (ii) an alternative liner that will achieve performance equivalent to the requirements set out in subsection (2)(c)(i).
- (3) The facility design plan and specifications must be prepared and signed by a qualified professional.

SOIL CONSERVATION PLAN

- 5(1) In the soil conservation plan, the person responsible must include at least each of the following:
 - (a) detailed plans to conserve on site topsoil and subsoil, including:
 - (i) this material is required to remain on-site,
 - (ii) away from the active area,
 - (iii) topsoil and subsoils piles are separate, and
 - (iv) away from other stockpiles to prevent admixing.
 - (b) a map showing the locations and volumes of each stockpile referred to in subsection (1)(a), and
 - (c) an initial siting soil sample prior to commencement of the facility.

OPERATIONS PLAN

- 6(1) In the operations plan, the person responsible must include at least each of the following:
 - (a) criteria for the acceptance of waste at the hydrovac facility including:
 - (b) procedures for the pre-screening of hydrovac waste to be transported to the hydrovac facility to prevent unauthorized waste from being transported to the facility,
 - (c) procedures for the inspection, acceptance, handling and treatment of hydrovac waste at the facility, and
 - (d) a response plan for managing unauthorized wastes at the facility,
 - (e) procedures for handling and storage of hydrovac wastes, amendments, chemicals and fuels at the hydrovac facility, including:
 - (i) receiving of hydrovac waste,
 - (ii) treatment or separation of hydrovac waste,
 - (iii) treatment of hydrovac wastewater for use or disposal,

- (iv) treatment of hydrovac solids for use or disposal, and
 - (v) storage of hydrovac waste, hydrovac wastewater, hydrovac solids, other wastes, amendments, chemicals and fuels,
- (a) procedures for quantifying hydrovac waste, hydrovac wastewater, hydrovac solids, other wastes, run-off, and wastewater,
- (d) procedures for use of wastes, including:
- (i) detailed plans for use of hydrovac wastewater,
 - (ii) detailed plans for release and use of run-off,
 - (iii) detailed plans for use of hydrovac solids, and
 - (iv) detailed plans for monitoring and quality testing of hydrovac wastewater, run-off, and hydrovac solids, in accordance with the requirements set out in section 13, 14, and 15,
- (e) procedures for site security and public access controls,
- (f) a program for the inspection and maintenance of:
- (i) working surfaces at the hydrovac facility,
 - (ii) process equipment,
 - (iii) retention pond(s), and
 - (iv) tanks or bins used for
- (g) procedures for run-off and wastewater management including:
- (i) detailed plans for the management of run-off,
 - (ii) detailed plans for the management of wastewater,
 - (i) detailed plans for the management of tanks and retention ponds, and
 - (ii) detailed plans for monthly monitoring of water levels in tanks and retention ponds,
- (h) procedures for the disposal of wastes, including:
- (i) detailed plans for managing and tracking the disposal of hydrovac waste, hydrovac wastewater and hydrovac solids,
 - (ii) detailed plans for managing and tracking the disposal of run-off and wastewater, and
 - (iii) detailed plans for managing and tracking the disposal of other wastes,

- (i) an emergency response plan,
- (j) a spill response plan, and
- (k) procedures to ensure all reporting and recordkeeping requirements that apply to the hydrovac facility set out in this Code of Practice, are met.

GROUNDWATER MONITORING PROGRAM

- 7(1) A person responsible for a hydrovac facility must use at least one of the following methods to establish baseline groundwater quality:
- (a) by using historical data, if available,
 - (b) by obtaining groundwater samples from monitoring wells established hydraulically up gradient in nearby physical locations not more than 200 meters from the boundary of the hydrovac facility site, on which no hydrovac operations have taken place, or
 - (c) through the collection and analysis of groundwater samples from groundwater monitoring wells at the hydrovac facility prior to commencing operation of the facility.
- (2) In the groundwater monitoring program, the person responsible must include, at a minimum, each of the following:
- (a) a groundwater monitoring program that includes detailed plans for:
 - (i) collection and analysis of groundwater samples, including the frequency of sampling,
 - (ii) monitoring the depth of water at each groundwater monitoring well at the times of each sampling event,
 - (iii) collection of representative groundwater samples semi-annually from each groundwater monitoring wells for four consecutive years until groundwater quality control limits are established,
 - (iv) collection of representative groundwater samples annually from each groundwater monitoring wells for per year, once groundwater quality control limits groundwater quality control limits are established,
 - (v) laboratory analysis of each groundwater sample for each groundwater parameter as listed in Schedule A, unless otherwise authorized in writing by the Director, and
 - (vi) laboratory analysis of each groundwater sample for any additional parameters that are specified in writing by the Director, and

- (b) a groundwater response plan to address any exceedances of any groundwater parameters above the groundwater quality control limit or indicate groundwater contamination.
- (3) The groundwater monitoring program must be prepared and signed by a qualified professional.

CHANGES TO PLANS OR PERSON RESPONSIBLE

- 8(1) The person responsible for a hydrovac facility must submit to the Director, in writing, any proposed change to the:
 - (a) facility design plan and specifications,
 - (b) soil conservation plan,
 - (c) operations plan (except for the emergency response plan), or
 - (d) groundwater monitoring program,if the proposed change represents a change to the authorized hydrovac facility activity, or will potentially impact the hydrovac facility's operation or the environment.
- (2) The person responsible for a hydrovac facility must not implement any proposed change referred to in subsection (1) without written authorization from the Director.
- (3) Upon receipt of a proposed change under subsection (1), the Director must:
 - (a) review the proposed change, and
 - (b) respond in writing.
- (4) If the Director authorizes a proposed change referred to in subsection (1), the person responsible for a hydrovac facility must as soon as practicable:
 - (a) record the change in the hydrovac facility's operating record,
 - (b) notify all relevant hydrovac facility personnel about the change, and
 - (c) provide appropriate training to all relevant hydrovac facility personnel regarding the change.
- (5) As per the Approvals and Registration Procedure Regulation (A.R. 113/93), Section 11 no transfer, sale, lease, assignment or other disposition of an approval or registration is valid without the prior written consent of the Director, therefore a hydrovac facility must notify the Director, in writing.

CONSTRUCTION SPECIFICATIONS

- 9(1) No person may commence the construction of a new hydrovac facility until the Director has issued a registration.
- (2) The person responsible for a hydrovac facility must construct and operate the hydrovac facility, in accordance with the plans that have been submitted as part of the registration or subject to 8(1) have been authorized in writing by the Director, including the:
 - (a) facility design plan and specifications,
 - (b) soil conservation plan,
 - (c) operations plan, and
 - (d) groundwater monitoring program.

OPERATION OF HYDROVAC FACILITY

- 10(1) The person responsible for a hydrovac facility must operate the hydrovac facility in accordance with:
 - (a) each of plans that have been authorized in writing by the Director, including the:
 - (i) facility design plan and specifications,
 - (ii) soil conservation plan,
 - (iii) operations plan, and
 - (iv) groundwater monitoring program,
 - (b) all other requirements set out in this Code of Practice.
- (2) Upon accepting waste at a hydrovac facility, the person responsible for a hydrovac facility must immediately:
 - (a) inspect the hydrovac waste in accordance with the procedures set out in the hydrovac facility's operations plan, and
 - (b) ensure the hydrovac waste meets the acceptance criteria set out in the hydrovac facility's operations plan.
- (3) When waste under subsection (2) does not meet the hydrovac facility's waste acceptance criteria, the person responsible for the hydrovac facility must:
 - (a) reject the waste and
 - (b) record the reason for rejecting the waste.
- (4) When waste under subsection (2) does not meet the hydrovac facility's waste acceptance criteria and the load cannot be rejected, the person responsible for the hydrovac facility must:

- (c) segregate the waste immediately,
 - (d) report the waste to the Director, immediately, and
 - (e) no later than seven days after the waste arrived at the hydrovac facility, dispose of the waste at a waste management facility authorized under the Act.
- (5) The person responsible for a hydrovac facility must not accept any of the following waste, individually or in any combination:
- (a) hazardous waste or hazardous recyclables,
 - (b) dangerous oilfield waste that are as regulated by the Alberta Energy Regulator,
 - (c) biomedical waste,
 - (d) radioactive materials defined as Class 7 by the Transportation of Dangerous Goods Regulations (SOR/2001-286), as amended from time to time,
 - (e) substances regulated by the Canadian Nuclear Safety Commission,
 - (f) explosive materials defined as Class 1 by the Transportation of Dangerous Goods Regulations (SOR/2001-286), as amended from time to time,
 - (g) NORM waste,
 - (h) car wash sump wastes,
 - (i) industrial sump wastes,
 - (j) sewage, septage or biosolids, subject to subsection (6),
 - (k) municipal solid waste,
 - (l) drilling waste, that is regulated by the Alberta Energy Regulator,
 - (m) waste containing sulphur, and
 - (n) waste containing asbestos,
- (6) Notwithstanding subsection (5)(j), the person responsible for a hydrovac facility may accept hydrovac waste that has been contaminated with sewage, septage, or biosolids, in accordance with the following:
- (a) this hydrovac waste type is listed in the operations plan,
 - (b) the hydrovac waste is not comingled with other hydrovac waste at the hydrovac facility,
 - (c) no hydrovac solids derived from the hydrovac waste are used, and

- (d) no hydrovac wastewater derived from the hydrovac waste is used.
- (7) All hydrovac waste, hydrovac solids, hydrovac wastewater, run-off, and wastewater must be stored in a containment system that conforms to the requirements set out in the facility design plan and specifications.
- (8) Amendments stored on site must be protected from the weather, wind exposure and not directly on the ground, unless otherwise authorized by the Director.
- (9) The person responsible for a hydrovac facility must at all times post and maintain, at the entrance to the hydrovac facility, signage that includes:
- (a) the name of the person responsible for the hydrovac facility,
 - (b) telephone numbers for:
 - (i) the 24-hour emergency contact for the hydrovac facility,
 - (ii) the local fire department, and
 - (iii) Alberta Environment and Parks (1-800-222-6514),
 - (c) the hours of operation of the hydrovac facility, and
 - (d) a notice that no person may dispose of any hydrovac waste at the hydrovac facility outside of operating hours.
- (10) Upon receiving any complaints from any person regarding the hydrovac facility the person responsible must:
- (a) investigate the report, and
 - (b) establish and maintain a written record of:
 - (i) the place, date, and time of the report,
 - (ii) the name and address of the complainant, if provided,
 - (iii) the nature of the report,
 - (iv) the actions taken to investigate the report,
 - (v) the findings from the investigation of the report,
 - (vi) the actions taken to respond to the report, and
 - (vii) whether the issues raised in the report were resolved to the satisfaction of the person who made the report.

- (11) In implementing the soil conservation plan, the person responsible for a hydrovac facility must:
- (a) prevent erosion of topsoil and subsoil stockpiles, including:
 - (i) revegetating the stockpiles, and
 - (ii) any other steps that the Director has specified in writing,
 - (b) immediately suspend the conservation of topsoil or subsoil when wet or frozen field conditions will result in mixing, loss, or degradation of soil, and
 - (c) recommence the conservation of topsoil or subsoil only when the conditions referred to in subsection (10)(b) no longer exist.

MONITORING AND TESTING STANDARDS

- 11(1) The person responsible for a hydrovac facility must ensure the collection, preservation, storage, handling, and analysis of any sample required to be taken under this Code of Practice in accordance with:
- (a) Standard Methods for the Examination of Water and Wastewater, published by the American Public Health Association, American Water Works Association, and the Water Environment Federation, 2010, as amended or replaced from time to time,
 - (b) Toxicity Concentration Leaching Procedure (TCLP) US EPA Regulation 40, CFR 261, Appendix II, Method 1311, as amended or replaced from time to time,
 - (c) Test Methods for Evaluating Solids Wastes: Physical, Chemical Methods, published by the United States Environmental Protection Agency, 1996, as amended or replaced from time to time,
 - (d) Test methods set out in the Alberta User Guide for Waste Managers, 1996, published by the Department, as amended or replaced from time to time, or
 - (e) Soil Sampling and Methods of Analysis, Second Edition, published by CRC Press, 2007, as amended or replaced from time to time, or
- (2) The person responsible for a hydrovac facility must have each sample referred to in subsection (1) analyzed in a laboratory that is accredited pursuant to the ISO/IEC 17025 standard in respect of the specific parameter to be analyzed.

GROUNDWATER QUALITY MONITORING

- 12(1) The person responsible for a hydrovac facility must implement and maintain a groundwater monitoring program in compliance with the groundwater monitoring program as implemented by a qualified professional as described in section 7, throughout:

- (a) the operation of the hydrovac facility, and
 - (b) the final closure of the hydrovac facility.
- (2) The person responsible for a hydrovac facility must:
- (a) protect each groundwater monitoring well from damage,
 - (b) keep each groundwater monitoring well in good working condition, and
 - (c) lock each groundwater monitoring well, except when groundwater samples are being taken.
- (3) In the event that a groundwater sample cannot be obtained at a scheduled sampling time due to improper functioning of a groundwater monitoring well, the person responsible for a hydrovac facility must:
- (a) immediately repair or replace that groundwater monitoring well, and
 - (b) immediately obtain a groundwater sample once the groundwater monitoring well has been repaired or replaced.
- (4) In the event that a groundwater monitoring well has been replaced under subsection 3 and is no longer used for groundwater monitoring, the person responsible for a hydrovac facility must properly decommission that groundwater monitoring well within two years,
- (5) In addition to other record keeping requirements set out in this Code of Practice, the person responsible for a hydrovac facility must record the following information for each groundwater sample that is collected:
- (a) a description of purging and sampling procedures that were used,
 - (b) the static elevation above sea level, and depth below ground surface, of fluid phases in the groundwater monitoring well prior to purging,
 - (c) the temperature of the sample at the time of sampling,
 - (d) the pH of the sample at the time of sampling, and
 - (e) the specific conductance of the sample at the time of sampling.
- (6) In the event that:
- (a) groundwater contamination occurs,
 - (b) the measured level of a groundwater parameter displays an increasing trend of a groundwater control parameter,
 - (c) the measured level of a groundwater parameter exceeds a groundwater quality control limit, or

(d) a groundwater parameter that is not naturally present in groundwater is detected in three consecutive sampling events,

then the person responsible for a hydrovac facility must:

(i) immediately notify the Director in accordance with the Act and regulations under the Act,

(ii) immediately implement the groundwater response plan and take all necessary and applicable actions under the groundwater response plan,

(iii) immediately take the following actions:

- (A) identify the source or cause of the event referred to in subsections (6)(a), (6)(b), or (6)(c), or 6(d),
- (B) remove or control that source or cause,
- (C) identify the proposed steps for the remediation and management of groundwater contamination,
- (D) construct, repair, or replace any structure or item, as necessary, to remedy the event referred to in subsections (6)(a), (6)(b), or (6)(c), or 6(d), and
- (E) conduct additional groundwater monitoring to verify that the event referred to in subsections (6)(a), (6)(b), (6)(c), or 6(d) is being or has been remedied,

(iv) take any other actions that are required under the Act or regulations,

(v) implement the actions or requirements as specified in writing by the Director, and

(vi) provide any information to the Director that is requested in writing by the Director, in the form and manner specified by the Director.

(7) In the event that groundwater remediation is required, the person responsible for a hydrovac facility must prepare and submit to the Director a written groundwater monitoring report that includes at least each of the following:

(a) a legal land description of the hydrovac facility,

(b) a map illustrating the boundaries of the hydrovac facility,

(c) a topographic map of the hydrovac facility,

(d) a description of the industrial activity and processes used at the hydrovac facility,

(e) a map showing the location of all surface and groundwater users within a five kilometer radius of the hydrovac facility,

- (f) details regarding the uses of surface water and water wells by the users referred to in subsection (7)(e),
- (g) a general hydrogeological characterization of the region within a five kilometre radius of the hydrovac facility,
- (h) a detailed hydrogeological characterization of the hydrovac facility, including an interpretation of groundwater flow patterns,
- (i) cross-sections showing depth to water table, patterns of groundwater movement, and hydraulic gradients at the hydrovac facility,
- (j) borehole logs and completion details for groundwater monitoring wells,
- (k) a map showing locations of all known buried channels within a five kilometre radius of the hydrovac facility,
- (l) a map of surface drainage within the hydrovac facility and surrounding areas, including nearby water bodies,
- (m) a map of groundwater monitoring well locations and a table summarizing the existing groundwater monitoring program for the facility,
- (n) the groundwater monitoring program of the hydrovac facility,
- (o) a summary of fluid elevations recorded and an interpretation of changes in fluid elevations,
- (p) an interpretation of quality assurance and quality control program results,
- (q) an interpretation of all the data contained within the items referred to in subsections (7)(a) through 7(p), including:
 - (i) diagrams indicating the location and extent of any groundwater contamination,
 - (ii) a description of the probable sources of groundwater contamination, and
 - (iii) a site map showing the location and type of current and historical potential sources of groundwater contamination,
- (r) a summary and interpretation of the data collected since the hydrovac facility commenced the implementation of its groundwater monitoring program, including:
 - (i) control charts that indicate trends in concentrations of groundwater parameters, and
 - (ii) the migration of groundwater contaminants,

- (s) delineation of the contaminants on and offsite,
- (t) measures taken to remediate the groundwater contamination,
- (u) a proposed groundwater sampling schedule for the following year, and
- (v) recommendations for changes to the groundwater monitoring program to make it more effective.

HYDROVAC WASTEWATER QUALITY MONITORING

- 13(1) Subject to subsections (2) and (3), the person responsible for a hydrovac facility must not release, use, offer, give away, trade, or sell any hydrovac wastewater produced by or brought to the hydrovac facility unless that hydrovac wastewater:
- (a) meets all of the criteria set out in Schedule C to this Code of Practice, and
 - (b) does not contain any additives that do not pass the toxicity test as set out in Schedule D to this Code of Practice.
- (2) The person responsible for a hydrovac facility must dispose of any hydrovac wastewater that does not meet the criteria in subsection (1) at a waste management facility, a wastewater treatment plant authorized under the Act, to accept the hydrovac wastewater, or in accordance with section 176 of the Act.
- (3) The person responsible for a hydrovac facility must not use hydrovac wastewater exceeding the criteria in subsection (1) for any purpose except for the following:
- (a) for equipment cleaning in areas where the wastewater is collected, or
 - (b) for use in dust control at the hydrovac facility in active areas.
- (4) Unless the hydrovac wastewater is disposed of in accordance with subsection (2), the person responsible for a hydrovac facility must collect and test one grab sample from each 250 cubic meters of hydrovac wastewater.

RUN-OFF QUALITY MONITORING

- 14(1) Subject to subsections (2) and (3), the person responsible for a hydrovac facility must not release, use, offer, give away, trade, or sell any run-off unless that run-off meets all of the criteria set out in Schedule C to this Code of Practice.
- (2) The person responsible for a hydrovac facility must dispose of any run-off that does not meet the criteria in subsection (1) at a waste management facility or wastewater treatment plant authorized under the Act, to accept the run-off, or in accordance with section 176 of the Act.

- (3) The person responsible for a hydrovac facility must not use must not use run-off exceeding the criteria in subsection (1) for any purpose except for the following
 - (a) for equipment cleaning in areas where the wastewater is collected, or
 - (b) for use in dust control at the hydrovac facility in any active areas,
- (4) Unless the run-off is disposed of in accordance with subsection (2), the person responsible for a hydrovac facility must collect and test at least one grab sample prior to release or use.

HYDROVAC SOLIDS QUALITY MONITORING

- 15(1) Subject to subsection (2) the person responsible for a hydrovac facility must not use, offer, give away, trade, or sell any hydrovac solids produced by or brought to the hydrovac facility unless those hydrovac solids:
 - (a) meet all of the criteria set out in Schedule E to this Code of Practice, and
 - (b) do not contain any additives that do not pass the toxicity test as set out in Schedule D to this Code of Practice.
- (2) The person responsible for a hydrovac facility must dispose of any hydrovac solids that do not meet the criteria in subsection (1) t, at a waste management facility authorized under the Act to accept the hydrovac solids or in accordance with section 176 of the Act.
- (3) When hydrovac solids are offered, given away, traded, or sold for use off site, the person responsible for a hydrovac facility must:
 - (a) record the analytical results of testing of the hydrovac solids of the analytical results that demonstrate the hydrovac solids meet the criteria outlined in subsection (1),
 - (b) provide a copy of the applicable analytical results of testing to the recipient, and
 - (c) provide instructions to the recipients:
 - (i) solids shall only be placed below the topsoil layer,
 - (ii) solids shall only be placed below the subsoil B (or upper subsoil) layer,
 - (iii) solids cannot be placed within 10 meters of a water body, and
 - (iv) solids cannot be placed within 10 meters of a water well or in groundwater.
- (4) Unless the hydrovac solids are disposed of in accordance with subsection (2), the person responsible for a hydrovac facility must collect and test one composite sample from, at a minimum, each 250 cubic meters of hydrovac solids.

REPORTING AND RECORD KEEPING

- 16(1) The person responsible for a hydrovac facility must establish and maintain an operating record:
- (a) during the operation of the hydrovac facility, and
 - (b) during the final closure period of the hydrovac facility.
- (2) The operating record referred to in subsection (1) must be in writing and must contain, at a minimum, the following information:
- (a) a copy of the Registration related to the hydrovac facility,
 - (b) a current organizational chart of the personnel operating the hydrovac facility,
 - (c) an operation or procedures logbook,
 - (d) a current scaled drawing of the site plan for the hydrovac facility,
 - (e) a record of all public reports, in accordance with section 10(11) for the last 5 years,
 - (f) all results of groundwater monitoring, in accordance with section 12 for the last 5 years,
 - (g) all inspection reports for the last 5 years,,
 - (h) all maintenance records for the last 5 years,,
 - (i) all records of contraventions, in accordance with subsection (4) for the last 5 years,
 - (j) all results of hydrovac wastewater quality testing, in accordance with section 13 for the last 5 years,
 - (k) all records of volumes of hydrovac wastewater used, detailed by method and locations of use for the last 5 years,
 - (l) all records of volumes of hydrovac wastewater disposed of, including identification of the waste management facility or wastewater treatment facility at which hydrovac wastewater was disposed for the last 5 years,
 - (m) all results of run-off quality testing, in accordance with section 14 for the last 5 years,
 - (n) all records of volumes of run-off used, detailed by method and locations of use for the last 5 years,
 - (o) all records of volumes of run-off disposed of, including identification of the waste management facility or wastewater treatment facility at which run-off was disposed for the last 5 years,
 - (p) all results of hydrovac solids quality testing, in accordance with section 15 for the last 5 years,

- (q) all records of volumes or weight of hydrovac solids used, detailed by method and locations of use for the last 5 years,
 - (r) all records of volumes or weight of hydrovac solids disposed of, including identification of the waste management facility at which hydrovac solids were disposed for the last 5 years,
 - (s) all records of total volumes or weight of hydrovac waste, hydrovac solids, and hydrovac wastewater that have been:
 - (i) accepted at the hydrovac facility, a
 - (ii) removed from the hydrovac facility,
 - (t) the cumulative volume of hydrovac wastewater and hydrovac solids stored monthly/annually for the last 5 years.
 - (u) all annual reports for the hydrovac facility for the last 5 years, and
 - (v) any authorizations that the Director has specified in writing.
- (3) The person responsible for a hydrovac facility must record and, for not less than 5 years, retain all of the following information in respect of any sampling conducted or analyses performed in accordance with this Code of Practice:
- (a) the place where the sample was taken,
 - (b) the sample type,
 - (c) the date and time on which the sample was taken,
 - (d) the dates on which the analysis on the sample was performed,
 - (e) the techniques, methods, or procedures used in analyzing the sample,
 - (f) the name of the person who collected the sample,
 - (g) the name of the person and laboratory who analyzed the sample, and
 - (h) the results of the analysis.
- (4) In addition to any other reporting requirements under the Act, or regulations under the Act, the person responsible for a hydrovac facility must, upon learning of any contravention of this Code of Practice:
- (a) immediately notify the Director by telephone at 1-800-222-6514,
 - (b) within seven days of learning of the contravention, submit a report in writing to the Director that contains, at a minimum, the following information:

- (i) a description of the contravention,
 - (ii) the date of the contravention,
 - (iii) an explanation as to why the contravention occurred,
 - (iv) a legal land description of the location of the contravention,
 - (v) the name of the registered owner or owners of the land on which the contravention occurred,
 - (vi) a summary of all measures and actions taken to mitigate any effects of the contravention,
 - (vii) the registration or notification number of the hydrovac facility,
 - (viii) the name of the person who held the registration or notification number at the time when the contravention occurred,
 - (ix) the names, job titles, addresses, and contact information of all persons who were operating, managing or in control of the site at the time of the contravention,
 - (x) a summary of proposed measures to prevent similar contraventions from occurring in the future, and a schedule for implementation of those measures,
 - (xi) any information recorded in accordance with this Code of Practice in relation to or as a result of the contravention, and
 - (xii) any other information required in writing by the Director,
- (c) record and, for a period of not less than five years, retain, the information in subsection (4)(b).
- (5) The person responsible for a hydrovac facility must, each year:
- (a) prepare, in writing, an annual report that contains, at a minimum, the following information pertaining to the calendar year covered by the annual report:
 - (i) a summary of personnel training logs,
 - (ii) the types and quantities of hydrovac waste received at the hydrovac facility during the year,
 - (iii) records and interpretations of those records in respect of:
 - (A) the qualities and quantities of run-off water released, used, or disposed from the hydrovac facility during the year, and
 - (B) the qualities and quantities of hydrovac wastewater used or disposed from the hydrovac facility during the year,

- (C) the qualities and quantities of hydrovac solids used or disposed from the hydrovac facility during the year,
 - (D) a groundwater monitoring report prepared in accordance with section 12(8), if applicable, and
 - (E) volume of accumulated waste soils present on or off-site in temporary storage.
- (iv) copies of analytical reports from testing of hydrovac wastewater, run-off, and hydrovac solids, pursuant to sections 13, 14, and 15, respectively,
 - (v) a summary of any remedial actions taken at the hydrovac facility for any purpose during the year,
 - (vi) a summary of all incidents of non-compliance at the hydrovac facility during the year, including information on actions taken to return to compliance,
 - (vii) a summary of reports received by the hydrovac facility during the year, including information on actions taken in response to those reports, and
 - (viii) a summary of any adjustments made during the year to financial security, if applicable, and
- (b) place the annual report in the operating record no later than March 31 following the calendar year on which the annual report is based.
- (6) Upon receiving a request in writing from the Director or investigator, the person responsible for a hydrovac facility must provide to the Director or investigator any records, reports, documents, data, or other information required to be created under this Code of Practice:
 - (a) in the form and manner specified in writing by the Director, and
 - (b) within the time limits prescribed in writing by the Director.
- (7) The person responsible for a hydrovac facility must immediately notify the Director in writing if any of the following events occurs:
 - (a) the registration holder is served with a petition into bankruptcy,
 - (b) the registration holder files an assignment in bankruptcy or notice of intent to make such a proposal,
 - (c) a receiver or receiver-manager is appointed,
 - (d) an application for protection from creditors is filed for the benefit of the registration holder under any creditor protection legislation, or
 - (e) any of the assets which are the subject matter of this Code of Practice are seized for any reason.

FINAL CLOSURE

- 17(1) Within six months of the last day on which a hydrovac facility accepts waste, the person responsible for a hydrovac facility must submit to the Director, in writing, a final closure plan that includes, at a minimum, the following information:
- (a) a schedule for completion of all activities at the hydrovac facility,
 - (b) a description of the final use of the site of the hydrovac facility,
 - (c) a description of the hydrovac facility remediation objectives, in accordance with the following:
 - (i) for soil or groundwater, *Alberta Tier 1 Soil and Groundwater Remediation Guidelines*, published by Alberta Environment and Parks, January 2019, as amended or replaced from time to time,
 - (ii) for soil or groundwater, *Alberta Tier 2 Soil and Groundwater Remediation Guidelines*, published by Alberta Environment and Parks, January 2019, as amended or replaced from time to time,
 - (iii) for drinking water, *Canadian Environmental Quality Guidelines*, Canadian Council of Ministers of the Environment, PN 1299, 1999, as amended, and
 - (iv) for surface water, *Surface Water Quality Guidelines for Use in Alberta*, Alberta Environment, November 1999, as amended,
 - (d) a description of proposed site restoration procedures, including those in relation to:
 - (i) dismantling of the hydrovac facility,
 - (ii) removal of infrastructure,
 - (iii) removal of any structures or ponds,
 - (iv) restoration of drainage,
 - (v) soil replacement,
 - (vi) erosion control, and
 - (vii) revegetation, where applicable,
 - (e) plans for the removal of hydrovac waste, hydrovac wastewater, run-off, and hydrovac solids,
 - (f) plans for the removal of any other wastes,
 - (g) a comprehensive plan to assess the nature, degree and extent of contamination at the site and any affected lands,

- (h) plan to remediate any identified soil and/or groundwater contamination exceeding applicable Tier 1 soil and groundwater criteria,
 - (i) plans for confirmatory testing to indicate compliance with the remediation objectives, and
 - (j) plans for the decommission of groundwater monitoring system,
- (2) Upon receiving a final closure plan referred to in subsection (1), the Director must:
- (a) review the final closure plan, and
 - (b) respond in writing to the person who submitted the final closure plan.
- (3) If the final closure plan is found deficient by the Director, the person responsible for the hydrovac facility shall correct all deficiencies identified in writing by the Director by the date specified in writing by the Director.
- (4) After receiving written authorization of the final closure plan from the Director, the person responsible for a hydrovac facility must:
- (a) implement the final closure plan in accordance with the authorization, and
 - (b) do any other thing specified in writing by the Director.
- (5) Groundwater monitoring wells no longer used for groundwater monitoring must properly decommission within two years.
- (6) The person responsible for a hydrovac facility must prepare in writing a final closure report that includes, at a minimum, the following information:
- (a) the date of completion of the final closure of the hydrovac facility,
 - (b) a statement that the final closure has been completed in accordance with the final closure plan as authorized in writing by the Director, subject to subsection (4)(c), along with supporting evidence,
 - (c) a description of any deviations from the final closure plan and the reasons and justifications for the deviations, and
 - (d) a report demonstrating that groundwater parameters do not exceed groundwater quality control limits at the hydrovac facility, along with supporting evidence.
- (7) The person responsible for a hydrovac facility must submit the final closure report to the Director within six months of the facility completing the final closure as referred to in subsection (4)(a).

SCHEDULE A

LIST OF GROUNDWATER PARAMETERS

Parameters	Parameters	Parameters
Arsenic, total	Vanadium, total	Calcium
Barium, total	Ammonia	Magnesium
Boron, total	Nitrate-Nitrogen	Sodium
Cadmium, total	Total Kjeldahl Nitrogen	Potassium
Chromium, total	pH	Chloride
Copper, total	Total dissolved solids	Sulphate
Iron, total	Electrical conductivity	Benzene
Lead, total	Chemical oxygen demand	Ethylbenzene
Manganese, total	Total organic carbon	Toluene
Mercury, total	Total phosphorus	Xylene

SCHEDULE B

REGISTRATION APPLICATION FORM FOR HYDROVAC FACILITY

1. General Information

Applicant Name (Person Responsible): _____

Company Name (if applicable): _____

Mailing Address: _____

Legal Land Description for hydrovac facility: _____

Municipal or rural address of hydrovac facility: _____

Contact Person: _____

Phone Number: _____ E-mail address: _____

2. Facility Type

What is the type of hydrovac waste accepted at this facility (i.e. sources)?
What is the treatment process and what chemicals or amendments are used to treat the waste?
Is the hydrovac wastewater and/or hydrovac solids going to be used or disposed?

3. Technical Information

Please provide the following information as specified in this Code of Practice:

- (a) the facility design plan and specifications required in Section 4;
- (b) the soil conservation plan required in Section 5;
- (c) the operations plan required in Section 6 ;
- (d) a groundwater monitoring program required in Section 7; and
- (e) a financial security calculation, as required in the Waste Control Regulation.

I acknowledge that I have reviewed the Code of Practice for Hydrovac Facilities, and that I am bound by the provisions and requirements of this Code of Practice and any subsequent amendments to it.

Applicant Signature: _____ Date: _____

This box is for AEP office use only

Date received: _____

Registered by: _____

Director's Signature: _____

Date: _____

SCHEDULE C

HYDROVAC WASTEWATER AND RUN-OFF QUALITY CRITERIA

Parameter	Limit
Chlorides	120 mg/L
pH	The Environmental Quality Guidelines for Alberta Surface Waters, Alberta Government, 2018, as amended,
Hardness	
Electrical Conductivity	
Metals (listed in Table 2 of the Alberta Tier 1 Guidelines)	
Hydrocarbon Fraction F1 & F2	
Benzene	
Toluene	
Ethylbenzene	
Xylene	
Polycyclic aromatic hydrocarbon	

SCHEDULE D

TOXICITY TEST

Microtox® is a test which uses bioluminescent bacteria to detect toxic substances in a substrate (water, air, soil and sediment). Appendix 5 of Directive 050 Alberta Energy Regulator provides procedures for the Microtox ® toxicity test.

https://static.aer.ca/prd/2020-07/Directive050_0.pdf

[For information purposes only]

Samples with high turbidity can impair the test therefore caution is needed to ensure the turbidity of samples meet the testing parameters.

- Hydrovac solids will require sample preparation which could include extraction and/or filtration. A procedure is described in Directive 050.
- Hydrovac wastewater may require additional filtration. A procedure is described in Directive 050.

SCHEDULE E

HYDROVAC SOLIDS QUALITY CRITERIA

Table 3: Limits for Hydrovac Solids

Parameter	Limit
pH	Between 6.0 and 8.5
Metals (listed in Table 2 of the Alberta Tier 1 Guidelines)	As per Table 1 of Alberta Tier 1 Guidelines for both agricultural and residential use, (using the most stringent between fine grained and coarse grained soil)
Benzene	
Toluene	
Ethylbenzene	
Xylene	
Hydrocarbon Fractions (F1, F2, F3 and F4)	
Polycyclic Aromatic Hydrocarbons (PAHs)	
Electrical Conductivity (ds/m)	3
Sodium Adsorption Ratio	4